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ASRDI OXYGEN TECHNOLOGY SURVEY

Volume I:

Thermophysical Properties

Edited by

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16. ABSTRACT (A 200-word or less factual summary of most significant information. If document includes a significant bibliography or literature survey, mention it here.)

This Handbook is the result of an extensive survey of the thermophysical properties of oxygen, including densities and the thermodynamic, transport, electrical, optical, and molecular properties for the gaseous and fluid states. A thorough bibliography of published work on each property is given. Recommended references are cited for those properties which have been critically surveyed. Other references are listed which were reviewed but not considered as basic source material. Each property is described and defined; selected values are presented for the more common properties; and, where appropriate, graphical presentation is also made. The major tables cover the range 100°-600°R for pressure to 5000 psia (55-340 K, 340 atmospheres or 345 x 10^5 Pa). In addition, for property values beyond this range, recommended references are given, where available. The Handbook is designed to provide a convenient reference for the user.

17. KEY WORDS (Alphabetical order, separated by semicolons)

See Attached.

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Key Words for NASA and CDC Information Systems

Liquid oxygen, gaseous oxygen, solid oxygen, oxygen, handbook thermophysical properties, tables, graphs, computer programs, property value uncertainties.

PVT, density, compressibilities, virial coefficients, fixed points, melting curve, vapor pressure, ideal gas properties.

Enthalpy, entropy, internal energy, free energy, specific heats, latent heats, thermodynamic diagrams.

Thermal conductivity, viscosity, diffusion, accommodation coefficient, thermal transpiration.

Joule-Thomson coefficient, Prandtl number, velocity of sound, heat transfer parameters.

Dielectric constant, electrical conductivity, index of refraction, infrared absorption, surface tension, sound absorption, mixture properties.

Key Words for ASRDI Information System

(Liquid oxygen, thermophysical properties, handbook)

(Gaseous oxygen, thermophysical properties, handbook)

(Liquid oxygen, "list properties using keywords listed above")

(Gaseous oxygen, "list properties using keywords listed above")

(Solid oxygen, "list properties using keywords listed above")

(Oxygen, thermophysical properties, tables, graphs, computer programs)

(Liquid oxygen, gaseous oxygen, thermophysical properties, property value uncertainties)

SPECIAL NOTICE

This edition of NASA SP-3071 replaces the edition distributed during September 1972. For ease in distinguishing between the two editions, the color of the cover has been changed. Accordingly this edition with the blue cover is to be considered the viable one. The edition with the green cover may be discarded.

Preface

This publication is part of a major oxygen safety review in progress by the NASA Aerospace Safety Research and Data Institute (ASRDI). The objectives of the review include:

1. Recommendations to improve NASA's oxygen handling practices by comparing NASA and contractor oxygen systems including the design, inspection, operation, maintenance and emergency procedures.

2. Assessment of the vulnerability to failure of oxygen equipment from a variety of sources so that hazards may be defined and remedial measures formulated.

3. Contributions to safe oxygen handling techniques through research.

4. Formulation of criteria and standards on all aspects of oxygen handling storage and disposal.

This Special Publication is composed of the thermodynamic functions, transport properties, and physical properties of both liquid and gaseous oxygen. The low temperature regime is emphasized. Because the data are detailed beyond that previously available, this handbook should fill an existing need for both the scientific and technical communities.

I. I. Pinkel, Director
Aerospace Safety Research and Data Institute
National Aeronautics and Space Administration

Contents

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1. Introduction

NASA's Aerospace Safety Research and Data Institute (ASRDI) is responsible for providing NASA and its contractors technical information and consultation on safety problems. To accomplish its objective, ASRDI is collecting, organizing and evaluating safety related information. One activity involves cryogenic fluids, that is, the fuels, oxidizers, pressurants, and inert gases which are used in our space program. In addition, many of these fluids are used or being considered for use in ground transportation systems, power generation systems and major industrial applications. Oxygen was chosen as one of the fluids to be studied.

The physical properties of oxygen are required in many calculations, including those involving safety. In the present report we review a segment of the world's literature on the properties of oxygen. Our objective was to indicate the major references from which the data were selected, and to provide the reader with the references which, in the judgment of the editors, are most useful. In addition, other references are listed which were reviewed but not considered to be basic source material. This approach is considered to be a valuable innovation in the critical analysis of the literature on thermophysical properties.

A primary source of information is the Cryogenic Data Center of the National Bureau of Standards which has been collecting data and documents for more than ten years. This survey covers thermodynamic functions, transport properties, and physical properties. The level of review varies from an extensive critical survey to a knowledgeable person's examination of information at hand. The report emphasizes the low temperature regime, i.e., the liquid and dense gas states; above room temperature the information presented is not nearly as complete. We have covered the literature up to August of 1971 - however, several particularly pertinent references are included even though published after that date.

The contributors to this volume, all at the Cryogenics Division are, in addition to the authors: D. E. Diller, H. J. M. Hanley, M. J. Hiza, J. Hord, V. J. Johnson, M. C. Jones, R. D. McCarty, N. A. Olien, A. F. Schmidt, R. V. Smith, G. C. Straty, R. O. Voth and B. A. Younglove.

2. Description of the Volume on Thermophysical Properties

Properties data are usually presented in tables, in graphs or in both. Often more than one variable is found in a particular table or graph. To present the information so that it is easy to find a particular value, the book has been arranged into three major sections. Section A contains a descriptive sheet for each property: Section B contains all the graphs: and Section C contains all the tables.

Each section is preceded by a separate Table of Contents sheet. Reviewing the contents sheet will give access to the property desired. Occasionally, the contents sheet will not suffice because a particular term is applied to a given property and the property is listed under a synonym. An example would be T-S chart, thermodynamic diagram, and Mollier chart. If a review of the contents sheets does not yield a quick answer, refer to the index at the end of the book.

2.1 Pagination

Normal pagination is used on the bottom of each page, keyed to the table of contents in the front of the book. In addition, auxiliary pagination is employed on the upper corners of the pages in the major sections A, B, and C. This pagination is keyed to the index. Its purpose is to permit easy access to the descriptive sheets in Section A, which refer the user to the graphs and tables of Sections B and C. A secondary purpose of the auxiliary pagination is to permit easy updating and additions.

2.2 The Descriptive Sheets, Section A

These sheets are critical for optimum use of the Handbook because they give a survey of the property as well as indicate the location of specific values. For a given property, each sheet normally contains the following items:

1. A definition or description to distinguish between such terms as compressibility and compressibility factor.

2. A locator of tables of values. This locator gives the units of the table(s), and the auxiliary page designation, C__, of the table(s). The user should be able to tell at a glance if the range he requires is covered in the tables available.

3. A locator of figures giving the auxiliary designation, B__, of appropriate graphs or charts. Coordinates of the figures are indicated.

4. Equations which represent the property, provided that the functional form of the equation is simple.

5. An abbreviated table of values. This table is intended for quick reference only. It shows the magnitude of the variable, usually at several fixed points. The values are given in both SI* and engineering units to facilitate the rapid checking of magnitude and unit conversions.

6. An estimate of uncertainty. The uncertainties given are three standard deviations, i.e., 3σ.

7. The major references from which data were selected.†

8. Other references which were reviewed but not considered to be basic source material.†

2.3 The Figures, Section B

In this section we have collected property diagrams and other figures as they exist in the literature. As a consequence, the graphs are a mixture of units, both SI and engineering. Where possible, auxiliary scales in an alternative set of units have been added.

A primary consideration was that the figures should show the qualitative behavior of a property, that is, the wide range dependencies upon temperature and pressure. The graphs will provide adequate numbers for rough calculations. For precision calculations, however, use of the tables is advised. Exceptions are, perhaps, the thermodynamic diagrams B-3; B-37; B-37a; B-37b; B-37c; B-37d; and B-37e, which have been prepared very carefully and are included in the report in a larger size.

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* For a complete description of the SI system see:
[72728] Page, C. H. and Vigoureux, P., Natl. Bur. Standards, Spec. Publ. 330 (Jan 1971), or
[25291] Mechtly, E. A., National Aeronautics and Space Administration, SP-7012 (1964), and
[V0368] Mechtly, E. A., National Aeronautics and Space Administration, SP-7012 (revised) (1969).

†The numbers in [ ] and those listed as "sources reviewed but not used" are National Bureau of Standards, Cryogenic Data Center accession numbers; see also the bibliography in Appendix 2.

2.4 The Tables, Section C

The tables of properties are collected in this section. Each table often contains more than just one property. The major tables cover the range from the triple point to 600 °R (330 K) at pressure to 5,000 psia (340 atm or 345 x 10^5 Pa). They are presented in both SI and engineering units. Most of the other tables are in the units in which they were published in the literature, i.e., again a mixture of SI and engineering units.

2.5 The Appendices

There are three appendices to this report. The first contains a listing of the pertinent unit conversion factors from SI to engineering units. The second is a bibliography of the 1568 references which were considered as sources of data for this volume. The bibliography is arranged by the accession numbers of the Cryogenic Data Center. The references appear on the descriptive sheets of Section A in either a listing of sources selected, or in a section of sources not used. For the sources selected, the citation appears both on the descriptive sheet, Section A, and under the appropriate accession number in the bibliography. The sources not used are identified only by an accession number and if desired the citation can be obtained from the bibliography. In subsequent editions of this or other volumes the accession numbers used will be those of ASRDI, therefore the third appendix lists the conversion of accession numbers from those of the Cryogenic Data Center to those of ASRDI.

2.6 The Index

In addition to the table of contents which is in the front of the volume, there is an index at the end of the volume which will enable the user to locate property values. In addition, as the computer retrieval scheme of ASRDI is implemented, it will be based on this index of key terms.

The index is structured to guide the user. The user should determine which section of the index is appropriate for the particular property desired as follows:

Index Section I,	thermodynamic properties
Index Section II,	transport properties
Index Section III,	physical properties
Index Section IV,	alphabetical key word list of properties.

If a particular property is not included in the compilation, it is recommended that ASRDI or the Cryogenic Data Center be contacted for updated information that may have been added since the publication of this report.

3. Computer Programs and Extrapolation

In many applications a computer program is the most convenient way to obtain the property values; for design optimization, computer programs are often the only reasonable way to proceed. It is obvious that the major tables in this volume were produced by computer. What may not be obvious is that such a computer program is quite complex. Further, several different programs exist and all are being used.

NASA recently sponsored a meeting* to coordinate efforts in calculating properties data of the common cryogenic fluids. Several conclusions reached during the conference are applicable here:

1. Usually, the choice of a program depends on the requirements of the problem.
2. The user needs to know what programs are available (for oxygen, see Table 3).
3. The user needs to apply certain criteria in making a choice (Table 1).
4. The user needs to know which equation of state is used by the program (Table 2).

Table 1 - Criteria

Accuracy
Storage Requirement
Computational Speed
Continuous Functions
Versatility
Convenience

Table 2 - Equation of State Used

Non-analytic Equation of State
(Large number) Local Interpolation Polynomials
Modified Benedict-Webb-Rubin Equation
Modified BWR Equation Including Bender Criteria
Linear Interpolation
PV = RT

The first three items in Table 1 require no comment. If a PVT surface is split into several regions, then the property values are often step-wise discontinuous at the boundaries. These steps can result in a particularly vexing computer problem: the "hanging up" of an iteration to get a specific value. By versatility we mean: how easy is it to enter with input parameters such as pressure/enthalpy if the normal entry is pressure/temperature? By convenience we mean: how easy is it to adopt the program to a specific situation; how modular are the functions and subroutines? Suppose, for example, density is required for an input of pressure and temperature. Can we reduce the bulky and complex program available easily to the minimum required for our problem? In Table 2 a non-analytic equation of state implies the best possible description of properties near the critical point. Local interpolating polynomials imply the best possible accuracy in the single phase region; they do, however, often have discontinuous steps. The Benedict-Webb-Rubin equation is a single smooth surface of slightly inferior accuracy; the description of the critical point, and of the heat capacities in the liquid state are major inaccuracies. The BWR surface is often discontinuous in derived properties at the vapor pressure curve. Use of a Modified BWR equation improves representation of the PVT surface, and applying Bender's techniques removes the discontinuities at two-phase boundary. Linear interpolation between precomputed values and PV = RT offer computational speed but suffer from large inaccuracies. A technique not listed but often used in space technology is to prepare a local curve fit for a very restricted region of the phase diagram. The values for the curve fit are taken from tables such as those given in this volume. The technique has the drawbacks of poor extrapolation and discontinuous steps if matched with any other properties program. With the above in mind, the following programs are available for cryogenic oxygen:

* Joint NASA-NBS Committee on Standardization of Thermodynamic and Transport Property Calculations, November 18 and 19, 1971, National Bureau of Standards, Boulder, Colorado.

Table 3. Major Oxygen Programs

Source Document* and year	Program Name	Program Type	Available From
[36783] 1966	OXYTBL	BWR, 28 terms	NBS Cryogenics Division
[71808] 1971	PVT02 or TEST	Polynominal Interpolation	NBS Cryogenics Division
[V0350] 1971	GASP	BWR-Bender, 20 Terms	NASA Lewis Research Center
[V0363] 1971	CEC 71	Chemical Equilibrium Compositions	NASA Lewis Research Center
[V0364] 1972	GCKP 71	General Chemical Kinetics Computer Program Concerning Homogenous Ideal-Gas Reactions	NASA Lewis Research Center
[V0365] 1972	TRAN 71	Thermodynamic and Transport Properties at High Temperatures	NASA Lewis Research Center

* The numbers in [ ] are Cryogenic Data Center accession numbers. A more complete citation is given in the bibliography, Appendix 2, under that number.

In addition to the major programs above, the PVT surface of Hilsenrath, et al., [453] and the equation of state presented by Vasserman, et al., [V0357] have been programmed; these decks are available from the Cryogenic Data Center.

For the major thermodynamic functions presented in this report we prefer the tables based ultimately on Weber's measurements because of inherently better accuracy. However, the computer program (PVT02) which returns these values is complex, bulky, and may be too costly in certain applications. For these reasons alternative sources are listed, e.g., the computer programs based on the PVT equations of Stewart or Bender, which for many practical applications are only slightly inferior in accuracy. In particular, if input variables other than pressure/temperature are required, then the iterative solutions are much easier to obtain from the latter two programs. It should be noted that Stewart's package does not contain the variables: thermal conductivity, viscosity, C_p, C_v, and the velocity of sound. The adaptation of Bender's equation of state by NASA-Lewis Research Center (GASP) is particularly noteworthy because it provides a number of different entry combinations not found elsewhere. The Bender fit, however, does not take into account existing values for the specific heats of the liquid. It should also be noted that individual subroutines, C_p for example, are an integral part of this package.

For extrapolation beyond the range of the tables in this volume, we presently recommend Bender's equation (GASP), because this equation represents the properties of other gases, where accurate data are available, adequately. In extrapolating, the user should be aware that the liquid enthalpies and specific heats at low temperature and high pressures, the densities near the melting line and in the vapor below the NBP, and virial coefficients at high temperatures will be subject to considerable uncertainty, or error. Additional work at the Cryogenics Division on the problem of extrapolation and correlation to higher pressures and temperatures is being continued.

A computer program for the calculation of complex chemical equilibrium compositions and rocket performance is presented in CEC 71 by Gordon and McBride. The TRAN 71 computer program by Svehla modifies CEC 71 to provide high temperature thermodynamic and transport properties. A General Chemical Kinetics computer program for complex homogenous ideal-gas reactions in any chemical system is given as GCKP 71 by Bittker and Scullin.

4. Evaluation of Existing Literature

The sequence and steps of the data evaluation process are discussed below. They are shown schematically in the flow chart, figure 1.

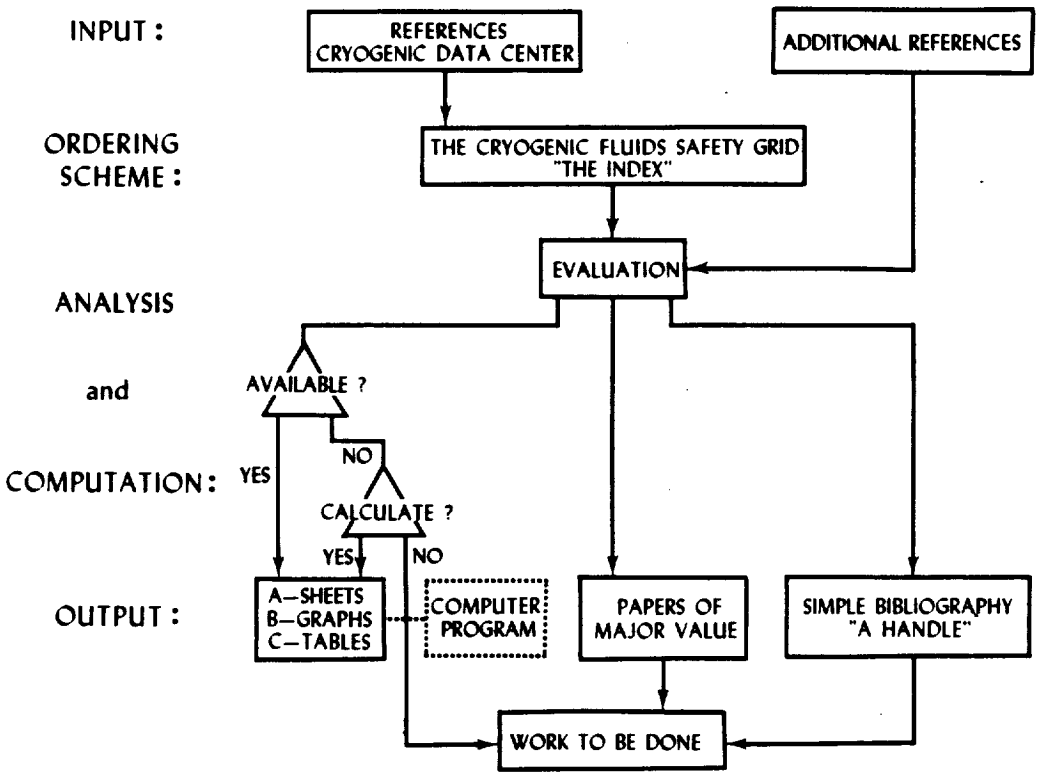

Figure 1, Schematic of the Evaluation Process

4.1 Preliminary Work

In the initial phase of this project, the Cryogenic Fluids Safety Grid* was reviewed. The Safety Grid was organized to structure the cryogenics field in a problem oriented profile and placing the safety aspects into modes which emphasized the transportation, storage and systems handling elements. From the grid a list of terms was developed by which the properties papers were subsequently indexed into the ASRDI storage and retrieval system. Three sections of this list are used in the index to the present report.

The Cryogenic Data Center's storage and retrieval system was queried for properties in the index, yielding 1568 suitable papers. The survey includes a listing of these papers by CDC accession numbers, giving authors and titles in Appendix 2. Many of the documents cited were available in the CDC system.

4.2 The Evaluation Process

The input of documents was categorized according to the Cryogenic Fluids Safety Grid (which has been abridged into the index). These documents are listed in Appendix 2. To identify the data available for a particular property, a descriptive sheet was compiled for the property and placed in Section A. For properties where a large number of values were available, a critical selection of "best" values was made by choosing a restricted set of references. The remainder of the unused literature was presented by accession numbers under a heading "sources reviewed but not used." If the property can be described by a simple equation, then the equation was noted on the descriptive sheet. Often, however, the property in question was calculated from a computer program with a large number of variables.

Values for many of the most frequently requested properties did not exist, but could be obtained by direct calculations, by an evaluation of the data in the literature, or by an estimation from other known properties. For thermal conductivity and viscosity an overwhelming need for values existed, and for these variables we developed the necessary correlations and then performed the required calculations. Some of these rather special cases are discussed in more detail below. Other properties, not deemed as important, were noted as a gap in our knowledge, i.e., as work to be performed in the future.

4.3 Comments on the Critical Selection of "Best" Values

Critical evaluation and selection of source material requires a high degree of expertise. We have depended heavily upon the publications of the Cryogenics Division for several reasons.

1. Considering PVT data alone, the 1200 PVT points measured at this laboratory represent 66% of the total number of PVT points published in the world literature.

2. In many engineering problems, having a continuous set of properties is of utmost importance. Choosing a single source eliminates the problem of discontinuities in values in going from one source to the next.

3. It is important that the various properties of a set of data be consistent; so-called reference values (choice of base) for enthalpy and entropy, for example, can change significantly with different authors while the PVT data of the set are identical.

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* The Cryogenic Fluids Safety Grid was prepared by P. M. Ordin and G. Mandel, NASA-Lewis Research Center, April 1970.

It should be noted that our selection of sources chosen automatically insures consistency between the thermodynamic functions presented here and the thermochemists standard state of 298.15 K (25° C)*. Consistency between these tables and the JANAF Thermochemical Tables+ is incomplete but can be achieved easily. Values for the ideal gas specific heat at constant pressure, C_p°, and the ideal gas entropy, S°, are already the same. Values of the ideal gas enthalpy, H°, differ but only by the choice of reference state. Complete correspondence is achieved by noting that H° (298.15) for these tables is 8680.1 J/mol or 2074.6 cal/mol, while H° (298.15) for the JANAF tables is chosen to be 0 cal/mol.

One result of selecting a restricted set of references is to establish "standard" sources of data; in other words, the values selected become "handbook" values and, unfortunately, are often treated in the nature of logarithm tables. It is anticipated that many segments of the technical community will be using the values in this Handbook, in particular, for calculations of reliability. Thus the inclusion of estimates of uncertainties in the descriptive sheets of Section A becomes exceedingly important. In the present volume we have supplied realistic estimates of error.

In the case of vapor pressure, the equation of R. Prydz [Metrologia, Vol 8, 1-4 (Jan 1972)] was not used because the temperature scale of this paper, while correct, is not consistent with the other sources.

4.4 Properties Calculated for This Volume

The properties most essential for heat transfer calculations are thermal conductivity and viscosity. For both properties, pertinent data had been previously analyzed to yield a graph for the dilute property and a graph for the excess property as a function of density. To produce the tables in this volume, computer programs were developed which include analytical representations of both dilute and dense gas transport properties. In this regard, two problems arose concerning the thermal conductivity enhancement near the critical point. A numerical example will illustrate the importance of this enhancement. The Apollo supercritical oxygen tanks operate at approximately 900 psi. The estimated enhancement is substantial over a wide range of densities. Near critical temperatures the enhancement is large, larger than the conductivity calculated without enhancement by a factor of three, not 30% as commonly supposed. The thermal conductivity enhancement was included in the computer programs described above by using an adaptation of the scaling laws employed for carbon dioxide and hydrogen.

The programs were also adjusted to yield derivatives and combinations of properties often used in heat transfer calculations. For the surface tension, available information was surveyed and a critical evaluation of the data was accomplished. For the index of refraction, an established method was used to estimate values over a wide range of temperature and pressure.

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* [V0351] Thermochemical standard state values are given in CODATA Bulletin No. 2 (November 1970).

\+ [V0367] Stull, D. R., and Prophet, H., Nat. Stand. Ref. Data Ser., Natl. Bur. Standards, 37, (June 1971).

5. Acknowledgement

The editors wish to thank their colleagues for their assistance in preparing this volume. We extend our appreciation to Phil Angerhofer and Greg Hansen for much of the programming and computing; to Mildred Birchfield, Karen Bowie, Verna Matthews and Alberta Ohm for typing; and to Lewis Ericks for preparing many of the graphs. We are in debt to our Project Manager Paul Ordin and our Technical Advisor George Mandel for many helpful suggestions and for their patience during the course of this work. Finally, the project benefited from a concurrent effort sponsored by the Manned Spacecraft Center of NASA.

6. Appendices

6.1 Appendix 1, Unit Conversions

A complete description of the International System of Units is given in

[72728] Page, C. H. and Vigoureux, P., Natl. Bur. Standards, Spec. Publ. 330 (Jan 1971).

Another good general reference for physical constants and conversion factors is

[25291] Mechtly, E. A., National Aeronautics and Space Administration, SP-7012 (1964), or as revised

[V0368] Mechtly, E. A., National Aeronautics and Space Administration, SP-7012 (revised) (1969).

Presented in this appendix are the conversion factors frequently encountered in this Handbook.

Variables, Units, Unit Conversions and Selected Physical Constants

Primary Variable	Variables having the same units as the primary variable	Variables having units reciprocal to those of the primary variable	To convert from	To	Multiply by
Pressure		Adiabatic compressibility Isothermal compressibility	atm bar mm Hg, or torr. Pa or N/m^2	psia psia psia psia	14.695949 14.503774 0.01933678 14.503774×10^{-5}
Volume	Virial Coefficients		cm^3/mol cm^3/g dm^3/kg	ft^3/lb ft^3/lb ft^3/lb	0.0005005957 0.016018462 0.016018462
Density			mol/cm^3 g/cm^3 kg/dm^3	lb/ft^3 lb/ft^3 lb/ft^3	1997.62 62.42797 62.42797
Temperature		Volume expansivity	K °C	°R °R	1.8 1.8 and add 491.67
Enthalpy	Internal energy Latent heat Free energy Heat of transition Specific heat input		J/mol kJ/kg	BTU*/lb BTU/lb	0.0134446 0.430211
Entropy	Specific heat		J/mol-K kJ/kg-°C	BTU/lb-°R BTU/lb-°R	0.0074692 0.239006
Joule-Thomson Coefficient			K/atm	°R/psi	0.12248273
Surface Tension			dyn†/cm	lb_f/in	5.710147×10^{-6}
Thermal Conductivity			mW/cm-K kW/m-°C	BTU/ft-hr-°R BTU/ft-hr-°R	0.0578176 578.176
Thermal Diffusivity			cm^2/s	ft^2/hr	3.87500775
Velocity of Sound			m/s	ft/s	3.280839895
Viscosity			g/cm-s, or poise $N-s/m^2$	lb/ft-s lb/ft-s	0.067196897 0.67196897

*The thermochemical BTU is used throughout, † 1 dyne = 10^{-5} N

Icepoint, T_o, 273.15 K = 0°C = 491.67°R
but note that one major reference [453] uses 273.16.

The Gas Constant, R, 8.31434 J/mol-K = 8.31434×10^6 $N-cm^3/m^2$-mol-K =
82.0562 atm-cm^3/mol-K = 10.7314 psi-ft^3/mol-°R,
but note that the major reference [64400] uses 82.0597 atm-cm^3/mol-K.

Molecular Weight 31.9988

6.2 Appendix 2, Bibliography of References

Presented in this appendix are the 1568 references which were considered as sources of data for this volume. The references appear in the text or on the descriptive sheets of Section A in either a listing of sources selected, or in a section of sources not used. The bibliography is arranged by the accession numbers of the Cryogenic Data Center. In the column headed "authors" the first author is listed. Additional authors, if any, for a given paper are indicated by "et al." Citations for formal publications follow conventional format. Citations for reports or other less formal documents are as complete as possible; appropriate identification number, i.e., NASA Star numbers or ASTIA numbers, etc., follow a sequence of dashes (-----).

6.2 APPENDIX 2, BIBLIOGRAPHY OF REFERENCES

CDC NUMBER	AUTHOR	CITATION
00034	VAN ITTERBEEK,A.	PROGRESS IN LOW TEMPERATURE PHYSICS VOL 1, 395-60 (1955)
00067	HALL,H.A. ET AL	THE AMER. SOC. OF MECH. ENG. ANNUAL MEETING, NEW YORK, NOV 29-DEC 3, 1953. PAPER NO. 53-A5
00104	ALIKHANOV,R.A.	J. EXP. THEOR. PHYS. VOL 2, NO. 1, 771-3 (JAN 1957)(TRANSLATED FROM ZH. EKSP. TEOR. FIZ. USSR 29, 962-3, DEC 1955)
00204	SHIFFMAN,C.A.	GENERAL ELECTRIC CO., SCHENECTADY, N.Y., RESEARCH LAB.
00210	MOLES,E.	GAZ. CHIM. ITAL, VOL 56, 919-47 (1926) (IN ITALIAN)
00219	MEGTOR,L.G. ET AL	PHYS. REV. VOL 69, NOS. 3 AND 4, 181-5 (FEB 1 AND 15, 1946)
00224	KELLEY,K.K.	U.S. BUR. MINES BULL. NO. 477 (1950)
00225	FRIEDMAN,A.S.	J. RES. NAT. BUR. STAND. VOL 58, NO. 2, 93-4 (FEB 1957)
00235	FASTOVSKII,V.G. ET AL	ZH. FIZ. KHIM. VOL 29, 1311-7 (1955) (IN RUSSIAN)
00236	FASTOVSKII,V.G. ET AL	ZH. FIZ. KHIM. VOL 15, 529-31 (1941) (IN RUSSIAN)
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25734	BARIEAU,R.E.	BUREAU OF MINES, AMARILLO, TEX. HELIUM RESEARCH CENTER------ 59
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63197	STEIGER,R.F. ET AL	J. CHEM. ENG. JAP. VOL 1, NOS. 1-2, 447-52 (1968)
63219	LATIMER,R.E.	SURFACE SCI. VOL 14, NO. 2, 279-384 (1969)
63220	KUHZ,R.G. ET AL	AM.CH.E. NATIONAL MEETING, 67TH, ATLANTA, GA., FEB 16-8, 1970. PAPER 43B
63222	PERRY,J.L. ET AL	AMER. INST. OF CHEM. ENG. NATIONAL MEETING, 67TH, ATLANTA, GA., FEB 15-8, 1970. PAPER NO. 32A
63285	HALPERN,B. ET AL	ADVANCES IN CRYOGENIC ENGINEERING VOL 15, 391-98 (1970) (PROC. OF THE CRYOGENIC ENGINEERING CONF, 15TH, LOS ANGELES, JUN 19-8, 1969)
63296	DLICKENSDORFER,R.P. ET AL	J. CHEM. PHYS. VOL 51, NO. 12, 5789-15 (DEC 15, 1969)
63381	NISHIGAKI,K. ET AL	J. CHEM. PHYS. VOL 51, NO. 12, 5284-9 (DEC 15, 1969)
63330	MARCOUX,J.E.	JAP. J. APPL. PHYS. VOL 8, NO. 12, 1548-5 (DEC 1969)
63364	KIN,S.H. ET AL	J. OPT. SOC. AMER. VOL 59, NO. 8, 998 (AUG 1969)
63390	VARGHESE,G. ET AL	J. CHEM. PHYS. VOL 51, NO. 9, 3967-71 (NOV 1, 1969)
63399	TABISZ,G.C. ET AL	CAN. J. PHYS. VOL 47, 2745-51 (1969)
63469	MUREULESCU,I.G. ET AL	CAN. J. PHYS. VOL 47, NO. 24, 2859-71 (DEC 1969)
63517	KOVALENKO,A.E. ET AL	REV. ROUM. CHIM. VOL 14, NO. 6, 681-7 (1969)
63557	ROBERTS,R.W. ET AL	ISOTOPEMPRAXIS VOL 5, 28-6 (JAN 1969)
63560	GIBBONS,R.W. ET AL	ROCKETDYNE, CANOGA PARK, CALIF.----- N69-78037//NASA-CR-54657
63561	YAMOTO,H. ET AL	AIR PRODUCTS AND CHEMICALS, INC., ALLENTOWN, PA.----- AFML-TR-68-378//AD-682818
63625	AHERN,J.E. ET AL	NIPPON KAGAKU ZASSHI VOL 89, 839-43 (1968) (TRANSLATED BY KRESGE-HOOKER SCIENCE LIBRARY SERVICES, APR 1, 1969)
63755	HACKAN,R.	ANRL-TR-68-105//AD-687852
63965	OK,H.N. ET AL	PROC. PHYS. SOC., LONDON, AT. MOL. PHYS. SER. 2, VOL 2, NO. 2, 216-33 (FEB 1969)
63993	SMITH,G.W. ET AL	PHYS. REV. VOL 187, NO. 2, 784-9 (NOV 10, 1969)
64026	THAN,W.J. ET AL	PHYS. REV. VOL 188, NO. 1, 433-44 (DEC 5, 1969)
64037	SHASHKOV,A.G. ET AL	IND. ENG. CHEM. FUNDAM. VOL 9, NO. 1, 63-70 (FEB 1970)
64054	LELAND,T.W. ET AL	INZ.-FIZ. ZH. VOL 17, NO. 1, 65-71 (1969)
64079	HERMANS,L.J. ET AL	TRANS. FARADAY SOC. VOL 65, NO. 568, PT. 8, 2034-43 (AUG 1969)
64078	SPENGLER,G. ET AL	PHYS. LETT. VOL 30A, NO. 2, 139-40 (SEP 1969)
64167	BEENAKKER,J.J.M.	BRENNST.-CHEM. VOL 50, NO. 9, 276-81 (SEP 1969) (IN GERMAN)
64319	PETERSON,M.M.	FESTKOERPERPROBLEME VOL 8, 276-311 (1968)
64408	WEBER,L.A.	CRYOG. ENG. CONF., 14TH, CLEVELAND, OHIO, AUG 19-21, 1968
64625	DUPONT-PAVLOVSKY,M. ET AL	J. RES. NAT. BUR. STAND. VOL 74A, NO. 1, 93-129(JAN-FEB 1970)
64660	MIKHAILENKO,S.A. ET AL	C.R.H. ACAD. SCI. SER. C VOL 269, NO. 8, 476-9 (1969) (IN FRENCH)
64767	OFFUTT,C.F. ET AL	ZH. FIZ. KHIM. VOL 42, NO. 5, 1079-84 (1968) (IN RUSSIAN)
64778	LANG,H.	IDAHO NUCLEAR CORP., IDAHO FALLS----- IN-1221
64794	CAREY,C. ET AL	MAX-PLANCK-INSTITUT FUER STROMUNGSFORSCHUNG, GOTTINGEN, WEST GERMANY----- N69-28594//43
64878	SHAMY,M.M. ET AL	PANAMETRICS INC., WALTHAM, MASS.----- AEDC-TR-69-78//AD-684530
64912	ARAI,Y. ET AL	BRIT. J. APPL. PHYS. SER. 2, VOL 2, NO. 10, 1437-46 (OCT 1969)
65030	WATSON,I.D. ET AL	J. CHEM. ENG. JAP. VOL 2, NO. 2, 234-9 (JUL 1969)
65278	CAMILL,J.E. ET AL	CHEM. ENG. SCI. VOL 24, NO. 10, 1575-80 (OCT 1969)
65729	ROGER,M.M. ET AL	PRINCETON UNIV., N.J. FRICK CHEMICAL LAB.----- TR-9(34)//AD-681088
65917	HARPER,R.J. ET AL	J. CHEM. PHYS. VOL 52, NO. 11, 5928-49(JUN 1970)
65933	BINDER,C.R. ET AL	CAN. J. CHEM. VOL 47, NO. 24, 4661-70 (DEC 1969)
66153	CHIRULESCU,T. ET AL	RUBBER WORLD VOL 160, NO. 3, 43-5 (JUN 1969)
66347	RAZ,B. ET AL	REV. ROUM. CHIM. VOL 15, NO. 1, 67-9 (1970)
66398	HENDRICKS,R.C. ET AL	VACUUM VOL 19, NO. 12, 571-4 (DEC 1969)
66485	BENOIT,A.	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION. LEWIS RESEARCH CENTER, CLEVELAND, OHIO----- N69-28316//NASA-TN-D-5124
66423	HOEPFNER,A.	TORONTO UNIV., ONTARIO, CANADA. INST. FOR AEROSPACE STUDIES----- UTIAS-TN-128//AD-674284
66569	IVAKIN,B.A. ET AL	ANGEW. CHEM. INT. ED. ENGL. VOL 8, 689-99 (OCT 1969)
66588	BAZLITIS,G.	SOV. PHYS. TECH. PHYS. VOL 14, NO. 3, 432-4 (SEP 1969) (TRANSL. FROM ZH. TEKH. FIZ. VOL 39, NO. 3, 577-81 (MAR 1969)
66658	TEMPELMEYER,K.E.	Z. PHYS. CHEM. (FRANKFURT AM MAIN) VOL 64, 382-12 (APR 1969)
66732	FREISER,M.J. ET AL	ARO, INC., ARNOLD AIR FORCE STATION, TENN.----- AEDC-TR-70-102//AD-712373
66856	NAFIKOV,E.M. ET AL	IEEE TRANS. MAGN. VOL MAG-5, NO. 2, 82-98 (JUN 1969)
67883	TEMPELMEYER,K.E.	INZH-FIZ. ZH. VOL 17, NO. 3, 536-4 (1969) (IN RUSSIAN)
68024	ROQUES,M. ET AL	ARO, INC., ARNOLD AIR FORCE STATION, TENN.----- AEDC-TR-70-123//AD-707844
68026	KOBELT,G.	BULL. SOC. CHIM. FR. NO. 4, 1252-7 (APR 1970) (IN FRENCH)
68111	VORONEL,A.V. ET AL	CHEM. TECH. (LEIPZIG) VOL 22, NO. 3, 150-3 (1970) (IN GERMAN)
68243	REITER,F.M.	SOV. PHYS. JETP VOL 28, NO. 6, 1065-71 (JUN 1969) (TRANSL. FROM ZH. EKSP. TEOR. FIZ. VOL 55, 2017-38 (DEC 1968))
68269	LORDI,J.A. ET AL	BER. BUNSENGES. PHYS. CHEM. VOL 74, NO. 6, 562-8 (1970) (IN GERMAN)
68343	YOUSSEF,A. ET AL	PHYS. FLUIDS VOL 13, NO. 2, 291-388 (FEB 1970)
68344	BLAGOI,Y.P. ET AL	Z. PHYS. CHEM. (LEIPZIG) VOL 243, NO. 1-2, 95-189 (MAR 1970)
68407	COOPER,M.G.	UKR. FIZ. ZH. VOL 15, NO. 3, 427-32 (1970) (IN RUSSIAN)
68418	SIMMLER,H.	INT. J. HEAT MASS TRANSFER VOL 12, 915-33 (AUG 1969)
68441	OTT,N.R. ET AL	GAS- WASSERFACH VOL 109, 724-38 (JUL 1968) (IN GERMAN)
68682	YOUSSEF,A. ET AL	J. APPL. PHYS. VOL 40, 3402 (JUL 1969)
68916	LOKTEV,V.M.	Z. PHYS. CHEM. (LEIPZIG) VOL 241, NO. 1-2, 81-100 (1969)
68917	IONESCU,M.I.	PHYS. LETT. A VOL 32, NO. 5, 357-8 (AUG 1970)
68937	DE KEATING-HART,C.	REV. ROUM. CHIM. VOL 15, NO. 2, 273-81 (FEB 1970)
68948	DENNE,O.R.	COMMISSARIAT A L ENERGIE ATOMIQUE, GRENOBLE, FRANCE. CENTRE D ETUDES NUCLEAIRES----- CEA-R-3757
		BRIT. J. APPL. PHYS. VOL 2, NO. 9, 1392-8 (SEP 1970)

CDC NUMBER	AUTHOR	CITATION
68992	SAKSENA,M.P. ET AL	PROC. PHYS. SOC. LONDON (AT. MOL. PHYS.) SER. 2, VOL 2, NO. 8, 890-901 (AUG 1969)
69886	CHANG,S.D. ET AL	CAN. J. CHEM. ENG. VOL 48, NO. 3, 261-6 (JUN 1970) (PRES. AT CIC ANNUAL CONF., 52ND, MONTREAL, QUEBEC, MAY 25-8, 1969)
69879	BARUA,A.K. ET AL	PROC. PHYS. SOC., LONDON (AT. MOL. PHYS.) SER. 2, VOL 3, NO. 5, 619-35 (MAY 1970)
69885	HAYDUK,W. ET AL	CAN. J. CHEM. ENG. VOL 48, NO. 1, 93-9 (FEB 1970)
69105	LELLEMAND,P. ET AL	C.R.H. ACAD. SCI. SER. B VOL 269, NO. 21, 1101-4 (NOV 1969) (IN FRENCH)
69312	KIRICHENKO,IU.A. ET AL	INZH.-FIZ. ZH. VOL 17, 281-9 (AUG 1969) (IN RUSSIAN)
69342	MCGLASHAN,M.L.	TRANS. FARADAY SOC. VOL 66, NO. 568, PT. 1, 18-24 (1970)
69424	KRICHEVSKII,I.R. ET AL	ZH. FIZ. KHIM. VOL 13, NO. 3, 370-96 (1939) AND ACTA PHYSICO-CHIMICA URSS VOL 13, NO. 6, 853-73 (1940) (TRANSL. BY PICATINNY ARSENAL, DOVER, N.J., TRANSL. NO. PA-TT-73)
69490	ARAKAWA,K. ET AL	BULL. CHEM. SOC. JAP. VOL 43, NO. 4, 975-84 (APR 1970)
69720	SENGERS,J.V. ET AL	PHYS. REV. LETT. VOL 26, NO. 2, 70-3(JAN 1971)
69842	BARBAUX,Y. ET AL	J. CHIM. PHYS. PHYSICOCHIM. BIOL. VOL 67, NO. 5, 1035-40 (MAY 1970) (IN FRENCH)
69898	FROST,W. ET AL	ARO, INC., ARNOLD AIR FORCE STATION, TENN.----- AEDC-TR-69-186//AD-698323
69977	COSMA,G. ET AL	BUNSENGES. PHYS. CHEM. BER. VOL 74, NO. 8-9, 934 (1967)
70314	WEBER,L.A.	PHYS. REV. A VOL 2, NO. 6, 2379-86(DEC 1970)
70483	KLEIN,M. ET AL	J. CHEM. PHYS. VOL 53, NO. 12, 4722-3(DEC 1970)
70607	NAVAL AIR SYSTEMS COMMAND	NAVAL AIR SYSTEMS COMMAND, WASHINGTON,D.C.,REPT.NO.NAVAIR 06-30-501(MAR 1971)
71000	MCCARTY,R.D. ET AL	NATIONAL BUREAU OF STANDARDS, BOULDER, COLO., CRYOGENICS DIV.----- NBS-TN-384
72720	PAGE,C.H. ET AL	NAT. BUR. STAND.(U.S.), SPEC. PUBL. 330 (JAN 1971)
R0323	DILLER,D.E.	NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.----- NBS-LN-71-4
R0330	KRAUSE,R.P.	GENERAL DYNAMICS CORP.----- N66-18845//NASA-CR-54606//AE64-1156
R0336	RING,I.H. ET AL	ROYAL AIRCRAFT ESTABLISHMENT, FARNBOROUGH, ENGLAND----- X68-84390//TN-AERO-1846
V0350	HENDRICKS,R.C. ET AL	INTERNATIONAL CONGRESS OF REFRIGERATION,13TH,WASHINGTON,D.C.,AUG 27-SEP 3,1971
V0351	ICSU-CODATA TASK GROUP ON KEY VALUES FOR THERMODYNAMICS	CODATA 2 BULL., 1-5, (NOV 1970)
V0352	MANN,W.B.	PROC. ROY. SOC. (LONDON), VOL A146, 776(1934)
V0353	AMDUR,I. ET AL	J. CHEM. PHYS, VOL 12, 159(1944)
V0354	GRILLY,E.R. ET AL	J. CHEM. PHYS. VOL 14, 435(1946)
V0355	KENNARD,E.H.	KINETIC THEORY OF GASES, MCGRAW-HILL (1938)
V0356	PRESENT,R.D.	KINETIC THEORY OF GASES, MCGRAW-HILL(1958)
V0357	VASSERMAN,A.A. ET AL	THERMOPHYSICAL PROPERTIES OF AIR AND AIR COMPONENTS, IZDATELSTVO NAUKA, MOSKVA (1966),TRANSLATED FROM RUSSIAN BY ISRAEL PROGRAM FOR SCIENTIFIC TRANSLATIONS, JERUSALEM(1971)
V0358	YOUNGLOVE,B.A.	J. RES. NATL. BUR. STANDARDS VOL 76A, 37(1972)
V0359	JONES,M.C.	NATL. BUR. STANDARD, BOULDER, COLO.----- REPT. NO. 10711(NOV 1971)
V0360	BOSOMWORTH,D.R. ET AL	CAN. J. PHYS. VOL 43, 751(1965)
V0361	SHAPIRO,M.M. ET AL	CAN. J. PHYS. VOL 43, 949 (1966)
V0362	KRUPENIE,P.H.	NATL. BUR. STANDARDS MONOGRAPH, THE SPECTRUM OF MOLECULAR OXYGEN, TO BE PUBLISHED
V0363	GORDON,S. ET AL	LEWIS RESEARCH CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, CLEVELAND, OHIO, SPEC. PUBL. NO. NASA SP-273(1971)
V0364	BITTKER,D.A. ET AL	LEWIS RESEARCH CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, CLEVELAND, OHIO, TECH. NOTE D-5586(JAN 1970)
V0365	SVEHLA,R.	LEWIS RESEARCH CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, CLEVELAND, OHIO----- UNPUBLISHED REPORT (JUN 1971)
V0366	DAVIS,M.L. ET AL	NATIOANL AERONAUTICS AND SPACE ADMINISTRATION SPEC.PUBL. 247 (1970)
V0367	STULL,D.R. ET AL	NAT. STAND. REF. DATA SER., NAT. BUR. STAND. (U.S.), NO. 37 (JUN 1971)
V0368	MECHTLY,E.A.	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION SPEC. PUBL. 7012(REVISED)(1969)
V0369	MCCARTY,R.D.	NATL. BUR. STANDARDS, BOULDER, COLO., NBS-LN-70-7

6.3 Appendix 3, CDC-ASRDI Numbers

In subsequent editions of this or other volumes, the accession numbers used will be those of ASRDI; therefore, this appendix lists the conversion of accession numbers from those of the Cryogenic Data Center to those of ASRDI. The arrangement of this table is by accession numbers of the Cryogenic Data Center; that is, the sequence is the same as in the bibliography, appendix 2.

6.3 APPENDIX 3, CDC-ASRDI NUMBERS

CDC NO.	ASRDI NO.	CDC NO.	ASRDI NO.	CDC NO.	ASRDI NO.	CDC NO.	ASRDI NO.	CDC NO.	ASRDI NO.
00034	71C01063	01015	71C02194	05710	71C01140	06304	71C00064	00643	71C01178
00067	71C01004	01006	71C01710	05726	71C01721	06306	71C00065	00645	71C00201
00104	71C01005	01106	71C02195	05733	71C01722	06309	71C01196	00646	71C00202
00204	71C01700	01130	71C01478	05736	71C02206	06390	71C02211	00648	71C02220
00210	71C00769	01133	71C01113	05756	71C00820	06391	71C01197	00651	71C00203
00219	71C01006	01167	71C01479	05807	71C00821	06393	71C00066	00673	71C01204
00224	71C00770	01230	71C02196	05806	71C00822	06394	71C00067	00678	71C00205
00225	71C01473	01255	71C01114	05805	71C02207	06398	71C02212	00679	71C00875
00235	71C01701	01617	71C02197	05809	71C01141	06400	71C02213	00680	71C00206
00236	71C01702	01606	71C01115	05898	71C01723	06403	71C00068	00687	71C01179
00275	71C02105	02020	71C01116	05911	71C01142	06424	71C00069	00693	71C00207
00293	71C01007	02114	71C01117	05915	71C00823	06497	71C00070	00695	71C01180
00340	71C01474	02135	71C00794	05917		06507	71C00071	00696	71C02221
00355	71C01008	02161	71C01118	05921	71C00824	06506	71C00072	00698	71C02222
00356	71C01009	02169	71C00795	05930	71C01143	06508	71C00073	00699	71C02223
00373	71C01475	02200	71C01711	05959	71C01144	06515	71C00074	00701	71C01748
00374	71C02106	02207	71C01119	05980	71C01481	06516	71C01485	00702	71C00208
00405	71C01476	02819	71C01120	06011	71C00825	06620	71C01486	00703	71C00209
00404	71C01010	02809	71C01121	06023	71C00826	06627	71C01487	00706	71C00298
00442	71C00771	02907	71C01488	06044	71C01145	06673	71C01731	00710	71C00291
00446	71C00772	03106	71C00796	06046	71C01482	06738	71C01488	00711	71C00292
00458	71C01011	03142	71C00797	06047	71C00827	06746	71C00260	00712	71C00293
00453	71C00773	03272	71C02198	06049	71C01146	06775	71C02214	00716	71C00294
00455	71C01012	03276	71C01122	06061	71C00828	06781	71C01158	00774	71C01741
00457	71C00774	03284	71C00798	06062	71C00829	06792	71C01732	00986	71C01742
00475	71C00952	03409	71C00799	06064	71C00830	06797	71C01159	00985	71C00295
00482	71C01013	03456	71C00800	06066	71C00831	06809	71C01160	00614	71C00296
00483	71C01703	03051	71C02199	06069	71C01147	06809	71C01161	00825	71C01743
00485	71C00775	03999	71C00801	06071	71C00832	06811	71C01162	00976	71C00297
00488	71C01014	03861	71C02200	06074	71C01724	06814	71C01163	00142	71C01744
00490	71C01015	03709	71C01123	06079	71C01148	06841	71C01164	00143	71C01745
00501	71C01016	03801	71C01124	06105	71C00833	06852	71C02215	00239	71C01746
00504	71C01017	03867	71C01712	06106	71C00834	06853	71C01165	00250	71C00298
00527	71C01018	04103	71C01125	06118	71C00835	06854	71C01166	00486	71C00299
00533	71C01019	04225	71C01126	06125	71C00836	06893	71C00261	00501	71C00300
00536	71C01180	04403	71C01127	06140	71C01149	06912	71C00262	00675	71C01493
00538	71C00776	04511	71C01128	06151	71C00837	06917	71C02216	00749	71C00301
00542	71C00777	04586	71C01129	06158	71C00838	06926	71C00263	10193	71C00302
00553	71C00778	04890	71C00802	06161	71C01150	06927	71C01167	10196	71C02224
00562	71C00779	04901	71C01130	06163	71C00839	06929	71C00264	10389	71C01181
00567	71C02107	04900	71C00803	06164	71C00840	06959	71C00265	10392	71C01747
00604	71C01704	04902	71C01131	06165	71C00841	06988	71C00266	10402	71C01182
00607	71C01181	05093		06167	71C00842	06990	71C01489	10411	71C02225
00614	71C00780	05099	71C01713	06168	71C01151	06992	71C01168	10414	71C00303
00617	71C01705	05215	71C00804	06169	71C00843	07026	71C02217	10418	71C01748
00628	71C01182	05297	71C02201	06173	71C02208	07034	71C00267	10438	71C01749
00626	71C00781	05424	71C00805	06192	71C01483	07052	71C01733	10481	71C01750
00633	71C01183	05490	71C01714	06201	71C02209	07125	71C01734	10540	71C00304
00636	71C00782	05491	71C00806	06215	71C01725	07146	71C00268	10579	71C01183
00658	71C02186	05492	71C00807	06217	71C00844	07146	71C00269	10614	71C00305
00664	71C01184	05493	71C00808	06223	71C00845	07211	71C01735	10647	71C01751
00667	71C01185	05494	71C01715	06228	71C01726	07222	71C01491	10656	71C00306
00669	71C00783	05505	71C00809	06229	71C00846	07256	71C00270	10672	71C00307
00680	71C01186	05518	71C01716	06243	71C01484	07299	71C00271	10673	71C00308
00682	71C01187	05514	71C02202	06252	71C00847	07308	71C01169	10677	71C00309
00695	71C00784	05524	71C01132	06293	71C00848	07324	71C02218	10731	71C00876
00708	71C00785	05525	71C01133	06257	71C01152	07362	71C00272	10748	71C02226
00709	71C02189	05526	71C01717	06263	71C00849	07391	71C01170	10742	71C01752
00717	71C01188	05541	71C00810	06264	71C02210	07396	71C01736	10746	71C00877
00724	71C01189	05542	71C00811	06265	71C00850	07439	71C01171	10747	71C01184
00737	71C02190	05546	71C02203	06266	71C00851	07476	71C02219	10748	71C00878
00771	71C01706	05550	71C01134	06268	71C00852	07611	71C00273	10749	71C01753
00784	71C00786	05564	71C01135	06269	71C00853	07622	71C01172	10750	71C00879
00787	71C02191	05573	71C00812	06270	71C00854	07650	71C01737	10751	71C00880
00789	71C01110	05576	71C00813	06271	71C00855	07653	71C01173	10752	71C01754
00790	71C00787	05603	71C00814	06272	71C00856	07681	71C01174	10756	71C00881
00795	71C01111	05613	71C01718	06273	71C01153	07735	71C00274	10763	71C02227
00802	71C00788	05615	71C01719	06275	71C01727	07747	71C01738	10798	71C00882
00803	71C00789	05616	71C01720	06297	71C00857	07791	71C00275	10799	71C01755
00818	71C01477	05627	71C01136	06308	71C00858	07807	71C01175	10841	71C00310
00897	71C02192	05643	71C00815	06313	71C00859	07838	71C01176	10844	71C01185
00829	71C01707	05646	71C00816	06318	71C00860	07896	71C00276	10845	71C00883
00940	71C00790	05655	71C02204	06321	71C00861	07935	71C00277	10848	71C00884
00958	71C01708	05675	71C01137	06323	71C00862	07940	71C01177	10859	71C01756
00909	71C00791	05701	71C01138	06326	71C00863	08107	71C00278	10860	71C01757
00960	71C02193	05703	71C00817	06327	71C01728	08267	71C01491	10882	71C01494
00994	71C01709	05706	71C00818	06337	71C01154	08282	71C01492	10908	71C01758
00998	71C00792	05710	71C02205	06349	71C01729	08313	71C00279	10912	71C02228
00999	71C00793	05711	71C01139	06352	71C01730	08331	71C00280	10914	71C01495
01009	71C01112	05716	71C00819	06363	71C01155	08421	71C01739	10916	71C02229

6.3 APPENDIX 3, CDC-ASRDI NUMBERS (CONTINUED)

CDC NO.	ASRDI NO.	CDC NO.	ASRDI NO.	CDC NO.	ASRDI NO.	CDC NO.	ASRDI NO.	CDC NO.	ASRDI NO.
10923	71C01496	13344	71C01522	16067	71C01207	20898	71C01564	25102	71C00385
10989	71C01759	13345	71C01523	16077	71C00322	20914	71C00356	25177	71C00984
11000	71C01497	13377	71C01524	16083	71C01598	20963	71C01565	25237	71C00386
11001	71C02230	13378	71C01786	17018	71C01208	20972	71C01623	25271	71C00387
11002	71C01498	13379	71C01525	17021	71C01599	21134	71C00357	25290	71C00388
11003	71C02231	13380	71C01526	17137	71C01003	21305	71C01566	25291	
11005	71C01499	13382	71C01827	17165	71C01004	21338	71C01567	25293	71C01043
11008	71C01500	13385	71C01196	17166	71C00323	21396	71C01824	25312	71C01228
11010	71C01760	13463	71C01787	17457	71C01005	21400	71C00892	25334	71C01044
11015	71C02232	13466	71C01528	17625	71C00324	21430	71C01825	25358	71C01045
11021	71C01501	13467	71C01529	17764	71C01006	21436	71C01826	25512	71C01046
11029	71C01502	13496	71C01530	17950	71C01209	21763	71C01827	25530	71C01047
11041	71C01186	13545	71C01197	17994	71C00325	21824	71C00358	25557	71C00389
11062	71C01761	13546	71C00668	18003	71C00326	22092	71C01828	25577	71C01048
11102	71C01762	13614	71C01531	18026	71C01007	22175	71C00893	25685	71C01229
11114	71C01763	13776	71C01532	18042	71C00327	22242	71C01219	25729	71C01230
11121	71C01503	13781	71C02239	18049	71C01210	22253	71C00894	25731	71C01231
11261	71C01764	13783	71C01533	18126	71C00328	22447	71C01829	25963	71C01232
11283	71C01504	13803	71C01788	18129	71C01211	22448	71C01228	25978	71C00905
11305	71C01765	13807	71C01789	18167	71C00329	22449	71C01830	26001	71C00906
11455	71C00885	13824	71C01534	18171	71C02246	22450	71C01221	26003	71C02256
11478	71C01505	13831	71C00315	18188	71C00330	22451	71C01222	26006	71C00907
11479	71C02233	13849	71C02240	18192	71C00331	22666	71C00359	26010	71C00908
11500	71C01766	13880	71C01535	18331	71C01212	22697	71C00360	26021	71C00909
11502	71C01506	13889	71C01198	18454	71C01008	22805	71C00895	26049	71C01849
11624	71C02234	13978	71C01536	18498	71C00332	22830	71C00361	26051	71C00910
11645	71C01767	14072	71C01537	18509	71C00333	22874	71C00362	26178	71C02297
11778	71C01187	14220	71C00316	18515	71C02247	22895	71C00363	26247	71C00911
11797	71C01188	14224	71C01199	18516	71C00334	22935	71C00896	26345	71C01233
11798	71C01189	14226	71C01200	18526	71C00335	22936	71C00364	26433	71C01850
11800	71C01190	14232	71C01790	18567	71C00890	22938	71C00897	26435	71C01851
11818	71C01768	14284	71C01791	18622	71C01009	23065	71C01831	26436	71C01852
11823	71C01191	14994	71C01538	18638	71C00336	23177	71C01223	26502	71C00398
11832	71C00311	14616	71C01792	18639	71C00337	23186	71C00898	26543	71C01853
11878	71C01192	14619	71C01539	18643	71C02248	23247	71C01224	26602	71C01234
11948	71C01507	14739	71C01793	18651	71C00338	23268	71C01225	26603	71C01569
11958		14766	71C01540	18878	71C01810	23388	71C01832	26605	71C00912
11961	71C02235	14794	71C01794	18902	71C00891	23393	71C01226	26618	71C02298
11998	71C01508	14814	71C01201	18981	71C01811	23408	71C00899	26615	71C00913
12010	71C01193	14959	71C01541	19179	71C01213	23424	71C01833	26635	71C00914
12078	71C01509	14968	71C01202	19184	71C01812	23427	71C00365	26653	71C00915
12079	71C01769	14978	71C02241	19185	71C00339	23449	71C01834	26744	71C00916
12099	71C01770	15022	71C01203	19285	71C01214	23501	71C00366	26753	71C01235
12194	71C01771	15188	71C01204	19277	71C01215	23530	71C01835	26756	71C00391
12226	71C01510	15255	71C01205	19278	71C01813	23545	71C00367	26921	71C01854
12235	71C01511	15268	71C01542	19279	71C00340	23596	71C01836	26924	71C01855
12246	71C01512	15287	71C01795	19286	71C00341	23617	71C00368	27045	71C00917
12248	71C01513	15403	71C01543	19289	71C00342	23626	71C01837	27049	71C01237
12250	71C01514	15476	71C01796	19292	71C01814	23908	71C01838	27055	71C00392
12263	71C02236	15484	71C00889	19378	71C01815	23909	71C01839	27104	71C00393
12269	71C01772	15502	71C01544	19418	71C00343	23933	71C01840	27105	71C00394
12373	71C01773	15643	71C01545	19434	71C00344	24033		27110	71C00395
12394	71C01774	15739	71C01546	19443	71C00345	24243	71C01227	27208	71C00396
12408	71C00312	15748	71C01547	19444	71C00346	24274	71C00369	27300	71C01238
12420	71C01515	15838	71C01797	19485	71C01216	24298	71C00370	27389	71C00397
12586	71C01194	16063	71C00317	19620	71C01816	24311	71C00371	27398	71C01856
12626	71C01775	16072	71C01798	19648	71C00347	24313	71C00372	27461	71C02259
12632	71C01776	16075	71C01548	19665	71C00348	24314	71C00373	27464	71C00398
12638	71C01777	16093	71C01549	19666	71C01217	24315	71C00374	27495	71C00399
12704	71C01778	16100	71C02242	19694	71C00349	24316	71C01841	27513	71C00400
12727	71C02237	16120	71C01550	19701	71C00350	24318	71C00375	27514	71C00401
12802	71C00666	16173	71C01799	19703	71C00351	24323	71C00376	27519	71C01239
12803	71C01779	16202	71C01206	19708	71C00352	24325	71C00377	27768	71C01240
12827	71C01516	16296	71C01551	19956	71C01817	24328	71C00378	27806	71C01241
12840	71C00313	16306	71C01800	20010	71C00353	24332	71C02252	27834	71C01242
12853	71C00314	16317	71C01801	20016	71C01818	24346	71C00379	27836	71C02260
12855	71C01517	16331	71C01552	20024	71C00354	24398	71C00380	27838	71C00402
12901	71C02238	16357	71C01553	20135	71C00355	24467	71C00381	27840	71C00403
12905	71C01195	16361	71C01554	20240	71C02249	24484	71C00888	27932	71C00404
12977	71C01780	16375	71C00318	20252	71C01218	24498	71C02253	27983	71C00405
13009	71C01781	16437	71C01555	20262	71C01819	24499	71C02254	27995	71C02261
13099	71C01782	16494	71C00319	20296	71C01820	24506	71C02255	28012	71C01857
13110	71C01783	16495	71C02243	20304	71C01960	24508	71C01842	28019	71C01858
13125	71C01518	16497	71C01556	20421	71C01961	24777	71C00901	28081	71C01859
13161	71C01519	16700	71C02244	20465	71C01821	24780	71C00382	28119	71C00406
13168	71C00887	16701	71C02245	20499	71C01822	24838	71C00383	28125	71C01243
13185	71C01784	16702	71C01802	20642	71C01962	24839	71C00384	28129	71C00407
13197	71C01785	16819	71C01557	20645	71C02250	24927	71C01568	28149	71C00408
13247	71C01520	16849	71C00320	20646	71C02251	24946	71C00902	28155	71C01244
13296	71C01521	16846	71C00321	20651	71C01963	25092	71C00903	28156	71C00409

6.3 APPENDIX B. CDC-ASRDI NUMBERS (CONTINUED)

CDC NO.	ASRDI NO.	CDC NO.	ASRDI NO.	CDC NO.	ASRDI NO.	CDC NO.	ASRDI NO.	CDC NO.	ASRDI NO.
28166	71C01245	32340	71C02284	35954	71C00459	41567	71C01923	45642	71C00954
28193	71C01860	32372	71C01884	36007	71C00460	41580	71C01796	45683	71C01956
28237	71C00410	32373	71C00438	36034	71C01276	41660	71C01924	45684	71C00985
28268	71C01861	32394	71C01263	36125	71C00461	41615	71C01925	45779	71C00986
28358	71C01862	32674	71C00431	36346	71C00462	41665	71C01926	45868	71C01987
28367	71C01863	32784	71C00432	36386	71C00463	41770	71C00924	45870	71C01385
28391	71C01246	32785	71C00433	36394	71C01277	41798	71C01927	45964	71C00987
28489	71C00411	32789	71C00434	36783	71C01278	41837	71C00928	45982	71C00575
28411	71C01247	32739	71C01886	36784	71C00464	41892	71C01297	45992	71C00988
28445	71C01248	32817	71C01284	36792	71C01279	41965	71C01926	45998	71C01304
28446	71C01864	32822	71C01886	36796	71C01584	42868	71C01929	45998	71C01307
28650	71C01865	32835	71C01575	36818	71C01288	42818	71C01930	46053	71C00576
28653	71C00412	32860	71C01576	36819	71C00918	42871	71C00929	46185	71C01308
28679	71C00413	32865	71C01577	36822	71C00919	42875	71C00930	46289	71C00989
28694	71C01249	32876	71C00435	37224	71C00465	42114	71C01298	46366	71C00577
28875	71C00414	32888	71C01887	37398	71C01988	42187	71C01996	46279	71C00578
28876	71C00415	33033	71C01888	37433	71C00466	42414	71C00931	46280	71C00579
29027	71C01866	33079	71C01285	37438	71C01989	42485	71C01931	46496	71C01988
29057	71C00416	33116	71C00436	37441	71C01281	42466	71C01997	46488	71C01989
29094	71C01867	33120	71C00437	37444	71C01585	42584	71C01932	46422	71C00580
29127	71C01868	33183	71C01889	37545	71C00467	42512	71C01998	46447	71C00581
29144	71C00417	33184	71C00438	37583	71C01586	42587	71C01999	46432	71C01960
29288	71C00418	33238	71C00439	37603	71C00468	42692	71C01888	47151	71C00968
29289	71C00419	33474	71C02285	37723	71C01587	42992	71C01933	47219	71C00582
29213	71C00420	33517	71C01890	37743	71C01910	43042	71C00932	47221	71C01961
29214	71C01298	33810	71C00440	37806	71C00469	43096	71C01999	47229	71C01962
29236	71C00421	33814	71C00441	37892	71C01202	43099	71C01934	47303	71C00583
29275	71C00422	33839	71C01286	37922	71C01911	43101	71C00933	47324	71C00961
29391	71C01869	33868	71C00442	37937	71C01283	43107	71C00934	47333	71C00962
29436	71C01870	33862	71C00443	37961	71C01284	43199	71C01479	47378	71C01963
29438	71C00423	33864	71C01891	38041	71C01289	43116	71C01935	47381	71C01964
29496	71C00424	33877	71C01892	38069	71C01286	43124	71C00939	47426	71C01965
29497	71C02262	33878	71C01893	38096	71C01588	43132	71C01936	47536	71C00963
29499	71C00425	33713	71C01894	38128	71C01287	43177	71C01937	47643	71C00964
29581	71C01871	33717	71C01895	38181	71C01912	43194	71C00936	47789	71C01966
29589	71C00426	33746	71C01287	38365	71C00470	43256	71C00937	47795	71C00965
29673	71C01872	33798	71C01288	38568	71C01288	43278	71C00938	47813	71C02278
29806	71C01873	33793	71C01289	38577	71C01289	43286	71C00939	47815	71C01967
29966	71C01874	33799	71C01278	38695	71C01589	43294	71C00940	47815	71C01968
29828	71C00953	33884	71C01896	38815	71C02288	43328	71C01388	47822	71C00584
30036	71C00954	33844	71C00444	38829	71C01913	43366	71C01938	47938	71C00966
30101	71C00595	33983	71C00445	38969	71C01590	43368	71C01939	47978	71C01969
30134	71C01875	34074	71C01897	39252	71C01914	43395	71C01940	48138	71C00585
30249	71C01876	34232	71C01898	39328	71C01298	43471	71C01941	48184	71C00586
30286	71C00956	34281	71C01899	39337	71C01591	43486	71C01942	48186	71C00587
30354	71C01251	34383	71C00446	39363	71C01915	43531	71C01381	48199	71C01970
30452	71C00957	34333	71C01578	39369	71C00471	43934	71C01382	48219	71C00588
30490	71C01877	34413	71C00447	39381	71C01916	43947	71C01943	48263	71C00967
30553	71C01252	34447	71C01271	39848	71C01917	43982	71C02289	48289	71C01971
30709	71C01978	34453	71C00448	39915	71C01918	43841	71C01944	48387	71C00969
30753	71C01253	34486	71C01898	40172	71C01919	43843	71C01945	48336	71C00589
30773	71C01254	34457	71C01272	40178	71C00969	43786	71C00941	48377	71C00590
30775	71C00958	34471	71C02266	40226	71C01291	43789	71C01946	48404	71C00591
30788	71C00959	34473	71C01273	40383	71C01292	43858	71C00942	48428	71C00592
30888	71C00560	34584	71C00449	40485	71C01920	43929	71C01947	48431	71C00969
30925	71C00961	34514	71C00450	40963	71C01912	43943	71C00943	48488	71C01972
30931	71C01878	34518	71C01901	40591	71C01913	44084	71C00944	48521	71C00993
30994	71C01879	34548	71C01902	40995	71C00964	44085	71C00945	48576	71C00970
31074	71C01880	34549	71C01903	40681	71C01594	44223	71C00946	48588	71C01973
31242	71C00962	34619	71C00451	40627	71C01293	44287	71C01948	48788	71C01974
31279	71C00563	34679	71C01579	40655	71C00472	44481	71C00947	48798	71C00594
31280	71C01255	34814	71C01580	40680	71C01995	44525	71C01949	48848	71C00595
31305	71C01571	35281	71C01904	40686	71C00967	44743	71C01950	48854	71C01975
31310	71C01881	35296	71C01581	40791	71C00920	44796	71C01382	48869	71C00596
31446	71C02263	35383	71C01582	40767	71C00968	44884	71C00948	48935	71C00597
31495	71C01256	35348	71C01905	40767	71C00921	44916	71C00949	48968	71C01971
31503	71C01257	35481	71C01906	40881	71C00969	45032	71C00950	49092	71C00598
31680	71C00427	35529	71C02267	40886	71C00922	45187	71C01384	49095	71C00599
31648	71C01258	35627	71C00452	40811	71C00970	45140	71C01951	49147	71C01976
31659	71C00428	35639	71C01274	40827	71C00473	45206	71C01952	49238	71C01977
31683	71C01572	35636	71C01583	41818	71C01921	45227		49348	71C00972
31694	71C01259	35646	71C00453	41891	71C01294	45245	71C01953	49358	71C00973
31648	71C01573	35658	71C00454	41159	71C00923	45390	71C01954	49495	
31669	71C01574	35691	71C01279	41284	71C00924	45418	71C00951	49474	71C01978
31671	71C01882	35728	71C00455	41364	71C01922	45438	71C01955	49828	71C00974
31683	71C01260	35756	71C00456	41369	71C01295	45454	71C00952	49784	71C01979
31739	71C01261	35764	71C01907	41479	71C00925	45484	71C00953	49785	71C00980
31936	71C01262	35810	71C00457	41511		45529	71C00572	49787	71C01980
32104	71C00429	35814	71C00458	41524	71C00927	45562	71C00573	49798	71C00975
32225	71C01883	35893	71C00964	41597	71C00474	45656	71C00574	49928	71C00981

6.3 APPENDIX 3, CDC-ASRDI NUMBERS (CONTINUED)

CDC NO.	ASRDI NO.	CDC NO.	ASRDI NO.	CDC NO.	ASRDI NO.	CDC NO.	ASRDI NO.	CDC NO.	ASRDI NO.
49961	71C01981	54055	71C02883	57491	71C88644	62362		68418	71C81654
50159	71C02271	54089	71C88628	57501		62414	71C88662	68411	71C81655
50304	71C88682	54120	71C88621	57803	71C88645	62488	71C88663	68412	71C81656
50309	71C01982	54159	71C88643	57848		62497	71C88486	68916	71C81657
50333	71C81681	54225	71C88622	57852		62915	71C88664	68917	71C81658
50416	71C81682	54226	71C88623	57853		62536	71C88665	68937	71C81659
50447	71C81983	54231	71C88624	57884		62589	71C88666	68948	71C81660
50472	71C88683	54386	71C82884	57998		62625	71C81037	68992	71C81661
50478	71C88976	54463	71C82885	58033	71C88646	62644		69086	71C81662
50561	71C88476	54468	71C88625	58159		62884		69079	71C81663
50647	71C81984	54506	71C88626	58213		62885	71C81619	69085	71C81664
50704	71C88684	54514	71C88627	58222		62981	71C88667	69105	71C81665
50710	71C81985	54515	71C88628	58223	71C82278	62941	71C81038	69312	71C81666
50711	71C81683	54516	71C88629	58305	71C81012	62986	71C88668	69342	71C81667
50723	71C81684	54956	71C88630	58317	71C81013	62977	71C88669	69424	71C81668
50791	71C88477	54688	71C88994	58362	71C88647	63038	71C88670	69498	71C81669
50821	71C81685	54822	71C88995	58484	71C88648	63115	71C88671	69728	
50937	71C88685	54823	71C88996	58491		63121	71C88672	69842	71C81670
50963	71C81686	54847	71C82886	58874		63122	71C88673	69890	
50978	71C88977	54857	71C82887	58885	71C88484	63123	71C88674	69977	71C81671
50971	71C88978	54732	71C82888	58681		63137	71C81628	70314	
50980	71C81687	54765	71C88631	58682	71C81814	63197	71C88675	70483	
51010	71C88686	54767	71C82889	58683		63219	71C88676	70607	
51037	71C88979	54884	71C88997	58705		63220	71C88677	71888	
51039	71C88687	54814	71C82810	58731		63222	71C88678	72726	
51145	71C88988	54823	71C82811	58920	71C81015	63285	71C81621	R8323	
51189	71C82272	54886	71C88632	58933	71C81613	63296	71C88679	R8338	
51208	71C88981	54933	71C82812	59065	71C81614	63381	71C81622	R8336	
51228	71C81688	54935	71C82813	59401	71C81816	63338		V0350	
51262	71C81986	54964	71C82814	59412		63364	71C81623	V0351	
51361	71C88688	54988	71C81611	59452	71C82279	63398	71C81624	V0352	
51504	71C88982	54996	71C82815	59453	71C81817	63399		V0353	
51646	71C88689	54999	71C82816	59497	71C81615	63469	71C88680	V0354	
51945	71C88478	55043	71C82817	59585	71C88485	63517		V0355	
51947	71C81689	55069	71C88998	59601	71C88649	63557	71C88681	V0356	
51984	71C81987	55111	71C82818	59647		63560	71C88682	V0357	
51984	71C82273	55127	71C82819	59665		63561	71C88683	V0358	
52003	71C88618	55182	71C88999	59674	71C88650	63625	71C88684	V0359	
52046	71C88479	55224	71C81888	59932		63755	71C88685	V0360	
52123	71C88480	55230	71C81881	60107	71C88691	63955	71C88686	V0361	
52207	71C88481	55362	71C82820	60141		63993	71C88687	V0362	
52226	71C81618	55391	71C82821	60181	71C81818	64026	71C88688	V0363	
52309	71C81988	55393	71C81882	60331		64037	71C81625	V0364	
52314	71C81989	55396	71C82822	60347	71C81819	64054	71C81626	V0365	
52336	71C88983	55458	71C81883	60362	71C81820	64079	71C81689	V0366	
52382	71C88984	55508	71C88633	60454	71C88692	64078	71C88690	V0367	
52389	71C88985	55509	71C82823	60503	71C88653	64147	71C88487	V0368	
52420	71C88986	55541	71C88634	60576	71C81821	64319	71C81627	V0369	
52423	71C88611	55589	71C81612	60578	71C81616	64488			
52463	71C81990	55592	71C88635	60699	71C88654	64625	71C81628		
52503	71C88987	55638	71C88636	60724	71C88655	64668	71C81629		
52504	71C88482	55710	71C82824	60865		64767	71C81630		
52512	71C88612	55711	71C81884	60934	71C88656	64778	71C81631		
52517	71C81991	55712	71C82276	61083	71C88657	64794	71C81632		
52527	71C88988	55972	71C82825	61041	71C81822	64978	71C81633		
52996	71C81992	56290	71C81885	61114	71C81823	65012	71C81634		
52668	71C88613	56299	71C81886	61140	71C81617	65038	71C81635		
52701	71C88614	56303	71C81887	61361		65278	71C81636		
52792	71C81993	56338	71C82826	61378	71C81824	65729			
52797	71C81994	56343	71C81888	61417		65917	71C81637		
52819	71C81995	56440	71C81889	61466	71C88658	65933	71C81638		
52988	71C88615	56461	71C88637	61485	71C88659	66183	71C81639		
52989	71C88989	56488	71C82827	61486	71C88660	66347	71C81640		
53018	71C81996	56724	71C82828	61507	71C81618	66398	71C81641		
53036	71C82274	56759		61541	71C81825	66405			
53037	71C88990	56766	71C81810	61544	71C81826	66423	71C81642		
53043	71C81997	56789		61549	71C81827	66569	71C81643		
53048	71C88616	56841	71C81811	61624	71C81828	66588	71C81644		
53091	71C81998	56862		61627	71C81829	66650			
53150	71C88617	56883	71C82277	61675	71C81830	66732	71C81645		
53991	71C88991	56994		61691	71C81831	66856	71C81646		
53643	71C81999	57075	71C88638	61885		67883			
53736	71C82888	57082		61912		68024	71C81647		
53883	71C88618	57388		61980	71C88661	68026			
53934	71C88992	57396	71C88639	62091	71C81832	68111	71C81648		
53983	71C82881	57397	71C88640	62851	71C81833	68243	71C81649		
53991	71C88993	57398	71C88641	62278	71C81834	68269	71C81650		
53995	71C82882	57437		62272		68348	71C81651		
54085	71C88619	57459	71C88642	62284	71C81835	68344	71C81652		
54089	71C82275	57498	71C88643	62342	71C81836	68487	71C81653		

7. Section A, Descriptive Sheets

LIST OF DESCRIPTIVE SHEETS

Accommodation Coefficient

Definition: The accommodation coefficient, a, is defined as the ratio

$$a = (E_i - E_r)/(E_i - E_r')$$

where $(E_i - E_r)$ is the actual mean energy change of molecules colliding with a wall and $(E_i - E_r')$ is the mean energy change if the molecules come into thermal equilibrium with the wall.

Discussion: Accurate values of accommodation coefficients of gases on solids are required for estimation of heat conduction by gases at low pressures ($\leq$ 0.1 mm Hg.).

The accommodation coefficient depends on the particular gas, the temperature, and the smoothness and cleanliness of the surface. In general, the lighter the gas, the higher the temperature and the smoother and cleaner the surface, the smaller is the value of the accommodation coefficient. The accomodation coefficient is independent of pressure if the pressure is sufficiently high ($\leq$ 0.1 mm Hg.) to ensure a monomolecular gas film on the solid surface.

Tables of Values: None

Graph: None

Equation: None

Range of Values:

Units	at t = 25°C, p $\approx$ 0.1 mm Hg.
dimensionless	a = 0.782 ± 0.002 for oxygen on gas-saturated bright platinum [V0353].

Uncertainty: Reliable values of "a" are strictly obtained only from measurements at pressures high enough to achieve a gas-saturated surface but low enough to ensure "free molecule" conduction. Of the references reviewed, only [V0353] achieves this experimental condition. In [V0352] and [06140] pressures were too low to achieve a gas-saturated surface. In [V0354] pressures were too high to achieve "free molecule" conduction.

The uncertainty estimate (± 0.25%) given in [V0353] represents an estimate of measurement precision, not accuracy.

References:

Experimental data:

[V0352] Mann, W. B., Proc. Roy. Soc. (London) A146, 776 (1934).

[06140] Thomas, L. B. and Olmer, F., J. Am. Chem. Soc. 65, 1036 (1943).

[V0353] Amdur, I., Jones, M. C. and Pearlman, H., J. Chem. Phys. 12, 159 (1944).

[V0354] Grilly, E. R., Taylor, W. J. and Johnston, H. L., J. Chem. Phys. 14, 435 (1946).

General references:

[V0355] Kennard, E. H., Kinetic Theory of Gases, McGraw-Hill (1938).

[V0356] Present, R. D., Kinetic Theory of Gases, p. 191, McGraw-Hill (1958).

[06217] Devienne, M., Mem. Sc. Phys. Acad. Sci. Paris, No. 56, 1 (1953).

Sources reviewed but not used:

5494 6256 6323 10945 13168 13878 54285 [illegible]9411

A-2

Compressibility Coefficient

Definition: The compressibility coefficient is defined as $-\frac{P}{V}\left(\frac{\partial V}{\partial P}\right)_T$.

Tables of Values: This quantity is not tabulated but may be simply obtained from the product of P times the isothermal compressibility (see A-4). The reciprocal of the isothermal compressibility, the isothermal bulk modulus $V(\partial P/\partial V)_T$, is listed in Tables C-2, C-2a, C-5, or C-5a.

Units	Range of Table	Table Location
Dimensionless	54.35 - 340 K, 0.2 - 340 atm	C-2
Dimensionless	97.8 - 600°R, 1 - 5000 psia	C-2a
Dimensionless	saturation boundary	C-5 or C-5a
Dimensionless	340 - 3000 K, 0.01 - 100 atm	can be derived from tables in [453]

Graph: None

Equation: None

Range of Values:

Units	Triple Point		Boiling Point		Critical Point	STP
	liquid	vapor	liquid	vapor		
Dimensionless	1.29×10^{-7}	1.00	1.99×10^{-4}	1.04	∞	1.01

Uncertainty: In the gas phase, uncertainty varies from 0 in the low density limit to about 3% at 5000 psi. In the liquid, the uncertainty varies from 2% at low pressures to 4% at 5000 psi. In the near critical region ($T_c \pm 1\%$, $\rho_c \pm 20\%$) the uncertainties are undoubtedly larger; however, they are not experimentally defined as the property diverges at the critical point.

References:

[64400] Weber, L. A., J. Res. Natl. Bur. Standards, 74A, 93 (1970).

[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 384 (Jul 1971).

[453] Hilsenrath, J., Beckett, C. W., Benedict, W. S., Natl. Bur. Standards, Circ. No. 564 (1955).

Sources reviewed but not used:

34	442	680	4598	5756	6792	6811	6854	6917	6988
7034	10389	10746	11029	17018	18182	20296	22656	24777	24782
25952	29213	29240	31496	31503	37224	39328	41600	43531	46952
48404	50587	58305	58585	58320	64793		66899	69346	

Compressibility Factor

Definition: The compressibility factor is defined as Z = PV/RT.

Tables of Values: This quantity is not tabulated but may be simply obtained by combining the above properties from Tables C-2, C-2a, C-5, or C-5a.

Units	Range of Table		Table Location
Dimensionless	54.35 - 340 K,	0.2 - 340 atm	C-2
Dimensionless	97.8 - 600°R,	1 - 5000 psia	C-2a
Dimensionless	saturation boundary		C-5 or C-5a
Dimensionless	340 - 3000 K,	0.01 - 100 atm	see [453]

Graph: Compressibility factor versus pressure on isochores and isotherms, B-3.

Equation: None

Range of Values:

Units	Triple Point		Boiling Point		Critical Point	STP
	liquid	vapor	liquid	vapor		
Dimensionless	8.2×10^{-6}	0.9998	0.0038	0.966	0.288	0.999

Uncertainty: The absolute uncertainty, governed by the PVT data of [64400], is 0.1%, increasing to 0.14% at the maximum pressure of 5000 psia.

References:

[64400] Weber, L. A., J. Res. Natl. Bur. Standards, 74A, 93 (1970).

[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 384 (Jul 1971).

[36783] Stewart, R. B., Iowa Univ., Ph.D. Thesis (June 1966).

[453] Hilsenrath, J., Beckett, C. W., Benedict, W. S., Natl. Bur. Standards, Circ. No. 564 (1955).

Sources reviewed but not used:

67		488	667	3498	4900	5542	5646	5938	6069
6125	6160	6326	6352	6389	6507	6775	6781	6797	6805
6912	7146	7148	7324	7362	7681	7935	8687	8703	8716
9749	10547	10742	10841	12405	13781	14545	14794	15255	16883
19703	20642	23501	25268	25732	27932	30286	30452	31242	
38306	40767	42114	45966	46209	48307	49092	49035	50971	55969
56343	66249	68410							

A-4

Isothermal Compressibility

Definition: The isothermal compressibility is defined as $\beta_T = -\frac{1}{V}\left(\frac{\partial V}{\partial P}\right)_T$.

Tables of Values: The reciprocal of the isothermal compressibility is given in Tables C-2, C-2a, C-5, and C-5a.

Units	Range of Table	Table Location
atm^{-1}	54.35 - 340 K, 0.2 - 340 atm	C-2*
$psia^{-1}$	97.8 - 600°R, 1 - 5000 psia	C-2a*
atm^{-1}, $psia^{-1}$	saturation boundary	C-5, or C-5a*
atm^{-1}	340 - 3000 K, 0.01 - 100 atm	can be derived from [453]

*Note: The table headings include the negative sign; thus, the table entries are positive. The actual values of the isothermal compressibility are negative.

Graph: None

Equation: None

Range of Values:

Units	Triple Point		Boiling Point		Critical Point	STP
	liquid	vapor	liquid	vapor		
atm^{-1}	-8.6×10^{-5}	-667	-2×10^{-4}	-1.04	∞	-1.00
$psia^{-1}$	-5.9×10^{-6}	-45	-1.4×10^{-5}	-0.07	∞	-0.07

Uncertainty: In the gas phase the uncertainty varies from 0 in the low density limit to about 3% at 5000 psi. In the liquid the uncertainty varies from 2% at low pressures to 4% at the highest pressures. In the near critical region ($T_c \pm 1\%$, $\rho_c \pm 20\%$) the uncertainties are undoubtedly larger; however, they are not experimentally defined as the property diverges at the critical point.

References:

[64400] Weber, L. A., J. Res. Natl. Bur. Standards, 74A, 93 (1970).

[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 384 (Jul 1971).

[453] Hilsenrath, J., Beckett, C. W., Benedict, W. S., Natl. Bur. Standards, Circ. No. 564 (1955).

Sources reviewed but not used:

See page A-2

Dielectric Constant

Definition: A good working definition of the dielectric constant, ε, of a fluid is

$$\varepsilon = C(P, T)/C(0, T)$$

where C(P, T) is the capacitance of a capacitor in the fluid, and C(0, T) refers to the capacitance in a vacuum. In practical situations a correction may have to be made for pressure distortion of the capacitor. Also the equation assumes that there is no stray capacitance, i.e., the electric field passes from one plate to the other via the fluid (or vacuum) and does not pass through any of the supporting members or other foreign material.

Note: The dielectric constant is also known as specific inductive capacity, it is the proportionality constant in Coulomb's law of electrostatics.

Tables of Values: This quantity is tabulated in Tables C-2, C-2a, C-5, and C-5a.

Units	Range of Table	Table Location
Dimensionless	54.35 - 340 K, 0.2 - 340 atm	C-2
Dimensionless	97.8 - 600°R, 1 - 5000 psia	C-2a
Dimensionless	saturation boundary	C-5, or C-5a

Graph: None

Equation: The dielectric constant can be calculated from an extension of the Clausius-Mossotti relationship

$$\frac{\varepsilon - 1}{\varepsilon + 2} = A\rho + B\rho^2 + C\rho^3$$

where A = 0.12361, $B = 3.2 \times 10^{-4}$, $C = -1.21 \times 10^{-3}$ and ρ is in g/cm^3. The equation is valid over the range of the tables above and will yield reasonable values upon extrapolation.

Range of Values:

Units	Triple Point		Boiling Point		Critical Point	STP
	liquid	vapor	liquid	vapor		
Dimensionless	1.5687	1.000004	1.4871	1.0017	1.1708	1.00054

Uncertainty: The uncertainty in (ε - 1) varies from 0.15% at low densities to less than 0.05% at high densities.

References:

[58033] Younglove, B. A., Advances in Cryogenic Engineering 15, paper C-3, 70 (1970).

[V0358] Younglove, B. A., J. Res. Natl. Bur. Standards, 76A, 37 (1972)

Sources reviewed but not used:

4511

Diffusion Coefficient

Definition: The diffusion coefficient is defined as the coefficient relating the flux of a given species in a mixture to the concentration gradient of that species under isothermal conditions. For a two-component mixture of species i and j:

$$\underset{\sim}{J}_i = D_{ij} \text{ grad } c_i$$

where $\underset{\sim}{J}_i$ is the matter flux of i, grad c_i the gradient of concentration, and D_{ij} the diffusion coefficient. Diffusion is a mixture phenomenon and thus values of the coefficient for oxygen alone can not be reported. In addition to the diffusion coefficient an artificial quantity, the self-diffusion coefficient is often discussed. Self-diffusion refers to the diffusion of one isotopic form into another.

Thermal Diffusion

In a nonisothermal binary system the equation above should be extended to

$$\underset{\sim}{J}_i = - D_{ij} \text{ grad } c_i - D_{ij}^T \text{ grad } T$$

where D_{ij}^T is the thermal diffusion coefficient. However, unless one is dealing with isotopes, this coefficient is, like D_{ij}, a mixture coefficient and values are not reported here.

Note: The diffusion coefficient is often referred to as the mass diffusivity.

Information on the diffusion of oxygen can be retrieved by reference to the other component from the "General References" below.

General References:

Diffusion

604 5094 10745 10750 22052 51984 53018 54463 59497 60141

Diffusion Coefficient

588 4588 10658 10756 11021 11658 13361 14554 17182 24312
26019 26168 28117 28119 28412 28620 29604 29936 30925 31279
33790 35527 35636 35756 36796 37445 37603 38582 40591 40623
41284 41361 41770 41790 47333 54528 55069 55585 57491 58631
59452 60068 60454 60699 60823 60863 63115 64770 66856 68602

Self-Diffusion Coefficient

10658 10755 28119 29275 31279 37445 37961 38577 47333 48935
52819 62284

Thermal Diffusion

1187 35296 35635 35656 36011 38582 39336 39360 41359 41361
50824 52420 59452 61492 61980 64477

Thermal Diffusivity

Definition: The thermal diffusivity, α, is defined by the relation

$$\alpha = \frac{\lambda}{\rho C_p}$$

where λ is the thermal conductivity, ρ the density and C_p the specific heat at constant pressure.

Tables of Values: Tabulated in Tables C-2, C-2a, C-5 and C-5a.

Units	Range of Table	Table Location
cm^2/s	54.35 - 340 K, 0.2 - 340 atm	C-2
ft^2/hr	97.8 - 600°R, 1 - 5000 psia	C-2a
cm^2/s, ft^2/hr	saturation boundary	C-5, or C-5a

Graph: None

Equation: None, but the above relationship may be used to calculate values.

Range of Values:

Units	Triple Point		Boiling Point		Critical Point	STP
	liquid	vapor	liquid	vapor		
cm^2/s	0.00089	4.93	0.00078	0.0198	0	0.185
ft^2/hr	0.0034	19.1	0.0030	0.077	0	0.718

Uncertainty: The uncertainty is estimated to be 5%, except for the critical region. In the near critical region ($T_c \pm 3\%$, $\rho_c \pm 30\%$) the uncertainties are undoubtedly larger; however, they are not experimentally defined as the property diverges at the critical point.

References:

[64400] Weber, L. A., J. Res. Natl. Bur. Standards, 74A, 93 (1970).

[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 384 (Jul 1971).

Sources reviewed but not used:

22828 28263 38807 42435 46150 56804

Dielectric Breakdown

Liquid

Below some critical electric field gradient, called the breakdown voltage, oxygen is an insulator. The electrical breakdown strength of the liquid, as measured in the laboratory, is generally believed not to be an intrinsic property of the substance. Breakdown appears to be caused by the presence of impurities of very small particles with high dielectric constant. In the presence of irregularities of the electric field, these particles are believed to form bridges, causing a breakdown. The breakdown strength is inversely proportional to $r^{3/2}$, where r is the radius of the particles.

The breakdown strength of liquid oxygen at the boiling point has been measured several times in different laboratories, and the results varied from 930 - 2380 kV/cm, corresponding to impurity particles in the size range 6.5 - 12 Å. The smaller particles were believed to be H_2O (ice) crystals while the larger ones were probably P_2O_5 crystals from the drying agent used.

References:

[355] Kronig, R. and Van De Vooren, A. I., Physica IX, 139 (1942).

[52423] Kok, J. A., Poll, J. W., Van Vroonhaven, C. E. G. M. M., Appl. Sci. Res. Sect. B 10, 257 (1963).

[53045] Swan, D. M. and Lewis, T. J., J. Electrochem. Soc. 107, 180 (1960).

Gas

In the low pressure region the electrical breakdown strength, or corona onset voltage, of gases follows the Paschen law curve, illustrated in figure B-8, where it may be noted that the voltage is plotted as a function of pressure times electrode spacing. For oxygen the minimum d.c. breakdown voltage is about 440 volts and occurs at a P x d of about 0.5 torr-cm, while at a P x d value of 760 torr-cm (1 atm pressure for a 1 cm electrode spacing) breakdown occurs at about 30 kV.

The following are a few general observations which are approximately true for breakdown in low pressure gases:

(a) breakdown voltages are appreciably less at temperatures above 500°C,

(b) the voltage is a function only of the gas density (rather than temperature or pressure) for temperatures less than 500°C,

(c) near 1 atm pressure the onset voltage increases as the electrode configuration changes from points to planes, but near the minimum in the curve it is affected only slightly by the electrode configuration,

(d) for frequencies at least up to 400 Hz the peak-to-peak a.c. breakdown voltage is approximately equal to the d.c. breakdown voltage:

$$V_{rms}(a.c.) = 0.707\ V(d.c.),$$

(e) the voltage is affected somewhat by the electrode material, and,

(f) normally, initiation depends upon an external source of ionization.

For more complete information the reader should consult the following reference.

Reference:

[42892] Dunbar, W. G., (The Boeing Company), Contract AF 33(615)-3020, Proj. AF-8128 (1966).

Electrical Conductivity

Electrical conductivity is negligible except at elevated temperatures where ionization becomes important. See figure B-8a from [33790].

References:

[33790] Yos, J. M. (Avco Corporation), Tech Memorandum RAD-TM-63-7, Contract AF 33(616)-7578 (1963).

[28019] Thouvenin, J. and Simonet, R., Compt. Rend. 252, 243 (1961).

[38065] George, D. W. and Messerle, H. K., Engr. Digest 26, 83 (1965).

Sources reviewed but not used:

7211 12212 13831 18902 22874 30553 33079 35529 42662
43855 56812 56843 63755

Enthalpy

Definition: Enthalpy is defined by the equation H = U + PV, where U is internal energy and PV is a term called flow work. Change in enthalpy is a measure of the heat absorbed by a system in a constant pressure process.

Tables of Values: Tabulated in Tables C-2, C-2a, C-5, and C-5a.

Units	Range of Table		Table Location
J/mol	54.35 - 340 K,	0.2 - 340 atm	C-2
BTU/lb	97.8 - 600°R,	1 - 5000 psia	C-2a
J/mol, BTU/lb	saturation boundary		C-5, or C-5a
Reduced, by $(1/RT_o)$	340 - 3000 K,	0.01 - 100 atm	see [453]
kJ/kg	340 - 1300 K,	0.25 - 1000 bar	see [V0357]

Graph: B-25 heat of vaporization vs T; B-37 isenthalps on T-S chart; B-37a log P vs H; B-37b P vs H (supercritical); B-37c H vs S; B-37e isenthalps on T-S chart (metric)

Equation: None

Range of Values: The reference state for enthalpy is zero for the ideal gas at zero absolute temperature (see A-19).

Units	Triple Point		Boiling Point		Critical Point	STP
	liquid	vapor	liquid	vapor		
J/mol	-6190	1572	-4270	2542	1032	7938
BTU/lb	-83.22	21.13	-57.41	34.18	13.88	106.7

Uncertainty: The uncertainty varies from 0.5 J/mol in the low density limit to about 10^{-} J/mol in the liquid.

References:

[64400] Weber, L. A., J. Res. Natl. Bur. Standards, 74A, 93 (1970).

[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 384 (Jul 1971).

[36783] Stewart, R. B., Iowa Univ. Ph.D. Thesis (June 1966).

[70607] Technical Manual of Oxygen/Nitrogen Cryogenic Systems, Naval Air Systems Command, Washington, D.C., Rept. No. NAVAIR 06-30-501 (March 1971).

[453] Hilsenrath, J., Beckett, C., Benedict, W. S., Natl. Bur. Standards, Circ. No. 564 (1955).

[V0357] Vasserman, A. A., Kazavchinskii, Ya. Z., and Rabinovich, V. A., Thermophysical Properties of Air and Air Components, Izdatel'stvo "Nauka", Moskva 1966, Translated from Russian by Israel Program for Scientific Translations, Jerusalem 1971.

Sources reviewed but not used:

	520	553	658	730	398	2208	2607	3867	4588
5493	5514	5550	5921	6069	6079	6257	6268	6393	6497
10742	10882	11021	11041	11102	11283	11940	12018	12079	12638
12802	13377	13468	15739	15740	16694	16841	16845	16846	17166
19648	20651	23400	24314	24467	24782	25102	25312	25952	27045
27513	29127	29436	29806	30101	30659	30780	30888	30931	31496
31600	32104	33230	33614	34473	34504	34523	36007		36784
37892	40655	41524	43288	45245	45529	45780	45982	46209	47225
47303	47636	48307	50723		52503	53551	53664	53803	54004
54226	54490	55972	56299	56343	57398	62525	63007	63008	64054
	66093	66405	66479	69348	69498	69556	69776		

Entropy

Definition: Entropy is defined by the equation $dS = dQ/T$, or in words: In any reversible process the change in entropy of a system is equal to the heat which it absorbs, divided by the absolute temperature.

Tables of Values: This quantity is tabulated in Tables C-2, C-2a, C-5, and C-5a.

Units	Range of Table		Table Location
J/mol-K	54.35 - 340 K,	0.2 - 340 atm	C-2
BTU/lb-°R	97.8 - 600°R,	1 - 5000 psia	C-2a
J/mol-K, BTU/lb-°R	saturation boundary		C-5 or C-5a
Reduced, by (1/R)	340 - 3000 K,	0.01 - 100 atm	see [453]
kJ/kg-°C	340 - 1300 K,	0.25 - 1000 bar	see [V0357]

Graph: B-37 T-S chart
B-37a isentrope on log P vs H
B-37b isentrope on P vs H (critical region)
B-37c H-S chart
B-37e T-S chart (metric)

Equation: None

Range of Values: The reference state for entropy is the ideal gas at one atmosphere pressure and zero absolute temperature. (See A-19).

Units	Triple Point		Boiling Point		Critical Point	STP
	liquid	vapor	liquid	vapor		
J/mol-K	67.1	209.5	94.2	169.7	134.4	202.4
BTU/lb-°R	0.501	1.565	0.703	1.267	1.004	1.512

Uncertainty: The uncertainty varies from 0.04 J/mol-K in the low density limit to about 0.1 J/mol-K in the liquid.

References:

[64400] Weber, L. A., J. Res. Natl. Bur. Standards, 74A, 93 (1970).

[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 384 (Jul 1971).

[36783] Stewart, R. B., Iowa Univ., Ph.D. Thesis (June 1966).

[453] Hilsenrath, J., Beckett, C. W., Benedict, W. S., Natl. Bur. Standards, Circ. No. 564 (1955).

[V0357] Vasserman, A. A., Kazavchinskii, Ya. Z., and Rabinovich, V. A., Thermophysical Properties of Air and Air Components, Izdatel'stvo "Nauka", Moskva 1966, Translated from Russian by Israel Program for Scientific Translations, Jerusalem 1971.

Sources reviewed but not used:

224	275		520	527	553	558	790	2607	3867
4588	5550	6069	6079	6163	6223	6257	6268	6297	5424
6497	7396	8680	10742	10882	11041	11102	11283	11921	11940
12079	12302	12827	13807	15739	15740	16375	16694	16845	16846
17166	19648	20384	20651	24298	25092	27045	27513	29102	29436
29438	30101	30659	30780	30888	31496	31600	32104	34455	34504
	36784	37892	40655	40767	41366	43328	45245	45529	46209
47225	47303	47636	48307		53551	53803	54004	54226	54600
55630	56299	57398	62625	63007	63008		66093	69346	69498
69556									

Equation of State

Definition: The relationship between the pressure, temperature and specific volume of a substance. Specific volume and its reciprocal, density, are used interchangeably.

Tables of Values:

Units	Range of Tables		Table Location
P(atm), V(cm^3/mol), T(K)	54.35 - 340 K,	0.2 - 340 atm	C-2, C-5
P(psia), V(ft^3/lb), T(°R)	97.8 - 600°R,	1 - 5000 psia	C-2a, C-5a
P(atm), ρ/ρ_{STP}, T(K)	340 - 3000 K,	0.01 - 100 atm	see [453]
P(bars), V(dm^3/kg), T(K)	340 - 1300 K,	0.25 - 1000 bar	see [V0357]

Graph: B-30 specific volume vs temperature
B-30a density vs temperature
B-30b isochores on a P vs T phase diagram (skeleton)
B-37 isochores on a T vs S chart
B-37a isochores on a log P vs H chart
B-37b isochores on a P vs H chart (supercritical)
B-37c isochores on a H vs S chart
B-37d isochores on a P vs T phase diagram
B-37e isochores on a T vs S chart (metric)

Equation: None, but see also main text on computer programs, and sheet A-30.

Range of Values:

Units	Specific Volumes					
	Triple Point		Boiling Point		Critical Point	STP
	liquid	vapor	liquid	vapor		
cm^3/mol	24.49	2.97×10^6	28.05	7150	73.37	22392
ft^3/lb	0.01226	1489	0.01404	3.579	0.0367	11.209

Uncertainty: The uncertainty is estimated to be 0.1% with larger errors in the critical region ~ 2%.

References:

[64400] Weber, L. A., J. Res. Natl. Bur. Standards, 74A, 93 (1970).

[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 384 (Jul 1971).

[36783] Stewart, R. B., Iowa Univ. Ph. D. Thesis (June 1966).

[70607] Technical Manual of Oxygen/Nitrogen Cryogenic Systems, Naval Air Systems Command, Washington, D. C., Rept. No. NAVAIR 06-30-501 (March 1971).

[453] Hilsenrath, J., Beckett, C., Benedict, W. S., Natl. Bur. Standards, Circ. 564 (1955).

[V0357] Vasserman, A. A., Kazavchinskii, Ya. Z. and Rabinovich, V. A., Thermophysical Properties of Air and Air Components, Izdatel'stvo "Nauka", Moskva 1966, Translated from Russian by Israel Program for Scientific Translations, Jerusalem 1971.

A-11

Sources reviewed but not used:

67	225	233	442	457	486	542	669	2135	3275
3498	3301	4588	5424	5514	5542	5759	5808	5936	6160
6228	6229	6326	6424	6586	6718	6805	6852	6853	6854
6926	6927	6928	6929	6950	7052	7148	7324	7391	7611
7681	7827	7935	8107	8331	8395	8645	8702	10647	10677
10750	10751	10848	10923	10989	11002	11005	11008	11478	12246
12250	12420	12827	12855	13377	13463	13466	13824	14622	14766
15255	15651	16156	16296	16375	17994	18182	18839	18851	19648
19701	19703	20296	20431	20642	20651	20963	22666	23501	24298
24946	25268	25975	26051	26159	26756	27104	27838	27840	28149
28237	28409	28650	28653	28976	29057	29144	29221	29496	30101
30780	31305	32372	32705	33660	34303	35893	36054		36784
36818	37224	37583	38306	40173	40178	40767	41366	41479	41600
41837	42115	43099	43270	43641	45779	46209	46406	47225	47324
47795	48138	48184	49340	49784	50672		51958	52463	52503
52527	52355	54159	54898	54964	56338	58632	59341	61541	61544
62284	64026	64393	64568	66093	67017	67365	67896	68026	68343
68344	69342	69346	69424	69552					

Van der Waals Equation

457	669	7148	12246	26744	27110	27838	27840	37224	48856
49784	64054	68344	69592						

Virial Coefficients

Definition: The virial coefficients are usually defined from the virial equation in density

$$P = RT\rho[1 + B(T)\rho + C(T)\rho^2 + \ldots] .$$

The virial coefficients are functions of temperature only.

Two coefficients, B(T) and C(T), are adequate to describe the PVT surface accurately up to a density of about one half critical. At the Boyle Point B(T) = 0.

Tables of Values:

Units	Range of Table	Table Location
$B(cm^3/mol)$, $C(cm^3/mol)^2$	85 - 300 K	C-12

Graph: None

Equation: The values in Table C-12 have been calculated from the following expression:

$$B(T) = \sum_{i=1}^{5} B_i T^{(1-i)/4} , \qquad C(T) = \sum_{i=1}^{6} C_i T^{(1-i)/2} ,$$

the coefficients B_i and C_i being given in Table C-12a.

Range of Values:

Units	Triple Point	Boiling Point	200 K	273.15 K
$B(cm^3/mol)$	-611 (estimate)	-240	-49.9	-22.16
$C(cm^3/mol)^2$		-12750	1680	1223

Boyle Point (B = 0): 405.88 K

Uncertainty: The uncertainty for B varies from ± 30 cm^3/mol at the boiling point to ± 0.25 cm^3/mol for temperatures greater than 150 K; for C, from ± 10000 $(cm^3/mol)^2$ at the boiling point to ± 30 $(cm^3/mol)^2$ above 150 K.

References:

[64400] Weber, L. A., J. Res. Natl. Bur. Standards, 74A, 93 (1970).

[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 384 (Jul 1971).

[453] Hilsenrath, J., Beckett, C. W., Benedict, W. S., Natl. Bur. Standards, Circ. No. 564 (1955).

A-12

Sources reviewed but not used:

Virial Coefficients

67 4588 6586 10750 10989 12259 14766 16846 24945
26051 29620 29144 32705 45245 50723

Second Virial Coefficient

225 488 669 3801 5759 5808 5938 6326 6424 6718
6805 5852 6853 7324 7391 7827 8395 8645 10923 12420
12802 12955 14766 16067 16156 18839 28117 28237 28409 28876
29221 31739 32372 32835 36054 36783 38959 40173 41601 41837
43288 43340 46209 48184 51968 54364 61507 62792 64547

Third Virial Coefficient

488 5938 6805 7324 8331 8645 16156 36783 54964
67282

Boyle Point

6917 40655 51604 56299 63123 67365

Intermolecular Potential Function

Definition: The intermolecular potential function represents the potential energy of interaction vs distance between pairs of molecules. Since the forces involved cannot be determined experimentally, the potential function is usually described by a mathematical model. The models are used in kinetic theory and statistical mechanics calculations. See "viscosity" and "thermal conductivity", for example.

The Lennard-Jones potential. The most familiar potential is the Lennard-Jones or 12-6 potential:

$$\varphi(r) = 4\epsilon \left[\left(\frac{\sigma}{r}\right)^{12} - \left(\frac{\sigma}{r}\right)^{6} \right].$$

In this equation, $\varphi(r)$ is the potential energy of interaction as a function of intermolecular separation, r; ϵ is the maximum energy of attraction; and σ is the distance when $\varphi(r) = 0$. σ corresponds roughly to the diameter of the molecule. The Lennard-Jones parameters for oxygen are: $\sigma = 3.44$ Å, $\epsilon/k = 110.7$ K where k is Boltzman's constant [49455].

The m-6-8 potential. A new potential has been developed [70403] which is a significant improvement over the Lennard-Jones:

$$\varphi^* = \frac{1}{(m-6)} [6 + 2\gamma] \left(\frac{R}{r^*}\right)^m - \frac{1}{(m-6)} [m - \gamma(m-8)] \left(\frac{R}{r^*}\right)^6 - \gamma \left(\frac{R}{r^*}\right)^8$$

where $\varphi^* = \varphi/\epsilon$, $r^* = r/\sigma$, $R = (r_m/\sigma)$ and γ is a term which measures the strength of the inverse eight attraction. r_m is the value of r when $\varphi = \epsilon$.

The m-6-8 parameters for oxygen are: $m = 10$, $\gamma = 1.0$, $\sigma = 3.437$ Å and $\epsilon/k = 113$ K.

This potential was used to calculate the viscosity and thermal conductivity coefficients for dilute gaseous oxygen.

References:

[70403] Klein, Max and Hanley, H. J. M., J. Chem. Phys. 53, 4722-3 (1970).

For a detailed review on the fitting of data using a model potential see,

[49455] Hanley, H. J. M., and Klein, Max, NBS,Tech.Note No. 360 (1967).

Sources reviewed but not used:

Intermolecular Potential Functions

669	5542	5915	6959	8331	8702	10614	10753	12420	12855
13614	14766	18851	22448	23617	26018	27055	27110	28117	29238
29496	31280	31495	32674	34518	35296	36011	36784	36792	36819
37445	41837	43340	43366	45484	45562	46406	47151	47221	47638
48184	49784	50309	51604	53995	55585	59647	63115	63123	63220
64026	64381	66989	68243	68686					

Lennard-Jones

614	8395	10844	13496	26247	27838	28409	28876	32372	53018
55069	61003	61675	62956	65738	66569	68343	68602		

Fixed Points

Discussion: Below are summarized the temperature, pressure, and specific volumes of the various phases at several important points in the phase diagram. Temperatures are given on the IPTS-48 scale above 90 K and on the NBS-55 scale below 90 K in the order to be compatible with the tables of thermodynamic properties. Corresponding temperatures on the IPTS-68 [59932] scale are given in parentheses. Estimated uncertainties are also given.

Critical Point: [70314]
T = 154.576 (154.581) ± 0.010 K = 278.237°R
P = 49.76 ± 0.02 atm = 731.4 psia
V = 73.37 ± 0.10 cm^3/mol = 0.03673 ft^3/lb

Normal Boiling Point: [455]
T = 90.180 (90.188) ± 0.01 K = 162.324°R
P = 1 atm = 14.696 psia
V (liquid) = 28.05 ± 0.028 cm^3/mol = 0.01404 ft^3/lb
V (vapor) = 7150 ± 7 cm^3/mol = 3.579 ft^3/lb

Normal Melting Point: [64400]
T = 54.362 (54.372) ±0.001 K = 97.852°R
P = 1 atm = 14.696 psia
V (liquid) = 24.49 ± .024 cm^3/mol = 0.01226 ft^3/lb

Triple Point: [64400]
T = 54.351 (54.361) ±0.001 K = 97.832°R
P = (1.50 ± .06) x 10^{-3} atm = 0.0220 psia
V (solid) = 23.55 ± .03 cm^3/mol = 0.01179 ft^3/lb
V (liquid) = 24.49 ± .024 cm^3/mol = 0.01226 ft^3/lb
V (vapor) = (2.97 ± 0.01) x 10^6 cm^3/mol = 1487 ft^3/lb

Solid-Solid Transitions: There are two such transitions at 43.8 K and 23.9 K at atmospheric pressure. [455].

Molecular Weight: 31.9988 on the C^{12} scale. Atomic weight: 15.9994 [24033]

Other Properties at the Fixed Points: The fixed points can be found in tables C-2, C-2a, C-5, and C-5a. However, a more convenient survey is given in tables 14 and 14a.

References:

[70314] Weber, L. A., Phys. Rev. A 2, 2379 (1970).
[455] Hoge, H. J., J. Res. Natl. Bur. Standards, 44, 321 (1950).
[64400] Weber, L. A., J. Res. Natl. Bur. Standards, 74A, 93 (1970).
[24033] IUPAC Revises Atomic Weight Values, Chem. Engr. News 39, 42 (Nov. 20, 1961).
[59932] The International Practical Temperature Scale of 1968, Metrologia 5, 35 (April 1969).

Sources reviewed but not used:

Critical Constants

542 700 737 790 340 1133 4588 5542 5564 5576
5808 6123 6049 6105 6223 6326 6424 6852 7791 8699
9501 10841 11508 11582 12166 12204 12250 14794 15403 16375
18042 19185 20135 20898 21134 22697 25732 26744 31446 32705
32709 32876 33635 33662 34504 34514 36783 36784 42101 42114
44401 45227 45780 49095 50681 54600 55711 56863 57803 58033
58317 63122 65711

Critical Temperature

562 11000 16819 17625 19414 21305 62901

Critical Pressure

11000 16819 21305 26174

Critical Density

6746 45362 62901

Normal Boiling Point

504 1617 2169 2819 5643 6201 6326 6327 6403
6615 6627 6893 7622 8699 9005 9014 9076 10916 11001
11029 11114 12204 12506 12827 12901 12905 13161 13379 13614
13783 14072 14619 14959 15268 16075 16077 16282 16695 16697
16701 18045 18509 18516 19185 19791 22935 22936 24390 24498
24499 25732 27388 27389 27995 28653 32104 33983 34514 36346
36783 40383 40595 42101 42114 44085 44210 45682 46053 47225
47636 49620 50159 50304 53150 53736 58033 59601

Melting Point

527 705 802 2169 5525 5915 6074 6398 10414 12204
13161 13831 14619 16331 18180 18515 18516 32104

Triple Point Constants

4588 5564 6326 8699 10196 10763 10916 11798 12802
12827 15403 16700 18509 21824 22938 24506 25732 36783 36784
38815 42114 44085 45227 45682 46053 47636 49620 51039 53150
58033 62956 66100 66899

Solid-Phase Transitions

482 527 802 4588 5525 6074 6173 6398 10389 12827
13468 15543 18180 18454 18515 22450 22938 23260 24243 24506
31446 32104 32394 33610 34413 34455 37441 37839 38815 45104
45227 46279 46647 47536 47822 48219 48428 48790 49350 52003
53150 56500 58585 58877 59674 60576 60865 62001 62497 62941
68937

Atomic Weight

667 3551 6389 7026 8679 8687 10401 20645 20646

Heat Capacity (Specific Heat) at Constant Pressure

Definition: The heat capacity at constant pressure is defined by the equation

$$C_p = (\partial H/\partial T)_p, \quad \text{where H is enthalpy.}$$

Tables of Values:

Units	Range of Tables		Table Location
J/mol-K	54.35 - 340 K,	0.2 - 340 atm	C-2, C-5
BTU/lb-°R	97.8 - 600°R,	1 - 5000 psia	C-2a, C-5a
reduced, by (1/R)	340 - 3000 K,	0.01 - 100 atm	see [453]
kJ/kg-°C	340 - 1300 K,	0.25 - 1000 bar	see [V0357]

Graph: B-15 C_p vs temperature (isobars)
B-15a C_p of solid below 4 K
B-15b C_p of solid 14 - 54 K

Equation: None

Range of Values:

Units	Triple Point		Boiling Point		Critical Point	STP
	liquid	vapor	liquid	vapor		
J/mol-K	53.3	29.1	54.3	30.8	∞	29.3
BTU/lb-°R	0.40	0.22	0.41	0.23	∞	0.22

Uncertainty: The uncertainty is estimated to vary from 0.02% in the low density limit to about 1% - 2% in the liquid. In the near critical region ($T_c \pm 1\%, \rho_c \pm 20\%$) the uncertainties are undoubtedly larger; however, they are not experimentally defined as the property diverges at the critical point.

References:

[64400] Weber, L. A., J. Res. Natl. Bur. Standards, 74A, 93 (1970).

[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 384 (Jul 1971).

[453] Hilsenrath, J., Beckett, C., Benedict, W. S., Natl. Bur. Standards, Circ. No. 564 (1955).

[V0357] Vasserman, A. A., Kazavchinskii, Ya. Z., and Rabinovich, V. A., Thermophysical Properties of Air and Air Components, Izdatel'stvo "Nauka", Moskva 1966, Translated from Russian by Israel Program for Scientific Translations, Jerusalem 1971.

Sources reviewed but not used:

204	224	275	358	446		455	485	527	626
633	700	790	802	998	1238	2114	2607	3142	3272
3801	3867	4183	4588	5095	5490	5493	5550	5718	5726
5733	5921	6011	6046	6062	6069	6079	6105	6168	6173
6217	6223	6253	6257	6265	6266	6268	6275	6300	6318
6390	6393	6398	6841	6853	7248	7391	7396	7747	7827
7896	8282	8673	8680	8696	8698	8705	8710	9076	9486
9501	10742	10746	10748	10752	10880	10382	11021	11283	11940
12018	12827	13380	13468	13831	15739	15740	16317	16845	16877
17018	17166	18838	19665	19666	20898	22666	22805	23501	24298
24314	24315	24316	24318	24323	24332	24777	24782	25092	25732
25911	25952	25963	25978	26605	26615	27045	27105	27464	27513
27514	28119	28263	28412	29438	29501	29585	29604	30020	30101
30780	31496	31600	32104	32817	32822	33112	33604	34473	34523
36783	36784	37433	38807	40595	40655	41524	42075	42101	42114
43116	43200	43531	43780	43786	45104	45227	45245	45454	45529
45998	46209	46952	48289	48307	48404	48428	49790	50821	50963
	52908	52960	53150	53551	53664	53803	54004	54294	54506
54596	54732	54762	54765	55630	55710	55711	55969	55972	
57397	57964	58585	62001	62625		66249	66405	66479	66518
68111	69346								

Heat Capacity (Specific Heat) at Constant Volume

Definition: The heat capacity at constant volume is defined by the equation

$C_v = (\partial U/\partial T)_v$, where U is internal energy.

Tables of Values:

Units	Range of Tables		Table Location
J/mol-K	54.35 - 340 K,	0.2 - 340 atm	C-2, C-5
BTU/lb-°R	97.8 - 600°R,	1 - 5000 psia	C-2a, C-5a
reduced, by (1/R)	340 - 3000 K,	0.01 - 100 atm	can be derived from [453]

Graph: B-16 C_v vs density along isotherms

B-16a C_v vs temperature on isobars

Equation: None

Range of Values:

Units	Triple Point		Boiling Point		Critical Point	STP
	liquid	vapor	liquid	vapor		
J/mol-K	35.6	20.8	29.6	21.3	∞	21.0
BTU/lb-°R	0.27	0.16	0.22	0.16	∞	0.16

Uncertainty: The uncertainty is estimated to vary from 0.02% in the low density limit to a maximum of 2% at the highest pressures. In the near critical region ($T_c \pm 1\%$, $\rho_c \pm 20\%$) the uncertainties are undoubtedly larger; however, they are not experimentally defined as the property diverges at the critical point.

References:

[64400] Weber, L. A., J. Res. Natl. Bur. Standards, 74A, 93 (1970).

[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 384 (Jul 1971).

[57397] Goodwin, R. D., and Weber, L. A., J. Res. Natl. Bur. Standards, 73A, 15 (1969).

[453] Hilsenrath, J., Beckett, C. W., Benedict, W. S., et al., Natl. Bur. Standards, Circ. No. 564 (1955).

Sources reviewed but not used:

See sheet A-15

Heat Capacity (Specific Heat) Ratio

Definition: $\gamma = C_p/C_v$

Tables of Values:

Units	Range of Tables	Table Location
Dimensionless	340 - 3000 K, 0.01 - 100 atm	see [453]

Graph: None

Equation: None, however the equation above and values of C_p and C_v from Tables C-2, C-2a, C-5, and C-5a should be used to establish values at temperatures below 340 K.

Range of Values:

Units	Triple Point		Boiling Point		Critical Point	STP
	liquid	vapor	liquid	vapor		
Dimensionless	1.49	1.40	1.83	1.45	∞	1.40

Uncertainty: The uncertainty is estimated to vary from 0.02% in the low density limit to a maximum of 3% at the highest pressures. In the near critical region ($T_c \pm 1\%$, $\rho_c \pm 20\%$) the uncertainties are undoubtedly larger; however, they are not experimentally defined as the property diverges at the critical point.

References:

[64400] Weber, L. A., J. Res. Natl. Bur. Standards, 74A, 93 (1970).

[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 384 (Jul 1971).

[57397] Goodwin, R. D., and Weber, L. A., J. Res. Natl. Bur. Standards, 73A, 15 (1969).

[453] Hilsenrath, J., Beckett, C. W., Benedict, W. S., et al., Natl. Bur. Standards, Circ. No. 564 (1955).

Sources reviewed but not used:

	3801	4591	4902	5726	5756	6253	6363	6809	6853
7391	7747	9501	16877	18026	24208	24782	25965	47114	45227
45998	48307	48404	55711						

Heat Capacity (Specific Heat) of the Saturated Liquid

Definition: $C_\sigma = T(\partial S/\partial T)_\sigma = (dH/dT)_\sigma - V(dP/dT)_\sigma$, where the subscript "$\sigma$" refers to saturation conditions.

Tables of Values: Not tabulated

Graph: None

Equation:

$$C_\sigma = A_1/(T_c - T)^{1/2} + A_2 + A_3T + A_4T^2 ,$$

where C_σ is in J/mol-K, T in kelvins, and $T_c = 154.77$ K.

$A_1 = 2.105614 \times 10^{2}$ $\qquad$ $A_3 = -8.007074 \times 10^{-2}$

$A_2 = 3.741590 \times 10^{1}$ $\qquad$ $A_4 = -2.742842 \times 10^{-4}$

This equation is valid from the triple point (54.351 K) up to 154 K.

Range of values:

Units	Triple Point	Boiling Point	Critical Point
J/mol-K	53.3	54.2	∞
BTU/lb-°R	0.40	0.40	∞

Uncertainty: The uncertainty varies from 0.5% at the triple point to 2% at 154 K.

References:

[64400] Weber, L. A., J. Res. Natl. Bur. Standards, 74A, 93 (1970).

[57396] Goodwin, R. D. and Weber, L. A., J. Res. Natl. Bur. Standards, 73A, 1 (1969).

Sources reviewed but not used:

527 5550 17330 17018 28263 69346

Ideal Gas Properties, Thermodynamic

Discussion: All thermodynamic properties given here are based on thermodynamic properties of the ideal gas derived from spectroscopic measurements and statistical mechanics. The zero reference point of the enthalpy and the free energy function is taken as the internal energy U_o° of the ideal gas at zero absolute temperature. The values tabulated for enthalpy are $H^\circ - U_o^\circ$, for internal energy $U^\circ - U_o^\circ$ and for the Gibbs free energy $G^\circ - U_o^\circ$, where U_o° is taken to be zero at zero absolute temperature. By convention, the values for S° and G° are presented at 1 atmosphere pressure.

Tables of Values: For both molecular and atomic oxygen see [453].

Properties	Units	Range of Tables	Table location
C_p°, H°, S°, G°	reduced, by (1/R), (1/RT$_o$), and (1/RT)	10 - 5000 K	see [453]

where R is the gas constant, T_o = 273.16 K, and T is the temperature.

Graph: None

Equation: The heat capacity at constant pressure may be expressed as:

$$C_p^\circ/R = C_1/T^3 + C_2/T^2 + C_3/T + C_4 + C_5T + C_6T^2 + C_7T^3 + C_8u^2e^u/(e^u - 1)^2,$$

where $u = C_9/T$. This equation is accurate from 20 - 2000 K. The coefficients are:

$C_1 = -1.86442361 \times 10^2$
$C_2 = 2.07840241 \times 10$
$C_3 = -3.42642911 \times 10^{-1}$
$C_4 = 3.50297163$
$C_5 = 2.05866482 \times 10^{-7}$
$C_6 = -1.11035799 \times 10^{-8}$
$C_7 = 2.08612876 \times 10^{-11}$
$C_8 = 1.01894691$
$C_9 = 2.23918105 \times 10^3$

The heat capacity may then be integrated to find the other thermodynamic properties:

$$S^\circ(T) = S^\circ(T_1) + \int_{T_1}^{T} C_p^\circ/T \, dT, \quad H^\circ(T) = H^\circ(T_1) + \int_{T_1}^{T} C_p^\circ \, dT ;$$

the integration constants used here are $S^\circ(T_1)$ = 155.72 J/mol-K, $H^\circ(T_1)$ = 1590.93 J/mol at T_1 = 55 K.

Uncertainty: The uncertainty is estimated in the original source to be 0.02% [6079].

References:

[453] Hilsenrath, J., Beckett, C. W., Benedict, W. S., Natl. Bur. Standards,Circ. No. 564 (1955).
[6079] Woolley, H. W., J. Res. Natl. Bur. Standards,40, 163 (1948).
[36783] Stewart, R. B., Iowa Univ. Ph.D. Thesis (June 1966).

Sources reviewed but not used:

10382 45454 45529 56298 52625

Index of Refraction

Definition: The index of refraction n_λ of a medium is the ratio of the speed of light in vacuum to the speed of light in the medium, $n_\lambda = c/c_m$.

Tables of Values:

Units	Saturated liquid Range of Table	Table Location
Dimensionless	54.35 - 154 K, 0.04 - 0.017 mol/cm^3	C-20

Graph: None

Equation:

$$n_\lambda(\rho) = \left(\frac{2 \cdot \rho \cdot r_\lambda(\rho) + 1}{1 - \rho \cdot r_\lambda(\rho)} \right)^{1/2}, \quad \text{where}$$

$$r_\lambda(\rho) = 3.955 + 0.328 \cdot \rho - 39.6 \cdot \rho^2 + 0.0292 + 10^8/\lambda^2, \text{ and where}$$

specific refractions, $r_\lambda(\rho)$, are in cm^3/mol, densities are in mol/cm^3 and wavelengths are in angstroms.

Range of Values:

Units	Triple Point Liquid	Boiling Point Liquid	STP
Dimensionless	1.2592 at λ = 5461Å	1.2254 at λ = 5461Å	1.00027136 at λ = 5500Å

Uncertainty: The uncertainty is ± 0.5% in $(n_\lambda - 1)$.

References:

[29497] Ladenburg, R., and Wolfsohn, G., Z. Physik, 79, 42 (1932).

[19279] Cuthbertson, C., and Cuthbertson, M., Proc. Roy Soc. A83, 151 (1910).

[V0358] Younglove, B. A., J. Res. Natl. Bur. Standards, 76A, 37 (1972).

[23393] Johns, H. E., and Wilhelm, J. O., Can. J. Res. 15A, 101 (1937).

[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 384 (Jul 1971).

[R0323] Diller, D. E., Natl. Bur. Standards, Boulder, Colo. NBS-LN-71-4.

Sources reviewed but not used:

233 5655

Internal Energy

Definition: Internal energy is defined by the equation $\Delta U = Q - P\Delta V$, where Q is the heat absorbed by a system and ΔV is the change in its volume. Thus, in a constant volume process the change in internal energy is a measure of the heat absorbed.

Tables of Values:

Units	Range of Tables		Table Location
J/mol	54.35 - 340 K,	0.2 - 340 atm	C-2, C-5
BTU/lb	97.8 - 600°R,	1 - 5000 psia	C-2a, C-5

Graph: None

Equation: None

Range of Values: The reference state for internal energy is zero for the ideal gas at zero absolute temperature (See A-19).

Units	Triple Point		Boiling Point		Critical Point	STP
	liquid	vapor	liquid	vapor		
J/mol	-6190	1120	-4273	1817	662	5669
BTU/lb	-83.2	15.0	-57.4	24.4	8.9	76.2

Uncertainty: The uncertainty varies from 0.5 J/mol in the low density limit to about 10 J/mol in the liquid.

References:

[64400] Weber, L. A., J. Res. Natl. Bur. Standards, 74A, 93 (1970).

[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 384 (Jul 1971).

Sources reviewed but not used:

553 567 5921 6163 8643 16063 19648 36784 45245 46209
48307 54004 54294 57398 65738 69498

A-22

Joule-Thomson Coefficient

Definition: The Joule-Thomson Coefficient, μ, may be defined by the equation

$$\mu = - C_p^{-1} (\partial H/\partial P)_T = (\partial T/\partial P)_H .$$

The importance of this coefficient is that it indicates heating or cooling upon expansion of the gas, and can be used to predict temperature changes. If μ is positive it predicts cooling on expansion. The Joule-Thomson Inversion curve, $\mu = 0$, is given in Table C-22 for values within the experimental range of [64400] i.e. up to 357 atm or 190 K. The graph of the inversion curve was completed by recourse to estimates based on the principle of corresponding states [453], [15255], [36783], [41511].

Tables of Values: This quantity is not tabulated, but it may be calculated from Tables C-2, C-2a or Tables C-5, C-5a,using the above relationship.

Graph: B-22 The inversion curve, T vs P.

Equation: None

Range of Values:

Units	Pressure	100 K (180°R)	150 K (270°R)	200 K (360°R)	300 K (540°R)
K/atm	200 atm	-0.034	-0.005	+0.098	+0.135
°R/psi	1400 psia	-0.0038	+0.0044	+0.047	+0.026

Uncertainty: The uncertainty is estimated to be 5% in the experimental range of [64400].

References:

[64400] Weber, L. A., J. Res. Natl. Bur. Standards, 74A, 93 (1970).

[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 384 (Jul 1971).

[453] Hilsenrath, J., Beckett, C., Benedict, W. S., et al., Natl. Bur. Standards, Circ. 564 (1955).

[15255] Koeppe, W., Progr. Refrig. Sci. Tech. 1, 229 (Proc. 10th IIR, Copenhagen 1959).

[36783] Stewart, R. B., Iowa Univ. Ph.D. Thesis (June 1966).

[41511] Gunn, R. D., Chueh, P. L., Prausnitz, J. M., Cryogenics 6, 324 (Dec 1966).

Sources reviewed but not used:

567 3276 4588 5603 7935 10677 10923 14232 18026
18526 26535 30101 35893 68026

Latent Heat of Fusion

Definition: The latent heat of fusion is the heat required to melt a unit mass of a substance at constant pressure.

Tables of Values: None

Graph: None

Equation: None

Range of Values: This quantity has been measured at the triple point by several experimenters. The best value is 444.8 J/mol (5.976 BTU/lb). There are no known measurements of the heat of fusion at higher pressures and temperatures.

Uncertainty: Based upon the agreement between experimenters and upon their estimates, the uncertainty is ± 1.3 J/mol (0.017 BTU/lb).

References:

[527] Giauque, W. F. and Johnston, H. L., J. Am. Chem. Soc. 51, 2300 (1929).

[6300] Eucken, A., Verhandl. Deut. Physik. Ges. 18, 4 (1916).

[6398] Clusius, K., Z. Physik. Chem. B3, 41 (1929).

Sources reviewed but not used:

	4388	5733	6326		12018	12827	13831	27055	32104
34455	45104	45227	47636	52701	53991	54523	56863	66479	

A-24

Latent Heat of Sublimation

Definition: The latent heat of sublimation is the heat required to vaporize a unit mass of solid.

Tables of Values: This quantity is tabulated in Table C-24.

Graph: None

Equation: None

Range of Values:

Units	20.0 - 23.8 K gas - α solid	23.8 - 43.8 K gas - β solid	43.8 - 54.35 K gas - γ solid
J/mol	9309 - 9265	9216 - 9131	8389 - 8207
BTU/lb	125.1 - 124.5	123.8 - 122.7	112.7 - 110.3

Uncertainty: The uncertainty is estimated to be 10 J/mol (0.13 BTU/lb), with the uncertainty in temperature as large as 0.1 K.

References:

[12802] Mullins, J. C., Ziegler, W. T., and Kirk, B. S., Georgia Inst. Technol., Atlanta, Tech. Rept. No. 2 (1962).

Sources reviewed but not used:

4588 12927 21824 23427 33610 41524 47636 52701 63625

Latent Heat of Vaporization

Definition: The latent heat of vaporization is the heat required to convert a unit mass of a substance from the liquid to the vapor state at constant pressure.

Tables of Values: This quantity is not tabulated but values are easily established from Tables C-5 or C-5a by subtracting the liquid enthalpy from that of the vapor at the same temperature and pressure.

Graph: B-25 heat of vaporization vs T.

Equation: None

Range of Values:

Units	Triple Point	Boiling Point	Critical Point
J/mol	7761	6812	0
BTU/lb	104.3	91.6	0

Uncertainty: The uncertainty is estimated to be ± 10 J/mol (0.13 BTU/lb).

References:

[64400] Weber, L. A., J. Res. Nat. Bur. Standards, 74A, 93 (1970).

[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 384 (Jul 1971).

Sources reviewed but not used:

184	527	985	2020	2208	2989	4225	4588	5491	5550
5885	6223	6297	6300	6713	6737	6424	7396	8651	9025
10411	10348	11532	12018	12204	12263	12405	12802	12827	13377
13378	13380	13803	13831	13949	13978	14619	16093	16361	16694
16845	19708	21824	24313	24328	24777	24782	25312	25952	27104
28263	30020	30101	32104	32373	33230	33614	33983	36783	40595
40811	41524	42414	43288	45227	45780	47225	47636	47639	48307
48404		51208	52127	53150	53818	54294	55711	55969	55972
56343	56963	58305	60189	61627	63625		66093	66989	

Melting Curve

Definition: The melting curve is the boundary between the solid and liquid regions in a phase diagram.

Tables of Values: The liquid density for a given pressure is found in the first line of each isobar in Tables C-2, C-2a. The liquid and solid densities are given here; the melting pressures are given in A-27.

Graph: None

Equation: For the liquid phase densities:

$$\rho(\text{mol/cm}^3) = \rho_t + 1.81 \times 10^{-6} P(\text{atm}), \text{ or}$$

$$\rho(\text{mol/cm}^3) = \rho_t + 1.60 \times 10^{-4} (T - T_t)$$

give a good approximation, where the triple point density, $\rho_t = 0.04083$ mol/cm^3 and the triple point temperature, $T_t = 54.3507$ K. For melting pressures see A-27.

Range of Values:

	Units	Triple Point	100 atm	300 atm
liquid:	mol/cm^3	0.04083	0.04102	0.04139
	lb/ft^3	81.57	81.97	82.64
solid:	mol/cm^3	0.04246 [64400]	not measured	not measured
	lb/ft^3	84.82		

Uncertainty: The overall uncertainty is estimated to be 0.1%.

References:

[64400] Weber, L. A., J. Res. Natl. Bur. Standards, 74A, 93 (1970).

[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 384 (Jul 1971).

Sources reviewed but not used:

See A-27

Melting Pressures

Definition: The relationship between pressure and temperature along the solid-liquid boundary.

Tables of Values: The melting temperature for a given pressure is found in the first line of each isobar in Tables C-2, C-2a.

Units	Range of Table	Table Location
atm	54.35 - 58.5 K, 0.001 - 340 atm	C-2
psia	97.8 - 105.3°R, 0.02 - 5000 psia	C-2a

Graph: B-27 melting curve (T vs P) for oxygen.

Equation: The experimental melting curve data were fitted by means of the Simon melting equation in the form

$$P = P_t + P_o [(T/T_t)^c - 1]$$

where P_t is the triple point pressure, 0.0015 atm, P_o = 2637.2 atm, T_t = 54.3507 K, c = 1.769.

Range of Values:

Units	Triple Point	56 K (100.8°R)	58 K (104.4°R)
atm	0.0015	143.2	321.3
psia	0.021	2105	4722

Uncertainty: The triple point pressure has an uncertainty of 4%. The pressure at a given temperature has an uncertainty of about 0.08 atm.

References:

[64400] Weber, L. A., J. Res. Natl. Bur. Standards, 74A, 93 (1970).

[490] Mills, R. L., Grilly, E. R., Phys. Rev. 99, No. 2, 480 (1955).

[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 384 (Jul 1971).

Sources reviewed but not used:

475		538	810	2020	4588	6300	10912	11790	12018
14960	18567	25732	30101	31446	33112	34455	36346	42114	45227
46279		66100							

Phase Diagram

Definition: Phase diagrams indicate the boundaries, in pressure-volume-temperature coordinates, between the solid, liquid, and gas phases.

Tables of Values: For vapor pressures below the triple point, see Table C-24 [12802].

Graph:
- B-27 melting pressures vs temperature
- B-30 phase boundaries, specific volume vs temperature
- B-30a phase boundaries, density vs temperature
- B-30b phase boundaries, pressure vs temperature
- B-37 liquid and vapor boundary in T-S chart
- B-37a liquid and vapor boundary in log P-H chart
- B-37c liquid and vapor boundary in H-S chart
- B-37d phase boundaries, pressure vs temperature
- B-37e liquid and vapor boundary in T-S chart (metric)
- B-38 vapor pressure vs temperature
- B-38a vapor pressure vs temperature

Equation:
- Melting pressures as a function of temperature — see A-27
- Densities of liquid in equilibrium with solid — see A-26
- Vapor pressure equation — see A-38

Uncertainties: For each boundary consult the specific page mentioned above.

References:

[64400] Weber, L. A., J. Res. Natl. Bur. Standards, 74A, 93 (1970).

[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 384 (Jul 1971).

[12802] Mullins, J. C., Ziegler, W. T., and Kirk, B. S., Georgia Inst. Technol., Atlanta, Tech. Rept. No. 2 (1962).

[70607] Technical Manual of Oxygen/Nitrogen Cryogenic Systems, Naval Air Systems Command, Washington, D. C., Rept. No. NAVAIR 06-30-501 (March 1971).

Sources reviewed but not used:

10389 13009 26664 31446 34413 52003 50576 68937

Prandtl Number

Definition: The Prandtl number, Pr, is defined by the relation

$$Pr = C_p \eta/\lambda$$

where C_p is the specific heat at constant pressure, η the viscosity and λ the thermal conductivity.

Tables of Values: Tabulated in Tables C-2, C-2a, C-5 and C-5a.

Units	Range of Table	Table Location
Dimensionless	54.35 - 340 K, 0.2 - 340 atm	C-2
Dimensionless	97.8 - 600°R, 1 - 5000 psia	C-2a
Dimensionless	saturation boundary	C-5, or C-5a
Dimensionless	340 - 600 K 1 atm	see [453]

Graph: None

Equation: None, but the above relationship may be used to calculate values.

Range of Values:

Units	Triple Point		Boiling Point		Critical Point	STP
	liquid	vapor	liquid	vapor		
Dimensionless	5.34	0.739	2.19	0.771	∞	0.726

Uncertainty: The uncertainty is estimated to be 5%, except for the critical region. In the near critical region (T_c ± 3%, ρ_c ± 30%) the uncertainties are undoubtedly larger; however, they are not experimentally defined as the property diverges at the critical point.

References:

[64400] Weber, L. A., J. Res. Natl. Bur. Standards, 74A, 93 (1970).

[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 384 (Jul 1971).

[453] Hilsenrath, J., Beckett, C. W., Benedict, W. S., et al., Natl. Bur. Standards, Circ. No. 564 (1955).

Sources reviewed but not used:

446 998 4585 5959 6151 11995 12977 16296 19485
43780 59452 67274

P-V-T

Definition: Any two of these variables determine the state of a pure fluid, with the exception of the phase boundaries, where, although the pressure is a unique function of the temperature, the volume may be multivalued. Specific volume and its reciprocal, density, are often used interchangeably.

Tables of Values: The properties are tabulated in Tables C-2, C-2a, C-5, and C-5a.

Graph:
- B-27 melting curve for oxygen
- B-30 specific volume vs temperature
- B-30a density vs temperature
- B-30b isochores on a P vs T phase diagram (skeleton)
- B-37 isochores on a T vs S chart
- B-37a isochores on a log P vs H chart
- B-37b isochores on a P vs H chart (supercritical)
- B-37c isochores on a H vs S chart
- B-37d isochores on a P vs T phase diagram
- B-37e isochores on a T vs S chart (metric)
- B-38 vapor pressure
- B-38a vapor pressure (metric)

Equation:
- For specific volume or density see A-11
- For virial coefficients see A-12
- For melting curve see A-27
- For vapor pressure see A-38

Range of Values:

Property	Units	Range of Tables	Table Location
pressure	atm	0 - 340	C-2 or C-5
pressure	psia	0 - 5000	C-2a C-5a
volume, or density	cm^3/mol, mol/cm^3	24.13 - ∞	C-2 C-5
volume, or density	ft^3/lb, lb/ft^3	0.012 - ∞	C-2a C-5a
temperature	K	54.35 - 340	C-2 C-5
temperature	°R	97.8 - 600	C-2a C-5a

Other major tables of values can be found in the sources indicated; they are, however, not reprinted in this volume.

Property	Range of Table	Table Location
PVT	340 - 3000 K, 0.01 - 100 atm	see [453]
PVT	340 - 1300 K, 0.25 - 1000 bar	see [V0357]

Uncertainty: Uncertainties are estimated to be as follows: temperature, ± 0.01 kelvin; volume, ± 0.1%; pressure, ± 0.02%; however,note that in some regions, such as the compressed liquid, the uncertainty in volume may cause a large effective uncertainty in pressure as may be seen by use of the relationship $\Delta P = (\partial P/\partial V)\,\Delta V$. Larger uncertainties, i.e., up to 2% in density,are estimated in the near critical region.

References:

[64400] Weber, L. A., J. Res. Natl. Bur Standards,74A, 93 (1970).

[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards,Tech. Note 384 (Jul 1971).

[36783] Stewart, R. B., Iowa Univ. Ph. D. Thesis (June 1966).

[70607] Technical Manual of Oxygen/Nitrogen Cryogenic Systems, Naval Air Systems Command, Washington, D. C., Rept. No. NAVAIR 06-30-501 (March 1971).

[453] Hilsenrath, J., Beckett, C. W., Benedict, W. S., et al., Natl. Bur. Standards,Circ. No. 564 (1955).

[V0357] Vasserman, A. A., Kazavchinskii, Ya. Z., and Rabinovich, V. A., Thermophysical Properties of Air and Air Components Izdatel'stvo "Nauka", Moskva 1966, Translated from Russian by Israel Program for Scientific Translations, Jerusalem 1971.

Sources reviewed but not used:

PVT Data

67	293		488	667	2161	3498	4588	4900	5542
5550	5646	5938	6023	6069	6125	6160	6326	6352	6389
6424	6507	6718	6775	6781	6797	6805	6814	6853	6854
6912	6926	6928	6988	7146	7148	7324	7362	7611	7681
7935	8687	8703	8716	9749	10647	10677	10742	10841	10923
11008	11015	12235	12381	12454	13546	13781	14545	14914	15403
16883	19648	19703	20248	20645	20646	20363	25102	26664	27932
28149	29240	30101	30286	32340	33662		36784	39328	41479
42115	43109	43124	43298	44401	45966	46382	45992	48283	48307
48965	49092	50791		51604	54004	54294	54896	55711	55969
55972	56338	56461	57396	57397	57398	58682	61541		69346
69424									

Density

34	218	405		475	488	567	636	667	700
705	737	787	2029	2135	2208	2889	4183	4511	4902
5363	5424	5546	5550	5756	6064	6273	6318	6424	6497
6507	6515	6805	6854	6912	6917	6925	7026	7299	8648
8679	8687	8774	9005	9749	10401	10402	10579	10672	10748
10841	11002	11003	11005	11015	11582	11624	11769	11798	11995
12018	12194	12226	12235	12727	12840	13125	13247	13344	13345
13377	13482	13546	13781	14794	14814	15027	15268	15403	16067
16156	16357	16437	17018	18167	19184	19278	19648	20651	22566
23393	23400	24328	24346	25102	25729	25731	25732	25952	25966
26171	27495	28263	28350	28875	30020	30286	30354	30452	30659
30780	30888	32705	34457	36346		36784	36818	40595	42101
42114	43107	44401	46952	47221	47225	48404	49340	50791	51145
51361	52712	53663	53819	54005	54568	54622	54765	55509	55969
56343	57903	58305	59402	62488	62884	63007	63038	63122	63647
64319	65711	66249	66405	67365	69346				

Radiative Properties

Definitions and relationships: The absorptivity α of a gas through an isothermal path of length ℓ at temperature T is given in terms of the spectral absorption coefficient $k(\nu, T)$ by the defining relation

$$\alpha = \frac{\int_0^\infty (1-e^{-k(\nu)\,\ell})\, I(\nu)d\nu}{\int_0^\infty I(\nu)d\nu}$$

where $I(\nu)$ is the incident intensity at frequency ν. Under conditions of radiative equilibrium, I becomes the black body intensity $I_b(\nu, T)$ for temperature T, or the Planck function, and α becomes equal to the gas emissivity $\epsilon(T)$, which is a property of the gas alone. Thus:

$$\epsilon(T) = \frac{\pi}{\sigma T^4} \int_0^\infty I_b(\nu, T)\,(1-e^{-k(\nu, T)\ell})d\nu$$

where σ is the Stefan-Boltzmann constant. When k is the form of sharply peaked bands, I_b may be replaced by its value at the band center I_{bc} and taken outside the integral to give

$$\epsilon(T) = \frac{\pi}{\sigma T^4} \sum_i (I_{bc})_i \int_{\text{band } i} (1-e^{-k(\nu, T)\ell})d\nu \quad .$$

The integral is called the total band absorptance A (or sometimes the equivalent black width) of the band. The latter has proven to be a useful concept in both exact and approximate formulations of radiative transfer.

Graphs and Tables: Figure B-31 gives the emissivity of oxygen as a function of temperature for various values of the modified path length W; $W = \ell\,(\rho/\rho_0)^2$, where ρ is the density and ρ_0 is the S. T. P. density). In figure B-31a, a correlation is given of the total band absorptance in dimensionless form: $\bar{A} = A/C_1$ vs $u = WC_1/C_3$, where C_1 and C_3 are constants listed in Table C-31. The data in the figures and in the table were computed using the above relationships and spectral absorption coefficients of Section A-42. Extrapolation of the absorption coefficients above and below room temperature was performed according to established theoretical principles. For further details see [V0359].

Uncertainties: Where no extrapolation was involved ϵ and A are as good as the absorption coefficient data, i. e., about 5% uncertainty. It should be noted that on account of the assumed ρ^2 dependence of k the density ratio ρ/ρ_0 is limited to about 500 for a 5% error.

References:

[V0359] Jones, M. C., Natl. Bur. Standards, Report 10711 (Nov 1971).

Saturation Properties

Definition: The term saturation normally refers to two or more phases in equilibrium, usually liquid-vapor or solid-vapor.

Tables of Values: Saturation properties are tabulated from the triple point to the critical point in Tables C-5 and C-5a. The individual properties given in saturation Tables C-5 and C-5a are listed below along with the page on which they are discussed in more detail.

Property	Page	Property	Page
Temperature	A-30	Density	A-30
Pressure	A-30	Thermal Conductivity	A-36
Volume	A-30	Viscosity	A-39
Internal Energy	A-21	Thermal Diffusivity	A-7
Enthalpy	A-9	Dielectric Constant	A-5
Entropy	A-10	Prandtl Number	A-29
Constant Volume Heat Capacity	A-16		
Constant Pressure Heat Capacity	A-15		
Velocity of Sound	A-33		
Surface Tension	A-35		

A summary of property values for the fixed points only is given in very convenient form in Tables C-14 and C-14a.

Graph:

B-25	heat of vaporization vs temperature
B-30	liquid and vapor volumes vs temperature
B-30a	liquid and vapor densities vs temperature
B-37	liquid and vapor boundary in T-S chart
B-37a	liquid and vapor boundary in log P-H chart
B-37c	liquid and vapor boundary in H-S chart
B-37e	liquid and vapor boundary in T-S chart (metric)
B-38 and B-38a	vapor pressure vs temperature

Equation: Vapor pressure - see A-38.

Uncertainties: For each property see the appropriate page.

References: For references see appropriate property.

Sources reviewed but not used:

Saturated Liquid Density

5550 8648 10672 11015 11395 12235 12727 12802 13344 13345
14814 16357 16437 17018 19184 19648 24328 26171 27495 28263
30286 44401 50791 51351 57803 62488 62884 64319 69346

Saturated Vapor Density

5550 12235 16357 19648 24328 27495 30286 53663 57803 63122

Sound Velocity

Definition: The thermodynamic sound velocity, W, may be calculated from

$$W = \left(\frac{C_p}{C_v} \left(\frac{\partial P}{\partial \rho} \right)_T \right)^{1/2}$$

Tables of Values:

Units	Range of Table		Table Location
m/s	54.35 - 340 K,	0.1 - 340 atm	C-2, C-5
ft/s	97.8 - 6000°R,	1 - 5000 psia	C-2a, C-5a
reduced by S.T.P.	340 - 3000 K,	0.01 - 100 atm	see [453]

Graph: B-33 velocity of sound vs T (isobars)

Equation: None

Range of Values:

Units	Triple Point		Boiling Point		Critical Point	STP
	liquid	gas	liquid	gas		
m/s	1159	141	903	178	0	315
ft/s	3804	461	2963	583	0	1033

Uncertainty: Uncertainty in the compressed liquid varies from 1% at low pressures to 2% at high pressures; in the vapor or above critical temperature, the uncertainty is about 0.5%. In the near critical region ($T_c \pm 1\%$, $\rho_c \pm 20\%$) the uncertainties are undoubtedly larger; however, they are not experimentally defined as the property diverges at the critical point.

References:

[64400] Weber, L. A., J. Res. Natl. Bur. Standards, 74A, 93 (1970).

[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 384 (Jul 1971).

[70607] Technical Manual of Oxygen/Nitrogen Cryogenic Systems, Naval Air Systems Command, Washington, D. C., Rept. No. NAVAIR 06-30-501 (March 1971).

[453] Hilsenrath, J., Beckett, C. W., Benedict, W. S., et al., Natl. Bur. Standards, Circ. 564 (1955).

Sources reviewed but not used:

34		501	680	682	988	1106	3106	3709	3801
4183	4588	4590	4591	4903	5756	5757	6161	6201	6363
6424	6809	6811	6841	6853	6992	7128	7391	7476	7653
7747	7807	7827	7841	7896	8282	8595	9501	10746	10923
11029	12704	13099	13296	13389	16877	17019	18851	19205	19289
20252	22052	24318	24777	24782	25911	25952	25966	27834	30101
31650	31683	31936	32860	36792	36813	40225	43116	43531	45245
45418	45998	47930	48307	48404		52336	54014	54069	54480
55972	56768	58585	58920	60503		64568	65035	66249	66405
67274	69105								

Sound Absorption

Definition: The sound absorption is usually given as the ratio α_{exp}/α_{cl} where

$$\alpha_{cl} = \frac{4\pi^2\nu^2}{2\gamma PW}\left[\frac{4}{3}\eta + \frac{\gamma - 1}{C_p}\lambda\right]$$

is the "classical" absorption. Here, P is the pressure, W the sound velocity, γ the ratio of specific heats (C_p/C_v), ν the frequency, η the viscosity coefficient and λ the thermal conductivity coefficient.

Liquid: The sound absorption, α, for the saturated liquid [6161] as measured at 60, 70, and 87 K (± 5 K) is 0.17 db/cm for the frequency 44.4 MHz.

Gas: For the gas, Parker [31654] gives

$$\alpha = (12.68 \times 10^{-10})\frac{\nu^2}{P} \text{ db/cm},$$

with P in mm Hg, ν in Hz, for pressures less than 10 mm Hg.

Range of Values: The available data can be summarized in the following table:

α_{exp}/α_{cl}	State	Author
1.240 ± 0.025	gas	Tempest [607]
1.17 ± 0.05	gas	Parker [31654]
1.2 ± 0.2	liquid	Galt [6161]

Uncertainty: The uncertainty in α is ± 5% [31654].

References:

[6161] Galt, J. K., J. Chem. Phys. 16, 505 (1948).

[31654] Parker, J. G., Adams, C. E., and Stavseth, R. M., J. Acoust. Soc. Amer. 25, 263 (1953).

[607] Tempest, W. and Parbrook, H. D., Nature 177, 181 (1956).

Sources reviewed but not used:

1106 4591 6363 7653 7807 7838 10989 19205
20262 20288 24471 26345 27934 28125 31548 31650 31671
31683 41892 44864 48186 49785 49787 51018 55182 64794 65035
67274

Surface Tension

Definition: Surface tension is defined as the amount of work required to increase the surface area of a liquid by one unit of area. Note that this property is defined only for the saturated liquid, not for the compressed fluid states.

Discussion: The equation used was proposed by Guggenheim [2135]. The principal sources of experimental data are [536] and [705]. All experimental values were recalculated using a consistent set of liquid densities [64400]. The values selected here were chosen on the basis that both densities and critical temperature are consistent with other properties such as enthalpy, entropy, etc.

Tables of Values:

Units	Range of Table	Table Location
dyn/cm	54.351 - 154.576 K	C-5
dyn/cm	58 - 91 K	C-35
lb/in	97.831 - 278.237°R	C-5a

Graph: B-35 surface tension vs temperature

Equation:

$$\gamma = \gamma_o (1-T/T_c)^{11/9} = 38.461 (1-T/154.576)^{11/9}$$

with γ in dyn/cm and T in kelvins, where T_c is the critical temperature, and γ_o is simply a coefficient.

Range of Values:

Units	Triple Point (54.35 K)	Normal Boiling Point (90.18 K)	Critical Point (154.576 K)	STP (0°C)
dyn/cm	22.65	13.19	0	not defined
lb/in	1.29×10^{-4}	0.75×10^{-4}	0	not defined

Uncertainty:

Error	Range of Temperature	How Obtained
1%	58-91 K	Intercomparison of the experimental values.
4%	91-154.576 K	Estimated from similar calculations on N_2.

References:

[2135] Guggenheim, E. A., J. Chem. Phys. 13, 253-61 (1945).

[536] Baly, E. C., and Donnan, F. G., J. Chem. Soc. (London) 81, 907-23 (1902).

[705] Reilly, M. L., and Furukawa, G. T., Natl. Bur. Standards,Rept. No. 3958 (1955), AD 67828.

[64400] Weber, L. A., J. Res. Natl. Bur. Standards,74A, 93 (1970).

[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards,Tech. Note 384 (Jul 1971).

[538] Jenkins, A. C., and Di Paolo, F. S., J. Chem. Phys. 25, 296-301 (1956).

[6400] Grunmach, L., Physik, Z. 7, 740-44 (1906).

[5917] Kanda, E., Bull. Chem. Soc. Japan 12, 469-72 (1937).

[11958] Kanda, E., J. Chem. Soc. Japan 58, 810-2 (1937).

[V0369] McCarty, R. D., Natl. Bur. Standards, Boulder, Colo. NBS-LN-70-7.

Sources reviewed but not used:

		562			4588	6394		7299	11582
11961	12118	13824	18192	19443	20296	22242	23196	23598	24345
24777	24780	24782	25952	25966	26744	27143	29213	29214	30020
30101	31503	33983	35720	35814	41524	43060	43328	44406	46952
48307	48404	53991	54294	55969	55972	61114	63364	64393	64565
65738	66999	66902	68344	69592					

Thermal Conductivity

Definition: The thermal conductivity coefficient of a fluid is the coefficient which relates the flux of heat caused by molecular interactions to the temperature gradient:

$$\underset{\sim}{q} = -\lambda \text{ grad } T.$$

Here $\underset{\sim}{q}$ is the flux of heat, grad T the gradient of temperature, and λ the thermal conductivity coefficient.

Discussion: The thermal conductivity of a fluid may be separated into three additive parts,

$$\lambda = \lambda_o(T) + \lambda_E(\rho, T) + \lambda_c(\rho, T)$$

where $\lambda_o(T)$ is the dilute gas contribution, $\lambda_E(\rho, T)$ is the excess or dense gas contribution, and $\lambda_c(\rho, T)$ is the enhancement in the region near the critical point. The most complete set of data is that of Ziebland and Burton [620] on which the correlations are based.

Critical Point Anomaly: A rapid increase in the thermal conductivity has been observed for other fluids in the critical region. The thermal conductivities of oxygen in the critical region were estimated by an adaptation of scaling law procedures used for hydrogen [65729] and for carbon dioxide [69728].

Tables of Values: Tabulated in Tables C-2, C-2a, C-5, and C-5a

Units	Range of Table		Table Location
mW/cm-K	54.35 - 340 K,	0.2 - 340 atm	C-2
BTU/ft-hr-°R	97.8 - 600°R,	1 - 5000 psia	C-2a
mW/cm-K, BTU/ft-hr-°R	saturation boundary		C-5, or C-5a
kW/m-°C	340 - 1300 K	1.0 - 1000 bar	see [V0357]

Graph: B-36 thermal conductivity vs temperature (isobars)

Equation: Power series representations for $\lambda_o(T)$ and $\lambda_E(\rho, T)$ are presented in [71808]. They must, however, be used with values of density.

Range of Values:

Units	Triple Point		Boiling Point		Critical Point	STP
	liquid	vapor	liquid	vapor		
mW/cm-K	1.93	0.048	1.51	0.085	∞	0.243
BTU/ft-hr-°R	0.111	0.0028	0.0876	0.00494	∞	0.014

Uncertainty: The uncertainty is approximately 3% at room temperature and 1 atmosphere pressure, rising to 5% going either down to 80 K or up to 1000 K. It may go as high as 10% in the range 1000 - 2000 K at low densities (~ 1 atmosphere pressure); between 5 to 10% for pressures between 1 - 200 atm and temperatures in the range 80 - 400 K; up to 10% for pressures greater than 200 atmospheres in the temperature range 80 - 400 K; 50% or larger in the near-critical range.

References:

[00620] Ziebland, H., and Burton, J. T. A., J. Appl. Phys. 6, 416 (1955).

[65729] Roder, H. M., and Diller, D. E., J. Chem. Phys. 52, 5928 (Jun 1970).

[69728] Sengers, J. V., and Keyes, P. H., Phys. Rev. Lett. 26, 70 (1971).

[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 384 (Jul 1971).

[70607] Technical Manual of Oxygen/Nitrogen Cryogenic Systems, Naval Air Systems Command, Washington, D. C., Rept. No. NAVAIR 06-30-501 (March 1971).

[V0357] Vasserman, A. A., Kazavchinskii, Ya. Z., and Rabinovich, V. A., Thermophysical Properties of Air and Air Components, Izdatel'stvo "Nauka", Moskva 1966, Translated from Russian by Israel Program for Scientific Translations, Jerusalem 1971.

Sources reviewed but not used:

406	446		664	617		695	717	724	784
999	3284	3479	4568	5095	5494	5505	5524	5573	5701
5889	5911	5959	5988	6011	6068	6071	6106	6151	6164
6169	6174	6217	6266	6270	6271	6275	6318	6323	6497
6738	6746	7052	8024	8313	8693	10548	10658	10731	10746
10748	10799	10844	10880	10914	11007	11010	11021	11582	11995
12018	12977	14418	14622	15484	15502	15651	16296	16317	17994
18182	18490	18843	19179	20431	21338	22828	22895	23427	24512
24777	24782	25177	25237	25293	25732	25918	25952	25963	25978
25996	26744	27514	28061	28117	28119	28263	28391	28412	28620
28679	29275	29604	30020	30030	30101	32674	32704	33120	33790
33793	33795	35627	35646	35690	35651	36397	37445	37693	37818
38582	38807	40595	40623	40658	40686	40751	40836	40827	41284
41470	41524	41904	42101	42114	43294	43534	43643	43780	44064
45227	45390	46422	46897	47426	47645	47813	47816	48307	48536
48404	48451	48521	48840	48935	50937	52382	52955	53818	54120
54225	54294	54765	55069	55224	55230	55969	55972	56303	56804
57082	57884	58223	58631	59452	59453	60181	60454	60699	61075
64026	64037	64175	64382	65407	66518	67006	67854	68992	69079
69346	69520	69605							

Eucken Factors

Definition: A simple relation exists between the viscosity and thermal conductivity of a dilute monatomic gas: the thermal conductivity, λ, is related to the viscosity by

$$\lambda = \frac{5}{2} C_v \eta \equiv \frac{15}{4} \frac{R}{M} \eta$$

where C_v is the translational specific heat, R the gas constant, M the molecular weight and η the viscosity coefficient. In general, one could write for any gas

$$\lambda = E \eta$$

where E is called the Eucken factor. A simple expression for E is

$$E = C_p + \frac{5}{4} \frac{R}{M}$$

where C_p is the specific heat at constant pressure.

Thermodynamic Diagrams

Discussion: The thermodynamic diagrams listed below are based on the PVT surfaces of Weber [64400] or Stewart [36783]. These thermodynamic diagrams have been prepared very carefully. For other figures, a primary consideration was that the graphs should show the qualitative behavior of a property; that is, the wide range dependency upon temperature and pressure.

Graph: B-3 compressibility factor Z vs log P
B-37 temperature - entropy chart
B-37a Mollier diagram (log P vs H)
B-37b pressure - enthalpy chart (supercritical)
B-37c enthalpy-entropy chart
B-37d pressure - temperature diagram
B-37e temperature - entropy chart (metric)

Uncertainty: The charts are accurate to the precision with which they can be read. For precise calculations, however, use of the tables is advised.

References:

[64400] Weber, L. A., J. Res. Natl. Bur. Standards, 74A, 93 (1970).
[36783] Stewart, R. B., Iowa Univ. Ph. D. Thesis (June 1966).
[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 384 (Jul 1971).

Sources reviewed but not used:

H-S Diagrams

6069 11102 13279 13377 16594 48307 56298 63008

P-H Diagrams

34504 43288 48307

T-S Diagrams

6497 10677 12802 12827 20384 24777 48307 48404 54226
54600 56298 63007 66249 67580

Vapor Pressure

Definition: The vapor pressure is the pressure, P(T), of a liquid and its vapor in equilibrium.

Tables of Values:

Units	Range of Table	Table Location
atm	54.35 - 154.58 K	C-5
psia	97.8 - 278°R	C-5a

A very convenient table which includes entries at integral values of atm, psia, K, and °R is published in [50791].

Graph: B-38 vapor pressure vs temperature

B-38a vapor pressure vs temperature (metric)

Equation:

$$\ln P(\text{atm}) = A_1 + A_2 T + A_3 T^2 + A_4 T^3 + A_5 T^4 + A_6 T^5 + A_7 T^6 + A_8 T^7$$

$A_1 = -62.5967185$

$A_2 = 2.47450429$

$A_3 = -4.68973315 \times 10^{-2}$

$A_4 = 5.48202337 \times 10^{-4}$

$A_5 = -4.09349868 \times 10^{-6}$

$A_6 = 1.91471914 \times 10^{-8}$

$A_7 = -5.13113688 \times 10^{-11}$

$A_8 = 6.02656934 \times 10^{-14}$, where T is in kelvins.

Range of Values:

Units	Triple Point	Critical Point
atm	0.0015	49.77
psia	0.022	731

Uncertainty: The above equation, reported by Stewart [36783], was fitted to the data of Hoge [455]. The estimated uncertainty is 0.02% from the normal boiling point to the critical point. Below the normal boiling point the uncertainty increases, reaching about 3% at the triple point. The equivalent uncertainty in temperature is 0.02 K in the range 60 - 154.58 K.

References:

[36783] Stewart, R. B., Ph.D. Thesis, Iowa Univ. (June 1966).

[455] Hoge, H. J., J. Res. Natl. Bur. Standards, 44, 321 (1950).

[50791] Roder, H. M., McCarty, R. D., and Johnson, V. J., Natl. Bur. Standards, Tech. Note 361 (Jan 1968).

Sublimation Pressures

Vapor pressures at temperatures below the triple point (54.351 K) are often called sublimation pressures. The available data are summarized in [12802], and a table of values is given in Table C-24.

[12802] Mullins, J. C., Ziegler, W. T., and Kirk, B. S., Georgia Inst. Technol., Atlanta, Tech. Rept. No. 2 (1962).

A-38

Sources reviewed but not used:

293	442	453		483	700	787	3435	3539	4183
4588	5099	5363	5397	6047	6167	6326	6403	6497	6620
6627	7396	7791	8699	8711	10196	10763	10790	10916	11568
12018	12166	12204	12248		12827	13161	13345	13379	13382
13384	13385	13463	13466	13468	13783	14072	14619	14959	15403
16067	16075	16077	16100	16597	16699	16701	16702	18003	18126
18171	18509	19185	19410	19648	19694	20034	21408	22602	22830
23400	24274	24325	24328	24777	24782	25590	25732	25952	26159
26603	27390	28076	28350	29390	29391	29499	30020	30101	30659
33116	33184	33635	33664	34471	36394		36784	36818	37444
37937	39369	39547	40527	40595	40623	41524	42101	42114	45032
45684	45780	46952	48404	49095	50447	50704	51039	51145	51945
52504	52658	52955	53354	53663	54089	54622	55969	55972	56343
56883	57398	57923	58305	61041	61246	62589	62977	63121	64767
64924	66423	66989	67569	68839	69674				

Sublimation Curve

16701 63525

Viscosity (dynamic)

Definition: The viscosity coefficient of a fluid is the coefficient which relates the flux of momentum in the fluid to the traceless symmetric part of the velocity gradient:

$$\underset{\approx}{J}(\text{mom}) = -2\eta \underset{\approx}{D}$$

where $\underset{\approx}{J}$ is the flux of momentum, $\underset{\approx}{D}$ the traceless symmetric part of the velocity gradient, and η the viscosity coefficient.

In the simpler two-dimensional case the viscosity coefficient relates proportionality between the shear stress and the velocity gradient at right angles to the direction of flow

$$R_y = -\eta \frac{\partial u}{\partial y}$$

where R_y is the shear stress, η the viscosity, and $\partial u/\partial y$ the velocity gradient.

Note: The coefficient η as defined is sometimes called the shear or dynamic viscosity.

Discussion: The viscosity of a fluid may be separated into two distinct parts which are additive,

$$\eta = \eta_o (T) + \eta_E (\rho, T),$$

where $\eta_o(T)$ is the dilute gas contribution and $\eta_E(\rho, T)$ is the excess or dense gas contribution. Unlike the thermal conductivity coefficient, the viscosity coefficient does not exhibit an enhancement in the critical region. Reliable data for the dilute gas around room temperature were taken from [374], [5093], and [11832]. Only one set of reliable data is available for the dense gas and liquid [56724] and this set has an estimated uncertainty of 5 - 10%.

Tables of Values: Tabulated in Tables C-2, C-2a, C-5, and C-5a.

Units	Range of Table		Table Location
g/cm-s	54.35 - 340 K,	0.2 - 340 atm	C-2
lb/ft-s	97.8 - 600°R,	1 - 5000 psia	C-2a
g/cm-s, lb/ft-s	saturation boundary		C-5, or C-5a
$N-s/m^2$	340 - 1300 K	1.0 - 1000 bar	see [V0357]

Graph: B-39 viscosity vs temperature (isobars)

Equation: Power series representations for $\eta_o(T)$ and $\eta_E(\rho, T)$ are presented in [71808]. They must, however, be used with values of density.

Range of Values:

Units	Triple Point		Boiling Point		Critical Point	STP
	liquid	vapor	liquid	vapor		
g/cm-s	0.00619	0.000039	0.00196	0.000068	0.000338	0.00019
lb/ft-s	0.00041	0.0000026	0.00013	0.0000046	0.0000227	0.000013

Uncertainty: The uncertainty is approximately 2% at room temperature and 1 atmosphere, rising to 5% going either down to 80 K or up to 2000 K. It is between 5 and 10% for pressures between 1 and 200 atmospheres in the temperature range 80 - 400 K, and higher; and up to 10% for pressures greater than 200 atmospheres for the same temperature range and in the critical region.

References:

[374] Wobser, R. and Müller, F., Kolloid-Beih. 52, 165 (1941).

[5093] Andrussow, L., J. chim. Phys. 52, 295 (1955).

[11832] Kestin, J. and Leidenfrost, W., Physica 25, 1033 (1959).

[56724] Grevendonk, W., Herreman, W., de Pesseroey, W. and de Bock, A., Physica, 40, 207 (1968).

[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 384 (Jul 1971).

[70607] Technical Manual of Oxygen/Nitrogen Cryogenic Systems, Naval Air Systems Command, Washington, D. C., Rept. No. NAVAIR 06-30-501 (March 1971).

[V0357] Vasserman, A. A., Kazavchinskii, Ya. Z. and Rabinovich, V. A., Thermophysical Properties of Air and Air Components, Izdatel'stvo "Nauka", Moskva 1966, Translated from Russian by Israel Program for Scientific Translations, Jerusalem 1971.

Sources reviewed but not used:

	446	450	453	538	614	614	615	700	784
940	999	1106	3284	4588	5094	5095	5573	5643	5703
5706	5711	5736	5817	5959	6111	6061	6064	6110	6151
6164	6263	6269	6272	6275	6316	6321	6384	6386	6391
6497	6738	7052	7299	8024	8645	8700	8701	9250	10436
10579	10614	10628	10673	10731	10745	10747	10748	10749	10756
10751	10753	10880	11021	11479	11487	11582		11995	12018
12078	12166	12977	13824	14978	15484	15838	16296	16317	17536
17999	19286	19617	20010	20389	21305	22828	23617	24311	24312
24313	24346	24777	24762	25177	25293	25732	25952	25963	25978
26003	26008	26019	26164	26178	26247	26438	26610	26624	26653
27461	27514	27521	28117	28129	28156	28161	28166	28411	28412
28646	28683	29275	29604	30020	30101	30659	30709	31280	31668
32704	32709	32865	33113	33790	34281	34333	34549	35627	36034
37445	37618	38568	38807	39866	40172	40405	40595	40623	40827
41524	41560	41770	41790	41904	42101	42114	42512	43092	43096
43101	43641	43643	43780	43943	44223	44756	44864	45227	45656
45995	46352	47200	47324	47333	47426	47789	47815	48297	48507
48404	48909	49935	50309	50681	50710	50970	51037	52463	52787
53818	54294	54524	54765	55069	55585	55604	55969	55972	
57082	57459	58631	58683	59452	60454	60578	60699	63115	63123
64666	64773	65035	65616	66249	66264	66563	67136	67274	67854
67867	69346	69659	69664						

Bulk Viscosity

The shear viscosity should not be confused with the bulk viscosity. The bulk viscosity relates the flow of momentum in a fluid to the divergence of the velocity. The bulk viscosity is defined by an extension of the basic equation above to

$$\underset{\approx}{J}\,(\text{mom}) = 2\eta\,\underset{\approx}{D} - \eta_v\,\underset{\approx}{I}\,\text{div}\,\underset{\sim}{u}$$

where $\underset{\approx}{I}$ is the unit tensor, div $\underset{\sim}{u}$ the divergence of the velocity of the fluid, and η_v the coefficient of bulk viscosity.

Kinematic Viscosity

Definition: The kinematic viscosity, ν, is defined by the relation

$$\nu = \eta/\rho$$

where η is the shear viscosity and ρ the density. See "viscosity," "density."

Adiabatic Compressibility

Definition: Adiabatic compressibility is defined as

$$\beta_S = -\frac{1}{V}\left(\frac{\partial V}{\partial P}\right)_S \text{. A useful relation is } \beta_S = \frac{C_v}{C_p}\beta_T$$

where β_T is the isothermal compressibility.

Tables of Values: This quantity is not tabulated, but it may be obtained by means of the relationship

$$\beta_S = 1/\rho W^2$$

where ρ is density and W is sound velocity, from the following tables.

Units	Range of Table	Table Location
atm^{-1}	54.35 - 340 K, 0.2 - 340 atm	C-2
$psia^{-1}$	97.8 - 600°R, 1 - 5000 psia	C-2a
atm^{-1}, $psia^{-1}$	saturation boundary	C-5, or C-5a
atm^{-1}	340 - 3000 K, 0.01 - 100 atm	see [453]

Graph: None

Equation: None

Range of Values:

Units	Triple Point		Boiling Point		Critical Point	STP
	liquid	gas	liquid	gas		
atm^{-1}	5.8×10^{-5}	474	1.1×10^{-4}	0.71	∞	0.72
$psia^{-1}$	3.9×10^{-6}	32.2	7.5×10^{-6}	0.048	∞	0.049

Uncertainty: The uncertainty in the compressed liquid varies between 2% at low pressures to 4% at high pressures; in the gas, well above the critical temperature, it is 1%. In the near critical region ($T_c \pm 1\%$, $\rho_c \pm 20\%$) the uncertainties are undoubtedly larger; however, they are not experimentally defined as the property diverges at the critical point.

References:

[64400] Weber, L. A., J. Res. Natl. Bur. Standards, 74A, 93 (1970).

[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 384 (Jul 1971).

[453] Hilsenrath, J., Beckett, C. W., Benedict, W. S., et al., Natl. Bur. Standards, Circ. 564 (1955).

Sources reviewed but not used:

See page A-2.

Mixture Properties

Properties of mixtures of oxygen with other fluids are not given in detail in this report. Air is the most prevalent mixture involving oxygen. A recent bibliography which focuses on the low temperature properties of air contains 604 entries, Hall (1969) [62844]. This report also contains 28 papers on the properties of air at high temperatures. Other sources containing good technical information on air are [453] and [V0357].

Information on mixtures of oxygen with fluorine are contained in NASA SP 3037 [45227] which includes approximately 200 references.

Information on mixtures of oxygen with fluids other than nitrogen or fluorine can be retrieved by reference to the other component from the listings under "Additional References" below.

The terms excess properties or excess thermodynamic properties are included here because terms such as excess volume, excess enthalpy, etc., are often used in mixture problems. The various types of phase equilibria, such as liquid-vapor equilibrium, are included because it is in these papers that much experimental mixture data for cryogenic fluids are reported. In this context, terms such as liquid-vapor equilibrium refer to the phases of mixtures, not to the phases of a single component.

References:

[62844] Hall, L. A., Natl. Bur. Standards, Tech. Note 383 (Oct 1969).

[453] Hilsenrath, J., Beckett, C. W., Benedict, W. S., et al., Natl. Bur. Standards, Circ. No. 564 (1955).

[V0357] Vasserman, A. A., Kazavchinskii, Ya. Z., and Rabinovich, V. A., Thermophysical Properties of Air and Air Components, Izdatel'stvo "Nauka", Moskva 1966, Translated from Russian by Israel Program for Scientific Translations, Jerusalem 1971.

[45227] Schmidt, H. A., NASA SP-3037 (1967).

Additional References:

Excess Properties

16067 16841 24346 29057 29102 31496 35814 37444 41601 43547
46281 47221 47225 47776 53664 54898 63075 64054 66093 67006
69342 69498 69684 69776

Liquid-Solid Equilibrium

5492 5733 5735 10908 13110 19255 25312 29390 30112 34413
35810 52003 60576

Liquid-Vapor Equilibrium

373	379	929	958	5516	6215	6243	6349	6352	6627
8064	8711	8906	9078	11494	11645	11717	12373	12381	12394
12441	12479	17110	13135	13379	13384	15297	16156	16628	16699
16841	16945	16846	17013	17155	18981	19378	19620	19956	20074
20135	23400	23908	26159	27389	29390	30388	34619	35303	36394
38354	39337	43238	43796	44245	46883	48306	49095	50665	50723
53354	54490	58982	60347	60362	62792	63177	64373	64787	65012
65030	67158	67351	68675						

Other Equilibria

235	348	483	5033	6497	11900	11995	12079	12704	13009
13377	14766	16067	16694	24342	25358	26564	31305	31310	31346
31669	33230	33662	33717	37444	41557	41601	43194	51039	54213
58317	63219	67015	69006	69568	69776				

Phase Separation

36394	61417	61990

Solid-Solid Equilibrium

482	527	802	4588	5525	6074	6173	6398	10389	12827
13468	15643	18180	18454	18515	22450	22338	23260	24243	24506
31446	32104	32394	33610	34413	34455	37441	37839	38815	45104
	46279	46647	47536	47822	48213	48428	48790	49350	52003
53150	56300	58545	58877	59674	60576	60865	62001	62497	62941
68937									

Solid-Vapor Equilibrium

11385	12854	17013	23909	29390	63560

Solubility

236	771	5363	5513	5515	5716	5998	6252	7125	7650
12215	12381	12853	12895	13293	14325	16075	19255	19791	20499
20914	21756	21436	23359	24730	25359	26454	29209	29232	31310
31669	33844	34351	34457	38365	39363	40179	40404	40801	44424
45137	52752	54087	54089	55393	56305	57104	57331	57491	58731
59497	60923	60884	63075	63219	64078	64946	64947	66821	66902
67352	67749	67877	67942	69085					

Infrared Absorption (see also A-31)

Definition: The spectral absorption coefficient k of a medium is the fractional reduction in the intensity I of radiation per unit path length in passing through a homogeneous region of that medium, i.e. if the direction of propagation is along the z axis then

$$dI/I = - k\, dz, \text{ or, in integral form, } I = I(0) \exp(-kz).$$

Absorption Bands: k is for most gases a strong function of frequency, being zero over large ranges and sharply peaked in certain bands. For gaseous oxygen in the infrared there are four bands:

i) The pure rotational band which at room temperature peaks at a wavenumber (wavenumber = 1/wavelength) of 110 cm^{-1} and has a half width at half intensity of 75 cm^{-1} [V0360],

ii) The fundamental vibration-rotation band centered at 1556 cm^{-1} with a half width of 75 cm^{-1} [V0361],

iii) The first overtone band centered at 3088 cm^{-1} with a half width of 80 cm^{-1} [V0361],

iv) The "atmospheric bands" centered at 7900 and 9400 cm^{-1}. The half widths of these bands approach 100 cm^{-1} [63399].

Absorption in the liquid state closely resembles that of the gas [65842], [22450]. For a complete account of the spectroscopy of the O_2 molecule, including higher frequencies and the microwave spectra, see [V0362].

Graphs: B-42 rotational band
B-42a fundamental band

Density Dependence: For all four bands mentioned it has been established that the integrated absorption coefficient is proportional to the square of the density up to about 100 times S. T. P. density.

Uncertainty: Uncertainty varies with frequency but a typical conservative estimate is 5%.

References:

[V0360] Bosomworth, D. R., and Gush, H. P., Can. J. Phys. 43, 751 (1965).

[V0361] Shapiro, M. M., and Gush, H. P., Can. J. Phys. 44, 949 (1966).

[63399] Tabisz, G. C., Allin, Elizabeth, and Welsh, H. L., Can. J. Phys. 47, 2859 (1969).

[65842] Jones, M. C., Natl. Bur. Standards, Tech. Note 390 (1970).

[22450] Smith, A. L., Keller, W. E., and Johnston, H. L., Phys. Rev. 79, 728 (1950).

[V0362] Krupenie, P. H., The Spectrum of Molecular Oxygen, N. B. S. Monograph, to be published.

Sources reviewed but not used:

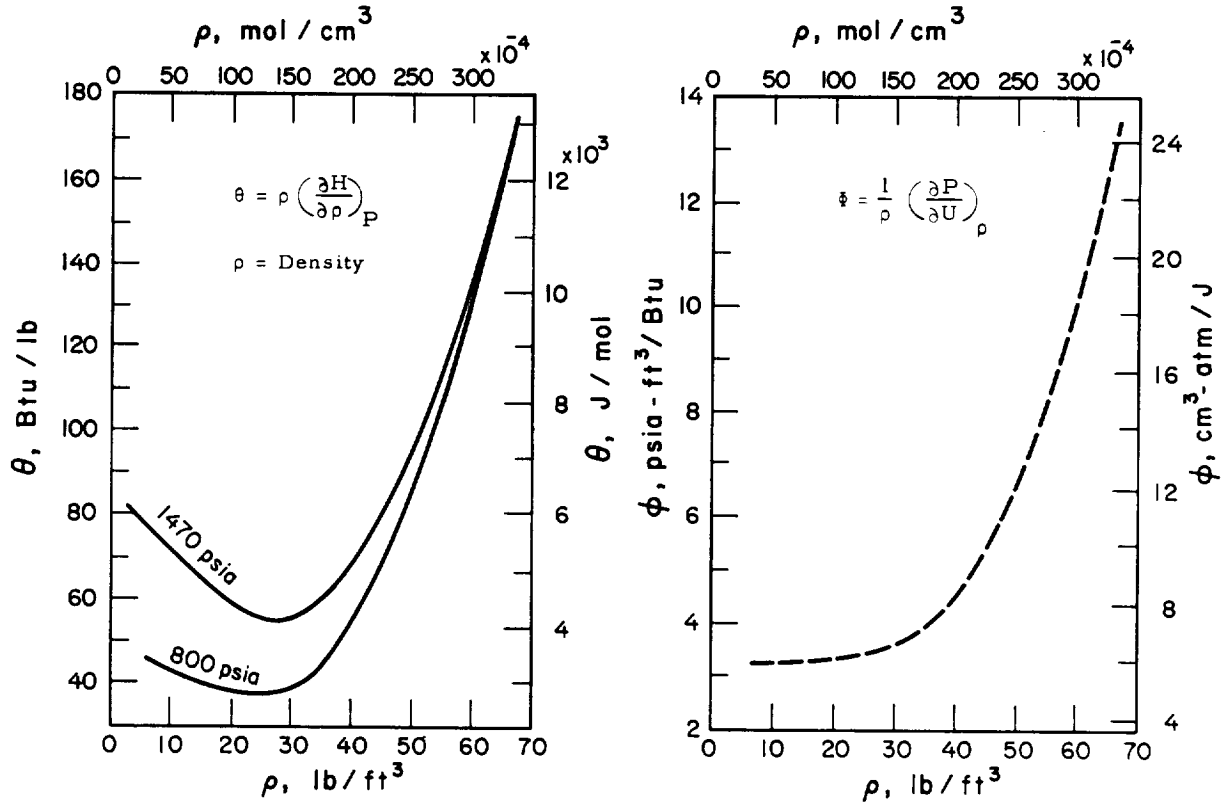
897	1086	5526	5655	5658	10481	11455	17958	22447	22448
22449		22451	23247	25685	29216	29238	30753	30775	32594
32817	34447	34457	37441	38041	38130	46125	46266	46286	51189
52207	53036	53934	57075	58362	58454	58877	59674	60528	61466
62497	62536	63296	63398		64547	65267		66347	68057

Heat Transfer and Pressurization Parameters

A number of thermodynamic expressions have become convenient for the engineer to use in dealing with the storage and transfer of liquefied gases. Tabulations for four such parameters for oxygen have been included in this Handbook. They are:

Specific heat input (commonly symbolized by θ)	$V\left(\frac{\partial H}{\partial V}\right)_P = \rho C_p \left[\left(\frac{\partial P}{\partial \rho}\right)_T / \left(\frac{\partial P}{\partial T}\right)_V\right]$
Energy derivative (commonly symbolized by Φ)	$V\left(\frac{\partial P}{\partial U}\right)_V = \frac{V}{C_v}\left(\frac{\partial P}{\partial T}\right)_V$
Isothermal bulk modulus (commonly symbolized by α)	$V\left(\frac{\partial P}{\partial V}\right)_T = -\rho\left(\frac{\partial P}{\partial \rho}\right)_T$
Volume expansivity (commonly symbolized by β)	$\frac{1}{V}\left(\frac{\partial V}{\partial T}\right)_P = \frac{1}{\rho}\left(\frac{\partial P}{\partial T}\right)_\rho / \left(\frac{\partial P}{\partial \rho}\right)_T$

Discussion: Specific heat input, θ (sometimes referred to as dQ/dM, heat input per increment of mass) is frequently expressed in terms of density instead of specific volume, i.e., $\rho(\partial H/\partial \rho)_P$. It is the amount of heat required to expel a unit mass of fluid from a storage vessel. The units are the same as those for enthalpy: BTU/lb or J/mol. Below is a sketch indicating the heat required at various densities for two choices of working pressure.



Energy derivative, Φ, is also frequently expressed in density by substituting $1/\rho$ for V. Typical units are psia-ft^3/BTU or atm-cm^3/J. This parameter is often used in conjunction with the specific heat input, θ, to determine expulsion rates from rigid containers (see reference [37158]). Φ has a weak pressure dependence, which, if neglected, can be illustrated as in the sketch (dashed line) for various densities.

Isothermal bulk modulus, α, likewise is frequently expressed in density: $-\rho(\partial P/\partial\rho)_T$ with the usual units of psia or atm. It is the reciprocal of isothermal compressibility $-(\partial V/\partial P)_T/V$ and is a convenient factor to use in certain engineering calculations.

Volume expansivity, β, often called simply expansivity or constant pressure expansion, is separately described in data sheet A-47. Units are K^{-1} or $°R^{-1}$. A related expression is the constant pressure expansion coefficient, $T(\partial V/\partial T)_P/V$, but values for this latter expression have not been tabulated and are not as widely used. (See data sheets A-2 and A-4).

Tables of Values: These parameters are tabulated in Tables C-2, C-2a, C-5 and C-5a as follows:

Parameter	Units	Range of Table	Table Location
$\theta = V(\partial H/\partial V)_P$	J/mol BTU/lb	54.35 - 340 K, 0.2 - 340 atm 97.8 - 600°R, 1 - 5000 psia saturation boundary	C-2 C-2a C-5 or C-5a
$\Phi = V(\partial P/\partial U)_V$	atm-cm^3 psia-ft^3/BTU		
$\alpha = -V(\partial P/\partial V)_T$	atm psia		
$\beta = (\partial V/\partial T)_P/V$	K^{-1} $°R^{-1}$		

Graphs: None.

Equations: None except as shown above.

Range of Values:

Parameter	Units	Triple Point liquid	Triple Point vapor	Boiling Point liquid	Boiling Point vapor	Critical Point	STP
θ	J/mol	15,875	1582	12,400	2508	(2250)	7980
	BTU/lb	213.4	21.3	166.7	33.7	(30.3)	107.3
Φ	atm-cm^3/J	26.75	3.94	20.78	3.98	0*	3.92
	psia-ft^3/BTU	14.63	2.16	11.37	2.18	0*	2.15
α	atm	-11,603	-0.0015	-5018	-0.96	0	-1.0
	psia	-170,514	-0.022	-73,740	-14.2	0	-14.7
β	K^{-1}	0.00336	0.0184	0.00438	0.0123	∞	.00368
	$°R^{-1}$	0.00186	0.0102	0.00243	0.00682	∞	.00204

* Not conclusive; may be finite but small value instead of 0.

Uncertainty: The uncertainties for each parameter are estimated as follows:

Parameter	Compressed Liquid	Gas and Supercritical Fluid
θ	2% - 3%	2%
Φ	2%	1%
α	2% - 4%	1% - 2%
β	2% - 3%	1% - 2%

References:

[64400] Weber, L. A., J. Res. Natl. Bur. Standards, 74A, 93 (1970).

[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 384 (Jul 1971).

[37158] Forester, C. K., Adv. in Cryo. Engrg., Vol. 12, Paper B-6; 82-91 (1967).

Sources Reviewed but not Used:

For Specific Heat Input: [56461], [V0366].

For Energy Derivative: None.

For Isothermal Bulk Modulus: See sheet A-2.

For Volume Expansivity: See sheet A-47.

Thermal Transpiration

Definition: Thermal transpiration is the phenomenon of the flow of a gas at very low pressures through a capillary tube under the influence of a temperature gradient. In a closed system, with a constant temperature gradient, a steady state pressure difference will be established across the ends of the tube provided the mean free path of the gas is about equal to, or larger than, the diameter of the tube.

Thermomolecular pressure difference: If, at the steady state, the pressures at the ends of the tubes are p_H and p_C, corresponding to temperatures of T_H and T_C, then

$$\frac{p_H}{p_C} = \sqrt{\frac{T_H}{T_C}} \quad .$$

The subscripts H and C refer to hot and cold respectively.

Strictly speaking, this equation only holds in the limit of zero gas pressure. At higher pressures it has to be modified. Note, however, that the thermal transpiration phenomenon is an apparatus effect. Therefore, correction coefficients to the equation should not be reported for a gas/apparatus system.

Reference:

[36386] Bennett, M. J., and Tomkins, F. C., Trans. Faraday, Soc., 57, 185 (1957).

Sources reviewed but not used:

Thermal Transpiration

47378 57490 58491 65563

Thermomolecular Pressure Ratio

None

Free Energy

Definition: The Gibbs free energy, G, is defined as G = H-TS, where H is enthalpy, T is absolute temperature and S is entropy. Similarly the Helmholtz free energy, F, is F = U-TS, where U is internal energy.

Tables of Values: These quantities are not tabulated but may be simply obtained, using the formulae above, from the following tables.

Units	Range of Table		Table Location
J/mol	54.35 - 340 K,	0.2 - 340 atm	C-2
BTU/lb	97.8 - 600°R,	1 - 5000 psia	C-2a
J/mol, BTU/lb	saturation boundary		C-5, or C-5a
reduced, by (1/RT)	340 - 3000 K,	0.01 - 100 atm	see [453]
kJ/kg	340 - 1300 K,	0.25 - 1000 bar	see [V0357]

Graph: None

Equation: None

Range of Values: The reference state for the Gibbs Free Energy is the ideal gas at one atmosphere pressure and zero absolute temperature (see A-19).

Units	Gibbs Free Energy			
	Triple Point	Boiling Point	Critical Point	STP
J/mol	-9831	-12753	-19730	-47340
Btu/lb	-132.1	-132.1	-265.1	-636.1

Uncertainty: The uncertainty varies from about 0.5 J/mol in the low density limit to about 15 J/mol in the liquid.

References:

[64400] Weber, L. A., J. Res. Natl. Bur. Standards,74A, 93 (1970).

[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards,Tech. Note 384 (Jul 1971).

[453] Hilsenrath, J., Beckett, C. W., Benedict, W. S., et al., Natl. Bur. Standards,Circ. No. 564 (1955).

[V0357] Vasserman, A. A., Kazavchinskii, Ya. Z., and Rabinovich, V. A., Thermophysical Properties of Air and Air Components Izdatel'stvo,"Nauka", Moskva 1966, Translated from Russian by Israel Program for Scientific Translations, Jerusalem 1971.

Sources reviewed but not used:

562	790	2637	4588	5493	6079	8579	8680	10742	10752
11940	15386	15740	16067	17166	27045	27513	31436	31500	37362
47225	50723	53664	58305	62629	67375	64054	65093	69776	

A-46

Heats of Transition

Definition: A heat of transition is the energy associated with a change of phase or a change in solid structure. Besides the liquid and gas phases, oxygen has three solid phases. The various transitions and their associated latent heats are summarized below.

Graph: B-25 heat of vaporization vs T

Equation: None

Range of Values:

Transition	Temperature (K)	Heat of Transition (J/mol)
normal boiling point	90.18	6812 ± 7
melting point (1 atm)	54.351	444.8 ± 1.3
β-α solid-solid	43.8	743.1 ± 2.1
γ-β solid-solid	23.7	93.8 ± 0.4

Uncertainty: See above.

References:

[527] Giauque, W. F., and Johnston, H. L., J. Am. Chem. Soc. 51, 2300 (1929).

[64400] Weber, L. A., J. Res. Natl. Bur. Standards, 74A, 93 (1970).

Sources reviewed but not used:

18180 32104 41524 45104 45227 52701 66479

Volume Expansivity

Definition: The volume expansivity is defined as

$$\beta = \frac{1}{V} \left(\frac{\partial V}{\partial T}\right)_P .$$

Volume expansivity is often simply called expansivity or coefficient of volume expansion. The property is one of the compressibilities of a gas, where here the path (condition) of the compression is at constant pressure.

Tables of Values: This quantity is tabulated in Tables C-2, C-2a, C-5, and C-5a.

Units	Range of Table	Table Location
K^{-1}	54.35 - 340 K, 0.2 - 340 atm	C-2
$°R^{-1}$	97.8 - 600°R, 1 - 5000 psia	C-2a
K^{-1}, $°R^{-1}$	saturation boundary	C-5, or C-5a

Graph: None

Equation: None

Range of Values:

Units	Triple Point		Boiling Point		Critical Point	STP
	liquid	vapor	liquid	vapor		
K^{-1}	0.00336	0.0184	0.00438	0.0123	∞	0.00368
$°R^{-1}$	0.00186	0.0102	0.00243	0.0068	∞	0.00204

Uncertainty: The uncertainty in the compressed liquid is 2-3%; in the gas and supercritical fluid, 1-2%. In the near critical region (T_c ± 1%, ρ_c ± 20%) the uncertainties are undoubtedly larger; however, they are not experimentally defined as the property diverges at the critical point.

References:

[64400] Weber, L. A., J. Res. Natl. Bur. Standards, 74A, 93 (1970).

[71808] McCarty, R. D., and Weber, L. A., Natl. Bur. Standards, Tech. Note 384 (Jul 1971).

Sources reviewed but not used:

4588 5215 7324 11029 16120 17018 22566 25955 28057 30131
31496 41600 62898

Miscellaneous Properties

Included in this section are a number of properties which have not been discussed on one of the preceding descriptive sheets. The various terms originate in the Cryogenic Fluids Safety Grid. To provide a starting point for those who need information,the pages that follow present an abbreviated bibliography. The numbers given are Cryogenic Data Center accession numbers. In general, the papers listed in this section have not been reviewed to see if they are appropriate to the subject, nor have they been processed for entry into the ASRDI system. The exception to this is if the papers were processed for entry into the ASRDI system under some other properties term. For example, several papers under electrical properties were considered under the subject of electrical conductivity.

Alpha Radiation

62414

Crystal Structure

11797 11798 11808 11823 15188 18454 23260 27806 27836 41051
46647 59563 62414

Debye Constant

6300 27.55 58585 62011

Diffraction

62414

Dispersion

3681 19279 19292 19444 28155 29497 31671 31936 49785 63017

Electrical Properties

795 7735 23765 37922 43582 51485 51486 64978

Electron Diffraction

27806 47822 61148 62941

Electron Radiation

34457

Emissivity

36753

ESR

65064

Gamma Radiation

11778 13197 50319

Ionization Potential

33474 38065 43582 43855 44084 48576 53755 64978 67015

Irradiation

58213

Lattice Parameter

11808 11823 15188 18454 24243 27816 27836 34413 45107 45870
48219 48790 52003 61148

Liquid Structure

43328 57459 62956

Magnetic Properties

12626 25557 27388 36046 38868 41051 45870 46897 53037 55541
63993 66886 68784

Magnetic Susceptibility

527 994 1355 1656 5490 6074 6173 13880 24838 24839
35720 56500 60107

Magnetization

527 994 1355 1656 5490 6074 6173 13880 24838 24839
35720 56500 60107

Neutron Diffraction

533 11378 24243 27836 38868 41051 48790 59563

Neutron Radiation

NONE

NMR

NONE

Nuclear Properties

32822

Optical Properties

795 19279 19444 23449 26753 29497 33745 36822 40226 43855
49928 51646 52336 55592 56759 56841 57964 59401 59545 61724
63017 63023 65278 65466 65734 68916

A-99

Reflectance

67053

Solid Density

1130 4588 5215 10389 11838 11823 12802 12827 21824 23427
31446 38807 40627 48219 52701 63625

Solid State Properties

38868 47922 49350 52336 62341 63017 65278

Specific Impulse

7248 7948 11112 11284 12033 14939 20299 42101

Spectroscopy

1086 5718 6168 8683 10481 31495 43200 47639 55500

Surface Energy

6337 19443

Transmittance

NONE

Vibrational Properties

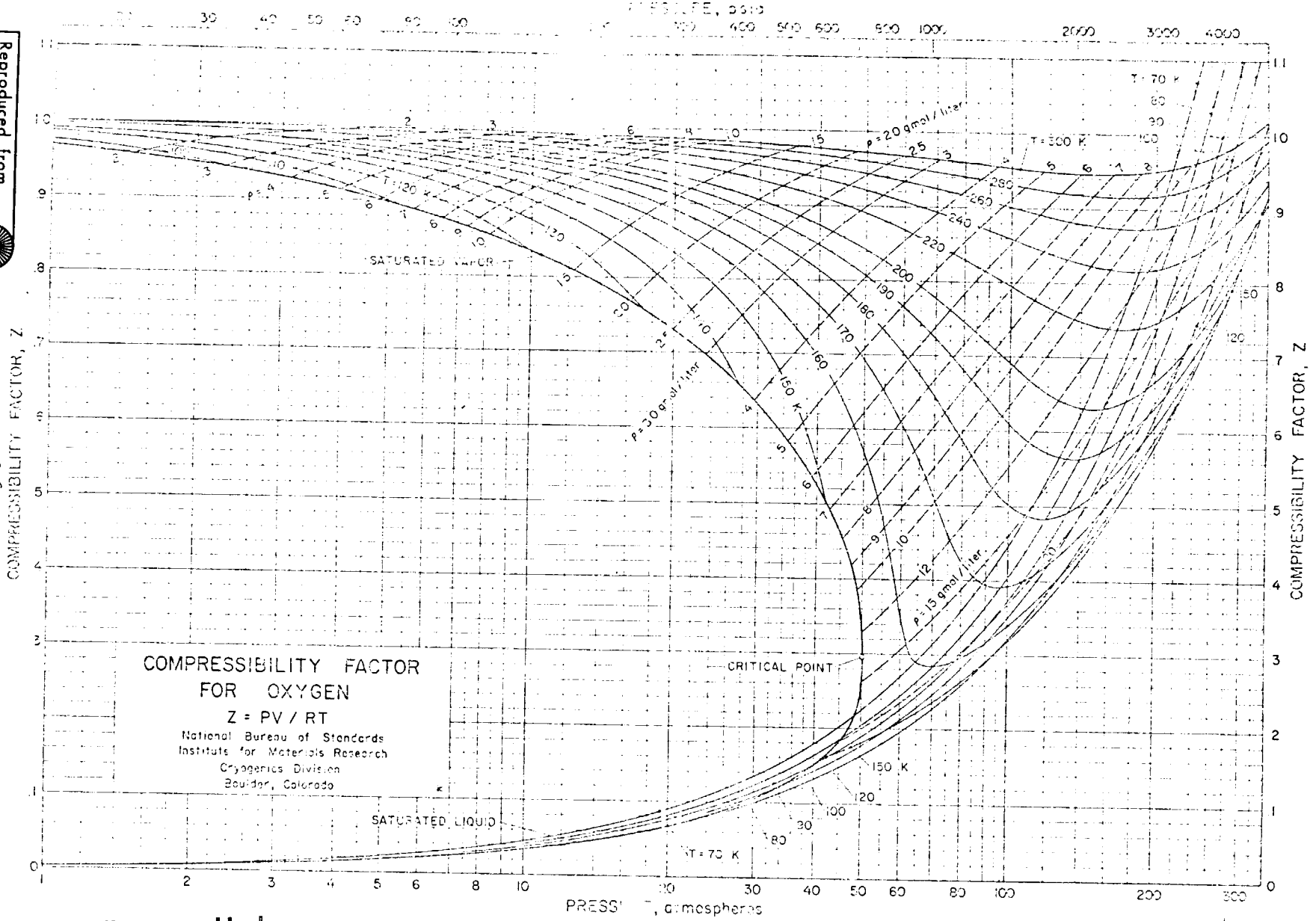
4591 20288 28694 31654 31671 32822 47378 48186 49785 60154
60181

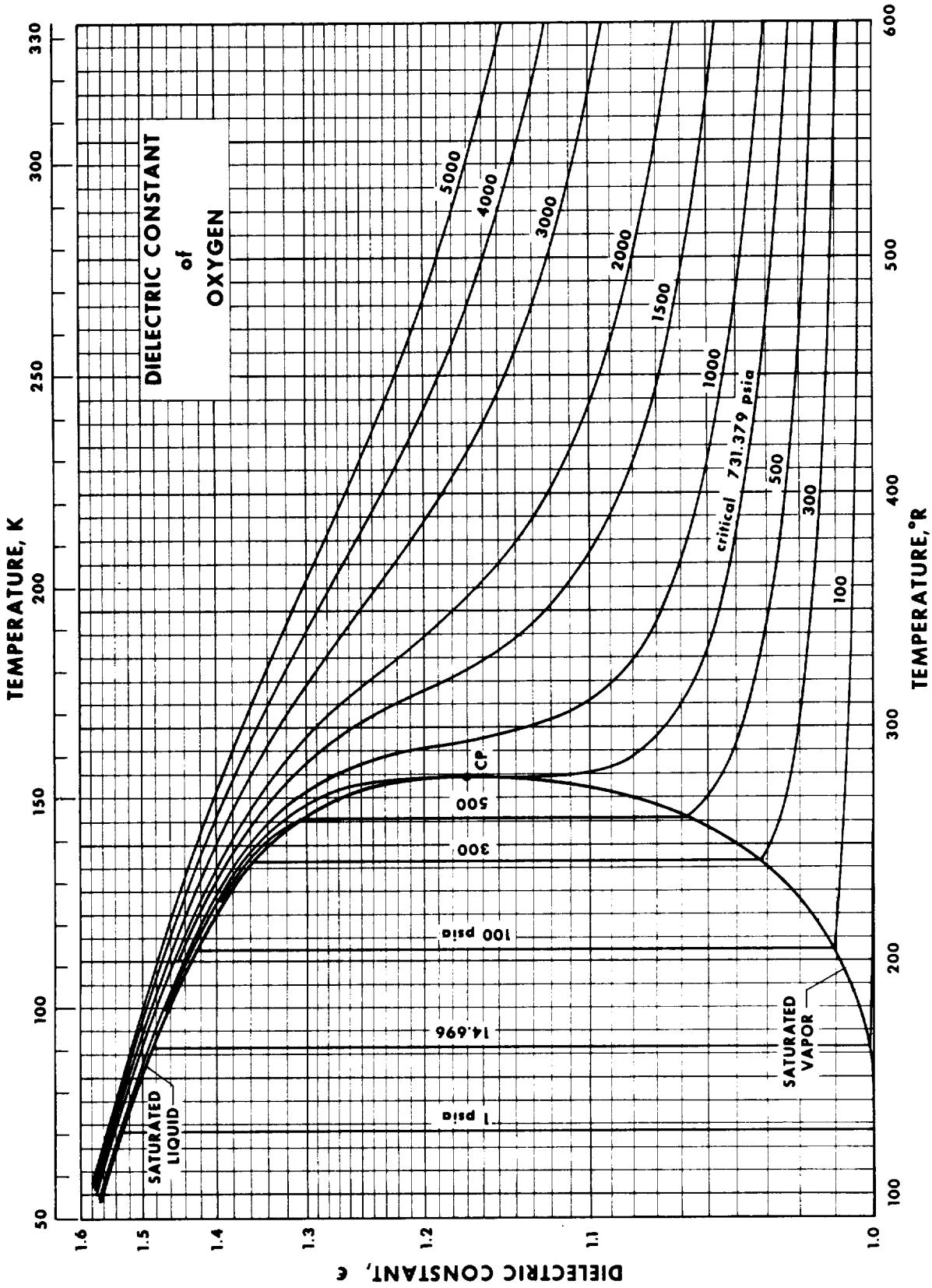
X-Ray Diffraction

18454 23055 23449 28645 45107 45870 48219 52003 62956 68948

8. Section B, Figures

LIST OF FIGURES





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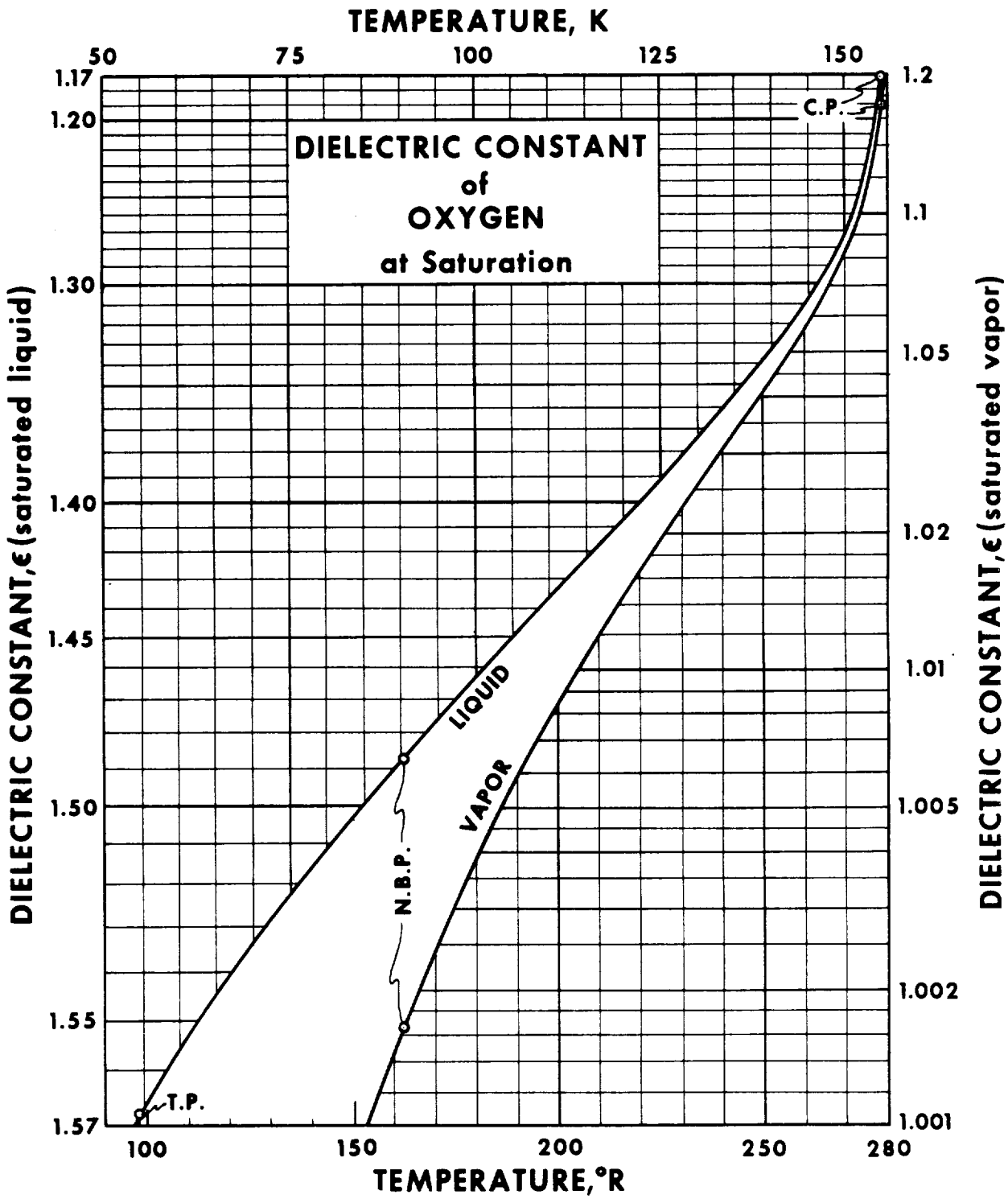
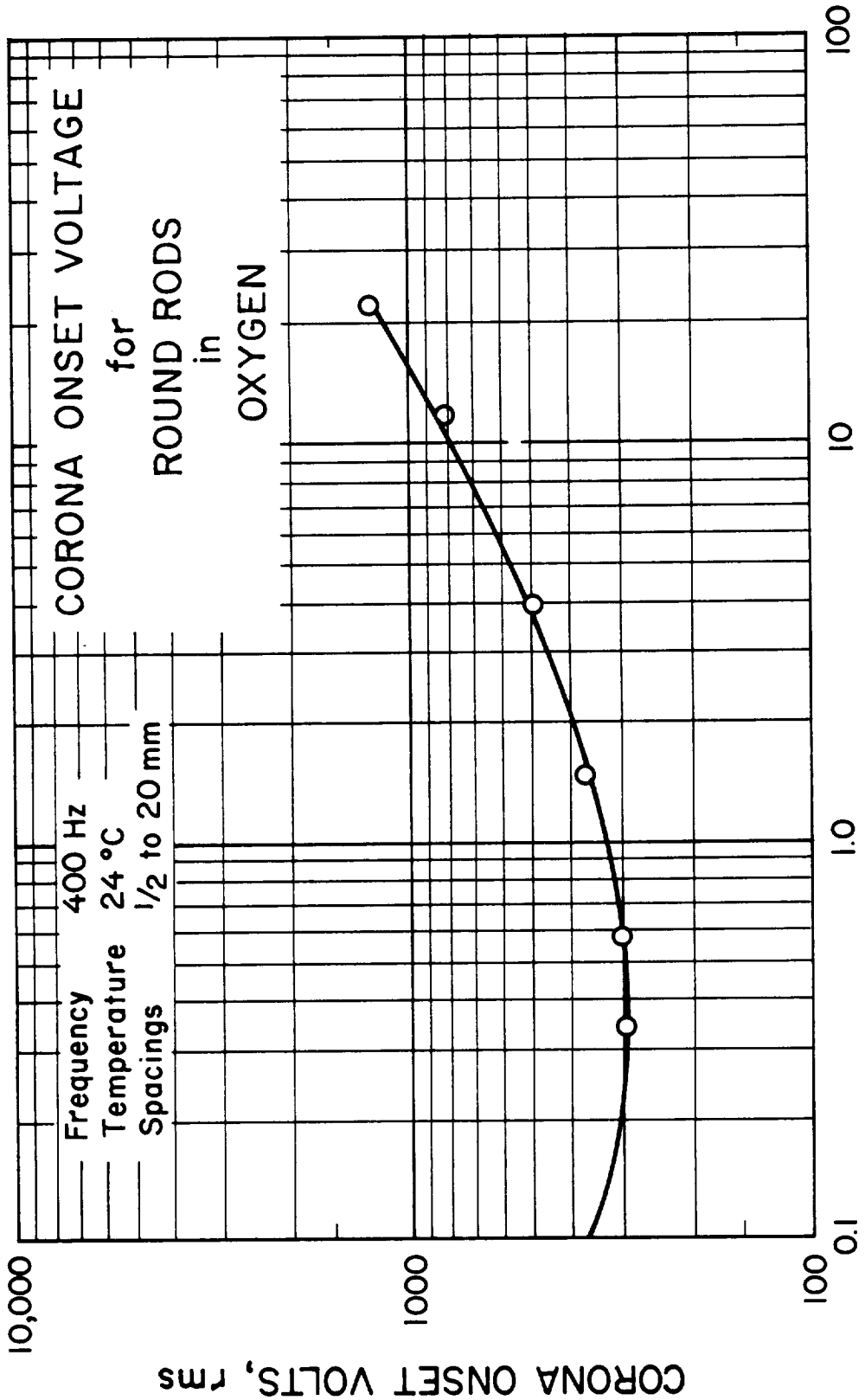
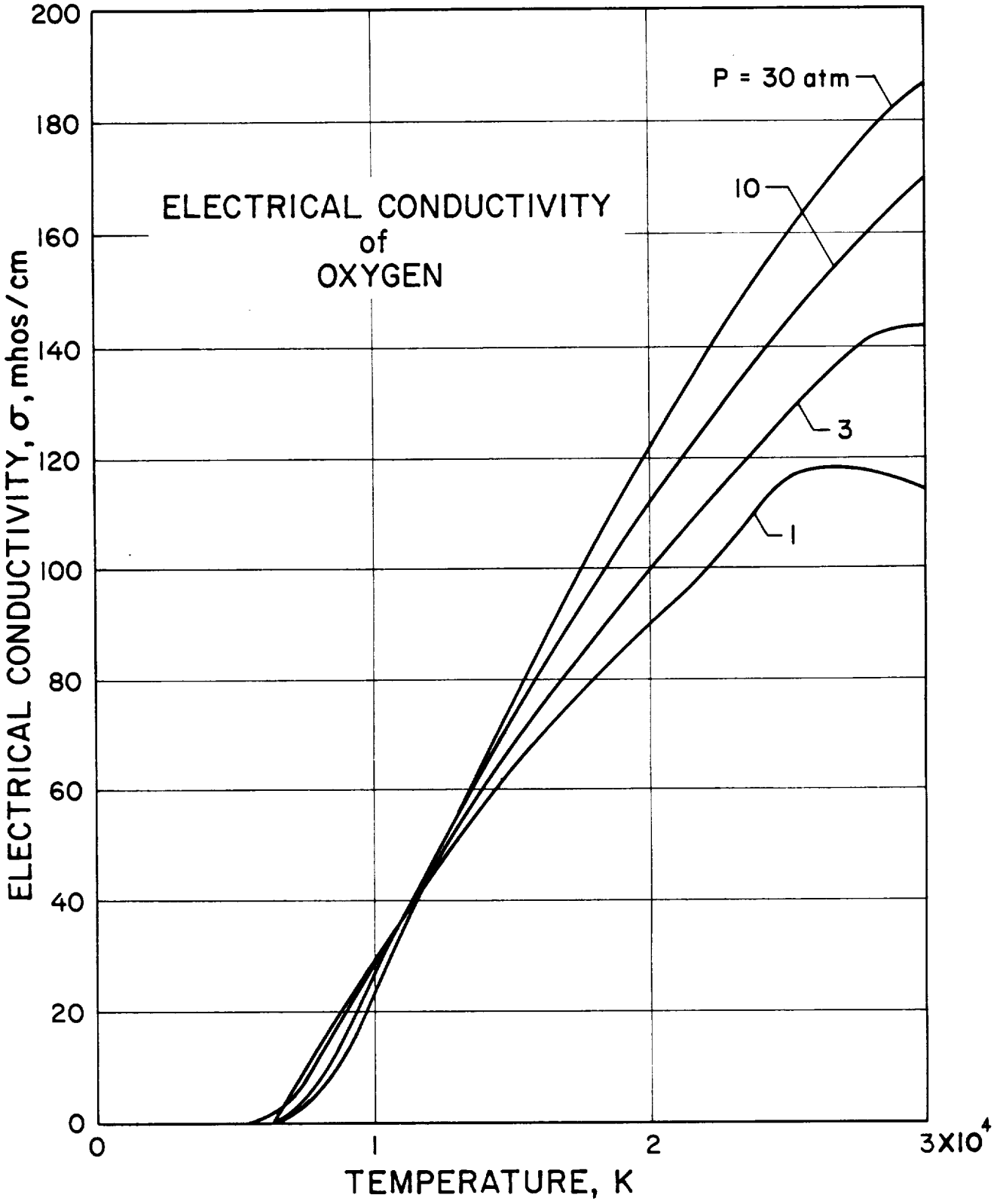
B-5a


TEMPERATURE, K
50
75
100
125
150
1.17
1.20
1.30
1.40
1.45
1.50
1.55
1.57
1.2
1.1
1.05
1.02
1.01
1.005
1.002
1.001
DIELECTRIC CONSTANT
of
OXYGEN
at Saturation
C.P.
LIQUID
VAPOR
N.B.P.
T.P.
DIELECTRIC CONSTANT, ε (saturated liquid)
DIELECTRIC CONSTANT, ε (saturated vapor)
100
150
200
250
280
TEMPERATURE, °R

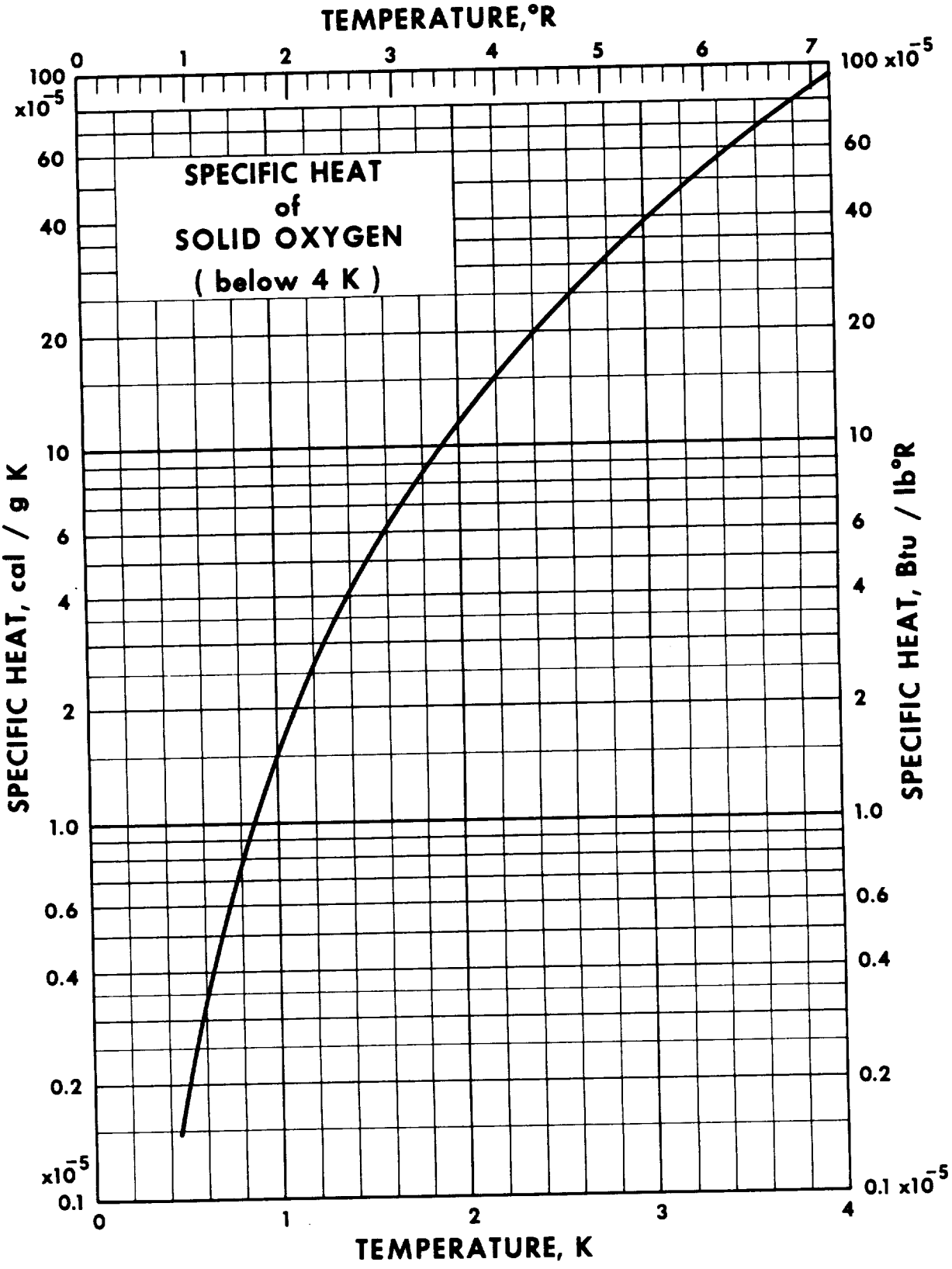

CORONA ONSET VOLTAGE
for
ROUND RODS
in
OXYGEN
Frequency 400 Hz
Temperature 24 °C
Spacings 1/2 to 20 mm
CORONA ONSET VOLTS, rms
10,000
1000
100
0.1
1.0
10
100
PRESSURE TIMES SPACING, torr cm

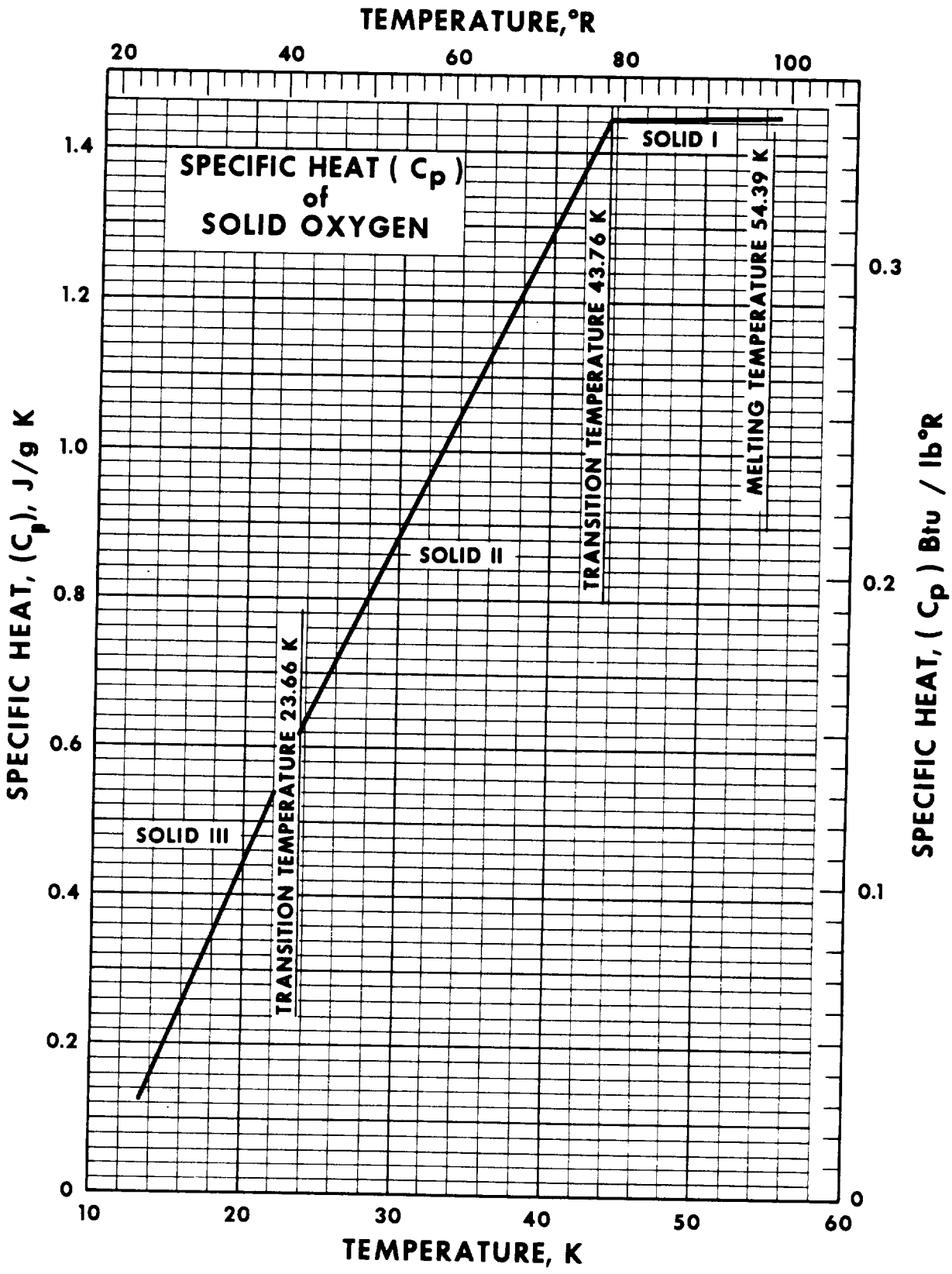
B-8a

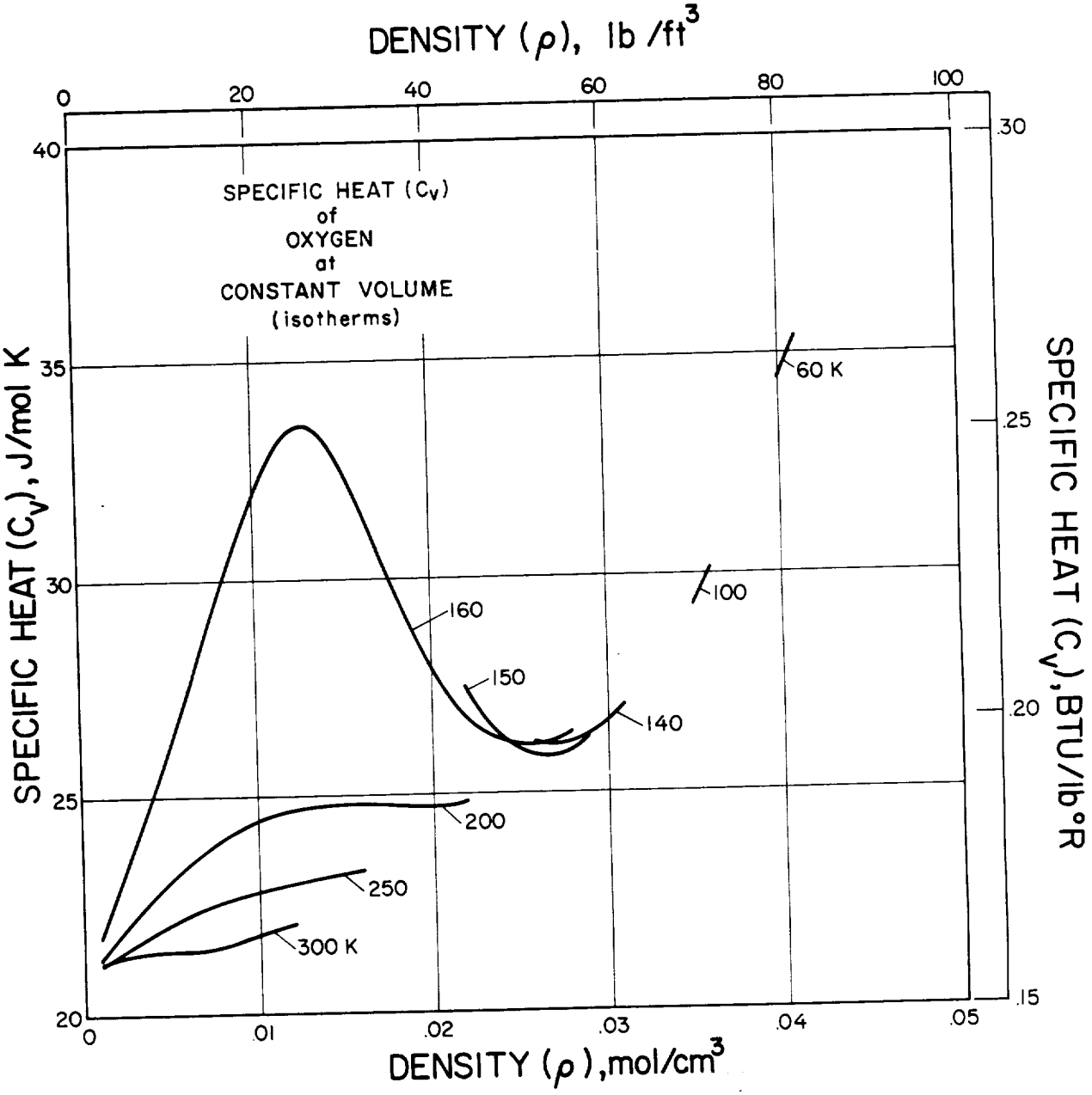

ELECTRICAL CONDUCTIVITY
of
OXYGEN
P = 30 atm
10
3
1
ELECTRICAL CONDUCTIVITY, σ, mhos/cm
TEMPERATURE, K
0
20
40
60
80
100
120
140
160
180
200
0
1
2
3X10^4

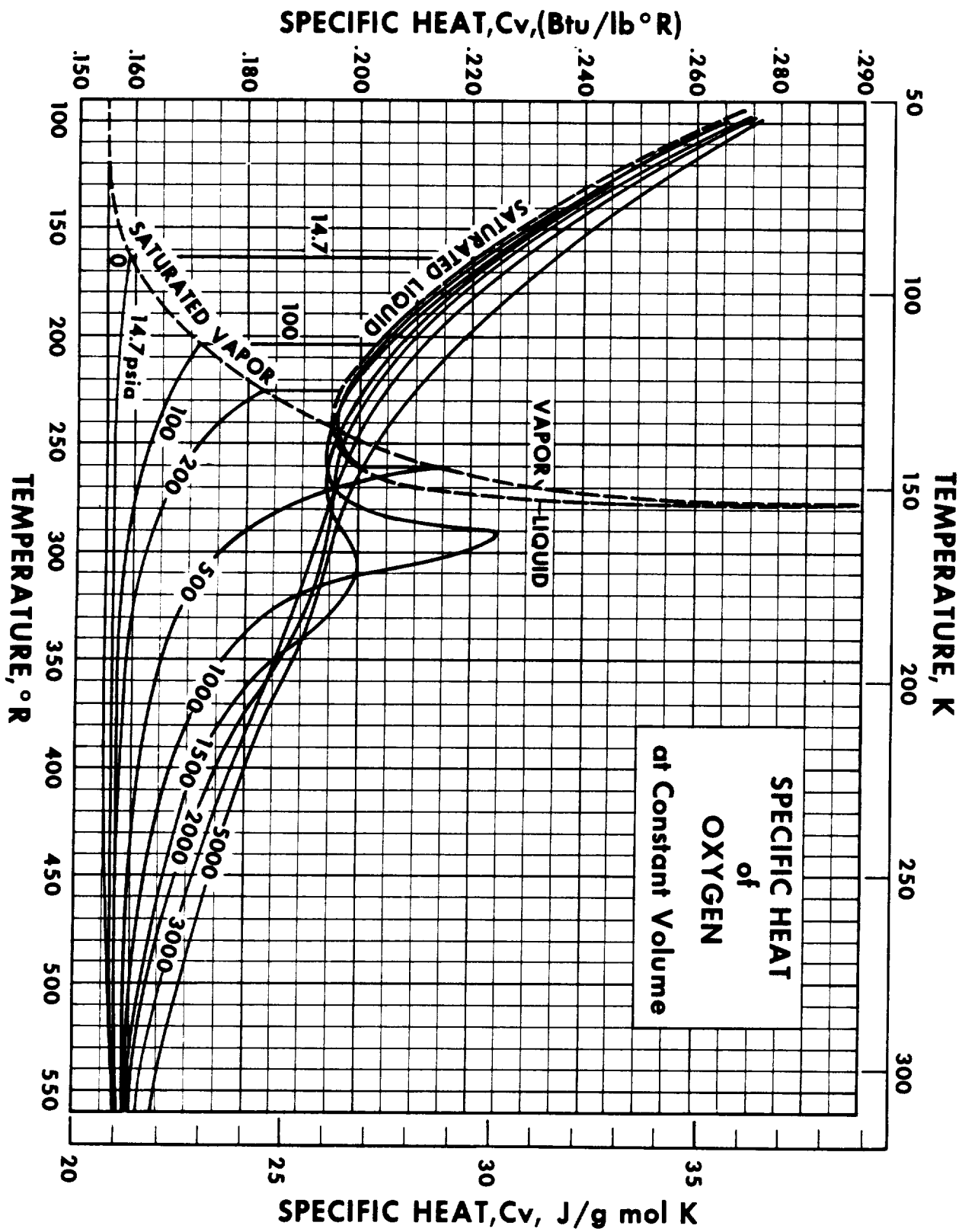
SPECIFIC HEAT
of
OXYGEN
at Constant Pressure
SPECIFIC HEAT, Cp, J/g mol K
SPECIFIC HEAT, Cp, (Btu/lb °R)
TEMPERATURE, K
TEMPERATURE, °R
SATURATED LIQUID
SATURATED VAPOR
14.7 psia
0
100
200
500
1000
1500
2000
3000
5000

B-15a

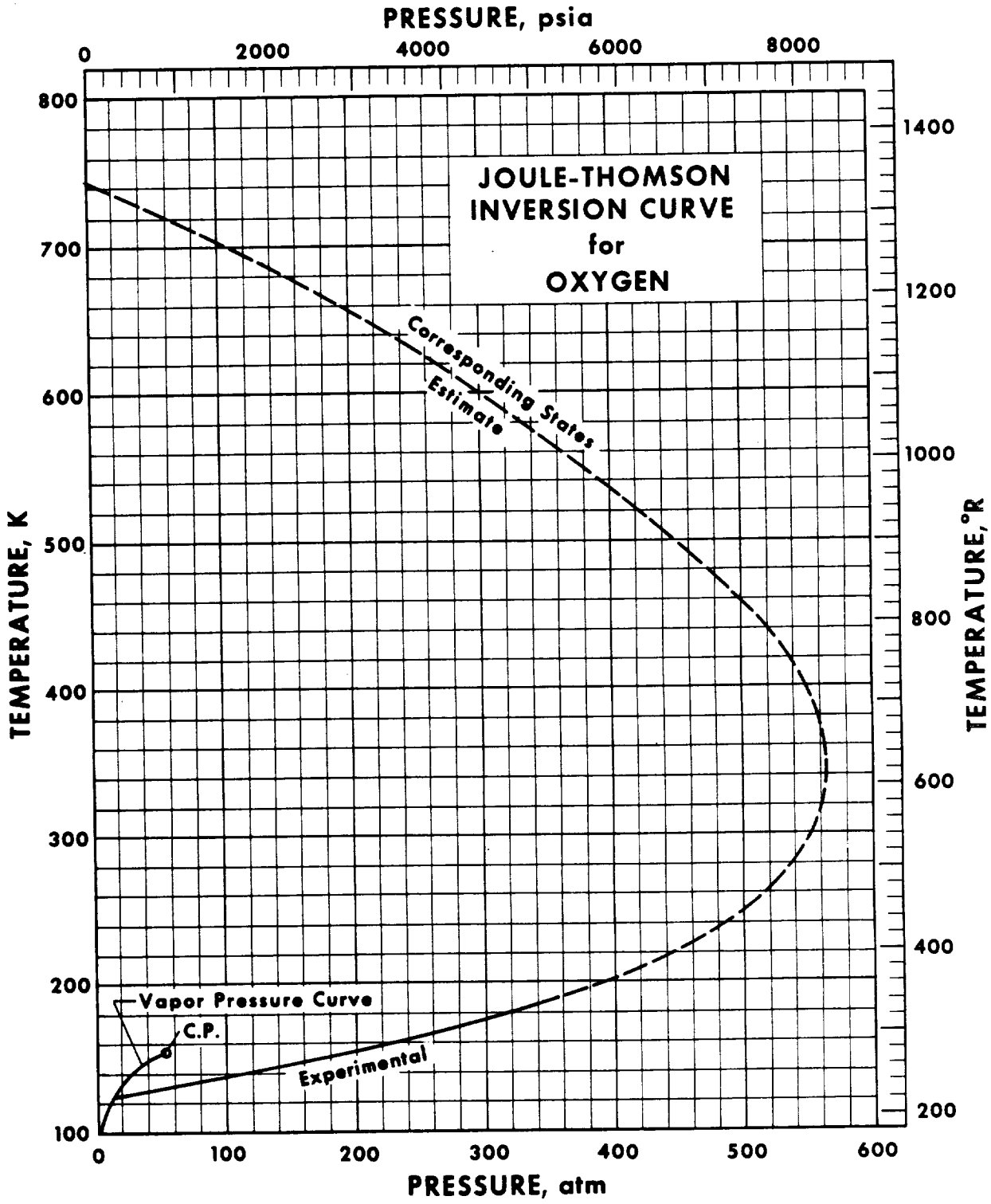

TEMPERATURE,°R
0
1
2
3
4
5
6
7
SPECIFIC HEAT
of
SOLID OXYGEN
(below 4 K)
SPECIFIC HEAT, cal / g K
100 x10⁻⁵
60
40
20
10
6
4
2
1.0
0.6
0.4
0.2
x10⁻⁵ 0.1
SPECIFIC HEAT, Btu / lb°R
100 x10⁻⁵
60
40
20
10
6
4
2
1.0
0.6
0.4
0.2
0.1 x10⁻⁵
0
1
2
3
4
TEMPERATURE, K

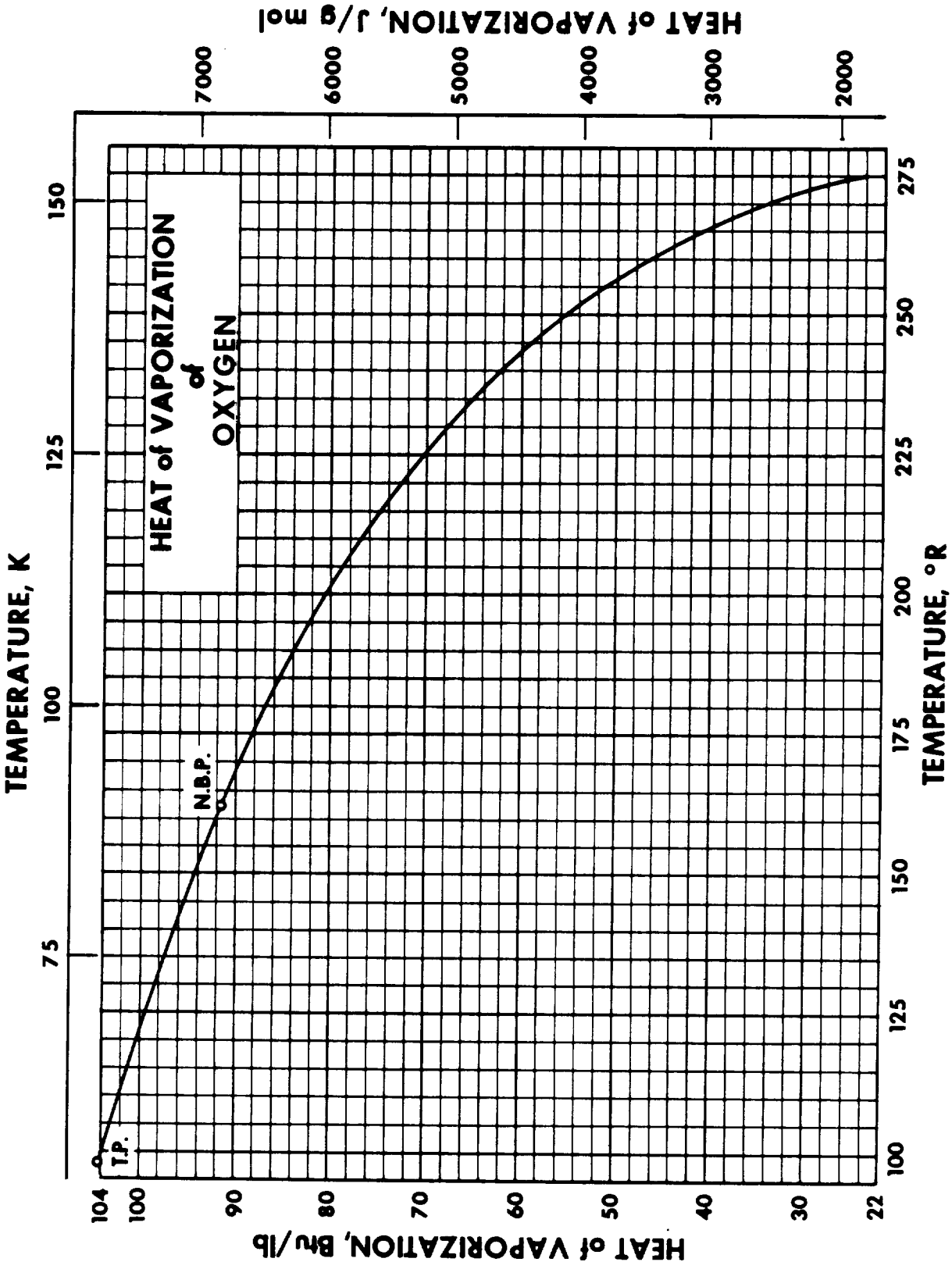

TEMPERATURE,°R
20
40
60
80
100
SPECIFIC HEAT (C_p)
of
SOLID OXYGEN
SOLID I
MELTING TEMPERATURE 54.39 K
TRANSITION TEMPERATURE 43.76 K
SOLID II
TRANSITION TEMPERATURE 23.66 K
SOLID III
SPECIFIC HEAT, (C_p), J/g K
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0
SPECIFIC HEAT, (C_p) Btu / lb°R
0.3
0.2
0.1
0
10
20
30
40
50
60
TEMPERATURE, K


DENSITY (ρ), lb /ft³
0
20
40
60
80
100
40
35
30
25
20
SPECIFIC HEAT (Cv)
of
OXYGEN
at
CONSTANT VOLUME
(isotherms)
60 K
100
160
150
140
200
250
300 K
SPECIFIC HEAT (Cv), J/mol K
.30
.25
.20
.15
SPECIFIC HEAT (Cv), BTU/lb °R
0
.01
.02
.03
.04
.05
DENSITY (ρ), mol/cm³

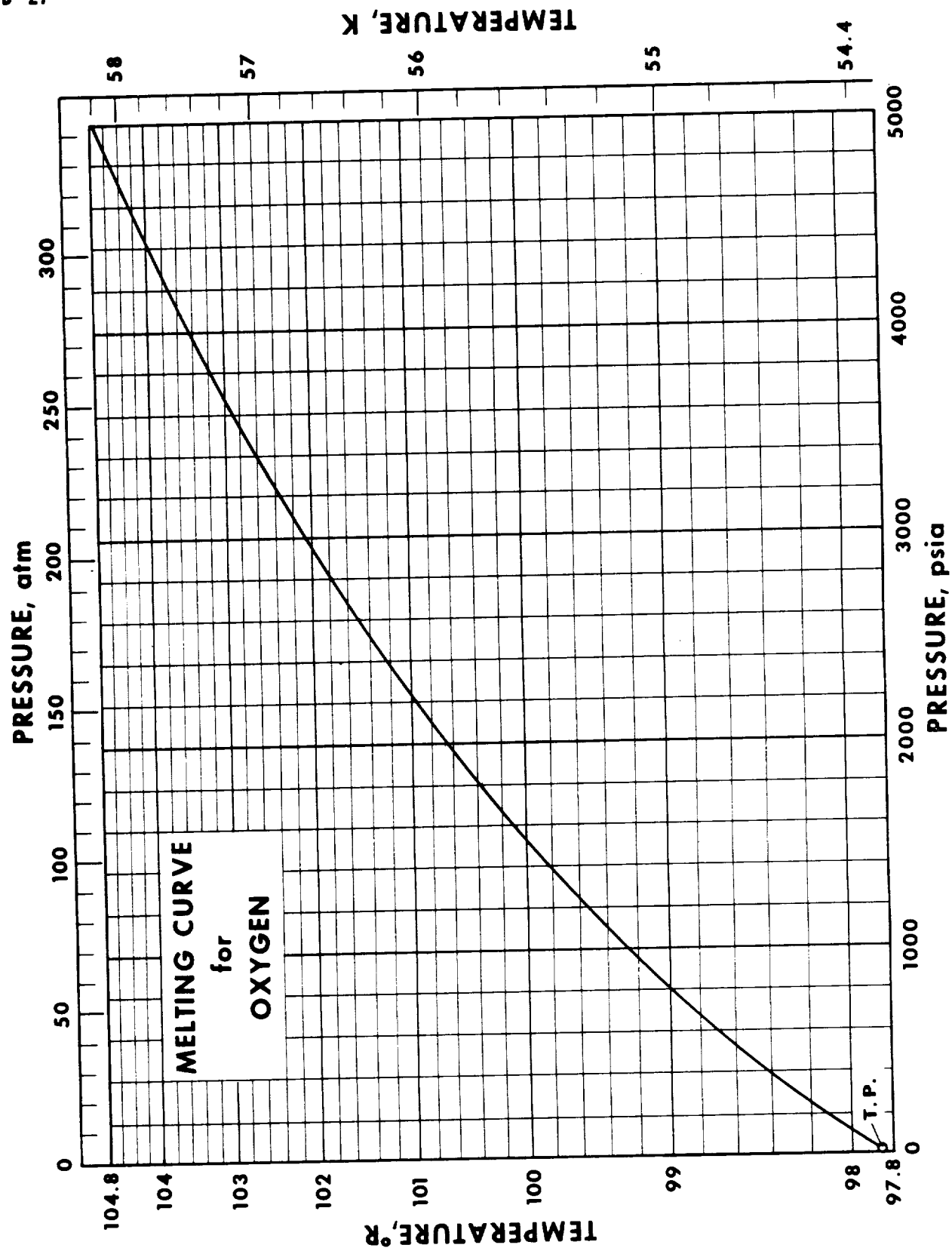

SPECIFIC HEAT,Cv,(Btu/lb °R)
.150
.160
.180
.200
.220
.240
.260
.280
.290
SPECIFIC HEAT,Cv, J/g mol K
20
25
30
35
TEMPERATURE, °R
100
150
200
250
300
350
400
450
500
550
TEMPERATURE, K
50
100
150
200
250
300
SATURATED LIQUID
SATURATED VAPOR
VAPOR-LIQUID
14.7
100
0
14.7 psia
100
200
500
1000
1500
2000
5000
3000
SPECIFIC HEAT
of
OXYGEN
at Constant Volume

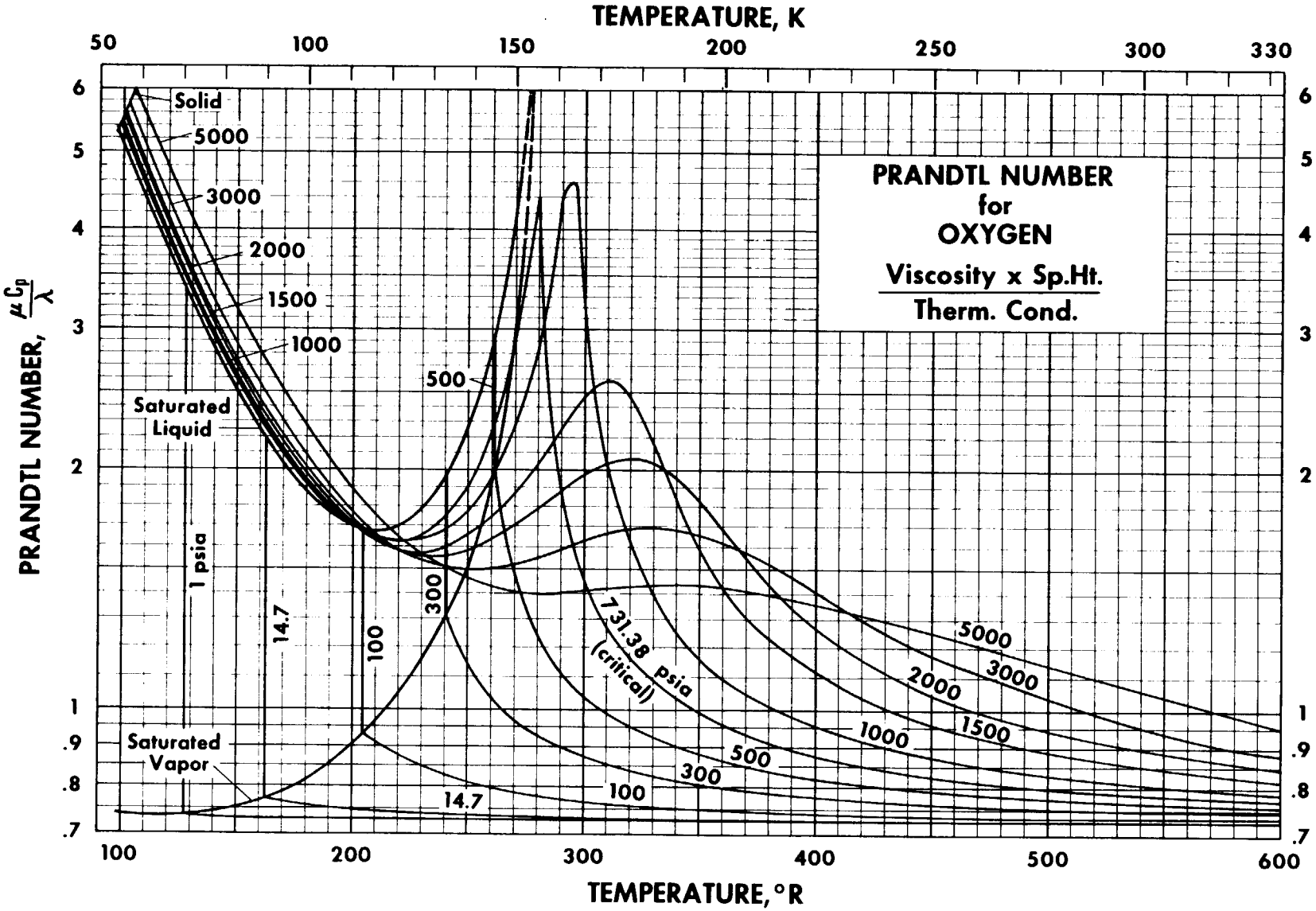
B-22

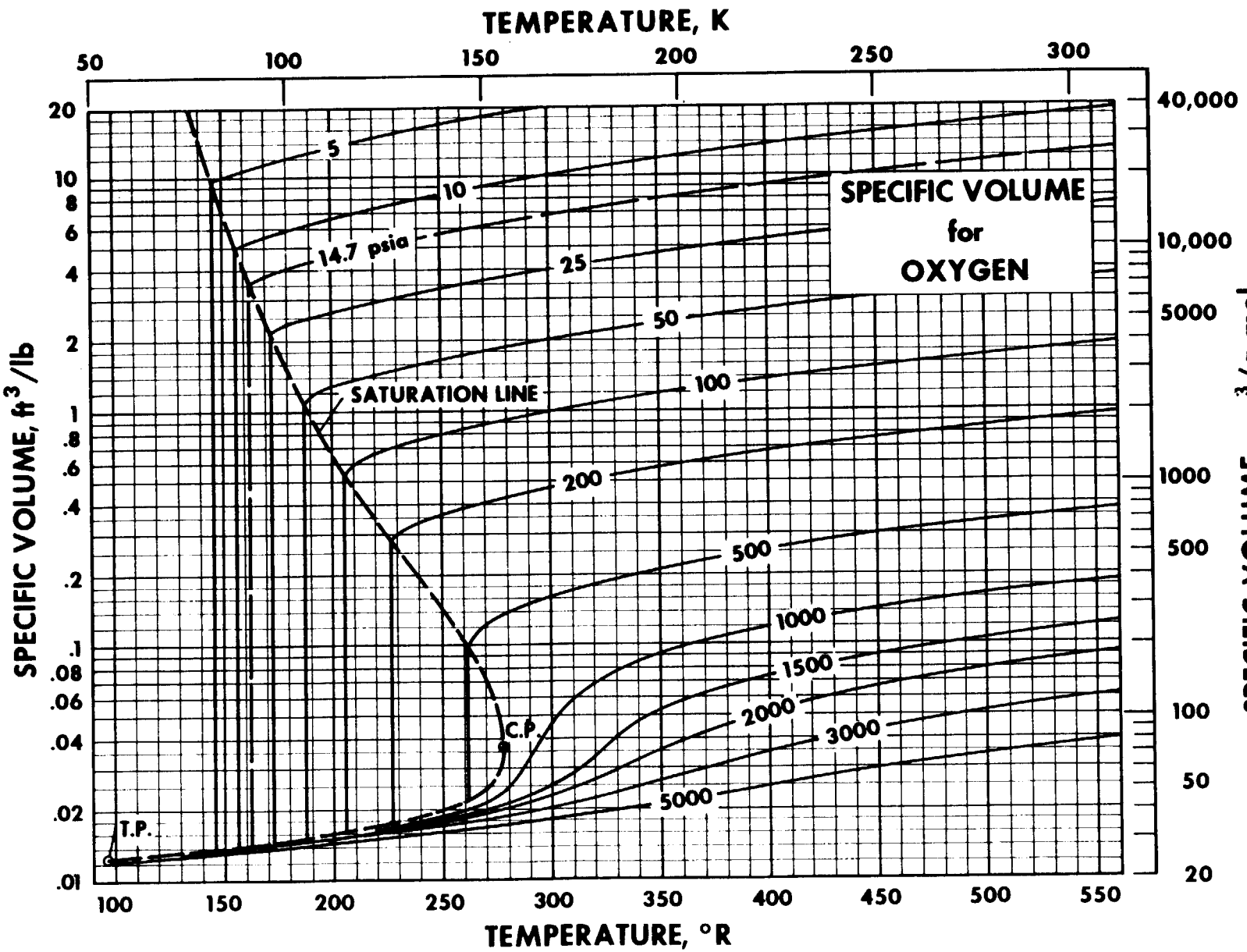

PRESSURE, psia
0
2000
4000
6000
8000
JOULE-THOMSON
INVERSION CURVE
for
OXYGEN
Corresponding States
Estimate
Vapor Pressure Curve
C.P.
Experimental
TEMPERATURE, K
800
700
600
500
400
300
200
100
TEMPERATURE, °R
1400
1200
1000
800
600
400
200
0
100
200
300
400
500
600
PRESSURE, atm

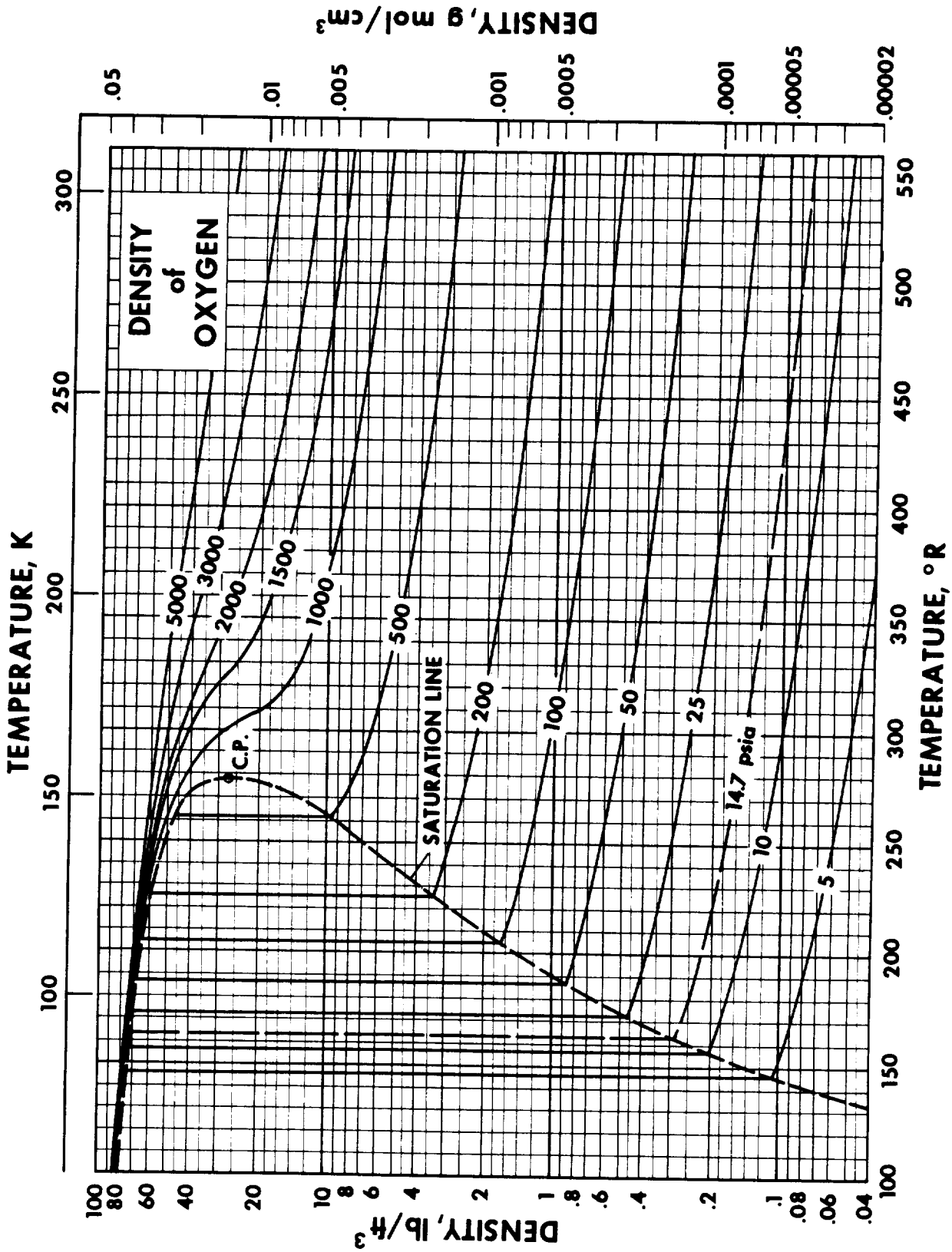

HEAT of VAPORIZATION, J/g mol
7000
6000
5000
4000
3000
2000
HEAT of VAPORIZATION
of
OXYGEN
N.B.P.
T.P.
TEMPERATURE, K
150
125
100
75
TEMPERATURE, °R
275
250
225
200
175
150
125
100
HEAT of VAPORIZATION, Btu/lb
104
100
90
80
70
60
50
40
30
22

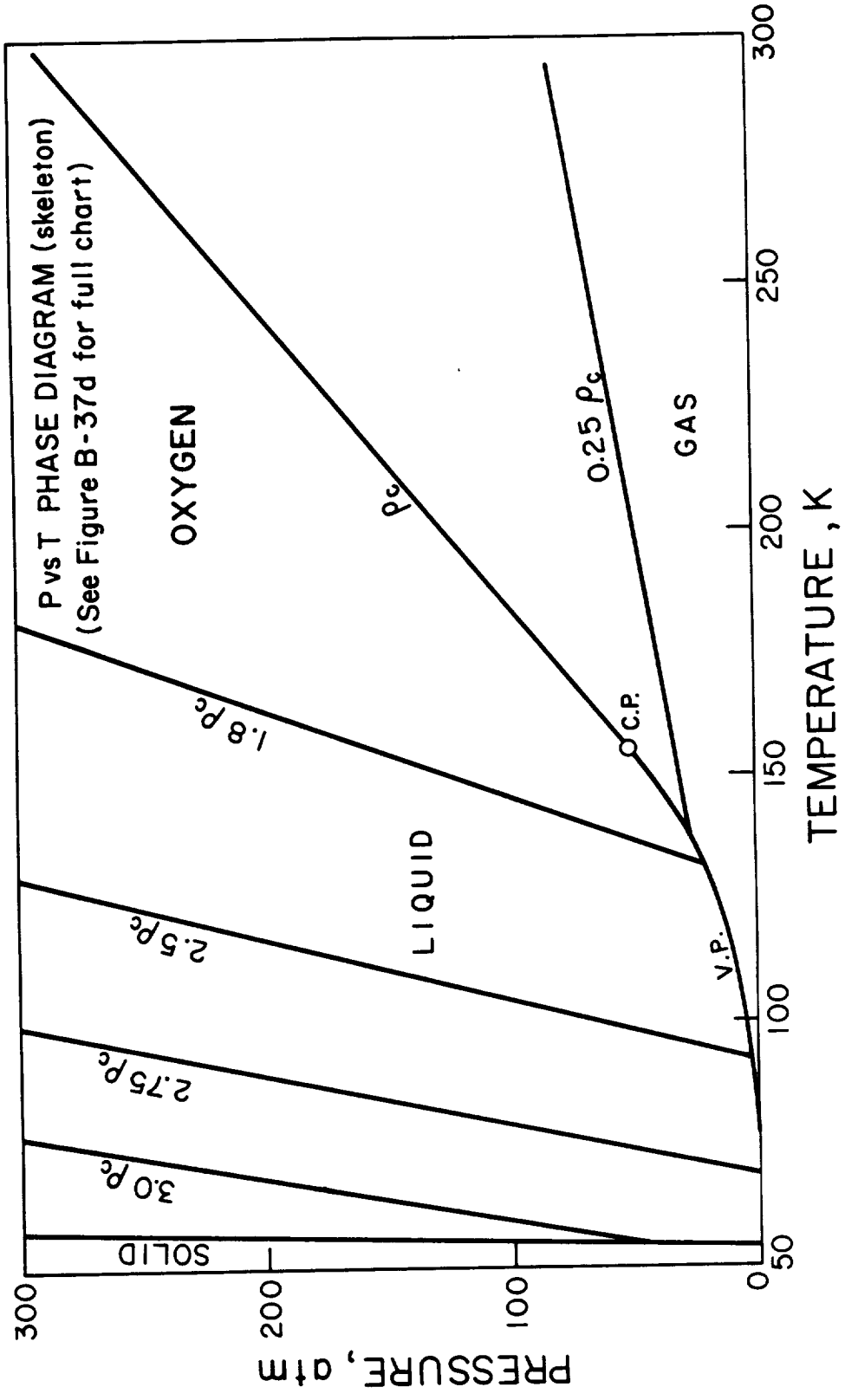
B-27

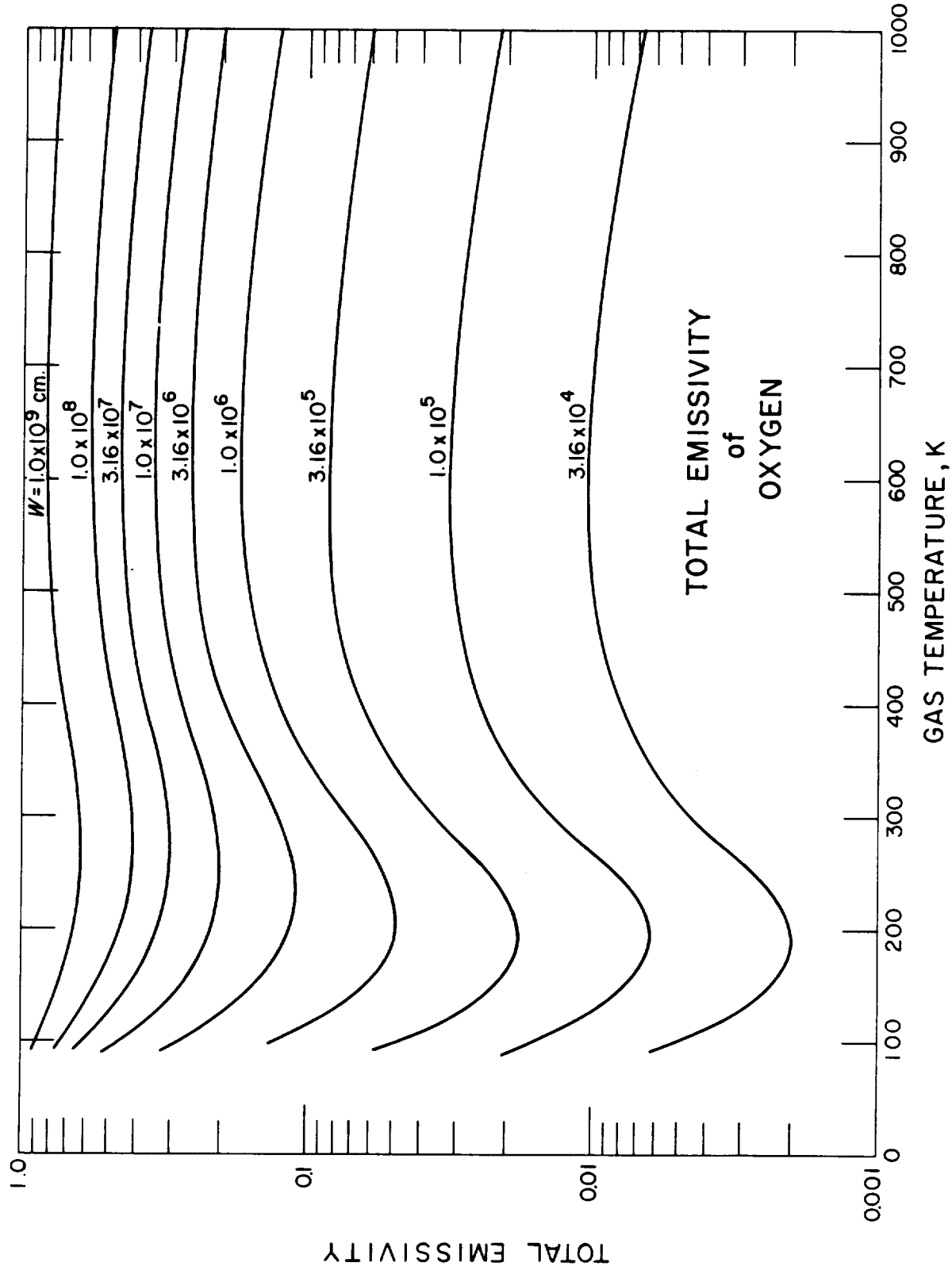

MELTING CURVE
for
OXYGEN
T.P.
PRESSURE, atm
0
50
100
150
200
250
300
PRESSURE, psia
0
1000
2000
3000
4000
5000
TEMPERATURE, °R
104.8
104
103
102
101
100
99
98
97.8
TEMPERATURE, K
58
57
56
55
54.4


TEMPERATURE, K
50
100
150
200
250
300
330
PRANDTL NUMBER, $\frac{\mu C_p}{\lambda}$
6
5
4
3
2
1
.9
.8
.7
PRANDTL NUMBER
for
OXYGEN
Viscosity x Sp.Ht.
Therm. Cond.
Solid
5000
3000
2000
1500
1000
500
Saturated
Liquid
1 psia
14.7
100
300
731.38 psia
(critical)
5000
3000
2000
1500
1000
500
300
100
14.7
Saturated
Vapor
100
200
300
400
500
600
TEMPERATURE, °R

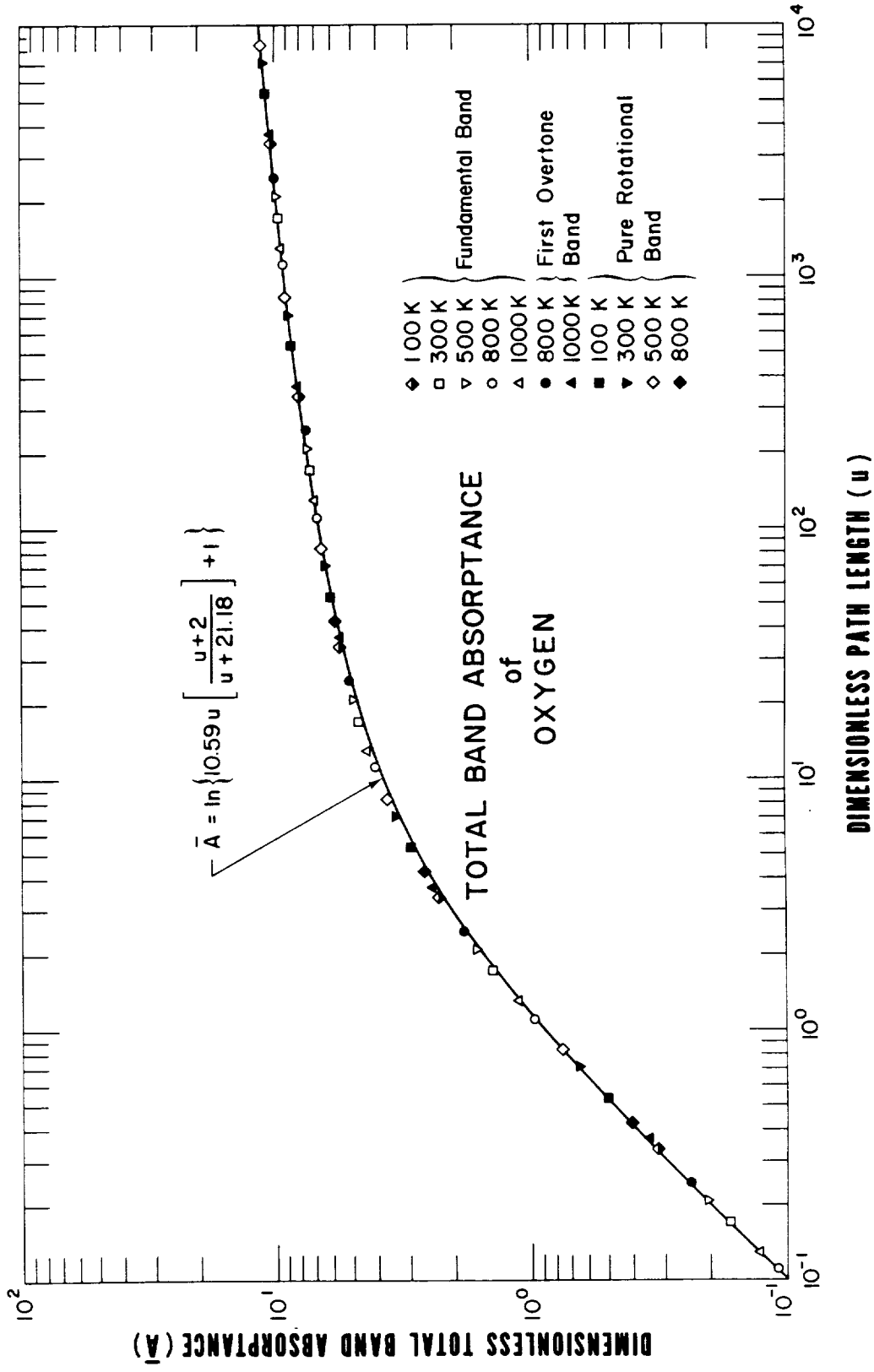

TEMPERATURE, K
50
100
150
200
250
300
SPECIFIC VOLUME
for
OXYGEN
5
10
14.7 psia
25
50
100
200
500
1000
1500
2000
3000
5000
SATURATION LINE
C.P.
T.P.
SPECIFIC VOLUME, ft³/lb
20
10
8
6
4
2
1
.8
.6
.4
.2
.1
.08
.06
.04
.02
.01
SPECIFIC VOLUME, cm³/g mol
40,000
10,000
5000
1000
500
100
50
20
100
150
200
250
300
350
400
450
500
550
TEMPERATURE, °R

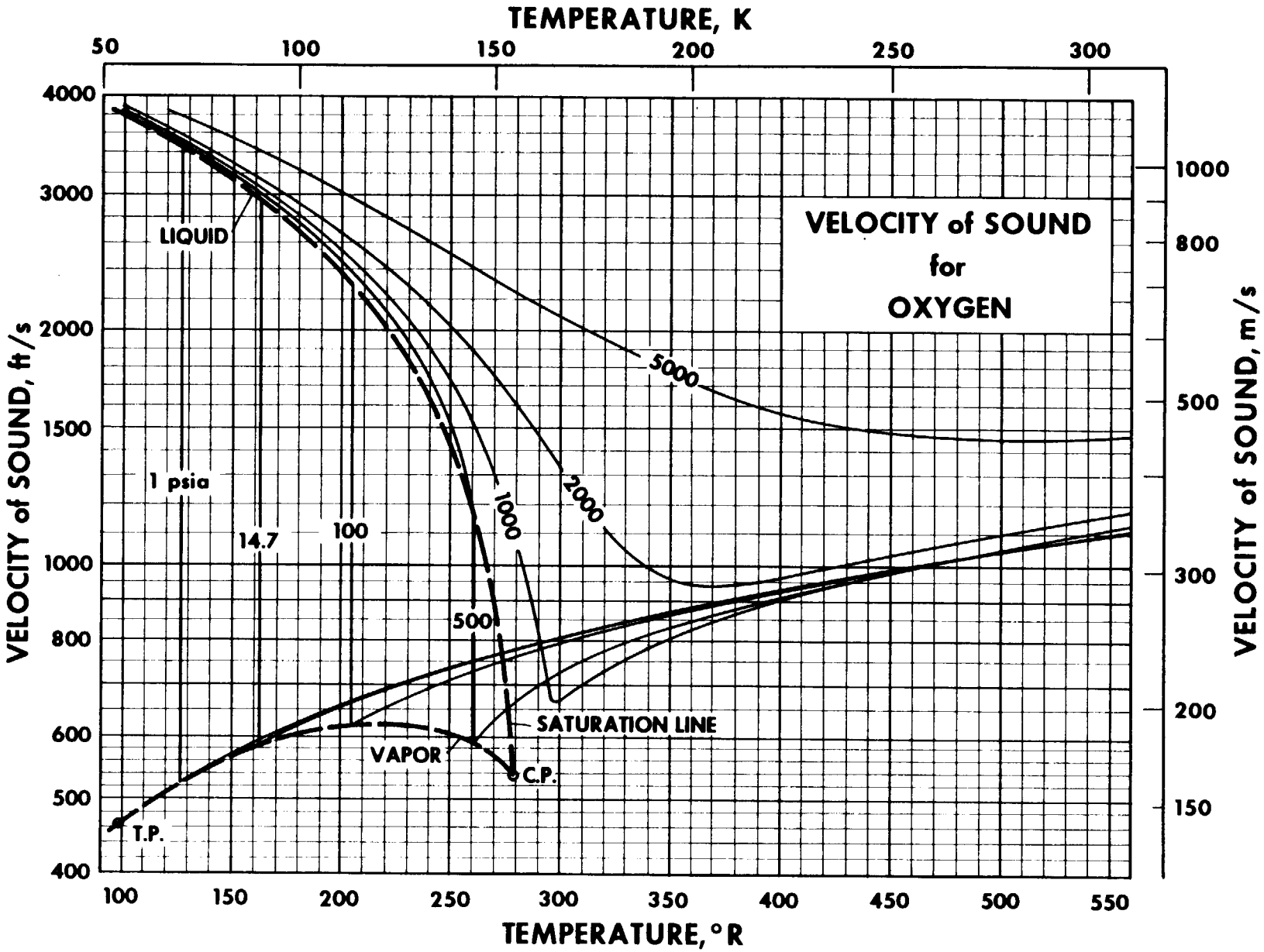

DENSITY of OXYGEN
TEMPERATURE, K
TEMPERATURE, °R
DENSITY, lb/ft³
DENSITY, g mol/cm³
SATURATION LINE
C.P.
5000
3000
2000
1500
1000
500
200
100
50
25
14.7 psia
10
5
100
150
200
250
300
350
400
450
500
550
.04
.06
.08
.1
.2
.4
.6
.8
1
2
4
6
8
10
20
40
60
80
100
.00002
.00005
.0001
.0005
.001
.005
.01
.05

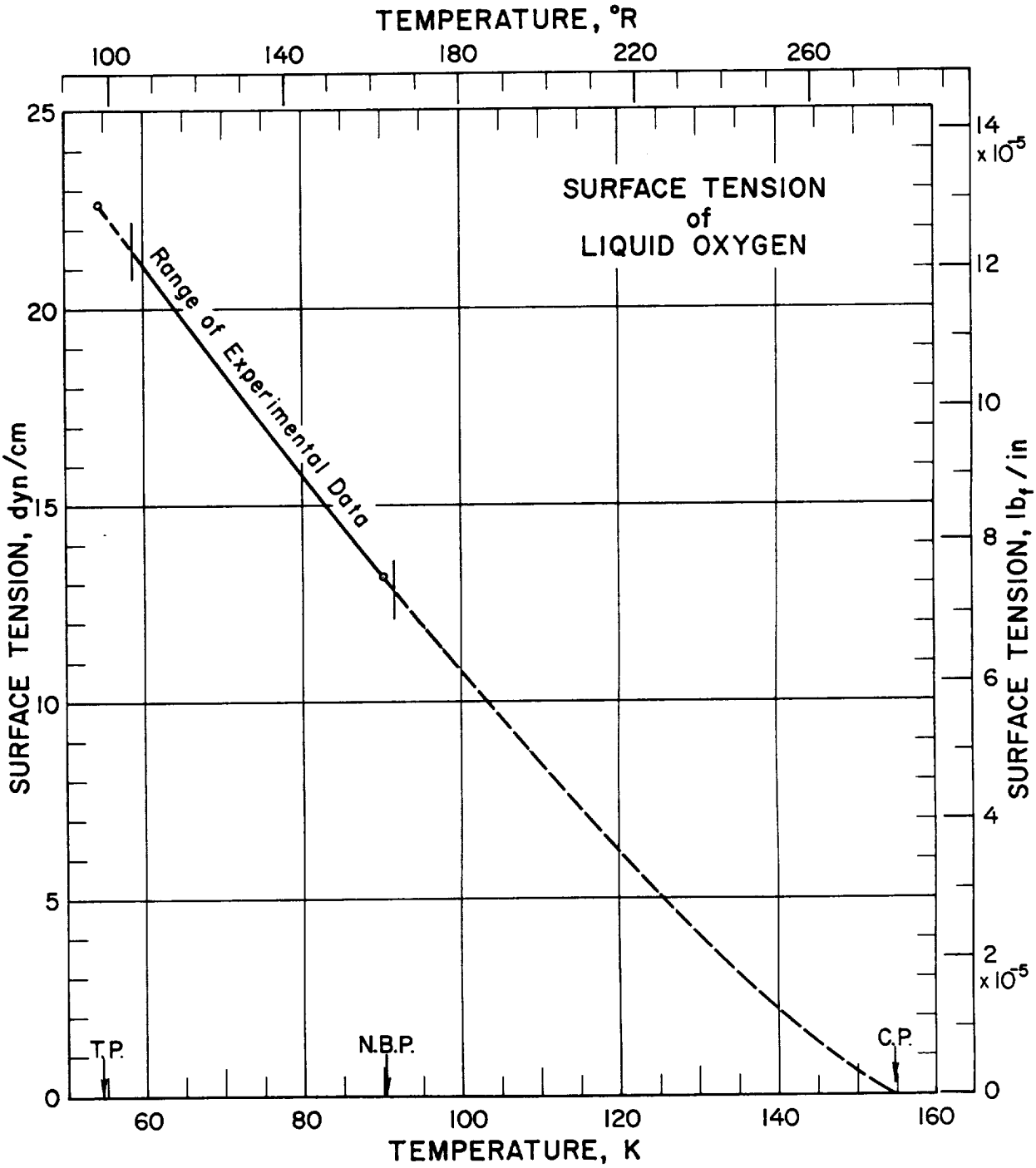

P vs T PHASE DIAGRAM (skeleton)
(See Figure B-37d for full chart)
OXYGEN
LIQUID
GAS
SOLID
ρ_c
0.25 ρ_c
1.8 ρ_c
2.5 ρ_c
2.75 ρ_c
3.0 ρ_c
C.P.
V.P.
PRESSURE, atm
TEMPERATURE, K
0
50
100
150
200
250
300

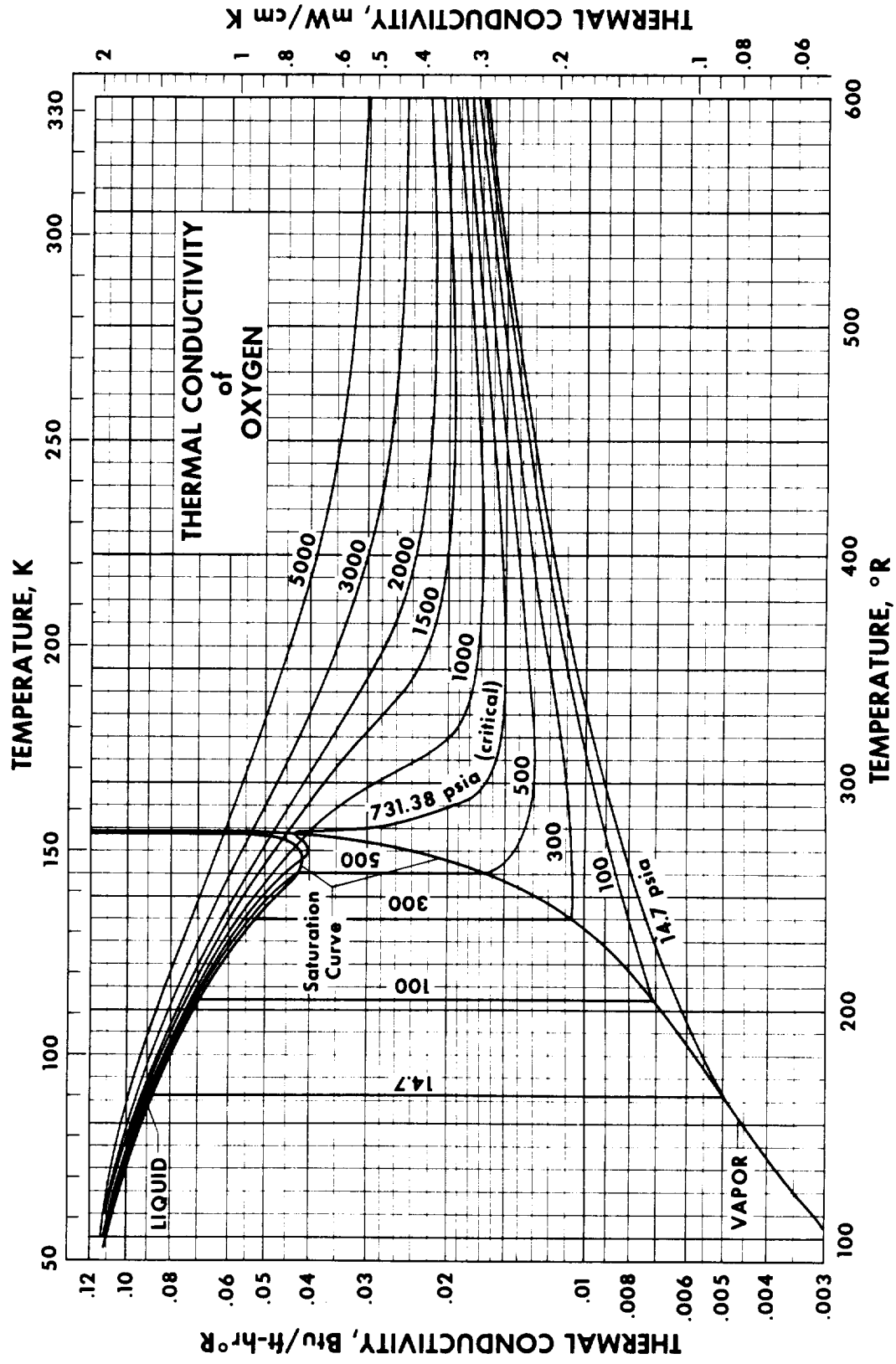

TOTAL EMISSIVITY
of
OXYGEN
W=1.0x10^9 cm.
1.0 x 10^8
3.16 x 10^7
1.0 x 10^7
3.16 x 10^6
1.0 x 10^6
3.16 x 10^5
1.0 x 10^5
3.16 x 10^4
TOTAL EMISSIVITY
1.0
0.1
0.01
0.001
0
100
200
300
400
500
600
700
800
900
1000
GAS TEMPERATURE, K

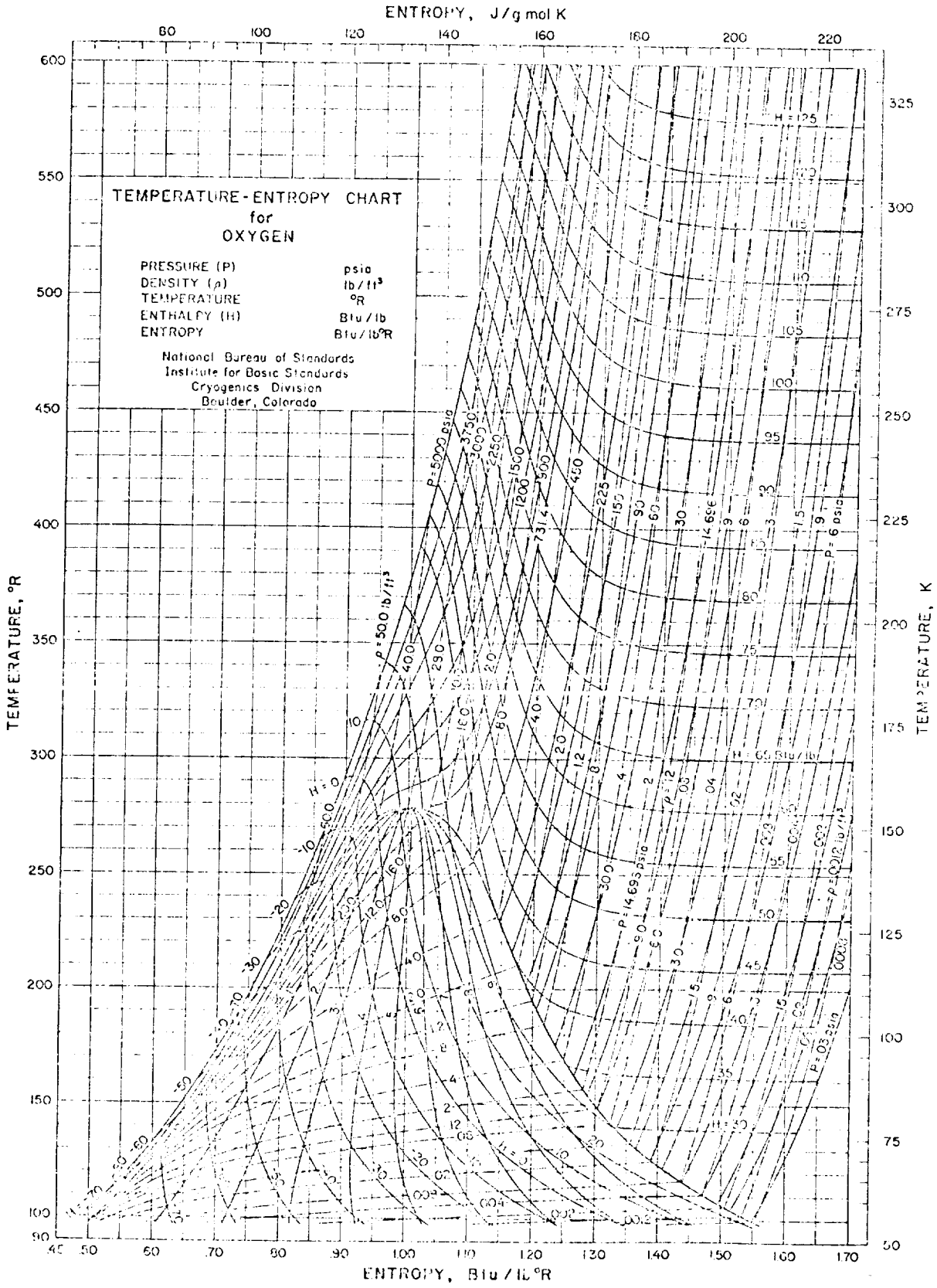
B-31a


TOTAL BAND ABSORPTANCE
of
OXYGEN
$\bar{A} = \ln\left\{10.59\,u\left[\frac{u+2}{u+21.18}\right]+1\right\}$
100 K
300 K
500 K
800 K
1000 K
Fundamental Band
800 K
1000 K
First Overtone Band
100 K
300 K
500 K
800 K
Pure Rotational Band
DIMENSIONLESS TOTAL BAND ABSORPTANCE ($\bar{A}$)
DIMENSIONLESS PATH LENGTH (u)
10^{2}
10^{1}
10^{0}
10^{-1}
10^{-1}
10^{0}
10^{1}
10^{2}
10^{3}
10^{4}


TEMPERATURE, K
50
100
150
200
250
300
VELOCITY of SOUND
for
OXYGEN
LIQUID
1 psia
14.7
100
1000
2000
5000
500
SATURATION LINE
VAPOR
C.P.
T.P.
VELOCITY of SOUND, ft/s
4000
3000
2000
1500
1000
800
600
500
400
VELOCITY of SOUND, m/s
1000
800
500
300
200
150
100
150
200
250
300
350
400
450
500
550
TEMPERATURE, °R


TEMPERATURE, °R
100
140
180
220
260
SURFACE TENSION
of
LIQUID OXYGEN
Range of Experimental Data
SURFACE TENSION, dyn/cm
SURFACE TENSION, lb_f / in
x 10^-5
25
20
15
10
5
0
14
12
10
8
6
4
2
0
T.P.
N.B.P.
C.P.
60
80
100
120
140
160
TEMPERATURE, K


THERMAL CONDUCTIVITY, mW/cm K
2
1
.8
.6
.5
.4
.3
.2
.1
.08
.06
THERMAL CONDUCTIVITY
of
OXYGEN
TEMPERATURE, K
330
300
250
200
150
100
50
TEMPERATURE, °R
600
500
400
300
200
100
5000
3000
2000
1500
1000
731.38 psia (critical)
500
300
100
14.7 psia
500
300
100
14.7
Saturation
Curve
LIQUID
VAPOR
.12
.10
.08
.06
.05
.04
.03
.02
.01
.008
.006
.005
.004
.003
THERMAL CONDUCTIVITY, Btu/ft-hr°R



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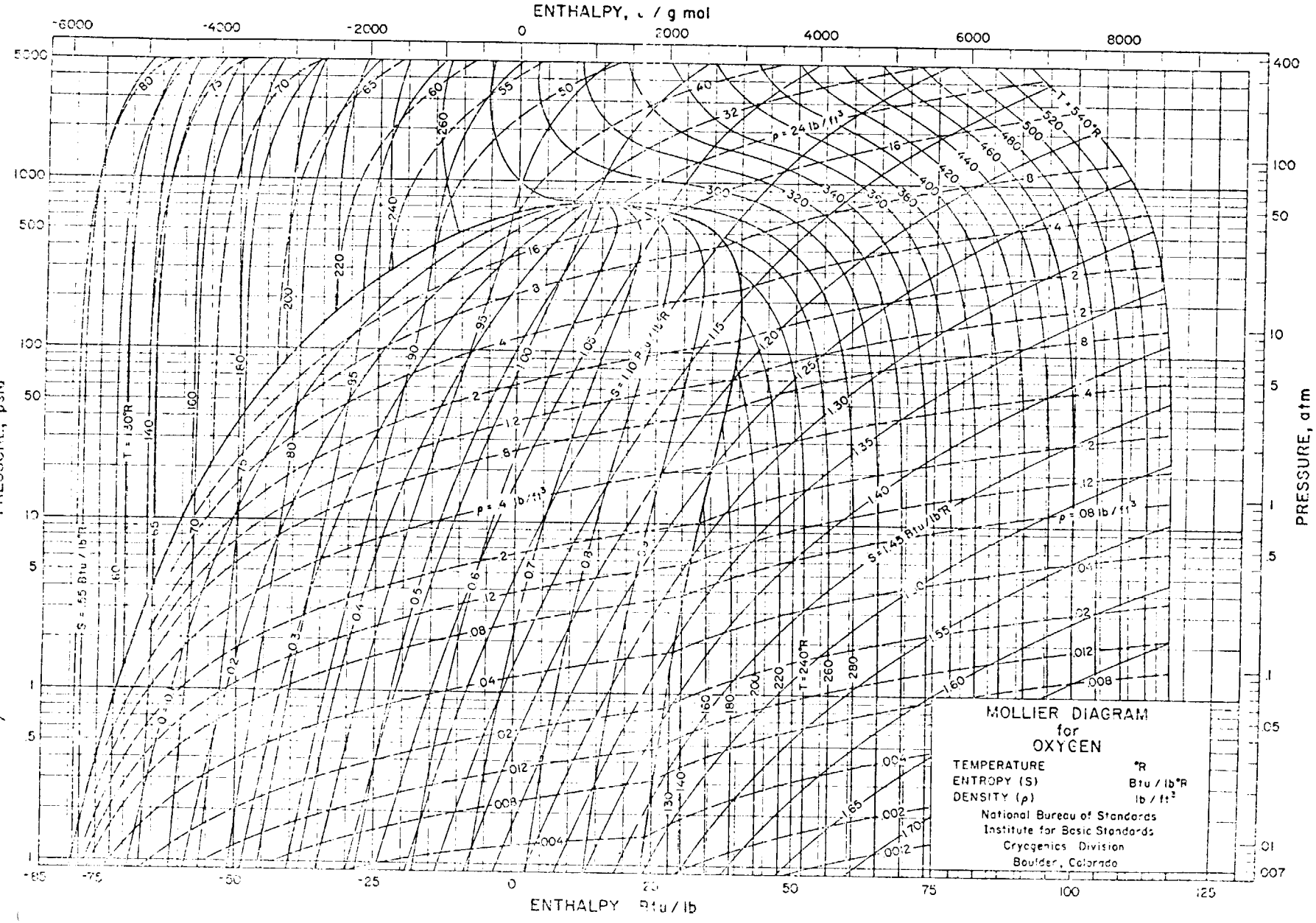
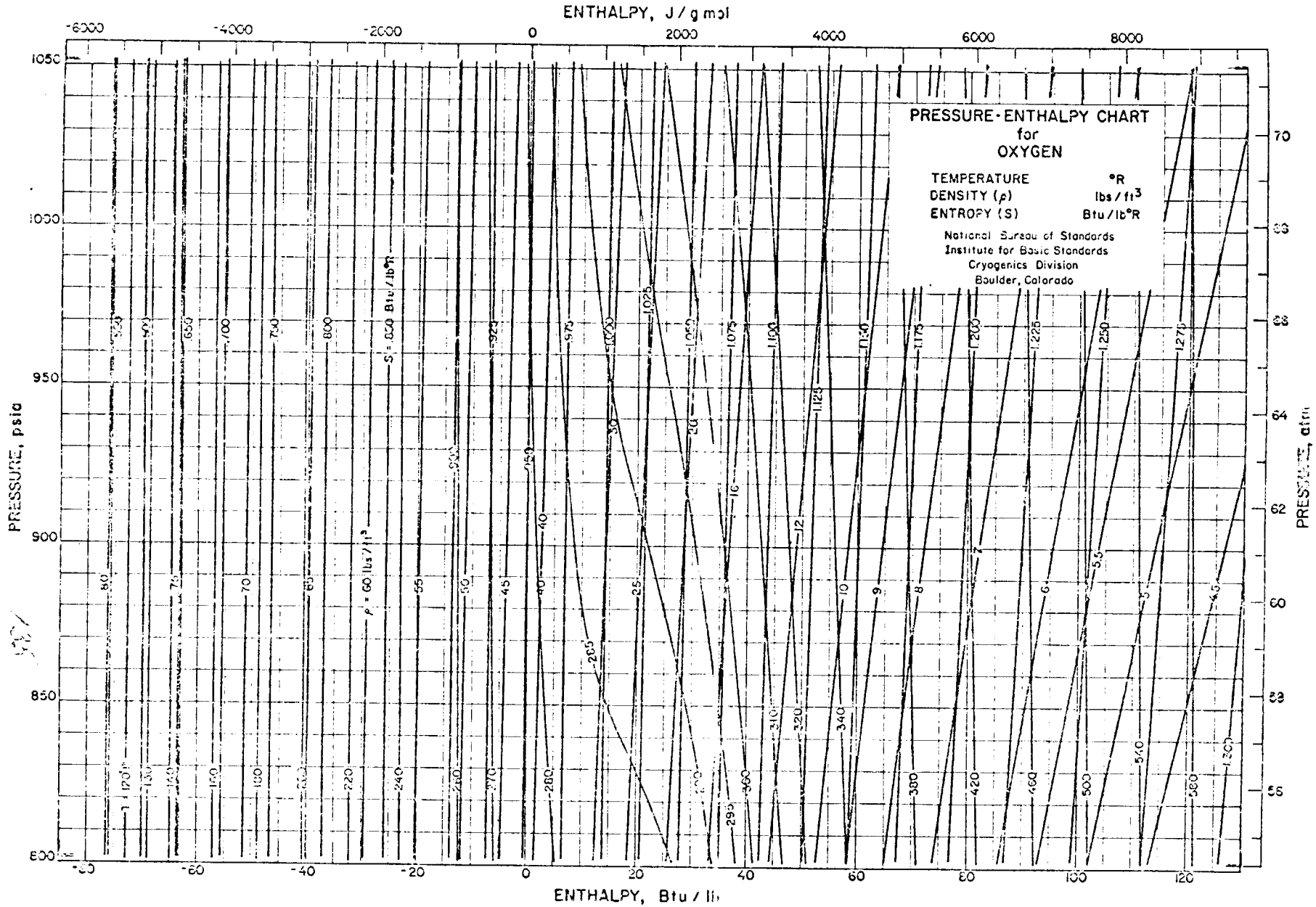
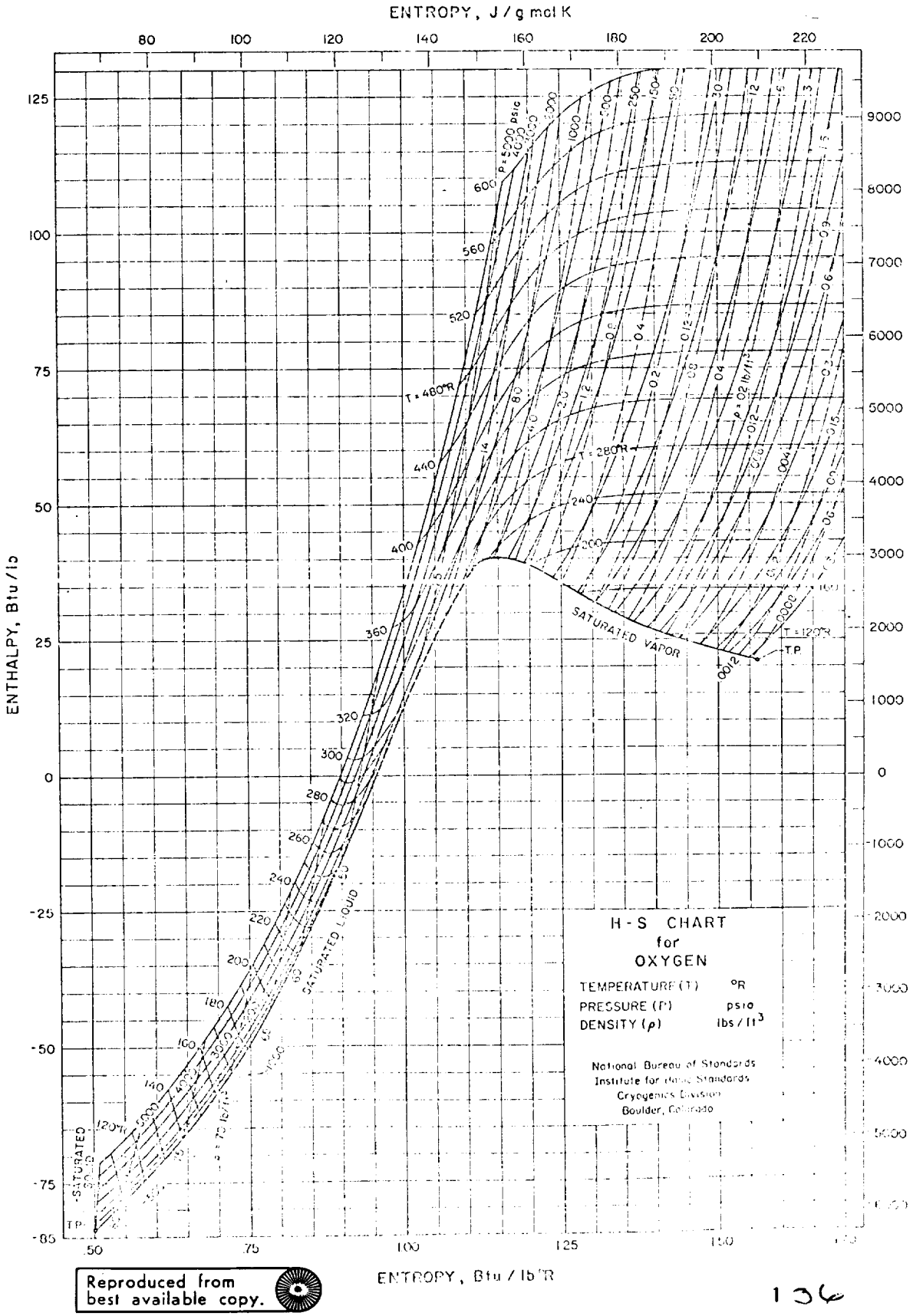
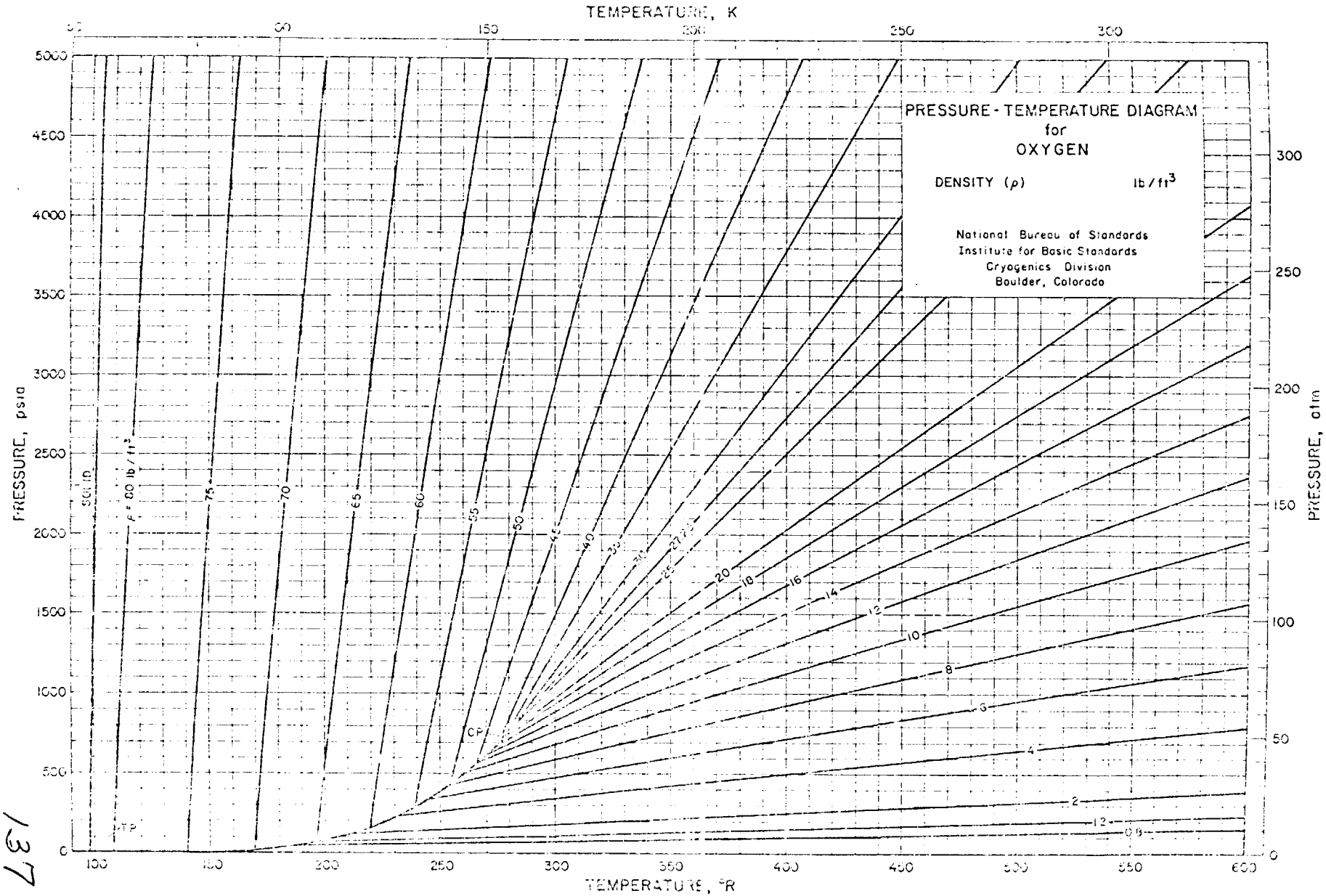
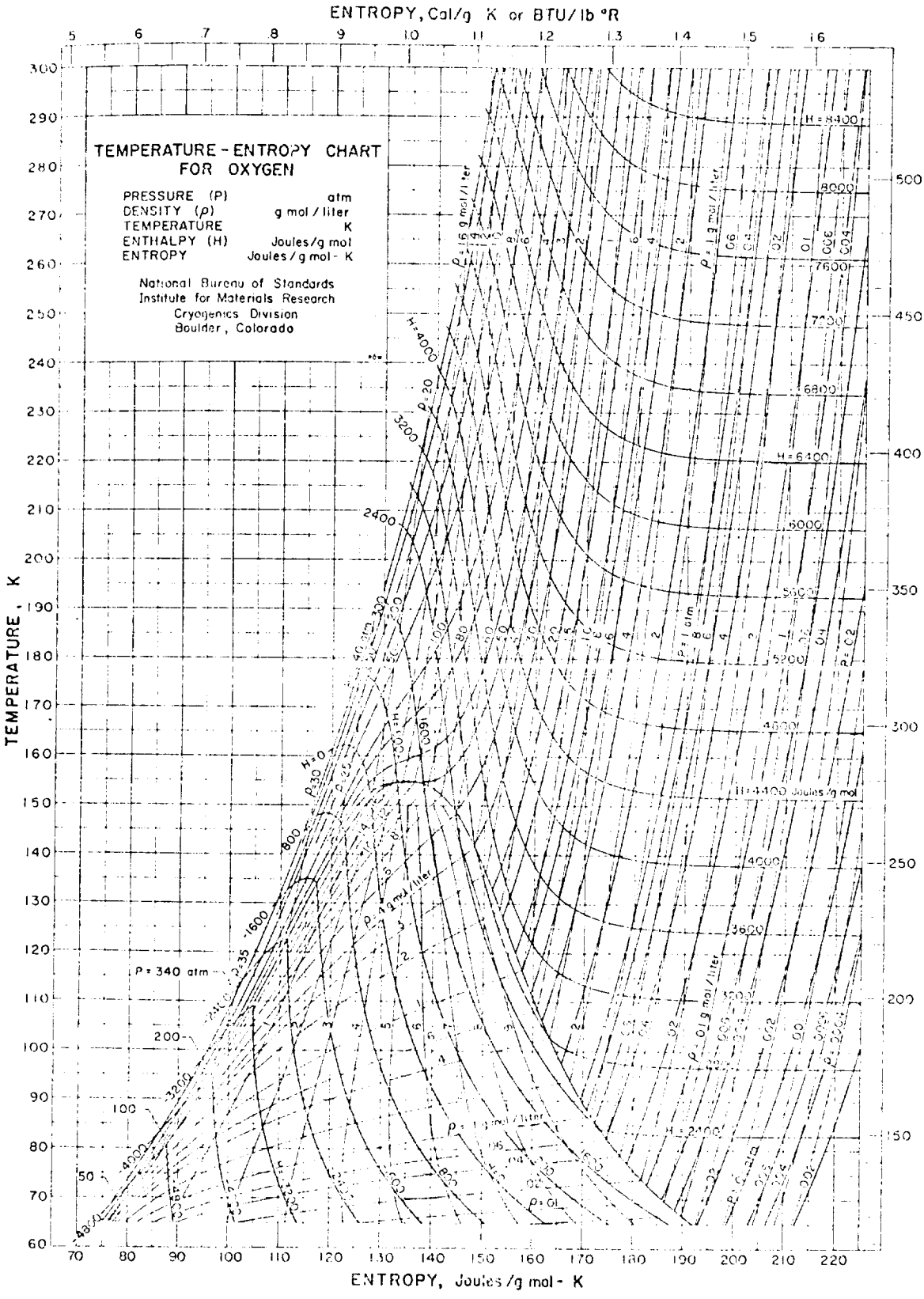


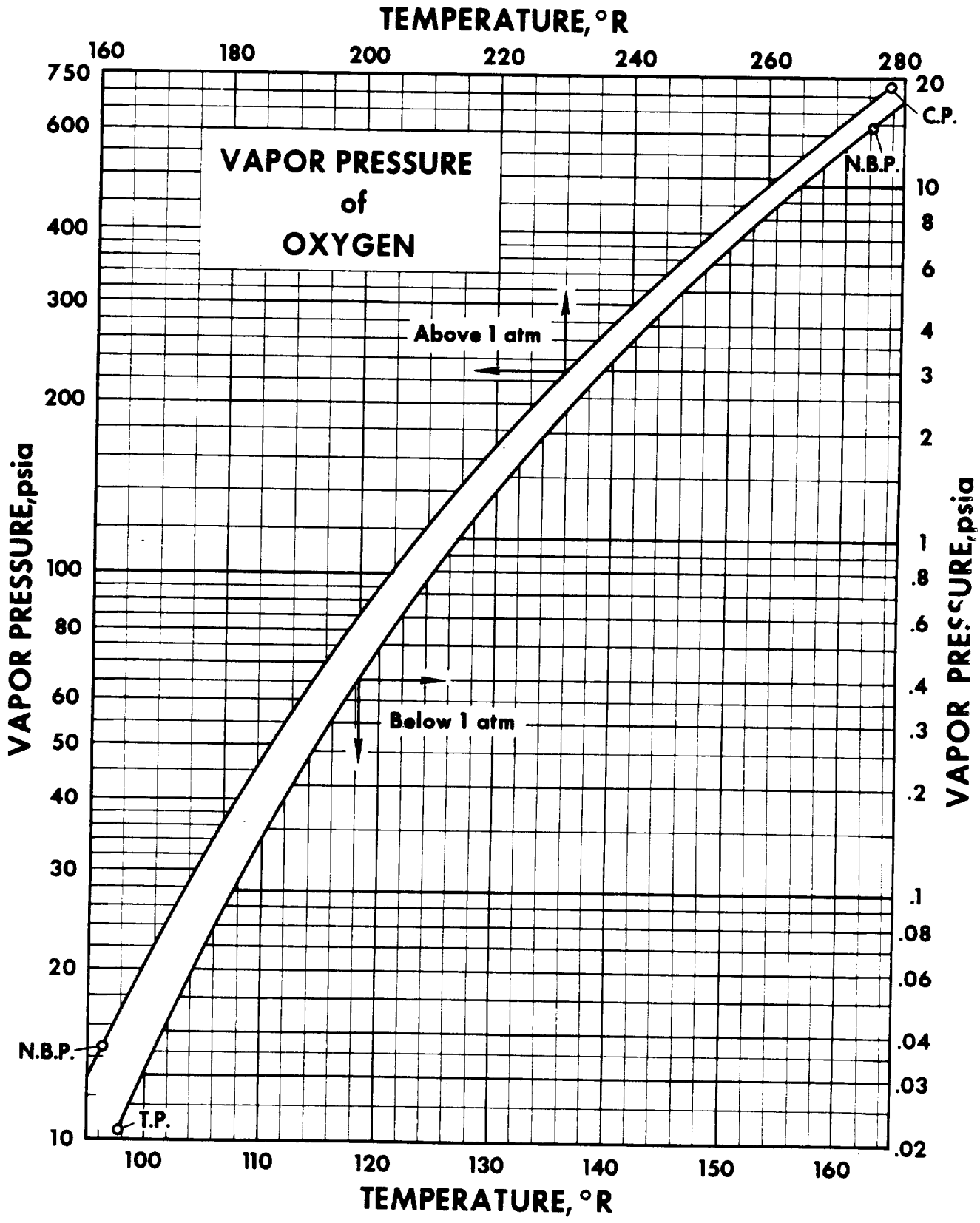
134


ENTHALPY, J / g mol
-6000
-4000
-2000
0
2000
4000
6000
8000
PRESSURE, psia
1050
1000
950
900
850
800
PRESSURE-ENTHALPY CHART
for
OXYGEN
TEMPERATURE °R
DENSITY (ρ) lbs / ft³
ENTROPY (S) Btu / lb°R
National Bureau of Standards
Institute for Basic Standards
Cryogenics Division
Boulder, Colorado
S = .850 Btu / lb°R
ρ = 60 lbs / ft³
ENTHALPY, Btu / lb
-80
-60
-40
-20
0
20
40
60
80
100
120
PRESSURE, atm
70
68
66
64
62
60
58
56

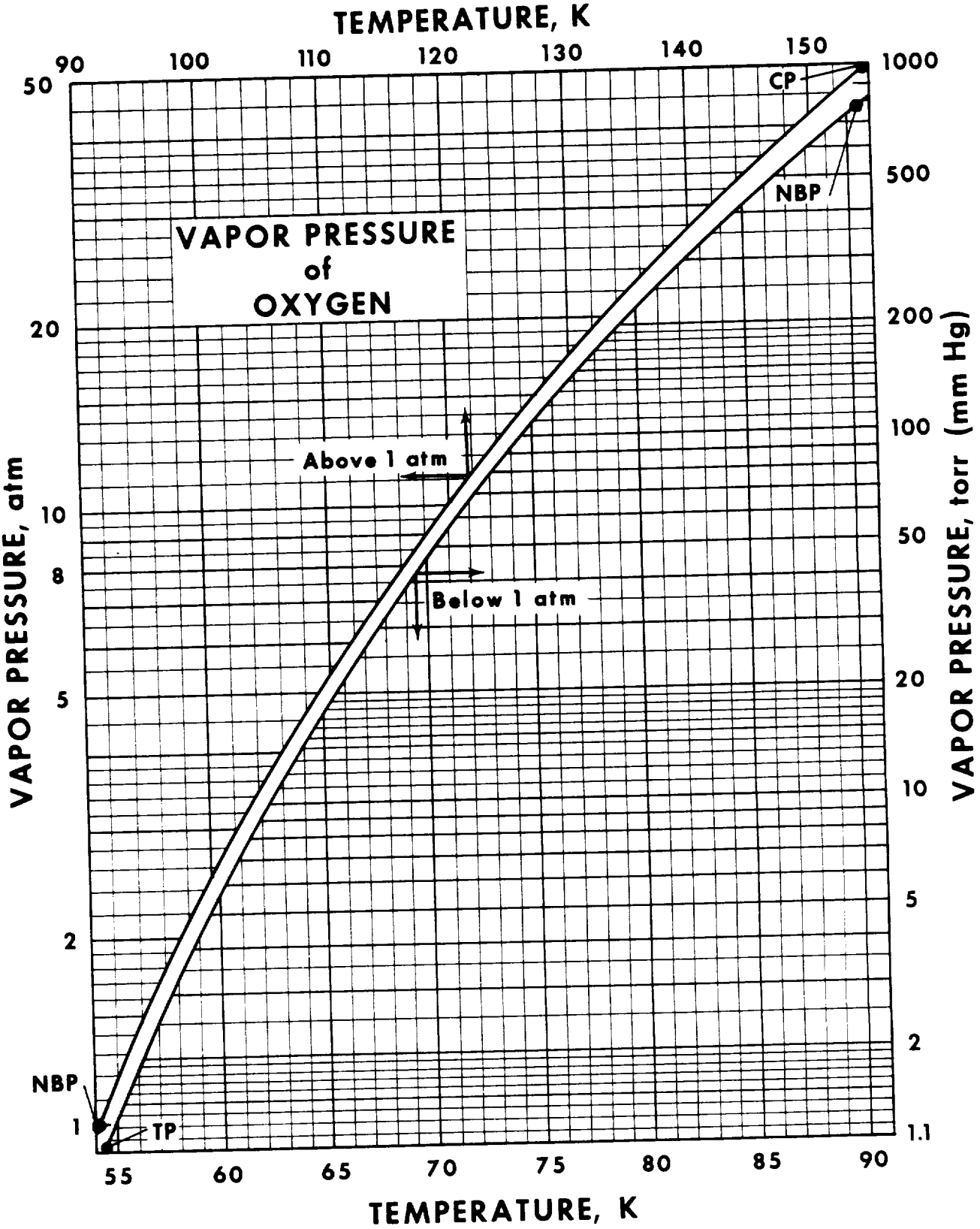


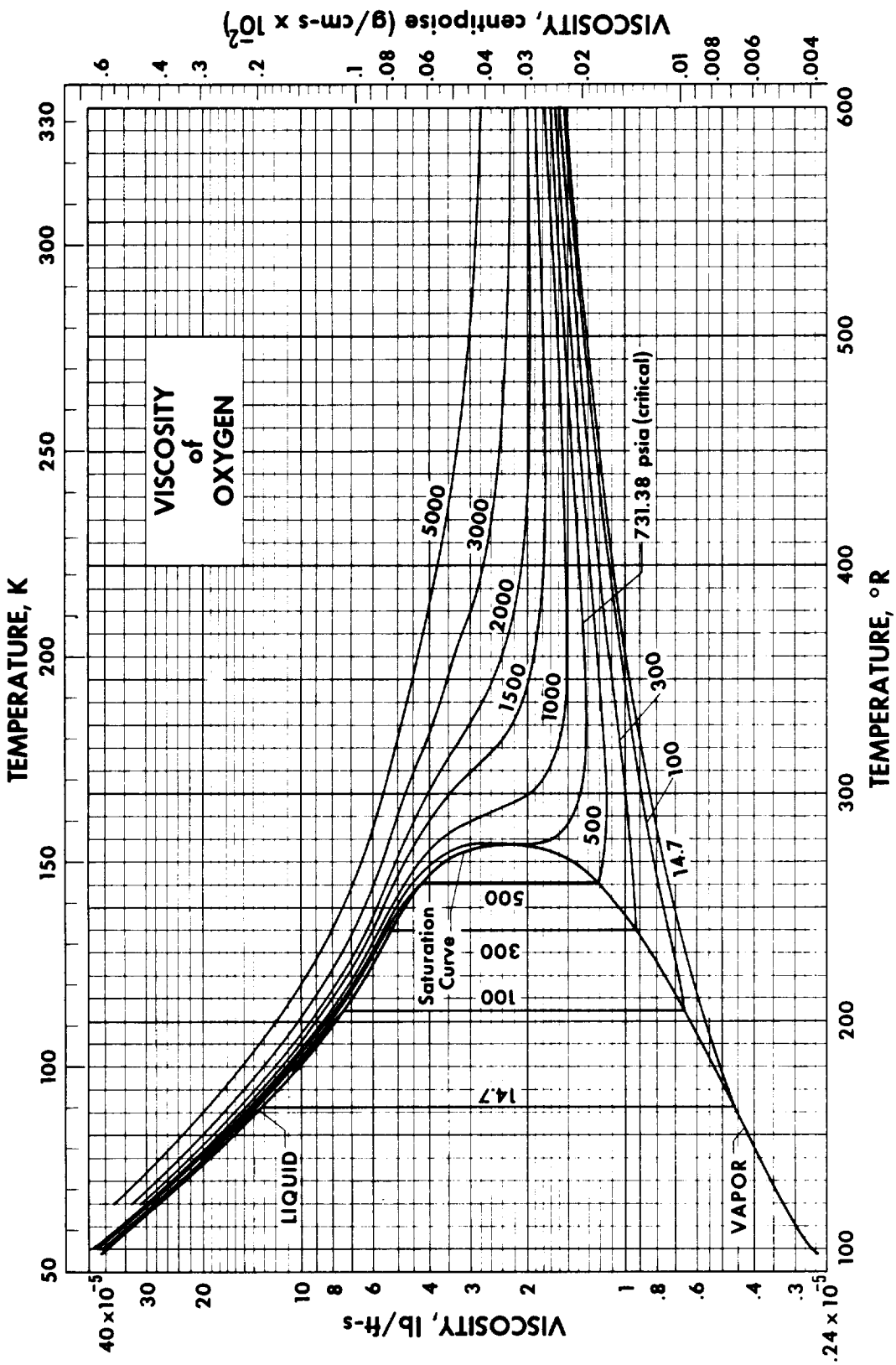

TEMPERATURE, K
PRESSURE - TEMPERATURE DIAGRAM
for
OXYGEN
DENSITY (ρ) lb / ft³
National Bureau of Standards
Institute for Basic Standards
Cryogenics Division
Boulder, Colorado
PRESSURE, psia
PRESSURE, atm
TEMPERATURE, °R
SOLID
ρ = 80 lb / ft³
75
70
65
60
55
50
45
40
35
30
27.2
25
20
18
16
14
12
10
8
6
4
2
1.2
0.8
CP
TP

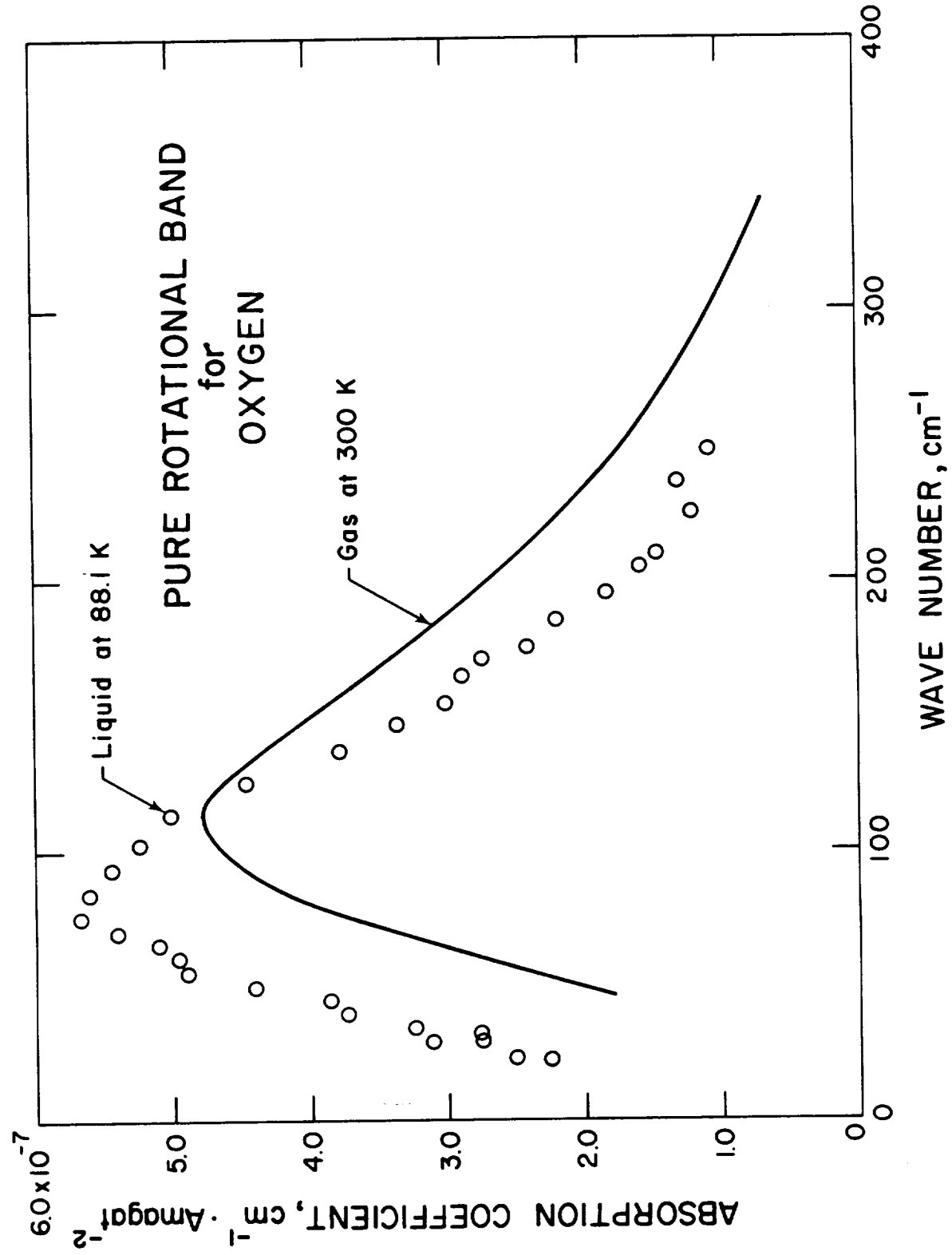


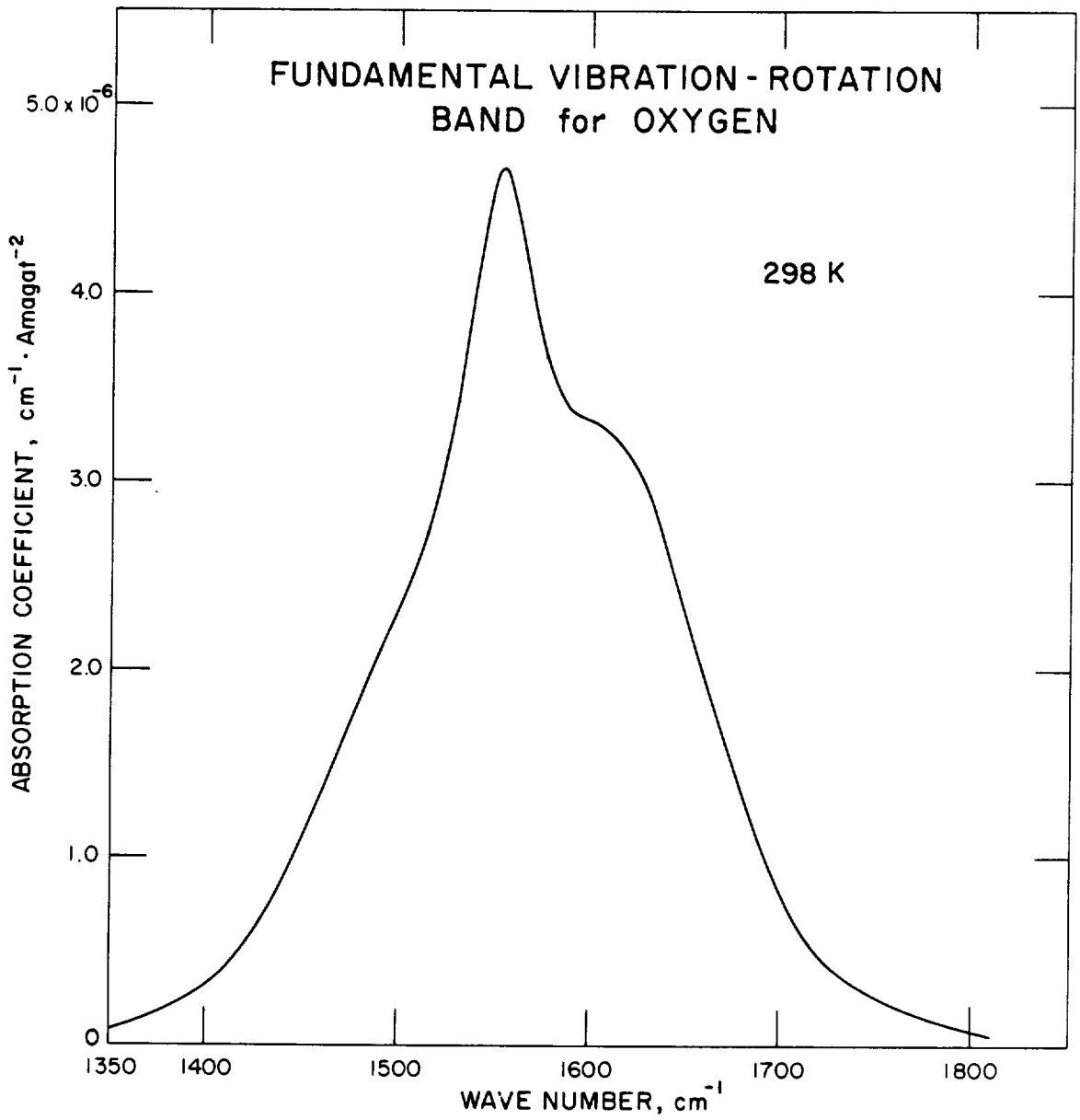

TEMPERATURE, °R
160
180
200
220
240
260
280
VAPOR PRESSURE of OXYGEN
Above 1 atm
Below 1 atm
C.P.
N.B.P.
T.P.
N.B.P.
VAPOR PRESSURE, psia
750
600
400
300
200
100
80
60
50
40
30
20
10
20
10
8
6
4
3
2
1
.8
.6
.4
.3
.2
.1
.08
.06
.04
.03
.02
VAPOR PRESSURE, psia
100
110
120
130
140
150
160
TEMPERATURE, °R

B-38a


TEMPERATURE, K
90
100
110
120
130
140
150
50
20
10
8
5
2
1
CP
NBP
VAPOR PRESSURE
of
OXYGEN
Above 1 atm
Below 1 atm
NBP
TP
VAPOR PRESSURE, atm
1000
500
200
100
50
20
10
5
2
1.1
VAPOR PRESSURE, torr (mm Hg)
55
60
65
70
75
80
85
90
TEMPERATURE, K


VISCOSITY of OXYGEN
TEMPERATURE, K
TEMPERATURE, °R
VISCOSITY, lb/ft-s
VISCOSITY, centipoise (g/cm-s x 10²)
LIQUID
VAPOR
Saturation Curve
731.38 psia (critical)
5000
3000
2000
1500
1000
500
300
100
14.7


PURE ROTATIONAL BAND
for
OXYGEN
Liquid at 88.1 K
Gas at 300 K
ABSORPTION COEFFICIENT, cm⁻¹ · Amagat⁻²
6.0x10⁻⁷
5.0
4.0
3.0
2.0
1.0
0
0
100
200
300
400
WAVE NUMBER, cm⁻¹


FUNDAMENTAL VIBRATION - ROTATION
BAND for OXYGEN
298 K
ABSORPTION COEFFICIENT, cm⁻¹ · Amagat⁻²
5.0 x 10⁻⁶
4.0
3.0
2.0
1.0
0
1350
1400
1500
1600
1700
1800
WAVE NUMBER, cm⁻¹

9. Section C, Tables

LIST OF TABLES

Table C-5

Thermodynamic Properties of Coexisting Gaseous and Liquid Oxygen (Metric Units)

THERMODYNAMIC PROPERTIES OF COEXISTING GASEOUS AND LIQUID OXYGEN

TEMP	PRESS	VOLUME	ISOTHERM DERIVATIVE	ISOCHORE DERIVATIVE	INTERNAL ENERGY	ENTHALPY	ENTROPY	C_v	C_p	VELOCITY OF SOUND	SURFACE TENSION
KELVIN	ATM	CC/GMOLE	CC ATM/GMOLE	ATM/K	J/GMOLE	J/GMOLE	J/GMOLE-K	J/G MOLE -K		M/SEC	DYNE/CM
54.351	0.001	24.49	284158	38.93	-6189.6	-6189.6	67.11	35.65	53.27	1159	22.649
54.351	0.001	2974819.07	4458	0.000	1120.0	1571.6	209.54	20.81	29.13	141	
56	0.002	24.63	276345	37.99	-6101.7	-6101.7	68.70	35.29	53.26	1149	22.194
56	0.002	1876345.27	4593	0.000	1154.2	1619.7	206.33	20.81	29.13	143	
58	0.004	24.80	267042	36.87	-5995.2	-5995.2	70.57	34.86	53.25	1136	21.645
58	0.004	1111925.72	4755	0.000	1195.6	1677.6	202.71	20.81	29.14	145	
60	0.007	24.97	257923	35.77	-5888.7	-5888.7	72.37	34.45	53.25	1124	21.098
60	0.007	683074.11	4916	0.000	1237.0	1735.5	199.36	20.81	29.15	148	
62	0.012	25.14	248985	34.70	-5782.2	-5782.2	74.12	34.06	53.26	1113	20.554
62	0.012	433699.56	5076	0.000	1278.2	1793.2	196.26	20.82	29.16	150	
64	0.018	25.32	240226	33.65	-5675.7	-5675.6	75.81	33.67	53.27	1097	20.013
64	0.018	283821.73	5235	0.000	1319.3	1850.6	193.39	20.82	29.18	152	
66	0.028	25.50	231643	32.63	-5569.1	-5569.0	77.45	33.30	53.29	1083	19.474
66	0.028	190960.14	5392	0.000	1360.2	1907.7	190.74	20.83	29.21	155	
68	0.042	25.69	223232	31.63	-5462.5	-5462.4	79.04	32.94	53.31	1070	18.938
68	0.042	131786.10	5546	0.001	1400.9	1964.5	188.27	20.84	29.25	157	
70	0.061	25.87	214991	30.65	-5355.9	-5355.7	80.59	32.59	53.34	1056	18.405
70	0.061	93094.99	5697	0.001	1441.2	2020.9	185.97	20.85	29.30	159	
72	0.087	26.07	206917	29.69	-5249.2	-5248.9	82.09	32.26	53.38	1041	17.874
72	0.087	67181.69	5844	0.001	1481.2	2076.0	183.84	20.87	29.35	161	
74	0.122	26.26	199086	28.76	-5142.4	-5142.0	83.55	31.93	53.43	1027	17.346
74	0.122	49440.13	5987	0.002	1523.8	2131.6	181.85	20.89	29.43	163	
76	0.167	26.47	191258	27.85	-5035.5	-5035.0	84.98	31.61	53.49	1012	16.822
76	0.167	37043.15	6125	0.002	1560.0	2186.2	179.99	20.91	29.51	165	
78	0.224	26.67	183668	26.96	-4928.5	-4927.9	86.37	31.31	53.56	997	16.300
78	0.224	28215.79	6257	0.003	1598.5	2239.6	178.25	20.95	29.62	167	
80	0.297	26.86	176234	26.09	-4821.3	-4820.5	87.72	31.01	53.64	982	15.781
80	0.297	21819.46	6383	0.004	1636.5	2292.5	176.62	20.98	29.74	169	
82	0.387	27.10	168953	25.24	-4714.0	-4713.0	89.05	30.73	53.73	967	15.265
82	0.387	17189.85	6502	0.005	1673.8	2344.1	175.09	21.03	29.89	171	
84	0.497	27.32	161823	24.41	-4606.6	-4605.2	90.34	30.45	53.84	952	14.753
84	0.497	13587.75	6613	0.006	1710.3	2394.5	173.64	21.08	30.06	173	
86	0.631	27.55	154842	23.60	-4498.9	-4497.1	91.61	30.18	53.96	936	14.243
86	0.631	10918.43	6716	0.008	1745.9	2443.7	172.29	21.13	30.26	174	
88	0.791	27.78	148007	22.80	-4391.0	-4388.8	92.85	29.92	54.10	921	13.737
88	0.791	8868.59	6809	0.009	1780.7	2491.5	171.00	21.20	30.49	176	
90	0.981	28.02	141315	22.03	-4282.8	-4280.1	94.06	29.67	54.26	905	13.235
90	0.981	7275.38	6892	0.012	1814.5	2537.9	169.79	21.28	30.74	178	
90.180	1.000	28.04	140720	21.96	-4273.1	-4270.3	94.17	29.64	54.28	903	13.190
90.180	1.000	7150.15	6899	0.012	1817.5	2542.0	169.68	21.28	30.77	178	
92	1.205	28.27	134764	21.27	-4174.4	-4171..	95.26	29.42	54.44	889	12.735
92	1.205	6023.11	6965	0.014	1847.2	2582.6	168.63	21.36	31.04	179	
94	1.466	28.52	128353	20.54	-4065.7	-4061.4	96.43	29.18	54.64	872	12.240
94	1.466	5028.47	7027	0.017	1878.8	2625.0	167.53	21.45	31.37	180	
96	1.768	28.79	122079	19.81	-3956.6	-3951.4	97.57	28.95	54.87	856	11.748
96	1.768	4230.71	7077	0.020	1909.2	2666.8	166.48	21.56	31.73	182	
98	2.114	29.06	115939	19.11	-3847.1	-3840.9	98.70	28.73	55.13	839	11.259
98	2.114	3585.00	7114	0.024	1938.2	2706.2	165.48	21.68	32.14	183	
100	2.509	29.34	109933	18.42	-3737.2	-3729.7	99.82	28.51	55.42	823	10.775
100	2.509	3057.86	7139	0.029	1966.0	2743.4	164.52	21.80	32.60	184	
102	2.957	29.63	104058	17.74	-3626.8	-3617.9	100.91	28.30	55.74	806	10.294
102	2.957	2624.08	7150	0.034	1992.3	2778.6	163.60	21.94	33.11	185	
104	3.462	29.93	98312	17.08	-3515.8	-3505.3	101.99	28.10	56.10	788	9.818
104	3.462	2264.42	7147	0.039	2017.1	2811.5	162.71	22.09	33.68	186	
106	4.029	30.24	92694	16.43	-3404.3	-3392.0	103.05	27.90	56.51	771	9.345
106	4.029	1964.12	7130	0.046	2040.3	2842.1	161.85	22.26	34.30	187	
108	4.661	30.57	87202	15.80	-3292.1	-3277.7	104.10	27.71	56.96	753	8.877
108	4.661	1711.70	7097	0.053	2061.8	2870.1	161.01	22.44	34.99	187	
110	5.363	30.90	81835	15.17	-3179.2	-3162.4	105.14	27.52	57.47	736	8.413
110	5.363	1498.21	7049	0.061	2081.5	2895.0	160.20	22.63	35.76	188	

THERMODYNAMIC PROPERTIES OF COEXISTING GASEOUS AND LIQUID OXYGEN

TEMPERATURE KELVIN	DENSITY GMOLE/CC	$V(\partial H/\partial V)_p$ J/GMOLE	$V(\partial P/\partial U)_V$ CC-ATM/J	$-V(\partial P/\partial V)_T$ ATM	$(\partial V/\partial T)_P/V$ 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S x 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
54.351	0.040832	15875.36	26.745	11602.81	0.0033552	1.92944	6.1938	0.00089	1.56868	5.3437
54.351	0.000000	1582.30	3.944	0.00	0.0184097	0.04829	0.0392	4.93158	1.00000	0.7392
56	0.040606	15732.34	26.510	11221.23	0.0033853	1.91433	5.8469	0.00089	1.56505	5.0835
56	0.000001	1630.02	3.944	0.00	0.0178727	0.04982	0.0404	3.20904	1.00001	0.7386
58	0.040330	15557.15	26.219	10769.88	0.0034231	1.89528	5.4544	0.00088	1.56064	4.7895
58	0.000001	1687.76	3.945	0.00	0.0172652	0.05170	0.0419	1.97267	1.00001	0.7380
60	0.040054	15379.94	25.920	10330.73	0.0034625	1.87550	5.0908	0.00088	1.55621	4.5173
60	0.000001	1745.28	3.945	0.01	0.0167020	0.05356	0.0434	1.25558	1.00002	0.7376
62	0.039776	15208.64	25.615	9903.53	0.0035037	1.85503	4.7540	0.00088	1.55177	4.2654
62	0.000002	1802.50	3.946	0.01	0.0161799	0.05548	0.0449	0.82502	1.00003	0.7374
64	0.039496	15019.15	25.303	9488.01	0.0035468	1.83392	4.4419	0.00087	1.54732	4.0321
64	0.000004	1859.35	3.946	0.02	0.0156962	0.05739	0.0464	0.55814	1.00004	0.7373
66	0.039215	14835.39	24.985	9083.93	0.0035919	1.81220	4.1528	0.00087	1.54285	3.8161
66	0.000005	1915.72	3.947	0.03	0.0152468	0.05932	0.0479	0.38779	1.00006	0.7375
68	0.038933	14649.26	24.661	8691.84	0.0036391	1.78991	3.8849	0.00086	1.53837	3.6160
68	0.000008	1971.48	3.948	0.04	0.0148359	0.06127	0.0495	0.27608	1.00009	0.7379
70	0.038649	14460.67	24.332	8309.10	0.0036887	1.76710	3.6368	0.00086	1.53386	3.4308
70	0.000011	2026.52	3.949	0.06	0.0144560	0.06325	0.0510	0.20099	1.00013	0.7386
72	0.038363	14269.56	23.997	7937.88	0.0037409	1.74380	3.4070	0.00085	1.52934	3.2593
72	0.000015	2080.68	3.951	0.09	0.0141078	0.06525	0.0526	0.14933	1.00018	0.7396
74	0.038075	14075.81	23.658	7577.15	0.0037956	1.72004	3.1940	0.00085	1.52480	3.1006
74	0.000020	2133.83	3.952	0.12	0.0137903	0.06728	0.0542	0.11303	1.00024	0.7410
76	0.037785	13879.36	23.314	7226.67	0.0038538	1.69586	2.9968	0.00084	1.52023	2.9539
76	0.000027	2185.81	3.954	0.17	0.0135025	0.06934	0.0558	0.08703	1.00032	0.7428
78	0.037493	13680.09	22.966	6886.24	0.0039149	1.67128	2.8141	0.00083	1.51564	2.8182
78	0.000035	2236.48	3.957	0.22	0.0132439	0.07144	0.0575	0.06805	1.00042	0.7451
80	0.037199	13477.93	22.615	6555.63	0.0039796	1.64635	2.6449	0.00083	1.51102	2.6929
80	0.000046	2285.68	3.959	0.29	0.0130136	0.07358	0.0592	0.05398	1.00054	0.7478
82	0.036982	13272.78	22.260	6234.65	0.0040482	1.62108	2.4881	0.00082	1.50637	2.5772
82	0.000058	2333.26	3.962	0.36	0.0128113	0.07578	0.0609	0.04337	1.00069	0.7511
84	0.036682	13064.55	21.901	5923.08	0.0041209	1.59550	2.3429	0.00081	1.50169	2.4706
84	0.000074	2379.09	3.965	0.49	0.0126365	0.07802	0.0627	0.03526	1.00087	0.7550
86	0.036308	12853.15	21.540	5620.73	0.0041983	1.56964	2.2084	0.00080	1.49697	2.3726
86	0.000092	2423.03	3.969	0.62	0.0124889	0.08033	0.0645	0.02898	1.00109	0.7596
88	0.035994	12638.48	21.177	5327.40	0.0042807	1.54352	2.0838	0.00079	1.49222	2.2825
88	0.000113	2464.96	3.972	0.77	0.0123683	0.08270	0.0664	0.02406	1.00134	0.7648
90	0.035686	12420.44	20.810	5042.92	0.0043687	1.51715	1.9683	0.00078	1.48742	2.2000
90	0.000137	2504.75	3.977	0.95	0.0122747	0.08514	0.0683	0.02015	1.00163	0.7709
90.188	0.035658	12400.64	20.777	5017.74	0.0043769	1.51477	1.9584	0.00078	1.48699	2.1929
90.188	0.000140	2508.22	3.977	0.96	0.0122676	0.08537	0.0685	0.01984	1.00166	0.7714
92	0.035374	12198.91	20.442	4767.18	0.0044627	1.49057	1.8614	0.00077	1.48258	2.1246
92	0.000166	2542.30	3.981	1.16	0.0122081	0.08766	0.0703	0.01701	1.00197	0.7777
94	0.035058	11973.81	20.071	4499.77	0.0045636	1.46379	1.7623	0.00076	1.47770	2.0559
94	0.000199	2577.51	3.986	1.40	0.0121687	0.09027	0.0723	0.01447	1.00236	0.7855
96	0.034738	11745.00	19.699	4240.76	0.0046719	1.43683	1.6705	0.00075	1.47276	1.9937
96	0.000236	2610.30	3.990	1.67	0.0121570	0.09297	0.0745	0.01239	1.00281	0.7943
98	0.034414	11512.39	19.325	3989.91	0.0047886	1.40970	1.5854	0.00074	1.46777	1.9376
98	0.000279	2640.57	3.996	1.98	0.0121734	0.09576	0.0767	0.01068	1.00331	0.8041
100	0.034085	11275.83	18.949	3747.87	0.0049146	1.38241	1.5066	0.00073	1.46272	1.8874
100	0.000327	2668.27	4.001	2.33	0.0122169	0.09867	0.0789	0.00925	1.00389	0.8150
102	0.033751	11035.18	18.572	3512.08	0.0050511	1.35498	1.4335	0.00072	1.45761	1.8428
102	0.000381	2693.32	4.006	2.72	0.0122943	0.10168	0.0813	0.00806	1.00453	0.8273
104	0.033412	10790.34	18.192	3284.60	0.0051992	1.32742	1.3657	0.00071	1.45242	1.8038
104	0.000442	2715.65	4.012	3.16	0.0124012	0.10483	0.0837	0.00705	1.00525	0.8408
106	0.033067	10541.12	17.811	3065.11	0.0053606	1.29974	1.3028	0.00070	1.44716	1.7701
106	0.000509	2735.21	4.017	3.63	0.0125411	0.10810	0.0863	0.00619	1.00605	0.8559
108	0.032716	10287.39	17.428	2852.87	0.0055371	1.27194	1.2444	0.00068	1.44161	1.7416
108	0.000584	2751.93	4.023	4.15	0.0127164	0.11152	0.0890	0.00545	1.00695	0.8726
110	0.032358	10028.96	17.042	2647.98	0.0057308	1.24402	1.1902	0.00067	1.43637	1.7184
110	0.000667	2765.76	4.028	4.71	0.0129296	0.11509	0.0918	0.00482	1.00794	0.8911

THERMODYNAMIC PROPERTIES OF COEXISTING GASEOUS AND LIQUID OXYGEN

TEMP	PRESS	VOLUME	ISOTHERM DERIVATIVE	ISOCHORE DERIVATIVE	INTERNAL ENERGY	ENTHALPY	ENTROPY	Cv	Cp	VELOCITY OF SOUND	SURFACE TENSION
KELVIN	ATM	CC/GMOLE	CC ATM/GMOLE	ATM/K	J/GMOLE	J/GMOLE	J/GMOLE-K	J/G MOLE -K		M/SEC	DYNE/CM
112	6.139	31.26	76592	14.57	-3065.5	-3046.0	106.17	27.34	58.05	718	7.954
112	6.139	1316.57	6985	0.070	2099.4	2918.4	159.41	22.83	36.61	186	
114	6.995	31.63	71472	13.97	-2950.9	-2928.5	107.18	27.16	58.70	699	7.500
114	6.995	1161.16	6984	0.080	2115.2	2938.2	158.64	23.05	37.55	189	
116	7.934	32.02	66476	13.38	-2835.2	-2809.5	108.19	26.99	59.43	681	7.051
116	7.934	1027.49	6806	0.092	2129.0	2955.0	157.88	23.26	38.59	189	
118	8.961	32.42	61602	12.80	-2718.5	-2689.1	109.19	26.83	60.25	662	6.607
118	8.961	911.95	6690	0.104	2140.6	2968.6	157.14	23.52	39.75	189	
120	10.082	32.85	56852	12.23	-2600.5	-2568.9	110.19	26.67	61.19	643	6.168
120	10.082	811.59	6556	0.119	2149.8	2978.8	156.40	23.78	41.04	189	
122	11.388	33.31	52226	11.67	-2481.1	-2442.9	111.18	26.53	62.27	623	5.735
122	11.388	724.82	6482	0.135	2156.4	2985.4	155.67	24.06	42.49	189	
124	12.821	33.79	47728	11.11	-2368.1	-2316.8	112.17	26.39	63.49	603	5.307
124	12.821	647.27	6229	0.153	2160.3	2988.4	154.95	24.35	44.13	189	
126	14.849	34.31	43362	10.56	-2237.3	-2188.4	113.15	26.26	64.91	583	4.886
126	14.849	579.72	6836	0.173	2161.2	2986.4	154.23	24.65	45.99	189	
128	15.591	34.86	39132	10.02	-2112.4	-2057.3	114.14	26.15	66.56	562	4.471
128	15.591	528.03	5021	0.196	2158.8	2980.3	153.51	24.97	48.12	188	
130	17.249	35.45	35969	9.62	-1984.8	-1922.9	115.14	26.60	69.16	544	4.064
130	17.249	467.85	5575	0.221	2153.0	2969.3	152.78	25.31	50.60	188	
132	19.031	36.89	32895	9.03	-1853.9	-1784.3	116.15	26.48	70.70	521	3.663
132	19.031	419.84	5314	0.250	2143.1	2952.7	152.84	25.68	53.48	187	
134	20.942	36.79	27789	8.51	-1719.9	-1641.8	117.17	26.37	74.28	498	3.271
134	20.942	377.60	5827	0.283	2128.8	2930.0	151.29	26.06	56.90	186	
136	22.986	37.55	24282	7.98	-1582.5	-1495.0	118.20	26.30	77.25	475	2.886
136	22.986	339.63	4715	0.320	2109.4	2908.5	150.53	26.47	61.03	186	
138	25.178	38.48	28776	7.44	-1441.1	-1343.2	119.24	26.38	81.19	451	2.511
138	25.178	385.34	4374	0.363	2084.2	2862.9	149.73	26.98	66.14	185	
140	27.581	39.35	17392	6.90	-1295.8	-1185.4	120.31	26.38	86.45	425	2.146
140	27.581	274.21	4083	0.412	2052.8	2816.1	148.98	27.38	72.63	183	
142	29.986	40.43	14184	6.36	-1143.0	-1020.1	121.41	26.52	93.61	398	1.792
142	29.986	245.75	3598	0.470	2011.3	2757.9	148.03	27.89	81.18	182	
144	32.631	41.68	11263	5.85	-983.4	-845.6	122.56	26.73	103.71	372	1.450
144	32.631	219.93	3154	0.530	1959.8	2685.6	147.89	28.48	93.04	181	
146	35.448	43.17	8737	5.28	-813.9	-658.9	123.76	27.08	114.96	343	1.122
146	35.448	195.88	2667	0.622	1894.8	2594.7	146.85	29.14	110.71	179	
148	38.446	44.99	6181	4.71	-638.4	-455.2	125.06	27.94	138.86	311	0.811
148	38.446	171.69	2124	0.727	1807.8	2477.4	144.88	29.95	140.18	177	
150	41.638	47.38	3867	4.13	-425.1	-225.2	126.58	28.28	179.13	278	0.521
150	41.638	149.13	1586	0.869	1688.2	2317.4	143.45	31.81	200.53	176	
152	45.041	50.90	1943	3.50	-179.5	52.7	128.23	29.94	281.53	240	0.258
152	45.041	126.20	848	1.07	1512.3	2088.2	141.62	33.36	366.53	171	
154	48.675	58.46	311	2.66	200.0	488.4	130.94	33.38	1249.48	192	0.041
154	48.675	97.80	404	1.43	1165.1	1647.5	138.47	37.02	794.32	166	
154.576	49.767	73.37									0.000
154.576	49.767	73.37									

THERMODYNAMIC PROPERTIES OF COEXISTING GASEOUS AND LIQUID OXYGEN

TEMPERATURE	DENSITY	V(DH/DV)p	V(DP/DU)v	-V(DP/DV)t	(DV/DT)p/V	THERMAL CONDUCTIVITY	VISCOSITY	THERMAL DIFFUSIVITY	DIELECTRIC CONSTANT	PRANDTL NUMBER
KELVIN	GMOLE/CC	J/GMOLE	CC-ATM/J	ATM	1/KELVIN	MW/CM-K	G/CM-S x 10^3	SQ CM/SEC		
112	0.031992	9765.65	16.654	2450.32	0.0059441	1.21600	1.1393	0.00065	1.43083	1.7005
112	0.000760	2776.62	4.034	5.31	0.0131842	0.11882	0.0947	0.00427	1.00904	0.9116
114	0.031618	9497.25	16.262	2259.81	0.0061803	1.18787	1.0933	0.00064	1.42519	1.6878
114	0.000861	2784.45	4.039	5.95	0.0134843	0.12274	0.0977	0.00380	1.01025	0.9344
116	0.031235	9223.57	15.867	2076.37	0.0064428	1.15963	1.0494	0.00062	1.41942	1.6606
116	0.000973	2789.18	4.045	6.62	0.0138350	0.12684	0.1009	0.00338	1.01159	0.9597
118	0.030842	8944.40	15.467	1899.94	0.0067364	1.13127	1.0087	0.00061	1.41352	1.6796
118	0.001097	2790.73	4.051	7.34	0.0142428	0.13115	0.1043	0.00301	1.01307	0.9879
120	0.030438	8659.48	15.061	1730.48	0.0070666	1.10279	0.9708	0.00059	1.40747	1.6834
120	0.001232	2789.04	4.057	8.08	0.0147157	0.13568	0.1078	0.00268	1.01469	1.0195
122	0.030023	8368.64	14.649	1567.96	0.0074403	1.07416	0.9353	0.00057	1.40126	1.6943
122	0.001381	2784.81	4.062	8.84	0.0152639	0.14046	0.1116	0.00239	1.01648	1.0549
124	0.029593	8071.70	14.228	1412.43	0.0078663	1.04538	0.9020	0.00056	1.39486	1.7121
124	0.001545	2775.57	4.068	9.62	0.0159003	0.14550	0.1155	0.00213	1.01845	1.0949
126	0.029148	7768.61	13.796	1263.92	0.0083557	1.01643	0.8708	0.00054	1.38826	1.7379
126	0.001725	2763.62	4.075	10.41	0.0166417	0.15250	0.1197	0.00192	1.02061	1.1279
128	0.028667	7459.52	13.351	1122.56	0.0089226	0.98726	0.8470	0.00052	1.38142	1.7844
128	0.001923	2748.88	4.081	11.19	0.0175099	0.16008	0.1241	0.00173	1.02308	1.1657
130	0.028212	7297.18	12.815	1014.76	0.0094774	0.95829	0.8235	0.00049	1.37443	1.8572
130	0.002141	2726.83	4.087	11.94	0.0185562	0.16846	0.1288	0.00155	1.02563	1.2090
132	0.027711	6966.14	12.298	889.39	0.0101485	0.92872	0.7993	0.00047	1.36706	1.9014
132	0.002382	2703.70	4.094	12.66	0.0197808	0.17773	0.1338	0.00140	1.02854	1.2585
134	0.027184	6591.80	11.876	755.44	0.0112687	0.89882	0.7746	0.00045	1.35935	2.0005
134	0.002648	2676.75	4.101	13.31	0.0212578	0.18810	0.1392	0.00125	1.03176	1.3162
136	0.026629	6260.21	11.395	646.61	0.0123405	0.86855	0.7493	0.00042	1.35125	2.0828
136	0.002944	2645.93	4.109	13.88	0.0230673	0.19981	0.1450	0.00111	1.03536	1.3845
138	0.026040	5906.75	10.858	541.02	0.0137460	0.83782	0.7233	0.00040	1.34269	2.1906
138	0.003275	2611.21	4.118	14.33	0.0253293	0.21323	0.1514	0.00098	1.03938	1.4672
140	0.025411	5540.21	10.287	441.94	0.0156035	0.80691	0.6965	0.00037	1.33359	2.3329
140	0.003647	2572.60	4.128	14.68	0.0282315	0.22691	0.1583	0.00086	1.04392	1.5693
142	0.024732	5162.80	9.698	358.79	0.0181314	0.77446	0.6686	0.00033	1.32382	2.5254
142	0.004069	2538.18	4.138	14.64	0.0328863	0.24774	0.1659	0.00075	1.04948	1.6993
144	0.023990	4791.62	9.118	270.19	0.0216435	0.74140	0.6393	0.00030	1.31320	2.7949
144	0.004555	2484.09	4.149	14.37	0.0374563	0.27128	0.1745	0.00064	1.05505	1.8709
146	0.023167	4408.21	8.419	202.40	0.0260785	0.71211	0.6082	0.00027	1.30148	3.0686
146	0.005126	2434.71	4.161	13.67	0.0454734	0.30254	0.1845	0.00053	1.06210	2.1096
148	0.022227	3972.25	7.788	135.61	0.0347553	0.71096	0.5745	0.00023	1.28819	3.4866
148	0.005818	2382.81	4.172	12.36	0.0588294	0.34833	0.1963	0.00043	1.07067	2.4683
150	0.021107	3535.77	6.927	81.62	0.0506619	0.72352	0.5367	0.00019	1.27246	4.1524
150	0.006705	2330.22	4.180	10.10	0.0860549	0.42858	0.2112	0.00032	1.08174	3.0886
152	0.019648	3070.27	5.949	38.17	0.0916949	0.78199	0.4909	0.00014	1.25218	5.5232
152	0.007924	2284.42	4.041	6.66	0.1604484	0.60389	0.2318	0.00021	1.09747	4.3967
154	0.017104	2497.74	4.678	5.33	0.5002429	1.07329	0.4198	0.00005	1.21734	15.2727
154	0.010225	2291.54	3.782	4.13	0.3466316	0.70937	0.2719	0.00009	1.12642	9.5134
154.576	0.013630	2253.60					0.3381		1.17082	
154.576	0.013630	2253.60					0.3381		1.17082	

Table C-2

Thermodynamic Properties of Oxygen (Isobars, Metric Units)

THERMODYNAMIC PROPERTIES OF OXYGEN

0.100 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p	VELOCITY OF SOUND M/SEC
* 54.352	24.49	284171	38.93	-6189.6	-6189.3	67.11	35.65	53.26	1160
56	24.63	276363	37.99	-6101.8	-6101.5	68.70	35.29	53.26	1149
58	24.80	267059	36.87	-5995.3	-5995.0	70.57	34.86	53.25	1137
60	24.97	257940	35.77	-5888.8	-5888.5	72.37	34.45	53.25	1124
62	25.14	249002	34.70	-5782.2	-5782.0	74.12	34.06	53.26	1110
64	25.32	240242	33.65	-5675.7	-5675.5	75.81	33.67	53.27	1097
66	25.50	231656	32.63	-5569.2	-5568.9	77.45	33.30	53.29	1083
68	25.69	223243	31.63	-5462.6	-5462.3	79.04	32.94	53.31	1070
70	25.87	214998	30.65	-5355.9	-5355.6	80.58	32.59	53.34	1056
72	26.07	206919	29.70	-5249.2	-5248.9	82.09	32.26	53.38	1041
* 72.791	26.14	203767	29.32	-5206.9	-5206.7	82.67	32.13	53.40	1036
* 72.791	59371.84	5901	0.001	1497.0	2098.5	163.03	20.88	29.38	162
74	60374.67	6002	0.001	1522.3	2134.1	163.52	20.87	29.37	164
76	62033.01	6170	0.001	1564.2	2192.8	164.30	20.87	29.35	166
78	63690.09	6337	0.001	1606.1	2251.5	165.06	20.86	29.33	168
80	65346.03	6504	0.001	1648.0	2310.1	165.80	20.86	29.32	170
82	67000.94	6671	0.001	1689.8	2368.7	166.53	20.85	29.30	172
84	68654.92	6838	0.001	1731.7	2427.3	167.23	20.85	29.29	174
86	70308.06	7004	0.001	1773.5	2485.9	167.92	20.85	29.28	176
88	71960.42	7171	0.001	1815.3	2544.4	168.60	20.84	29.27	179
90	73612.07	7337	0.001	1857.1	2602.9	169.25	20.84	29.26	181
92	75263.08	7503	0.001	1898.8	2661.5	169.90	20.84	29.25	183
94	76913.49	7669	0.001	1940.6	2719.9	170.52	20.83	29.24	185
96	78563.36	7835	0.001	1982.4	2778.4	171.14	20.83	29.23	187
98	80212.72	8001	0.001	2024.1	2836.9	171.74	20.83	29.23	189
100	81861.63	8166	0.001	2065.9	2895.3	172.33	20.83	29.22	190
102	83510.18	8332	0.001	2107.6	2953.7	172.91	20.83	29.21	192
104	85158.18	8497	0.001	2149.3	3012.2	173.48	20.82	29.21	194
106	86805.89	8663	0.001	2191.0	3070.6	174.04	20.82	29.20	196
108	88453.26	8828	0.001	2232.7	3129.0	174.58	20.82	29.20	198
110	90100.32	8993	0.001	2274.4	3187.4	175.12	20.82	29.19	200
112	91747.08	9159	0.001	2316.1	3245.8	175.64	20.82	29.19	202
114	93393.56	9324	0.001	2357.8	3304.1	176.16	20.82	29.18	203
116	95039.79	9489	0.001	2399.5	3362.5	176.67	20.82	29.18	205
118	96685.78	9654	0.001	2441.2	3420.9	177.17	20.82	29.18	207
120	98331.55	9819	0.001	2482.9	3479.2	177.66	20.82	29.17	209
122	99977.10	9984	0.001	2524.5	3537.6	178.14	20.81	29.17	210
124	101622.46	10149	0.001	2566.2	3595.9	178.61	20.81	29.17	212
126	103267.64	10314	0.001	2607.9	3654.2	179.08	20.81	29.17	214
128	104912.64	10479	0.001	2649.5	3712.6	179.54	20.81	29.16	216
130	106557.47	10644	0.001	2691.2	3770.9	179.99	20.81	29.16	217
132	108202.16	10809	0.001	2732.9	3829.2	180.44	20.81	29.16	219
134	109846.70	10973	0.001	2774.5	3887.5	180.87	20.81	29.16	221
136	111491.10	11138	0.001	2816.2	3945.8	181.31	20.81	29.16	222
138	113135.38	11303	0.001	2857.8	4004.2	181.73	20.81	29.15	224
140	114779.53	11468	0.001	2899.5	4062.5	182.15	20.81	29.15	225
142	116423.57	11632	0.001	2941.1	4120.8	182.57	20.81	29.15	227
144	118067.50	11797	0.001	2982.7	4179.1	182.97	20.81	29.15	229
146	119711.33	11962	0.001	3024.4	4237.4	183.38	20.81	29.15	230
148	121355.06	12126	0.001	3066.0	4295.7	183.77	20.81	29.15	232
150	122998.69	12291	0.001	3107.7	4354.0	184.16	20.81	29.15	233
152	124642.24	12455	0.001	3149.3	4412.2	184.55	20.81	29.14	235
154	126285.71	12620	0.001	3190.9	4470.5	184.93	20.81	29.14	237
156	127929.10	12785	0.001	3232.6	4528.8	185.31	20.81	29.14	238
158	129572.41	12949	0.001	3274.2	4587.1	185.68	20.81	29.14	240
160	131215.65	13114	0.001	3315.8	4645.4	186.04	20.81	29.14	241
165	135323.46	13525	0.001	3419.9	4791.1	186.94	20.81	29.14	245
170	139430.89	13936	0.001	3524.0	4936.8	187.81	20.81	29.14	249
175	143537.98	14347	0.001	3628.1	5082.5	188.65	20.81	29.14	252
180	147644.77	14758	0.001	3732.2	5228.2	189.48	20.81	29.14	255
185	151751.30	15169	0.001	3836.2	5373.9	190.27	20.81	29.14	259
190	155857.58	15580	0.001	3940.3	5519.5	191.05	20.81	29.14	263
195	159963.64	15991	0.001	4044.4	5665.2	191.81	20.81	29.14	266
200	164069.50	16402	0.001	4148.5	5810.9	192.55	20.82	29.14	270
210	172280.71	17224	0.000	4356.8	6102.4	193.97	20.82	29.15	276
220	180491.32	18045	0.000	4565.1	6393.9	195.32	20.83	29.16	283
230	188701.42	18867	0.000	4773.5	6685.6	196.62	20.85	29.17	289
240	196911.11	19688	0.000	4982.2	6977.4	197.86	20.87	29.19	295
250	205120.44	20509	0.000	5191.0	7269.3	199.05	20.89	29.21	301
260	213329.46	21330	0.000	5400.0	7561.6	200.20	20.91	29.23	307
270	221538.21	22152	0.000	5609.3	7854.1	201.30	20.95	29.27	313
280	229746.73	22973	0.000	5819.0	8146.9	202.37	20.98	29.30	319
290	237955.04	23794	0.000	6029.0	8440.1	203.40	21.02	29.34	324
300	246163.18	24615	0.000	6239.5	8733.8	204.39	21.07	29.39	330
310	254371.16	25436	0.000	6450.5	9027.9	205.36	21.12	29.44	335
320	262579.00	26257	0.000	6662.1	9322.6	206.29	21.18	29.50	340
330	270786.70	27078	0.000	6874.2	9617.9	207.20	21.24	29.56	345
340	278994.30	27899	0.000	7087.0	9913.9	208.09	21.31	29.63	350

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

0.100 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	$V(\partial H/\partial V)_P$ J/GMOLE	$V(\partial P/\partial U)_V$ CC-ATM/J	$-V(\partial P/\partial V)_T$ ATM	$(\partial V/\partial T)_P/V$ 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S X 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 54.352	0.040832	15875.96	25.745	11603.36	0.0033551	1.92946	6.1942	0.00869	1.56869	5.3438
56	0.040606	15733.04	25.510	11222.05	0.0033851	1.91435	5.8474	0.00869	1.56566	5.0838
58	0.040331	15557.86	25.219	10770.69	0.0034229	1.89531	5.4549	0.00868	1.56064	4.7898
60	0.040054	15380.65	25.920	10331.52	0.0034623	1.87553	5.0913	0.00868	1.55622	4.5176
62	0.039776	15201.33	25.615	9904.26	0.0035035	1.85506	4.7544	0.00868	1.55178	4.2657
64	0.039497	15019.81	25.303	9488.71	0.0035466	1.83395	4.4423	0.00867	1.54732	4.0323
66	0.039216	14835.98	24.985	9084.54	0.0035917	1.81222	4.1531	0.00867	1.54285	3.8163
68	0.038933	14649.75	24.661	8691.54	0.0036390	1.78993	3.8852	0.00866	1.53837	3.6162
70	0.038649	14461.01	24.332	8309.44	0.0036886	1.76711	3.6370	0.00866	1.53387	3.4309
72	0.038363	14269.68	23.997	7937.99	0.0037409	1.74380	3.4070	0.00865	1.52934	3.2594
* 72.791	0.038249	14193.22	23.864	7793.90	0.0037623	1.73445	3.3208	0.00865	1.52755	3.1951
* 72.791	0.000017	2101.84	3.951	0.10	0.0139785	0.06605	0.0532	0.13346	1.00020	0.7401
74	0.000017	2137.52	3.951	0.10	0.0137393	0.06720	0.0542	0.13815	1.00020	0.7396
76	0.000016	2196.56	3.951	0.10	0.0133613	0.06912	0.0557	0.14609	1.00019	0.7388
78	0.000016	2255.54	3.950	0.10	0.0130043	0.07104	0.0572	0.15426	1.00019	0.7381
80	0.000015	2314.46	3.950	0.10	0.0126665	0.07297	0.0587	0.16265	1.00018	0.7374
82	0.000015	2373.34	3.950	0.10	0.0123463	0.07490	0.0603	0.17127	1.00018	0.7368
84	0.000015	2432.16	3.950	0.10	0.0120424	0.07684	0.0618	0.18011	1.00017	0.7363
86	0.000014	2490.95	3.949	0.10	0.0117535	0.07878	0.0633	0.18918	1.00017	0.7358
88	0.000014	2549.70	3.949	0.10	0.0114785	0.08072	0.0649	0.19847	1.00016	0.7353
90	0.000014	2608.42	3.949	0.10	0.0112164	0.08266	0.0664	0.20798	1.00016	0.7349
92	0.000013	2667.10	3.949	0.10	0.0109662	0.08461	0.0680	0.21771	1.00016	0.7345
94	0.000013	2725.76	3.949	0.10	0.0107272	0.08655	0.0695	0.22767	1.00015	0.7341
96	0.000013	2784.39	3.948	0.10	0.0104986	0.08850	0.0711	0.23784	1.00015	0.7338
98	0.000012	2842.99	3.948	0.10	0.0102797	0.09044	0.0726	0.24824	1.00015	0.7334
100	0.000012	2901.57	3.948	0.10	0.0100699	0.09239	0.0742	0.25885	1.00014	0.7332
102	0.000012	2960.14	3.948	0.10	0.0098687	0.09434	0.0757	0.26967	1.00014	0.7329
104	0.000012	3018.68	3.948	0.10	0.0096755	0.09628	0.0773	0.28072	1.00014	0.7326
106	0.000012	3077.21	3.948	0.10	0.0094898	0.09822	0.0788	0.29197	1.00014	0.7324
108	0.000011	3135.72	3.948	0.10	0.0093112	0.10016	0.0804	0.30344	1.00013	0.7321
110	0.000011	3194.22	3.948	0.10	0.0091393	0.10210	0.0819	0.31512	1.00013	0.7319
112	0.000011	3252.70	3.948	0.10	0.0089737	0.10404	0.0835	0.32701	1.00013	0.7317
114	0.000011	3311.17	3.948	0.10	0.0088141	0.10597	0.0850	0.33911	1.00013	0.7315
116	0.000011	3369.62	3.948	0.10	0.0086601	0.10790	0.0865	0.35141	1.00012	0.7313
118	0.000010	3428.07	3.947	0.10	0.0085115	0.10982	0.0881	0.36392	1.00012	0.7311
120	0.000010	3486.51	3.947	0.10	0.0083679	0.11174	0.0896	0.37663	1.00012	0.7309
122	0.000010	3544.93	3.947	0.10	0.0082292	0.11366	0.0911	0.38954	1.00012	0.7307
124	0.000010	3603.35	3.947	0.10	0.0080953	0.11558	0.0926	0.40265	1.00012	0.7306
126	0.000010	3661.76	3.947	0.10	0.0079652	0.11748	0.0941	0.41597	1.00011	0.7304
128	0.000010	3720.16	3.947	0.10	0.0078395	0.11939	0.0957	0.42948	1.00011	0.7302
130	0.000009	3778.56	3.947	0.10	0.0077177	0.12129	0.0972	0.44318	1.00011	0.7301
132	0.000009	3836.95	3.947	0.10	0.0075997	0.12318	0.0987	0.45708	1.00011	0.7299
134	0.000009	3895.33	3.947	0.10	0.0074853	0.12507	0.1002	0.47117	1.00011	0.7298
136	0.000009	3953.71	3.947	0.10	0.0073743	0.12695	0.1017	0.48546	1.00011	0.7296
138	0.000009	4012.08	3.947	0.10	0.0072666	0.12883	0.1031	0.49993	1.00010	0.7295
140	0.000009	4070.45	3.947	0.10	0.0071620	0.13070	0.1046	0.51459	1.00010	0.7293
142	0.000009	4128.81	3.947	0.10	0.0070604	0.13257	0.1061	0.52945	1.00010	0.7292
144	0.000008	4187.17	3.947	0.10	0.0069616	0.13443	0.1076	0.54450	1.00010	0.7290
146	0.000008	4245.53	3.947	0.10	0.0068656	0.13629	0.1090	0.55973	1.00010	0.7289
148	0.000008	4303.89	3.947	0.10	0.0067722	0.13813	0.1105	0.57514	1.00010	0.7287
150	0.000008	4362.24	3.947	0.10	0.0066813	0.13998	0.1120	0.59072	1.00010	0.7286
152	0.000008	4420.59	3.947	0.10	0.0065929	0.14181	0.1134	0.60649	1.00010	0.7284
154	0.000008	4478.95	3.947	0.10	0.0065068	0.14364	0.1149	0.62244	1.00009	0.7283
156	0.000008	4537.30	3.947	0.10	0.0064229	0.14547	0.1163	0.63856	1.00009	0.7282
158	0.000008	4595.65	3.946	0.10	0.0063411	0.14728	0.1177	0.65486	1.00009	0.7280
160	0.000008	4654.01	3.946	0.10	0.0062615	0.14909	0.1192	0.67133	1.00009	0.7279
165	0.000007	4799.90	3.946	0.10	0.0060708	0.15359	0.1227	0.71327	1.00009	0.7276
170	0.000007	4945.82	3.946	0.10	0.0058915	0.15804	0.1262	0.75627	1.00009	0.7273
175	0.000007	5091.77	3.946	0.10	0.0057224	0.16246	0.1297	0.80033	1.00008	0.7270
180	0.000007	5237.78	3.946	0.10	0.0055629	0.16684	0.1332	0.84541	1.00008	0.7267
185	0.000007	5383.85	3.945	0.10	0.0054120	0.17118	0.1366	0.89152	1.00008	0.7264
190	0.000006	5530.00	3.945	0.10	0.0052691	0.17548	0.1399	0.93862	1.00008	0.7262
195	0.000006	5676.26	3.944	0.10	0.0051336	0.17974	0.1433	0.98670	1.00007	0.7259
200	0.000006	5822.63	3.944	0.10	0.0050049	0.18397	0.1466	1.03575	1.00007	0.7257
210	0.000006	6115.83	3.942	0.10	0.0047660	0.19231	0.1531	1.13668	1.00007	0.7253
220	0.000006	6409.80	3.940	0.10	0.0045489	0.20052	0.1595	1.24128	1.00007	0.7250
230	0.000005	6704.72	3.937	0.10	0.0043507	0.20860	0.1658	1.34939	1.00006	0.7247
240	0.000005	7000.83	3.934	0.10	0.0041691	0.21654	0.1720	1.46087	1.00006	0.7246
250	0.000005	7298.33	3.930	0.10	0.0040021	0.22436	0.1781	1.57558	1.00006	0.7245
260	0.000005	7597.45	3.924	0.10	0.0038480	0.23205	0.1842	1.69335	1.00006	0.7245
270	0.000005	7898.40	3.919	0.10	0.0037053	0.23964	0.1899	1.81405	1.00005	0.7246
280	0.000004	8201.37	3.912	0.10	0.0035729	0.24711	0.1956	1.93753	1.00005	0.7249
290	0.000004	8506.56	3.904	0.10	0.0034495	0.25448	0.2013	2.06366	1.00005	0.7252
300	0.000004	8814.12	3.895	0.10	0.0033344	0.26175	0.2068	2.19234	1.00005	0.7257
310	0.000004	9124.21	3.886	0.10	0.0032267	0.26892	0.2123	2.32347	1.00005	0.7263
320	0.000004	9436.95	3.875	0.10	0.0031258	0.27602	0.2177	2.45695	1.00005	0.7271
330	0.000004	9752.45	3.864	0.10	0.0030310	0.28303	0.2230	2.59271	1.00004	0.7279
340	0.000004	10070.77	3.852	0.10	0.0029418	0.28997	0.2283	2.73067	1.00004	0.7288

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

0.200 ATM ISOBAR

	TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p	VELOCITY OF SOUND M/SEC
*	54.353	24.49	284183	38.93	-6189.5	-6189.0	67.11	35.65	53.26	1160
	56	24.63	276381	37.99	-6101.8	-6101.3	68.78	35.29	53.26	1149
	58	24.79	267078	36.87	-5995.3	-5994.8	70.56	34.87	53.25	1137
	60	24.97	257959	35.77	-5888.8	-5888.3	72.37	34.45	53.25	1124
	62	25.14	249020	34.78	-5782.3	-5781.8	74.12	34.06	53.26	1110
	64	25.32	240261	33.65	-5675.8	-5675.3	75.81	33.67	53.27	1097
	66	25.50	231676	32.63	-5569.2	-5568.7	77.45	33.30	53.29	1083
	68	25.68	223263	31.63	-5462.6	-5462.1	79.04	32.94	53.31	1070
	70	25.87	215018	30.65	-5356.0	-5355.4	80.58	32.59	53.34	1056
	72	26.07	206939	29.70	-5249.2	-5248.7	82.09	32.26	53.38	1041
	74	26.26	199022	28.76	-5142.4	-5141.9	83.55	31.93	53.43	1027
	76	26.47	191265	27.85	-5035.5	-5035.0	84.98	31.61	53.49	1012
*	77.211	26.59	186643	27.31	-4978.7	-4978.2	85.82	31.43	53.53	1003
*	77.211	31354.61	6206	0.003	1583.4	2218.8	178.92	20.93	29.58	167
	78	31684.52	6273	0.003	1608.0	2242.1	179.22	20.93	29.56	168
	80	32520.18	6443	0.003	1642.2	2301.2	179.97	20.92	29.53	170
	82	33354.77	6613	0.002	1684.3	2360.2	180.78	20.91	29.50	172
	84	34188.37	6782	0.002	1726.4	2419.2	181.41	20.90	29.47	174
	86	35021.10	6951	0.002	1768.4	2478.1	182.10	20.90	29.45	176
	88	35853.03	7120	0.002	1810.5	2537.0	182.78	20.89	29.43	178
	90	36684.22	7288	0.002	1852.4	2595.8	183.44	20.88	29.41	180
	92	37514.75	7456	0.002	1894.4	2654.6	184.08	20.88	29.39	182
	94	38344.67	7624	0.002	1936.3	2713.4	184.72	20.87	29.37	184
	96	39174.03	7792	0.002	1978.3	2772.1	185.33	20.87	29.36	186
	98	40002.86	7959	0.002	2020.2	2830.8	185.94	20.86	29.34	188
	100	40831.25	8127	0.002	2062.1	2889.5	186.53	20.86	29.33	190
	102	41659.19	8294	0.002	2103.9	2948.1	187.11	20.86	29.32	192
	104	42486.72	8460	0.002	2145.8	3006.8	187.68	20.85	29.30	194
	106	43313.88	8627	0.002	2187.6	3065.4	188.24	20.85	29.29	196
	108	44140.70	8794	0.002	2229.4	3123.9	188.79	20.85	29.28	198
	110	44967.19	8960	0.002	2271.2	3182.5	189.32	20.84	29.28	200
	112	45793.38	9127	0.002	2313.0	3241.0	189.85	20.84	29.27	201
	114	46619.30	9293	0.002	2354.8	3299.6	190.37	20.84	29.26	203
	116	47444.95	9459	0.002	2396.6	3358.1	190.88	20.84	29.25	205
	118	48270.36	9625	0.002	2438.4	3416.6	191.38	20.84	29.25	207
	120	49095.55	9791	0.002	2480.1	3475.1	191.87	20.83	29.24	209
	122	49920.53	9957	0.002	2521.9	3533.5	192.35	20.83	29.23	210
	124	50745.30	10123	0.002	2563.6	3592.0	192.83	20.83	29.23	212
	126	51569.89	10288	0.002	2605.4	3650.5	193.30	20.83	29.22	214
	128	52394.31	10454	0.002	2647.1	3708.9	193.76	20.83	29.22	215
	130	53218.56	10620	0.002	2688.8	3767.3	194.21	20.83	29.21	217
	132	54042.66	10785	0.002	2730.6	3825.7	194.66	20.82	29.21	219
	134	54866.61	10951	0.001	2772.3	3884.2	195.10	20.82	29.20	221
	136	55690.42	11116	0.001	2814.0	3942.6	195.53	20.82	29.20	222
	138	56514.11	11281	0.001	2855.7	4001.0	195.95	20.82	29.20	224
	140	57337.67	11447	0.001	2897.4	4059.3	196.37	20.82	29.19	225
	142	58161.12	11612	0.001	2939.1	4117.7	196.79	20.82	29.19	227
	144	58984.46	11777	0.001	2980.8	4176.1	197.20	20.82	29.19	229
	146	59807.69	11942	0.001	3022.5	4234.5	197.60	20.82	29.18	230
	148	60630.83	12108	0.001	3064.2	4292.8	198.00	20.82	29.18	232
	150	61453.87	12273	0.001	3105.8	4351.2	198.39	20.82	29.18	233
	152	62276.83	12438	0.001	3147.5	4409.6	198.77	20.82	29.18	235
	154	63099.70	12603	0.001	3189.2	4467.9	199.16	20.81	29.17	237
	156	63922.49	12768	0.001	3230.9	4526.3	199.53	20.81	29.17	238
	158	64745.21	12933	0.001	3272.5	4584.6	199.90	20.81	29.17	240
	160	65567.86	13098	0.001	3314.2	4642.9	200.27	20.81	29.17	241
	165	67624.18	13510	0.001	3418.4	4788.8	201.17	20.81	29.16	245
	170	69680.12	13922	0.001	3522.5	4934.6	202.04	20.81	29.16	249
	175	71735.73	14334	0.001	3626.7	5080.4	202.88	20.81	29.16	252
	180	73791.03	14746	0.001	3730.8	5226.2	203.71	20.81	29.16	256
	185	75846.06	15157	0.001	3835.1	5372.0	204.50	20.81	29.16	259
	190	77900.85	15569	0.001	3939.1	5517.8	205.28	20.81	29.16	263
	195	79955.42	15981	0.001	4043.2	5663.5	206.04	20.82	29.16	266
	200	82009.80	16392	0.001	4147.4	5809.3	206.78	20.82	29.16	270
	210	86118.02	17215	0.001	4355.7	6100.9	208.20	20.83	29.16	276
	220	90225.64	18037	0.001	4564.1	6392.5	209.56	20.84	29.17	283
	230	94332.77	18859	0.001	4772.6	6684.3	210.85	20.85	29.18	289
	240	98439.47	19681	0.001	4981.3	6976.2	212.10	20.87	29.20	295
	250	102545.81	20503	0.001	5190.1	7268.2	213.29	20.89	29.22	301
	260	106651.85	21325	0.001	5399.2	7560.5	214.43	20.92	29.24	307
	270	110757.62	22147	0.001	5608.6	7853.1	215.54	20.95	29.27	313
	280	114863.15	22969	0.001	5818.3	8146.0	216.60	20.98	29.31	319
	290	118968.48	23790	0.001	6028.4	8439.3	217.63	21.03	29.35	324
	300	123073.63	24612	0.001	6238.9	8733.0	218.63	21.07	29.39	330
	310	127178.63	25433	0.001	6449.9	9027.2	219.59	21.12	29.45	335
	320	131283.48	26254	0.001	6661.5	9321.9	220.53	21.18	29.50	340
	330	135388.20	27076	0.001	6873.6	9617.3	221.44	21.24	29.56	345
	340	139492.81	27897	0.001	7086.4	9913.2	222.32	21.31	29.63	350

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

0.200 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	$V(\partial H/\partial V)_p$ J/GMOLE	$V(\partial P/\partial U)_V$ CC-ATM/J	$-V(\partial P/\partial V)_T$ ATM	$(\partial V/\partial T)_P/V$ 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S x 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 54.353	0.040833	15876.56	25.745	11603.92	0.0033549	1.92947	6.1945	0.00089	1.56869	5.3440
56	0.040607	15733.76	25.510	11222.89	0.0033849	1.91438	5.8479	0.00089	1.56516	5.0842
58	0.040331	15558.60	25.219	10771.53	0.0034227	1.89534	5.4554	0.00088	1.56065	4.7901
60	0.040054	15381.41	25.920	10332.36	0.0034621	1.87556	5.0918	0.00088	1.55622	4.5180
62	0.039776	15202.11	25.615	9905.13	0.0035033	1.85510	4.7548	0.00088	1.55178	4.2660
64	0.039497	15020.61	25.303	9489.56	0.0035464	1.83398	4.4427	0.00087	1.54733	4.0326
66	0.039216	14836.80	24.985	9085.40	0.0035914	1.81226	4.1535	0.00087	1.54286	3.8165
68	0.038934	14650.60	24.661	8692.40	0.0036387	1.78997	3.8856	0.00086	1.53838	3.6164
70	0.038649	14461.88	24.332	8310.39	0.0036884	1.76715	3.6374	0.00086	1.53387	3.4311
72	0.038363	14270.58	23.997	7938.86	0.0037406	1.74384	3.4074	0.00085	1.52935	3.2596
74	0.038075	14076.53	23.658	7577.83	0.0037956	1.72007	3.1943	0.00085	1.52480	3.1008
76	0.037785	13879.68	23.314	7226.96	0.0038537	1.69587	2.9969	0.00084	1.52023	2.9539
* 77.211	0.037608	13759.03	23.104	7019.32	0.0038904	1.68102	2.8845	0.00084	1.51745	2.8704
* 77.211	0.000032	2216.66	3.956	0.20	0.0133425	0.07061	0.0568	0.07485	1.00038	0.7441
78	0.000032	2240.17	3.955	0.20	0.0131963	0.07136	0.0574	0.07649	1.00037	0.7437
80	0.000031	2299.83	3.955	0.20	0.0128398	0.07328	0.0590	0.08070	1.00036	0.7426
82	0.000030	2359.38	3.954	0.20	0.0125031	0.07521	0.0605	0.08503	1.00036	0.7416
84	0.000029	2418.85	3.953	0.20	0.0121847	0.07713	0.0620	0.08947	1.00035	0.7407
86	0.000029	2478.22	3.953	0.20	0.0118830	0.07906	0.0636	0.09403	1.00034	0.7399
88	0.000028	2537.52	3.953	0.20	0.0115966	0.08100	0.0651	0.09869	1.00033	0.7392
90	0.000027	2596.74	3.952	0.20	0.0113244	0.08294	0.0666	0.10346	1.00032	0.7385
92	0.000027	2655.90	3.952	0.20	0.0110652	0.08487	0.0682	0.10834	1.00032	0.7378
94	0.000026	2715.00	3.951	0.20	0.0108181	0.08681	0.0697	0.11334	1.00031	0.7373
96	0.000026	2774.05	3.951	0.20	0.0105822	0.08875	0.0713	0.11844	1.00030	0.7367
98	0.000025	2833.05	3.951	0.20	0.0103568	0.09070	0.0728	0.12365	1.00030	0.7362
100	0.000024	2892.00	3.951	0.20	0.0101411	0.09264	0.0744	0.12897	1.00029	0.7358
102	0.000024	2950.91	3.950	0.20	0.0099345	0.09458	0.0759	0.13440	1.00028	0.7353
104	0.000024	3009.78	3.950	0.20	0.0097365	0.09652	0.0775	0.13993	1.00028	0.7349
106	0.000023	3068.62	3.950	0.20	0.0095464	0.09845	0.0790	0.14557	1.00027	0.7346
108	0.000023	3127.42	3.950	0.20	0.0093638	0.10039	0.0805	0.15132	1.00027	0.7342
110	0.000022	3186.19	3.950	0.20	0.0091882	0.10232	0.0821	0.15717	1.00026	0.7339
112	0.000022	3244.93	3.950	0.20	0.0090193	0.10426	0.0836	0.16313	1.00026	0.7336
114	0.000021	3303.65	3.949	0.20	0.0088567	0.10618	0.0852	0.16918	1.00025	0.7333
116	0.000021	3362.34	3.949	0.20	0.0086999	0.10811	0.0867	0.17535	1.00025	0.7330
118	0.000021	3421.01	3.949	0.20	0.0085487	0.11003	0.0882	0.18161	1.00025	0.7327
120	0.000020	3479.66	3.949	0.20	0.0084028	0.11195	0.0897	0.18798	1.00024	0.7324
122	0.000020	3538.28	3.949	0.20	0.0082619	0.11386	0.0913	0.19444	1.00024	0.7322
124	0.000020	3596.89	3.949	0.20	0.0081257	0.11577	0.0928	0.20101	1.00023	0.7319
126	0.000019	3655.49	3.949	0.20	0.0079940	0.11768	0.0943	0.20768	1.00023	0.7317
128	0.000019	3714.06	3.949	0.20	0.0078666	0.11958	0.0958	0.21444	1.00023	0.7315
130	0.000019	3772.62	3.949	0.20	0.0077433	0.12148	0.0973	0.22130	1.00022	0.7313
132	0.000019	3831.17	3.948	0.20	0.0076238	0.12337	0.0988	0.22826	1.00022	0.7311
134	0.000018	3889.71	3.948	0.20	0.0075080	0.12525	0.1003	0.23531	1.00022	0.7309
136	0.000018	3948.23	3.948	0.20	0.0073958	0.12713	0.1018	0.24246	1.00021	0.7307
138	0.000018	4006.74	3.948	0.20	0.0072869	0.12901	0.1033	0.24971	1.00021	0.7305
140	0.000017	4065.24	3.948	0.20	0.0071812	0.13088	0.1048	0.25705	1.00021	0.7303
142	0.000017	4123.74	3.948	0.20	0.0070785	0.13274	0.1062	0.26449	1.00020	0.7301
144	0.000017	4182.22	3.948	0.20	0.0069788	0.13461	0.1077	0.27203	1.00020	0.7299
146	0.000017	4240.70	3.948	0.20	0.0068819	0.13646	0.1092	0.27965	1.00020	0.7297
148	0.000016	4299.17	3.948	0.20	0.0067877	0.13831	0.1106	0.28737	1.00020	0.7295
150	0.000016	4357.63	3.948	0.20	0.0066961	0.14015	0.1121	0.29517	1.00019	0.7293
152	0.000016	4416.09	3.948	0.20	0.0066069	0.14199	0.1135	0.30307	1.00019	0.7291
154	0.000016	4474.54	3.948	0.20	0.0065201	0.14381	0.1150	0.31105	1.00019	0.7290
156	0.000016	4532.99	3.948	0.20	0.0064356	0.14564	0.1164	0.31912	1.00019	0.7288
158	0.000015	4591.44	3.948	0.20	0.0063532	0.14745	0.1179	0.32727	1.00018	0.7286
160	0.000015	4649.88	3.947	0.20	0.0062730	0.14926	0.1193	0.33552	1.00018	0.7285
165	0.000015	4795.99	3.947	0.20	0.0060810	0.15375	0.1228	0.35650	1.00018	0.7281
170	0.000014	4942.10	3.947	0.20	0.0059006	0.15820	0.1263	0.37802	1.00017	0.7278
175	0.000014	5088.24	3.947	0.20	0.0057306	0.16261	0.1298	0.40006	1.00017	0.7274
180	0.000014	5234.41	3.946	0.20	0.0055702	0.16699	0.1333	0.42261	1.00016	0.7271
185	0.000013	5380.63	3.946	0.20	0.0054186	0.17132	0.1367	0.44568	1.00016	0.7268
190	0.000013	5526.93	3.946	0.20	0.0052751	0.17562	0.1400	0.46924	1.00015	0.7265
195	0.000013	5673.31	3.945	0.20	0.0051390	0.17988	0.1434	0.49329	1.00015	0.7263
200	0.000012	5819.81	3.944	0.20	0.0050098	0.18410	0.1467	0.51783	1.00014	0.7260
210	0.000012	6113.24	3.943	0.20	0.0047701	0.19244	0.1532	0.56831	1.00014	0.7256
220	0.000011	6407.40	3.941	0.20	0.0045523	0.20064	0.1596	0.62063	1.00013	0.7252
230	0.000011	6702.50	3.938	0.20	0.0043536	0.20871	0.1659	0.67470	1.00013	0.7250
240	0.000010	6998.77	3.935	0.20	0.0041716	0.21665	0.1721	0.73045	1.00012	0.7248
250	0.000010	7296.41	3.930	0.20	0.0040042	0.22446	0.1781	0.78782	1.00012	0.7247
260	0.000009	7595.66	3.925	0.20	0.0038498	0.23215	0.1841	0.84672	1.00011	0.7247
270	0.000009	7896.73	3.919	0.20	0.0037069	0.23973	0.1899	0.90708	1.00011	0.7248
280	0.000009	8199.81	3.912	0.20	0.0035742	0.24720	0.1957	0.96883	1.00010	0.7250
290	0.000008	8505.10	3.904	0.20	0.0034507	0.25456	0.2013	1.03191	1.00010	0.7254
300	0.000008	8812.76	3.896	0.20	0.0033355	0.26183	0.2069	1.09626	1.00010	0.7258
310	0.000008	9122.94	3.886	0.20	0.0032277	0.26900	0.2124	1.16184	1.00009	0.7264
320	0.000008	9435.76	3.876	0.20	0.0031267	0.27609	0.2177	1.22859	1.00009	0.7271
330	0.000007	9751.33	3.864	0.20	0.0030318	0.28310	0.2231	1.29648	1.00009	0.7280
340	0.000007	10069.73	3.852	0.20	0.0029425	0.29004	0.2283	1.36547	1.00009	0.7289

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

0.300 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p J/G MOLE -K	VELOCITY OF SOUND M/SEC
* 54.354	24.49	284196	38.93	-6189.5	-6188.8	67.11	35.65	53.26	1160
56	24.63	276399	37.99	-6101.9	-6101.1	68.70	35.29	53.26	1149
58	24.79	267896	36.87	-5995.4	-5994.6	70.56	34.87	53.25	1137
60	24.97	257977	35.77	-5888.9	-5888.1	72.37	34.46	53.25	1124
62	25.14	249039	34.70	-5782.4	-5781.6	74.12	34.06	53.26	1110
64	25.32	240280	33.65	-5675.8	-5675.1	75.81	33.67	53.27	1097
66	25.50	231695	32.63	-5569.3	-5568.5	77.45	33.30	53.28	1083
68	25.68	223282	31.63	-5462.7	-5461.9	79.04	32.94	53.31	1070
70	25.87	215038	30.65	-5356.0	-5355.2	80.58	32.59	53.34	1055
72	26.07	206959	29.70	-5249.3	-5248.5	82.09	32.26	53.38	1041
74	26.26	199043	28.76	-5142.5	-5141.7	83.55	31.93	53.43	1027
76	26.47	191285	27.85	-5035.6	-5034.8	84.98	31.61	53.49	1012
78	26.67	183684	26.96	-4928.5	-4927.7	86.37	31.31	53.56	997
80	26.88	176234	26.09	-4821.3	-4820.5	87.72	31.01	53.64	982
* 80.081	26.89	175936	26.05	-4817.0	-4816.2	87.78	31.00	53.64	982
* 80.081	21539.67	6388	0.004	1638.0	2294.6	176.55	20.98	29.75	169
82	22138.21	6554	0.004	1678.7	2351.6	177.26	20.97	29.71	171
84	22698.52	6726	0.004	1721.0	2411.0	177.97	20.96	29.66	174
86	23257.91	6897	0.004	1763.3	2470.3	178.67	20.95	29.63	176
88	23816.47	7066	0.003	1805.6	2529.5	179.35	20.94	29.59	178
90	24374.28	7239	0.003	1847.8	2588.7	180.01	20.93	29.56	180
92	24931.39	7409	0.003	1889.9	2647.8	180.66	20.92	29.53	182
94	25487.89	7579	0.003	1932.0	2706.8	181.30	20.91	29.51	184
96	26043.81	7748	0.003	1974.1	2765.8	181.92	20.91	29.48	186
98	26599.20	7918	0.003	2016.2	2824.7	182.53	20.90	29.46	188
100	27154.11	8086	0.003	2058.2	2883.6	183.12	20.89	29.44	190
102	27708.57	8255	0.003	2100.2	2942.5	183.71	20.89	29.42	192
104	28262.62	8423	0.003	2142.2	3001.3	184.28	20.88	29.40	194
106	28816.29	8591	0.003	2184.2	3060.1	184.84	20.88	29.39	196
108	29369.61	8759	0.003	2226.1	3118.9	185.39	20.87	29.37	198
110	29922.61	8927	0.003	2268.0	3177.6	185.92	20.87	29.36	199
112	30475.30	9095	0.003	2309.9	3236.3	186.45	20.86	29.35	201
114	31027.71	9262	0.003	2351.8	3295.0	186.97	20.86	29.33	203
116	31579.85	9429	0.003	2393.7	3353.7	187.48	20.86	29.32	205
118	32131.76	9596	0.003	2435.6	3412.3	187.98	20.85	29.31	207
120	32683.43	9763	0.003	2477.4	3470.9	188.48	20.85	29.30	208
122	33234.89	9930	0.002	2519.3	3529.5	188.96	20.85	29.29	210
124	33786.15	10096	0.002	2561.1	3588.1	189.44	20.85	29.29	212
126	34337.22	10263	0.002	2602.9	3646.7	189.91	20.84	29.28	214
128	34888.12	10429	0.002	2644.7	3705.2	190.37	20.84	29.27	215
130	35438.85	10596	0.002	2686.5	3763.7	190.82	20.84	29.26	217
132	35989.42	10762	0.002	2728.3	3822.3	191.27	20.84	29.26	219
134	36539.85	10928	0.002	2770.1	3880.8	191.71	20.84	29.25	220
136	37090.14	11094	0.002	2811.8	3939.3	192.14	20.83	29.24	222
138	37640.30	11260	0.002	2853.6	3997.8	192.57	20.83	29.24	224
140	38190.34	11426	0.002	2895.3	4056.2	192.99	20.83	29.23	225
142	38740.26	11592	0.002	2937.1	4114.7	193.40	20.83	29.23	227
144	39290.07	11757	0.002	2978.8	4173.1	193.81	20.83	29.22	229
146	39839.78	11923	0.002	3020.6	4231.6	194.21	20.83	29.22	230
148	40389.38	12089	0.002	3062.3	4290.0	194.61	20.83	29.22	232
150	40938.90	12254	0.002	3104.0	4348.5	195.00	20.82	29.21	233
152	41488.33	12420	0.002	3145.7	4406.9	195.39	20.82	29.21	235
154	42037.67	12585	0.002	3187.5	4465.3	195.77	20.82	29.21	236
156	42586.93	12751	0.002	3229.2	4523.7	196.15	20.82	29.20	238
158	43136.12	12916	0.002	3270.9	4582.1	196.52	20.82	29.20	239
160	43685.24	13082	0.002	3312.6	4640.5	196.89	20.82	29.20	241
165	45057.74	13495	0.002	3416.8	4786.5	197.79	20.82	29.19	245
170	46429.85	13908	0.002	3521.1	4932.4	198.66	20.82	29.18	248
175	47801.63	14321	0.002	3625.3	5078.3	199.50	20.82	29.18	252
180	49173.11	14733	0.002	3729.5	5224.2	200.33	20.82	29.18	256
185	50544.31	15146	0.002	3833.7	5370.1	201.13	20.82	29.17	259
190	51915.27	15558	0.002	3937.9	5516.0	201.90	20.82	29.17	263
195	53286.01	15970	0.002	4042.1	5661.8	202.66	20.82	29.17	266
200	54656.56	16382	0.002	4146.3	5807.7	203.40	20.82	29.17	270
210	57397.12	17206	0.001	4354.7	6099.4	204.82	20.83	29.17	276
220	60137.09	18029	0.001	4563.1	6391.2	206.18	20.84	29.18	283
230	62876.55	18852	0.001	4771.7	6683.0	207.48	20.85	29.19	289
240	65615.59	19675	0.001	4980.4	6975.0	208.72	20.87	29.20	295
250	68354.28	20498	0.001	5189.3	7267.1	209.91	20.89	29.22	301
260	71092.65	21320	0.001	5398.5	7559.5	211.06	20.92	29.25	307
270	73830.75	22142	0.001	5607.9	7852.1	212.16	20.95	29.28	313
280	76568.63	22964	0.001	5817.6	8145.1	213.23	20.98	29.31	319
290	79306.30	23786	0.001	6027.7	8438.4	214.26	21.03	29.35	324
300	82043.79	24608	0.001	6238.3	8732.2	215.26	21.07	29.40	330
310	84781.12	25430	0.001	6449.3	9026.4	216.22	21.12	29.45	335
320	87518.31	26252	0.001	6660.9	9321.2	217.16	21.18	29.51	340
330	90255.37	27074	0.001	6873.1	9616.6	218.06	21.24	29.57	345
340	92992.32	27895	0.001	7085.9	9912.6	218.95	21.31	29.63	350

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

0.300 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	$V(\partial H/\partial V)_p$ J/GMOLE	$V(\partial P/\partial U)_v$ CC-ATM/J	$-V(\partial P/\partial V)_T$ ATM	$(\partial V/\partial T)_P/V$ 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S X 10^4	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 54.354	0.040833	15877.17	25.744	11604.49	0.0033548	1.92949	6.1948	0.00089	1.56869	5.3442
56	0.040607	15734.48	25.510	11223.73	0.0033847	1.91441	5.8485	0.00089	1.56507	5.0845
58	0.040331	15559.34	25.219	10772.37	0.0034225	1.89537	5.4559	0.00088	1.56065	4.7965
60	0.040055	15382.17	25.921	10333.21	0.0034619	1.87559	5.0923	0.00088	1.55623	4.5183
62	0.039777	15202.90	25.615	9905.98	0.0035031	1.85513	4.7553	0.00088	1.55179	4.2663
64	0.039497	15021.41	25.303	9490.41	0.0035461	1.83402	4.4432	0.00087	1.54734	4.0329
66	0.039216	14837.63	24.985	9086.26	0.0035912	1.81230	4.1539	0.00087	1.54287	3.8168
68	0.038934	14651.45	24.661	8693.26	0.0036385	1.79001	3.8860	0.00086	1.53838	3.6167
70	0.038650	14462.76	24.332	8311.17	0.0036881	1.76720	3.6378	0.00086	1.53388	3.4314
72	0.038364	14271.48	23.997	7939.73	0.0037403	1.74389	3.4078	0.00085	1.52936	3.2598
74	0.038076	14077.46	23.658	7578.73	0.0037953	1.72012	3.1947	0.00085	1.52481	3.1010
76	0.037786	13880.63	23.314	7227.84	0.0038533	1.69592	2.9973	0.00084	1.52024	2.9541
78	0.037493	13680.83	22.967	6886.91	0.0039147	1.67132	2.8144	0.00083	1.51564	2.8183
80	0.037199	13477.96	22.615	6555.66	0.0039796	1.64635	2.6449	0.00083	1.51102	2.6929
* 80.081	0.037187	13469.67	22.600	6542.43	0.0039823	1.64533	2.6383	0.00082	1.51083	2.6880
* 80.081	0.000046	2287.64	3.959	0.30	0.0130049	0.07367	0.0593	0.05349	1.00055	0.7479
82	0.000045	2345.37	3.958	0.30	0.0126658	0.07551	0.0607	0.05627	1.00054	0.7466
84	0.000044	2405.48	3.957	0.30	0.0123319	0.07743	0.0623	0.05925	1.00052	0.7453
86	0.000043	2467.45	3.957	0.30	0.0120166	0.07935	0.0638	0.06230	1.00051	0.7442
88	0.000042	2525.30	3.956	0.30	0.0117182	0.08128	0.0653	0.06542	1.00050	0.7431
90	0.000041	2585.04	3.955	0.30	0.0114353	0.08321	0.0669	0.06861	1.00049	0.7422
92	0.000040	2644.68	3.955	0.30	0.0111666	0.08514	0.0684	0.07188	1.00048	0.7413
94	0.000039	2704.24	3.954	0.30	0.0109110	0.08708	0.0699	0.07522	1.00047	0.7405
96	0.000038	2763.70	3.954	0.30	0.0106676	0.08901	0.0715	0.07863	1.00046	0.7398
98	0.000038	2823.16	3.953	0.30	0.0104353	0.09095	0.0730	0.08212	1.00045	0.7391
100	0.000037	2882.42	3.953	0.30	0.0102136	0.09288	0.0746	0.08567	1.00044	0.7385
102	0.000036	2941.68	3.953	0.30	0.0100015	0.09482	0.0761	0.08930	1.00043	0.7379
104	0.000035	3000.86	3.952	0.30	0.0097984	0.09675	0.0776	0.09300	1.00042	0.7373
106	0.000035	3060.02	3.952	0.30	0.0096038	0.09869	0.0792	0.09677	1.00041	0.7368
108	0.000034	3119.11	3.952	0.30	0.0094171	0.10062	0.0807	0.10061	1.00040	0.7363
110	0.000033	3178.16	3.952	0.30	0.0092378	0.10255	0.0822	0.10452	1.00040	0.7359
112	0.000033	3237.17	3.951	0.30	0.0090655	0.10448	0.0838	0.10849	1.00039	0.7355
114	0.000032	3296.13	3.951	0.30	0.0088997	0.10640	0.0853	0.11254	1.00038	0.7351
116	0.000032	3355.06	3.951	0.30	0.0087401	0.10832	0.0868	0.11666	1.00038	0.7347
118	0.000031	3413.95	3.951	0.30	0.0085863	0.11024	0.0884	0.12084	1.00037	0.7343
120	0.000031	3472.81	3.951	0.30	0.0084380	0.11215	0.0899	0.12509	1.00036	0.7340
122	0.000030	3531.64	3.951	0.30	0.0082949	0.11407	0.0914	0.12941	1.00036	0.7337
124	0.000030	3590.44	3.950	0.30	0.0081566	0.11597	0.0929	0.13379	1.00035	0.7333
126	0.000029	3649.21	3.950	0.30	0.0080231	0.11787	0.0944	0.13824	1.00035	0.7330
128	0.000029	3707.97	3.950	0.30	0.0078940	0.11977	0.0959	0.14276	1.00034	0.7328
130	0.000028	3766.69	3.950	0.30	0.0077690	0.12166	0.0974	0.14734	1.00033	0.7325
132	0.000028	3825.40	3.950	0.30	0.0076481	0.12355	0.0989	0.15198	1.00033	0.7322
134	0.000027	3884.09	3.950	0.30	0.0075309	0.12544	0.1004	0.15669	1.00032	0.7320
136	0.000027	3942.76	3.950	0.30	0.0074174	0.12731	0.1019	0.16147	1.00032	0.7317
138	0.000027	4001.41	3.950	0.30	0.0073073	0.12918	0.1034	0.16630	1.00032	0.7315
140	0.000026	4060.04	3.949	0.30	0.0072005	0.13105	0.1049	0.17120	1.00031	0.7312
142	0.000026	4118.66	3.949	0.30	0.0070968	0.13292	0.1064	0.17617	1.00031	0.7310
144	0.000025	4177.27	3.949	0.30	0.0069961	0.13478	0.1078	0.18120	1.00030	0.7307
146	0.000025	4235.86	3.949	0.30	0.0068983	0.13664	0.1093	0.18629	1.00030	0.7305
148	0.000025	4294.45	3.949	0.30	0.0068033	0.13848	0.1108	0.19144	1.00029	0.7302
150	0.000024	4353.02	3.949	0.30	0.0067109	0.14033	0.1122	0.19665	1.00029	0.7300
152	0.000024	4411.58	3.949	0.30	0.0066210	0.14216	0.1137	0.20192	1.00029	0.7298
154	0.000024	4470.14	3.949	0.30	0.0065335	0.14399	0.1151	0.20725	1.00028	0.7296
156	0.000023	4528.68	3.949	0.30	0.0064483	0.14580	0.1165	0.21263	1.00028	0.7294
158	0.000023	4587.22	3.949	0.30	0.0063653	0.14762	0.1180	0.21808	1.00028	0.7292
160	0.000023	4645.76	3.949	0.30	0.0062845	0.14942	0.1194	0.22358	1.00027	0.7291
165	0.000022	4792.68	3.948	0.30	0.0060913	0.15391	0.1229	0.23758	1.00026	0.7286
170	0.000022	4938.39	3.948	0.30	0.0059097	0.15836	0.1264	0.25193	1.00026	0.7282
175	0.000021	5084.70	3.948	0.30	0.0057388	0.16277	0.1299	0.26664	1.00025	0.7279
180	0.000020	5231.04	3.947	0.30	0.0055776	0.16713	0.1334	0.28168	1.00024	0.7275
185	0.000020	5377.41	3.947	0.30	0.0054253	0.17146	0.1368	0.29707	1.00023	0.7272
190	0.000019	5523.85	3.947	0.30	0.0052811	0.17576	0.1401	0.31278	1.00023	0.7269
195	0.000019	5670.37	3.946	0.30	0.0051445	0.18001	0.1435	0.32882	1.00022	0.7266
200	0.000018	5816.99	3.945	0.30	0.0050148	0.18423	0.1468	0.34519	1.00022	0.7263
210	0.000017	6110.64	3.944	0.30	0.0047742	0.19256	0.1533	0.37886	1.00021	0.7259
220	0.000017	6405.00	3.942	0.30	0.0045558	0.20075	0.1597	0.41374	1.00020	0.7255
230	0.000016	6700.28	3.939	0.30	0.0043565	0.20882	0.1660	0.44980	1.00019	0.7252
240	0.000015	6996.71	3.935	0.30	0.0041741	0.21675	0.1722	0.48698	1.00018	0.7249
250	0.000015	7294.50	3.931	0.30	0.0040064	0.22456	0.1782	0.52523	1.00017	0.7248
260	0.000014	7593.88	3.926	0.30	0.0038516	0.23225	0.1842	0.56451	1.00017	0.7248
270	0.000014	7895.06	3.920	0.30	0.0037085	0.23982	0.1900	0.60476	1.00016	0.7249
280	0.000013	8198.26	3.913	0.30	0.0035756	0.24729	0.1957	0.64593	1.00015	0.7251
290	0.000013	8503.65	3.905	0.30	0.0034519	0.25465	0.2014	0.68799	1.00015	0.7255
300	0.000012	8811.40	3.896	0.30	0.0033365	0.26191	0.2069	0.73090	1.00014	0.7259
310	0.000012	9121.67	3.887	0.30	0.0032286	0.26908	0.2124	0.77463	1.00014	0.7265
320	0.000011	9434.57	3.876	0.30	0.0031275	0.27617	0.2178	0.81913	1.00014	0.7272
330	0.000011	9750.22	3.865	0.30	0.0030325	0.28318	0.2231	0.86440	1.00013	0.7281
340	0.000011	10068.69	3.853	0.30	0.0029431	0.29012	0.2284	0.91040	1.00013	0.7290

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

0.400 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p	VELOCITY OF SOUND M/SEC
* 54.355	24.49	284208	38.93	-6189.5	-6188.5	67.11	35.65	53.26	1160
56	24.63	276418	37.99	-6101.9	-6100.9	68.69	35.29	53.26	1149
58	24.79	267114	36.87	-5995.4	-5994.4	70.56	34.87	53.25	1137
60	24.97	257996	35.77	-5888.9	-5887.9	72.37	34.46	53.25	1124
62	25.14	249058	34.70	-5782.4	-5781.4	74.11	34.06	53.26	1110
64	25.32	240299	33.66	-5675.9	-5674.9	75.81	33.67	53.27	1097
66	25.50	231714	32.63	-5569.3	-5568.3	77.45	33.30	53.28	1083
68	25.68	223302	31.63	-5462.7	-5461.7	79.04	32.94	53.31	1070
70	25.87	215058	30.65	-5356.1	-5355.1	80.58	32.59	53.34	1056
72	26.07	206979	29.70	-5249.4	-5248.3	82.09	32.26	53.38	1041
74	26.26	199063	28.76	-5142.6	-5141.5	83.55	31.93	53.43	1027
76	26.46	191306	27.85	-5035.7	-5034.6	84.97	31.62	53.49	1012
78	26.67	183704	26.96	-4928.6	-4927.5	86.36	31.31	53.55	997
80	26.88	176256	26.09	-4821.4	-4820.3	87.72	31.01	53.64	982
82	27.10	168956	25.24	-4714.0	-4712.9	89.05	30.73	53.73	967
* 82.264	27.13	168004	25.13	-4699.9	-4698.8	89.22	30.69	53.74	965
* 82.264	16585.00	6517	0.005	1678.6	2350.8	174.89	21.03	29.91	171
84	16952.81	6669	0.005	1715.6	2402.7	175.51	21.02	29.86	173
86	17375.64	6843	0.005	1758.1	2462.4	176.22	21.00	29.81	175
88	17797.61	7016	0.005	1800.6	2522.0	176.90	20.99	29.76	178
90	18218.79	7189	0.005	1843.0	2581.4	177.57	20.98	29.72	180
92	18639.27	7362	0.004	1885.4	2640.8	178.22	20.96	29.68	182
94	19059.18	7533	0.004	1927.7	2700.2	178.86	20.95	29.64	184
96	19478.35	7705	0.004	1970.0	2759.4	179.48	20.94	29.61	186
98	19897.05	7876	0.004	2012.2	2818.6	180.09	20.93	29.58	188
100	20315.26	8046	0.004	2054.4	2877.7	180.69	20.93	29.55	190
102	20733.02	8216	0.004	2096.5	2936.8	181.28	20.92	29.53	192
104	21150.36	8386	0.004	2138.6	2995.9	181.85	20.91	29.50	194
106	21567.31	8556	0.004	2180.7	3054.8	182.41	20.90	29.48	195
108	21983.90	8725	0.004	2222.8	3113.8	182.96	20.90	29.46	197
110	22400.17	8894	0.004	2264.8	3172.7	183.50	20.89	29.44	199
112	22816.12	9062	0.004	2306.8	3231.6	184.03	20.89	29.43	201
114	23231.79	9231	0.004	2348.8	3290.4	184.55	20.88	29.41	203
116	23647.20	9399	0.003	2390.8	3349.2	185.07	20.88	29.40	205
118	24062.35	9567	0.003	2432.8	3408.0	185.57	20.87	29.38	206
120	24477.28	9735	0.003	2474.7	3466.8	186.06	20.87	29.37	208
122	24891.99	9902	0.003	2516.6	3525.5	186.55	20.87	29.36	210
124	25306.50	10070	0.003	2558.5	3584.2	187.02	20.86	29.35	212
126	25720.82	10237	0.003	2600.4	3642.9	187.49	20.86	29.33	214
128	26134.96	10404	0.003	2642.3	3701.5	187.96	20.86	29.32	215
130	26548.93	10571	0.003	2684.1	3760.2	188.41	20.85	29.31	217
132	26962.75	10738	0.003	2726.0	3818.8	188.86	20.85	29.31	219
134	27376.42	10905	0.003	2767.8	3877.4	189.30	20.85	29.30	220
136	27789.95	11072	0.003	2809.6	3936.0	189.73	20.85	29.29	222
138	28203.35	11238	0.003	2851.5	3994.5	190.16	20.84	29.28	224
140	28616.63	11405	0.003	2893.3	4053.1	190.58	20.84	29.28	225
142	29029.79	11571	0.003	2935.1	4111.6	191.00	20.84	29.27	227
144	29442.84	11738	0.003	2976.9	4170.2	191.41	20.84	29.26	228
146	29855.79	11904	0.003	3018.6	4228.7	191.81	20.84	29.26	230
148	30268.64	12070	0.003	3060.4	4287.2	192.21	20.84	29.25	232
150	30681.39	12236	0.003	3102.2	4345.7	192.60	20.83	29.25	233
152	31094.06	12402	0.003	3144.0	4404.2	192.99	20.83	29.24	235
154	31506.64	12568	0.003	3185.7	4462.7	193.37	20.83	29.24	236
156	31919.14	12734	0.003	3227.5	4521.1	193.75	20.83	29.23	238
158	32331.56	12900	0.003	3269.2	4579.6	194.12	20.83	29.23	239
160	32743.91	13066	0.003	3310.9	4638.1	194.49	20.83	29.22	241
165	33774.50	13480	0.002	3415.3	4784.2	195.39	20.83	29.22	245
170	34804.71	13894	0.002	3519.6	4930.2	196.26	20.82	29.21	248
175	35834.57	14307	0.002	3623.9	5076.2	197.10	20.82	29.20	252
180	36864.14	14721	0.002	3728.1	5222.2	197.93	20.82	29.20	256
185	37893.43	15134	0.002	3832.4	5368.2	198.73	20.82	29.19	259
190	38922.48	15547	0.002	3936.6	5514.2	199.51	20.82	29.19	263
195	39951.31	15959	0.002	4040.9	5660.1	200.26	20.82	29.19	266
200	40979.94	16372	0.002	4145.1	5806.0	201.00	20.83	29.19	270
210	43036.67	17197	0.002	4353.6	6097.9	202.43	20.83	29.19	276
220	45092.81	18021	0.002	4562.2	6389.8	203.78	20.84	29.19	283
230	47148.44	18845	0.002	4770.8	6681.7	205.08	20.85	29.20	289
240	49203.66	19669	0.002	4979.6	6973.8	206.33	20.87	29.21	295
250	51258.51	20492	0.002	5188.5	7266.0	207.52	20.89	29.23	301
260	53313.05	21315	0.002	5397.7	7558.5	208.67	20.92	29.26	307
270	55367.33	22138	0.001	5607.1	7851.2	209.77	20.95	29.28	313
280	57421.37	22960	0.001	5816.9	8144.2	210.84	20.99	29.32	319
290	59475.21	23783	0.001	6027.1	8437.6	211.86	21.03	29.36	324
300	61528.87	24605	0.001	6237.6	8731.4	212.86	21.07	29.40	330
310	63582.37	25427	0.001	6448.7	9025.7	213.83	21.12	29.45	335
320	65635.73	26249	0.001	6660.3	9320.5	214.76	21.18	29.51	340
330	67688.96	27071	0.001	6872.5	9615.9	215.67	21.24	29.57	345
340	69742.08	27893	0.001	7085.3	9912.0	216.55	21.31	29.64	350

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

0.400 ATM ISOBAR

TEMPERATURE	DENSITY	$V(\partial H/\partial V)_P$	$V(\partial P/\partial U)_V$	$-V(\partial P/\partial V)_T$	$(\partial V/\partial T)_P/V$	THERMAL CONDUCTIVITY	VISCOSITY	THERMAL DIFFUSIVITY	DIELECTRIC CONSTANT	PRANDTL NUMBER
KELVIN	GMOLE/CC	J/GMOLE	CC-ATM/J	ATM	1/KELVIN	MW/CM-K	G/CM-S X 10^3	SQ CM/SEC		
* 54.355	0.040833	15877.77	25.744	11605.05	0.0033546	1.92950	6.1951	0.00089	1.56870	5.3444
56	0.040807	15735.20	25.510	11224.57	0.0033845	1.91443	5.8490	0.00089	1.56507	5.0849
58	0.040332	15560.08	25.219	10773.21	0.0034223	1.89540	5.4565	0.00088	1.56006	4.7908
60	0.040055	15382.93	25.921	10334.05	0.0034617	1.87563	5.0926	0.00088	1.55623	4.5186
62	0.039777	15203.68	25.615	9906.82	0.0035029	1.85516	4.7558	0.00088	1.55160	4.2666
64	0.039498	15022.22	25.303	9491.26	0.0035459	1.83405	4.4436	0.00087	1.54734	4.0332
66	0.039217	14838.46	24.985	9087.11	0.0035910	1.81233	4.1544	0.00087	1.54288	3.8171
68	0.038934	14652.30	24.661	8694.12	0.0036382	1.79005	3.8864	0.00086	1.53839	3.6169
70	0.038650	14463.63	24.332	8312.03	0.0036878	1.76724	3.6381	0.00086	1.53389	3.4316
72	0.038364	14272.38	23.998	7940.60	0.0037400	1.74393	3.4081	0.00085	1.52936	3.2600
74	0.038076	14078.39	23.658	7579.58	0.0037950	1.72016	3.1950	0.00085	1.52482	3.1012
76	0.037786	13881.59	23.315	7228.72	0.0038530	1.69597	2.9976	0.00084	1.52025	2.9543
78	0.037494	13681.82	22.967	6887.79	0.0039143	1.67137	2.8147	0.00083	1.51565	2.8185
80	0.037199	13478.98	22.615	6556.55	0.0039792	1.64640	2.6452	0.00083	1.51103	2.6930
82	0.036902	13272.92	22.260	6234.77	0.0040481	1.62109	2.4881	0.00082	1.50637	2.5772
* 82.264	0.036862	13245.49	22.213	6193.01	0.0040575	1.61772	2.4683	0.00082	1.50575	2.5626
* 82.264	0.000060	2339.41	3.962	0.39	0.0127867	0.07607	0.0612	0.04218	1.00072	0.7516
84	0.000059	2392.05	3.961	0.39	0.0124842	0.07773	0.0625	0.04413	1.00070	0.7501
86	0.000058	2452.63	3.960	0.39	0.0121544	0.07965	0.0640	0.04642	1.00068	0.7486
88	0.000056	2513.05	3.959	0.39	0.0118432	0.08157	0.0655	0.04878	1.00067	0.7473
90	0.000055	2573.32	3.959	0.39	0.0115491	0.08349	0.0671	0.05118	1.00065	0.7460
92	0.000054	2633.45	3.958	0.39	0.0112704	0.08542	0.0686	0.05364	1.00064	0.7449
94	0.000052	2693.45	3.957	0.40	0.0110060	0.08734	0.0701	0.05616	1.00062	0.7438
96	0.000051	2753.34	3.957	0.40	0.0107547	0.08927	0.0717	0.05872	1.00061	0.7429
98	0.000050	2813.13	3.956	0.40	0.0105154	0.09120	0.0732	0.06134	1.00060	0.7420
100	0.000049	2872.83	3.956	0.40	0.0102873	0.09313	0.0747	0.06402	1.00058	0.7412
102	0.000048	2932.44	3.955	0.40	0.0100695	0.09506	0.0763	0.06675	1.00057	0.7404
104	0.000047	2991.97	3.955	0.40	0.0098613	0.09699	0.0778	0.06953	1.00056	0.7397
106	0.000046	3051.42	3.954	0.40	0.0096620	0.09892	0.0793	0.07236	1.00055	0.7391
108	0.000045	3110.81	3.954	0.40	0.0094711	0.10085	0.0809	0.07525	1.00054	0.7385
110	0.000045	3170.13	3.954	0.40	0.0092880	0.10277	0.0824	0.07819	1.00053	0.7379
112	0.000044	3229.40	3.953	0.40	0.0091122	0.10470	0.0839	0.08118	1.00052	0.7374
114	0.000043	3288.61	3.953	0.40	0.0089432	0.10662	0.0855	0.08422	1.00051	0.7369
116	0.000042	3347.77	3.953	0.40	0.0087807	0.10853	0.0870	0.08731	1.00050	0.7364
118	0.000042	3406.89	3.953	0.40	0.0086242	0.11045	0.0885	0.09045	1.00049	0.7360
120	0.000041	3465.96	3.952	0.40	0.0084735	0.11236	0.0900	0.09365	1.00048	0.7355
122	0.000040	3524.99	3.952	0.40	0.0083281	0.11427	0.0916	0.09689	1.00048	0.7351
124	0.000040	3583.99	3.952	0.40	0.0081878	0.11617	0.0931	0.10018	1.00047	0.7348
126	0.000039	3642.94	3.952	0.40	0.0080524	0.11807	0.0946	0.10353	1.00046	0.7344
128	0.000038	3701.87	3.952	0.40	0.0079215	0.11996	0.0961	0.10692	1.00045	0.7340
130	0.000038	3760.76	3.951	0.40	0.0077949	0.12185	0.0976	0.11036	1.00045	0.7337
132	0.000037	3819.63	3.951	0.40	0.0076725	0.12374	0.0991	0.11384	1.00044	0.7334
134	0.000037	3878.47	3.951	0.40	0.0075539	0.12562	0.1006	0.11738	1.00043	0.7331
136	0.000036	3937.28	3.951	0.40	0.0074391	0.12749	0.1021	0.12096	1.00043	0.7328
138	0.000035	3996.07	3.951	0.40	0.0073278	0.12936	0.1035	0.12460	1.00042	0.7325
140	0.000035	4054.84	3.951	0.40	0.0072199	0.13123	0.1050	0.12827	1.00041	0.7322
142	0.000034	4113.59	3.951	0.40	0.0071152	0.13310	0.1065	0.13201	1.00041	0.7319
144	0.000034	4172.32	3.950	0.40	0.0070135	0.13496	0.1080	0.13579	1.00040	0.7316
146	0.000033	4231.03	3.950	0.40	0.0069148	0.13681	0.1094	0.13961	1.00040	0.7313
148	0.000033	4289.73	3.950	0.40	0.0068189	0.13866	0.1109	0.14348	1.00039	0.7310
150	0.000033	4348.41	3.950	0.40	0.0067257	0.14050	0.1123	0.14739	1.00039	0.7308
152	0.000032	4407.08	3.950	0.40	0.0066351	0.14233	0.1138	0.15135	1.00038	0.7305
154	0.000032	4465.73	3.950	0.40	0.0065469	0.14416	0.1152	0.15535	1.00038	0.7303
156	0.000031	4524.38	3.950	0.40	0.0064610	0.14597	0.1167	0.15939	1.00037	0.7301
158	0.000031	4583.01	3.950	0.40	0.0063775	0.14779	0.1181	0.16348	1.00037	0.7299
160	0.000031	4641.64	3.950	0.40	0.0062961	0.14959	0.1195	0.16761	1.00036	0.7297
165	0.000030	4788.17	3.949	0.40	0.0061016	0.15407	0.1231	0.17812	1.00035	0.7292
170	0.000029	4934.67	3.949	0.40	0.0059189	0.15851	0.1266	0.18889	1.00034	0.7287
175	0.000028	5081.16	3.949	0.40	0.0057470	0.16292	0.1300	0.19992	1.00033	0.7283
180	0.000027	5227.67	3.948	0.40	0.0055850	0.16728	0.1335	0.21121	1.00032	0.7279
185	0.000026	5374.20	3.948	0.40	0.0054319	0.17161	0.1369	0.22276	1.00031	0.7276
190	0.000026	5520.78	3.947	0.40	0.0052871	0.17590	0.1402	0.23455	1.00030	0.7272
195	0.000025	5667.43	3.947	0.40	0.0051499	0.18015	0.1436	0.24659	1.00030	0.7269
200	0.000024	5814.18	3.946	0.40	0.0050197	0.18436	0.1469	0.25887	1.00029	0.7266
210	0.000023	6108.05	3.945	0.40	0.0047783	0.19269	0.1534	0.28413	1.00028	0.7261
220	0.000022	6402.61	3.942	0.40	0.0045592	0.20087	0.1598	0.31030	1.00026	0.7257
230	0.000021	6698.07	3.940	0.40	0.0043594	0.20893	0.1661	0.33735	1.00025	0.7254
240	0.000020	6994.65	3.938	0.40	0.0041766	0.21686	0.1722	0.36524	1.00024	0.7251
250	0.000020	7292.58	3.932	0.40	0.0040085	0.22466	0.1783	0.39394	1.00023	0.7250
260	0.000019	7592.09	3.927	0.40	0.0038535	0.23235	0.1842	0.42340	1.00022	0.7250
270	0.000018	7893.40	3.921	0.40	0.0037100	0.23992	0.1901	0.45360	1.00021	0.7251
280	0.000017	8196.70	3.914	0.40	0.0035770	0.24738	0.1958	0.48449	1.00021	0.7253
290	0.000017	8502.19	3.906	0.40	0.0034531	0.25473	0.2015	0.51603	1.00020	0.7256
300	0.000016	8810.04	3.897	0.40	0.0033376	0.26199	0.2070	0.54822	1.00019	0.7261
310	0.000016	9120.40	3.887	0.40	0.0032296	0.26916	0.2125	0.58102	1.00019	0.7266
320	0.000015	9433.38	3.877	0.40	0.0031283	0.27624	0.2179	0.61441	1.00018	0.7273
330	0.000015	9749.11	3.865	0.40	0.0030332	0.28325	0.2232	0.64836	1.00018	0.7281
340	0.000014	10067.66	3.853	0.40	0.0029438	0.29019	0.2284	0.68287	1.00017	0.7291

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

0.500 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p	VELOCITY OF SOUND M/SEC
* 54.357	24.49	284220	38.93	-6189.5	-6188.2	67.11	35.65	53.26	1160
56	24.63	276436	37.99	-6142.0	-6100.7	68.69	35.29	53.26	1149
58	24.79	267133	36.87	-5995.5	-5994.2	70.56	34.87	53.25	1137
60	24.97	258014	35.77	-5889.0	-5887.7	72.37	34.46	53.25	1124
62	25.14	249077	34.70	-5782.5	-5781.2	74.11	34.06	53.26	1111
64	25.32	240318	33.66	-5675.9	-5674.7	75.80	33.67	53.27	1097
66	25.50	231734	32.63	-5569.4	-5568.1	77.44	33.30	53.28	1084
68	25.68	223321	31.63	-5462.8	-5461.5	79.04	32.94	53.31	1070
70	25.87	215077	30.65	-5356.2	-5354.9	80.58	32.60	53.34	1056
72	26.07	206999	29.70	-5249.5	-5248.1	82.08	32.26	53.38	1041
74	26.26	199083	28.77	-5142.7	-5141.3	83.55	31.93	53.43	1027
76	26.46	191326	27.85	-5035.7	-5034.4	84.97	31.62	53.48	1012
78	26.67	183725	26.96	-4928.7	-4927.3	86.36	31.31	53.55	998
80	26.88	176277	26.09	-4821.5	-4820.1	87.72	31.01	53.63	983
82	27.10	168978	25.24	-4714.1	-4712.8	89.05	30.73	53.73	967
84	27.32	161824	24.41	-4606.6	-4605.2	90.34	30.45	53.84	952
* 84.049	27.33	161650	24.39	-4603.9	-4602.5	90.37	30.44	53.84	951
* 84.049	13513.14	6616	0.006	1711.2	2395.8	173.61	21.08	30.07	173
86	13845.73	6788	0.006	1752.9	2454.4	174.30	21.06	30.04	175
88	14135.81	6964	0.006	1795.6	2514.3	174.99	21.04	29.94	177
90	14525.08	7139	0.006	1838.2	2574.1	175.66	21.02	29.88	179
92	14863.63	7314	0.006	1880.8	2633.8	176.32	21.01	29.83	181
94	15231.51	7488	0.005	1923.3	2693.5	176.96	20.99	29.79	183
96	15538.79	7661	0.005	1965.8	2753.0	177.59	20.98	29.74	185
98	15875.52	7834	0.005	2008.1	2812.4	178.20	20.97	29.71	187
100	16211.74	8006	0.005	2050.5	2871.8	178.80	20.96	29.67	189
102	16547.49	8177	0.005	2092.8	2931.1	179.38	20.95	29.64	191
104	16882.83	8349	0.005	2135.0	2990.4	179.96	20.94	29.61	193
106	17217.75	8519	0.005	2177.3	3049.6	180.52	20.93	29.58	195
108	17552.34	8690	0.005	2219.4	3108.7	181.08	20.93	29.55	197
110	17886.58	8861	0.005	2261.6	3167.8	181.62	20.92	29.53	199
112	18220.51	9030	0.005	2303.7	3226.8	182.15	20.91	29.51	201
114	18554.14	9199	0.004	2345.8	3285.8	182.67	20.91	29.49	203
116	18887.51	9369	0.004	2387.9	3344.8	183.19	20.90	29.47	205
118	19220.63	9538	0.004	2429.9	3403.7	183.69	20.89	29.45	206
120	19553.52	9706	0.004	2471.9	3462.6	184.18	20.89	29.43	208
122	19886.18	9875	0.004	2513.9	3521.4	184.67	20.88	29.42	210
124	20218.65	10043	0.004	2555.9	3580.3	185.15	20.88	29.40	212
126	20550.92	10211	0.004	2597.9	3639.0	185.62	20.88	29.39	213
128	20883.01	10379	0.004	2639.8	3697.8	186.08	20.87	29.38	215
130	21214.94	10547	0.004	2681.8	3756.6	186.54	20.87	29.37	217
132	21546.71	10715	0.004	2723.7	3815.3	186.99	20.87	29.36	218
134	21878.33	10882	0.004	2765.6	3874.0	187.43	20.86	29.34	220
136	22209.81	11050	0.004	2807.5	3932.7	187.86	20.86	29.34	222
138	22541.16	11217	0.004	2849.3	3991.3	188.29	20.86	29.33	223
140	22872.38	11384	0.004	2891.2	4050.0	188.71	20.85	29.32	225
142	23203.49	11551	0.004	2933.1	4108.6	189.13	20.85	29.31	227
144	23534.48	11718	0.004	2974.9	4167.2	189.54	20.85	29.30	228
146	23865.38	11885	0.003	3016.7	4225.8	189.94	20.85	29.29	230
148	24196.17	12051	0.003	3058.5	4284.4	190.34	20.84	29.29	232
150	24526.87	12218	0.003	3100.4	4343.0	190.73	20.84	29.28	233
152	24857.47	12384	0.003	3142.2	4401.5	191.12	20.84	29.27	235
154	25188.00	12551	0.003	3184.0	4460.1	191.50	20.84	29.27	236
156	25518.44	12717	0.003	3225.8	4518.6	191.88	20.84	29.26	238
158	25848.81	12883	0.003	3267.5	4577.1	192.25	20.84	29.26	239
160	26179.11	13050	0.003	3309.3	4635.6	192.62	20.84	29.25	241
165	27004.55	13465	0.003	3413.7	4781.8	193.52	20.83	29.24	245
170	27829.61	13880	0.003	3518.1	4928.0	194.39	20.83	29.23	248
175	28654.33	14294	0.003	3622.5	5074.2	195.24	20.83	29.22	252
180	29478.75	14708	0.003	3726.8	5220.3	196.06	20.83	29.22	256
185	30302.90	15122	0.003	3831.1	5366.3	196.86	20.83	29.21	259
190	31126.80	15535	0.003	3935.4	5512.4	197.64	20.83	29.21	263
195	31950.48	15949	0.003	4039.7	5658.4	198.40	20.83	29.20	266
200	32773.96	16362	0.003	4144.0	5804.4	199.14	20.83	29.20	270
210	34420.46	17188	0.002	4352.6	6096.4	200.57	20.83	29.20	276
220	36066.24	18013	0.002	4561.2	6388.4	201.92	20.84	29.20	283
230	37711.58	18838	0.002	4769.9	6680.5	203.22	20.86	29.21	289
240	39356.49	19662	0.002	4978.7	6972.6	204.47	20.87	29.22	295
250	41001.05	20486	0.002	5187.7	7264.9	205.66	20.89	29.24	301
260	42645.29	21310	0.002	5396.9	7557.4	206.81	20.92	29.26	307
270	44289.27	22133	0.002	5606.4	7850.2	207.91	20.95	29.29	313
280	45933.01	22956	0.002	5816.2	8143.3	208.98	20.99	29.32	319
290	47576.55	23779	0.002	6026.4	8436.7	210.01	21.03	29.36	324
300	49219.92	24602	0.002	6237.0	8730.6	211.00	21.07	29.41	330
310	50863.12	25425	0.002	6448.1	9024.9	211.97	21.13	29.46	335
320	52506.18	26247	0.002	6659.7	9319.8	212.90	21.18	29.51	340
330	54149.11	27069	0.002	6871.9	9615.3	213.81	21.24	29.58	345
340	55791.93	27892	0.001	7084.8	9911.3	214.70	21.31	29.64	350

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

0.500 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	V(DH/DV)p J/GMOLE	V(DP/DU)v CC-ATM/J	-V(DP/DV)T ATM	(DV/DT)p/V 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S X 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 54.357	0.040833	15878.38	25.744	11605.61	0.0033544	1.42462	5.1954	0.00089	1.56870	5.3446
56	0.040608	15735.92	25.510	11225.40	0.0033843	1.41446	5.8496	0.00089	1.56508	5.3852
58	0.040332	15560.82	25.219	10774.05	0.0034221	1.39543	5.4570	0.00088	1.56067	5.7911
60	0.040056	15383.69	25.921	10334.90	0.0034615	1.37566	5.0932	0.00088	1.55624	6.0189
62	0.039778	15204.46	25.615	9907.67	0.0035026	1.35519	4.7563	0.00088	1.55180	6.2669
64	0.039498	15023.02	25.303	9492.12	0.0035457	1.33408	4.4440	0.00087	1.54735	6.5335
66	0.039217	14839.28	24.985	9087.97	0.0035907	1.31237	4.1546	0.00087	1.54288	6.8174
68	0.038935	14653.15	24.662	8694.96	0.0036379	1.29009	3.8866	0.00086	1.53840	7.1172
70	0.038651	14464.51	24.332	8312.90	0.0036876	1.26728	3.6385	0.00086	1.53390	7.4319
72	0.038365	14273.28	23.998	7941.47	0.0037397	1.24397	3.4085	0.00085	1.52937	7.7603
74	0.038077	14079.32	23.658	7580.45	0.0037947	1.22021	3.1954	0.00085	1.52483	8.1015
76	0.037787	13882.55	23.315	7229.60	0.0038527	1.19601	2.9980	0.00084	1.52026	8.4546
78	0.037494	13682.80	22.967	6888.67	0.0039139	1.17142	2.8154	0.00083	1.51566	8.8187
80	0.037200	13479.99	22.615	6557.44	0.0039788	1.14645	2.6465	0.00083	1.51103	9.1932
82	0.036902	13273.97	22.260	6235.66	0.0040477	1.12114	2.4884	0.00082	1.50638	9.5774
84	0.036602	13064.58	21.902	5923.10	0.0041209	1.09550	2.3429	0.00081	1.50169	9.9706
* 84.649	0.036595	13059.41	21.893	5915.54	0.0041228	1.09487	2.3395	0.00081	1.50157	9.9681
* 84.649	0.000074	2380.20	3.965	0.49	0.0126325	0.07808	0.0627	0.03509	1.00088	0.7551
86	0.000072	2439.77	3.964	0.49	0.0122966	0.07994	0.0642	0.03689	1.00086	0.7533
88	0.000070	2500.76	3.963	0.49	0.0119720	0.08185	0.0657	0.03878	1.00084	0.7515
90	0.000069	2561.56	3.962	0.49	0.0116660	0.08377	0.0673	0.04072	1.00082	0.7500
92	0.000067	2622.18	3.961	0.49	0.0113769	0.08569	0.0688	0.04269	1.00080	0.7486
94	0.000066	2682.65	3.960	0.49	0.0111032	0.08761	0.0703	0.04471	1.00078	0.7473
96	0.000064	2742.97	3.959	0.49	0.0108437	0.08953	0.0719	0.04677	1.00076	0.7461
98	0.000063	2803.16	3.959	0.49	0.0105970	0.09146	0.0734	0.04888	1.00075	0.7450
100	0.000062	2863.23	3.958	0.49	0.0103623	0.09338	0.0749	0.05102	1.00073	0.7440
102	0.000060	2923.20	3.957	0.49	0.0101387	0.09531	0.0765	0.05321	1.00072	0.7431
104	0.000059	2983.06	3.957	0.49	0.0099252	0.09723	0.0780	0.05544	1.00070	0.7422
106	0.000058	3042.82	3.956	0.49	0.0097211	0.09916	0.0795	0.05772	1.00069	0.7414
108	0.000057	3102.50	3.956	0.50	0.0095259	0.10108	0.0811	0.06003	1.00068	0.7407
110	0.000056	3162.11	3.956	0.50	0.0093388	0.10300	0.0826	0.06239	1.00066	0.7400
112	0.000055	3221.63	3.955	0.50	0.0091594	0.10492	0.0841	0.06478	1.00065	0.7393
114	0.000054	3281.10	3.955	0.50	0.0089872	0.10683	0.0856	0.06722	1.00064	0.7387
116	0.000053	3340.49	3.954	0.50	0.0088217	0.10875	0.0872	0.06970	1.00063	0.7381
118	0.000052	3399.83	3.954	0.50	0.0086626	0.11066	0.0887	0.07222	1.00062	0.7376
120	0.000051	3459.11	3.954	0.50	0.0085093	0.11257	0.0902	0.07478	1.00061	0.7371
122	0.000050	3518.35	3.954	0.50	0.0083617	0.11447	0.0917	0.07738	1.00060	0.7366
124	0.000049	3577.53	3.953	0.50	0.0082193	0.11637	0.0932	0.08002	1.00059	0.7362
126	0.000049	3636.67	3.953	0.50	0.0080819	0.11827	0.0947	0.08269	1.00058	0.7357
128	0.000048	3695.77	3.953	0.50	0.0079492	0.12016	0.0962	0.08541	1.00057	0.7353
130	0.000047	3754.84	3.953	0.50	0.0078210	0.12204	0.0977	0.08817	1.00056	0.7349
132	0.000046	3813.86	3.953	0.50	0.0076971	0.12393	0.0992	0.09096	1.00055	0.7346
134	0.000046	3872.85	3.952	0.50	0.0075771	0.12580	0.1007	0.09379	1.00054	0.7342
136	0.000045	3931.81	3.952	0.50	0.0074610	0.12767	0.1022	0.09666	1.00053	0.7339
138	0.000044	3990.74	3.952	0.50	0.0073484	0.12954	0.1037	0.09957	1.00053	0.7335
140	0.000044	4049.64	3.952	0.50	0.0072394	0.13140	0.1052	0.10252	1.00052	0.7332
142	0.000043	4108.52	3.952	0.50	0.0071336	0.13327	0.1066	0.10551	1.00051	0.7328
144	0.000042	4167.37	3.952	0.50	0.0070310	0.13514	0.1081	0.10854	1.00050	0.7325
146	0.000042	4226.20	3.952	0.50	0.0069314	0.13699	0.1096	0.11161	1.00050	0.7321
148	0.000041	4285.01	3.951	0.50	0.0068346	0.13884	0.1111	0.11471	1.00049	0.7318
150	0.000041	4343.80	3.951	0.50	0.0067406	0.14067	0.1125	0.11784	1.00048	0.7315
152	0.000040	4402.57	3.951	0.50	0.0066492	0.14250	0.1139	0.12101	1.00048	0.7312
154	0.000040	4461.33	3.951	0.50	0.0065603	0.14433	0.1153	0.12421	1.00047	0.7310
156	0.000039	4520.07	3.951	0.50	0.0064739	0.14615	0.1168	0.12745	1.00047	0.7307
158	0.000039	4578.80	3.951	0.50	0.0063897	0.14795	0.1182	0.13072	1.00046	0.7305
160	0.000038	4637.51	3.951	0.50	0.0063077	0.14976	0.1196	0.13402	1.00045	0.7303
165	0.000037	4784.26	3.950	0.50	0.0061119	0.15423	0.1232	0.14244	1.00044	0.7297
170	0.000036	4930.96	3.950	0.50	0.0059281	0.15867	0.1267	0.15106	1.00043	0.7292
175	0.000035	5077.63	3.950	0.50	0.0057552	0.16307	0.1301	0.15990	1.00041	0.7288
180	0.000034	5224.30	3.949	0.50	0.0055923	0.16743	0.1336	0.16893	1.00040	0.7283
185	0.000033	5370.98	3.949	0.50	0.0054386	0.17175	0.1370	0.17817	1.00039	0.7280
190	0.000032	5517.71	3.948	0.50	0.0052931	0.17603	0.1403	0.18761	1.00038	0.7276
195	0.000031	5664.49	3.948	0.50	0.0051553	0.18028	0.1437	0.19725	1.00037	0.7272
200	0.000031	5811.36	3.947	0.50	0.0050247	0.18449	0.1470	0.20708	1.00036	0.7269
210	0.000029	6105.46	3.945	0.50	0.0047824	0.19281	0.1535	0.22729	1.00034	0.7264
220	0.000028	6400.22	3.943	0.50	0.0045626	0.20099	0.1599	0.24823	1.00033	0.7259
230	0.000027	6695.85	3.940	0.50	0.0043624	0.20904	0.1662	0.26988	1.00031	0.7256
240	0.000025	6992.59	3.937	0.50	0.0041793	0.21695	0.1723	0.29220	1.00030	0.7253
250	0.000024	7290.67	3.932	0.50	0.0040116	0.22476	0.1784	0.31517	1.00029	0.7252
260	0.000023	7590.31	3.927	0.50	0.0038553	0.23244	0.1843	0.33874	1.00028	0.7251
270	0.000023	7891.73	3.921	0.50	0.0037115	0.24001	0.1901	0.36290	1.00027	0.7252
280	0.000022	8195.15	3.914	0.50	0.0035783	0.24747	0.1959	0.38762	1.00026	0.7254
290	0.000021	8500.74	3.906	0.50	0.0034543	0.25482	0.2015	0.41286	1.00025	0.7257
300	0.000020	8808.66	3.898	0.50	0.0033386	0.26207	0.2071	0.43861	1.00024	0.7262
310	0.000020	9119.13	3.888	0.50	0.0032305	0.26924	0.2125	0.46486	1.00023	0.7267
320	0.000019	9432.20	3.877	0.50	0.0031291	0.27632	0.2179	0.49157	1.00023	0.7274
330	0.000018	9748.00	3.866	0.50	0.0030340	0.28333	0.2232	0.51874	1.00022	0.7282
340	0.000018	10066.62	3.854	0.50	0.0029445	0.29026	0.2285	0.54635	1.00021	0.7291

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

0.600 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p J/G MOLE -K	VELOCITY OF SOUND M/SEC
* 54.358	24.49	284233	38.93	-6189.5	-6186.0	67.11	35.65	53.26	1160
56	24.63	276454	37.99	-6102.1	-6100.5	68.69	35.29	53.26	1149
58	24.79	267151	36.87	-5995.5	-5994.0	70.56	34.87	53.25	1137
60	24.97	256033	35.78	-5889.0	-5887.5	72.37	34.46	53.25	1124
62	25.14	249096	34.70	-5782.5	-5781.0	74.11	34.06	53.26	1111
64	25.32	240337	33.66	-5676.0	-5674.5	75.80	33.68	53.27	1097
66	25.50	231753	32.63	-5569.5	-5567.9	77.44	33.30	53.28	1084
68	25.68	223341	31.63	-5462.9	-5461.3	79.03	32.94	53.31	1070
70	25.87	215097	30.66	-5356.2	-5354.7	80.58	32.60	53.34	1056
72	26.07	207019	29.70	-5249.5	-5247.9	82.08	32.26	53.38	1041
74	26.26	199104	28.77	-5142.7	-5141.1	83.55	31.93	53.43	1027
76	26.46	191347	27.85	-5035.8	-5034.2	84.97	31.62	53.48	1012
78	26.67	183746	26.96	-4928.8	-4927.2	86.36	31.31	53.55	998
80	26.88	176298	26.09	-4821.6	-4820.0	87.72	31.01	53.63	983
82	27.10	168999	25.24	-4714.2	-4712.6	89.04	30.73	53.73	967
84	27.32	161846	24.41	-4606.7	-4605.0	90.34	30.45	53.84	952
* 85.572	27.50	156323	23.77	-4521.9	-4520.3	91.34	30.24	53.93	940
* 85.572	11430.77	6695	0.007	1738.4	2433.3	172.57	21.12	30.22	174
86	11491.98	6732	0.007	1747.6	2446.2	172.72	21.12	30.20	175
88	11777.53	6911	0.007	1790.5	2506.6	173.41	21.09	30.12	177
90	12062.25	7089	0.007	1833.4	2566.7	174.09	21.07	30.05	179
92	12346.22	7265	0.007	1876.2	2626.8	174.75	21.05	29.99	181
94	12629.51	7441	0.007	1918.9	2686.7	175.40	21.04	29.93	183
96	12912.18	7617	0.006	1961.5	2746.5	176.02	21.02	29.88	185
98	13194.28	7791	0.006	2004.1	2806.2	176.64	21.01	29.83	187
100	13475.87	7965	0.006	2046.6	2865.8	177.24	20.99	29.79	189
102	13756.98	8138	0.006	2089.0	2925.4	177.83	20.98	29.75	191
104	14037.66	8311	0.006	2131.4	2984.8	178.41	20.97	29.71	193
106	14317.94	8483	0.006	2173.8	3044.2	178.97	20.96	29.68	195
108	14597.85	8655	0.006	2216.1	3103.6	179.53	20.95	29.65	197
110	14877.42	8826	0.006	2258.3	3162.8	180.07	20.94	29.62	199
112	15156.67	8997	0.005	2300.6	3222.0	180.61	20.94	29.59	201
114	15435.63	9166	0.005	2342.8	3281.2	181.13	20.93	29.57	203
116	15714.31	9338	0.005	2384.9	3340.3	181.64	20.92	29.54	204
118	15992.75	9508	0.005	2427.1	3399.4	182.15	20.91	29.52	206
120	16270.95	9678	0.005	2469.2	3458.4	182.64	20.91	29.50	208
122	16548.93	9848	0.005	2511.3	3517.4	183.13	20.90	29.48	210
124	16826.70	10017	0.005	2553.3	3576.3	183.61	20.90	29.46	211
126	17104.28	10186	0.005	2595.4	3635.2	184.08	20.89	29.45	213
128	17381.68	10354	0.005	2637.4	3694.1	184.55	20.89	29.43	215
130	17658.91	10523	0.005	2679.4	3753.0	185.00	20.88	29.42	217
132	17935.98	10691	0.005	2721.4	3811.8	185.45	20.88	29.41	218
134	18212.90	10860	0.005	2763.3	3870.6	185.89	20.88	29.39	220
136	18489.68	11028	0.004	2805.3	3929.4	186.33	20.87	29.38	222
138	18766.33	11195	0.004	2847.2	3988.1	186.76	20.87	29.37	223
140	19042.86	11363	0.004	2889.1	4046.8	187.18	20.87	29.36	225
142	19319.26	11531	0.004	2931.0	4105.5	187.60	20.86	29.35	227
144	19595.56	11698	0.004	2972.9	4164.2	188.01	20.85	29.34	228
146	19871.75	11865	0.004	3014.8	4222.9	188.41	20.86	29.33	230
148	20147.84	12033	0.004	3056.7	4281.6	188.81	20.85	29.32	231
150	20423.83	12200	0.004	3098.5	4340.2	189.20	20.85	29.31	233
152	20699.74	12367	0.004	3140.4	4398.8	189.59	20.85	29.31	235
154	20975.56	12534	0.004	3182.2	4457.4	189.98	20.85	29.30	236
156	21251.30	12700	0.004	3224.0	4516.0	190.35	20.85	29.29	238
158	21526.97	12867	0.004	3265.9	4574.6	190.73	20.84	29.29	239
160	21802.56	13034	0.004	3307.7	4633.2	191.10	20.84	29.28	241
165	22491.24	13450	0.004	3412.2	4779.5	192.00	20.84	29.27	245
170	23179.54	13865	0.004	3516.6	4925.8	192.87	20.84	29.25	248
175	23867.50	14281	0.003	3621.1	5072.1	193.72	20.83	29.24	252
180	24555.16	14695	0.003	3725.5	5218.3	194.54	20.83	29.24	256
185	25242.54	15110	0.003	3829.8	5364.4	195.34	20.83	29.23	259
190	25929.68	15524	0.003	3934.2	5510.6	196.12	20.83	29.22	263
195	26616.59	15938	0.003	4038.5	5656.7	196.88	20.83	29.22	266
200	27303.31	16352	0.003	4142.9	5802.8	197.62	20.83	29.21	269
210	28676.22	17179	0.003	4351.5	6094.9	199.05	20.84	29.21	276
220	30048.53	18005	0.003	4560.2	6387.0	200.40	20.85	29.21	283
230	31420.34	18831	0.003	4769.0	6679.2	201.70	20.86	29.22	289
240	32791.72	19656	0.003	4977.9	6971.4	202.95	20.87	29.23	295
250	34162.74	20480	0.002	5186.9	7263.8	204.14	20.89	29.25	301
260	35533.45	21305	0.002	5396.2	7556.4	205.29	20.92	29.27	307
270	36903.90	22129	0.002	5605.7	7849.3	206.39	20.95	29.30	313
280	38274.11	22952	0.002	5815.5	8142.4	207.46	20.99	29.33	319
290	39644.12	23776	0.002	6025.7	8435.9	208.49	21.03	29.37	324
300	41013.95	24599	0.002	6236.4	8729.8	209.49	21.07	29.41	330
310	42383.62	25422	0.002	6447.5	9024.2	210.45	21.13	29.46	335
320	43753.15	26245	0.002	6659.1	9319.1	211.39	21.18	29.52	340
330	45122.55	27067	0.002	6871.4	9614.6	212.30	21.24	29.58	345
340	46491.84	27890	0.002	7084.2	9910.7	213.18	21.31	29.64	350

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

0.600 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	V(DH/DV)$_P$ J/GMOLE	V(DP/DU)$_V$ CC-ATM/J	-V(DP/DV)$_T$ ATM	(DV/DT)$_P$/V 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S x 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 54.358	0.040833	15878.98	26.744	11606.17	0.0033543	1.92953	6.1957	0.00089	1.56870	5.3448
56	0.040608	15736.64	26.511	11226.24	0.0033842	1.91449	5.8501	0.00089	1.56518	5.0856
58	0.040333	15561.56	26.219	10774.90	0.0034219	1.89546	5.4575	0.00088	1.56067	4.7915
60	0.040056	15384.45	25.921	10335.74	0.0034613	1.87569	5.0337	0.00088	1.55625	4.5192
62	0.039778	15205.24	25.615	9908.52	0.0035024	1.85523	4.7567	0.00088	1.55181	4.2672
64	0.039499	15023.82	25.304	9492.97	0.0035454	1.83412	4.4445	0.00087	1.54736	4.0338
66	0.039218	14840.11	24.986	9088.83	0.0035905	1.81241	4.1552	0.00087	1.54289	3.8176
68	0.038935	14654.04	24.662	8695.84	0.0036377	1.79013	3.8872	0.00086	1.53841	3.6175
70	0.038651	14465.38	24.332	8313.76	0.0036873	1.76732	3.6389	0.00086	1.53390	3.4321
72	0.038365	14274.18	23.998	7942.34	0.0037394	1.74402	3.4089	0.00085	1.52938	3.2605
74	0.038077	14080.24	23.659	7581.32	0.0037944	1.72025	3.1958	0.00085	1.52483	3.1017
76	0.037787	13883.50	23.315	7230.48	0.0038523	1.69606	2.9983	0.00084	1.52026	2.9548
78	0.037495	13683.79	22.967	6889.56	0.0039136	1.67147	2.8154	0.00083	1.51567	2.8189
80	0.037200	13481.01	22.615	6558.33	0.0039785	1.64651	2.6458	0.00083	1.51104	2.6934
82	0.036903	13275.02	22.260	6236.55	0.0040473	1.62119	2.4887	0.00082	1.50639	2.5776
84	0.036603	13065.66	21.902	5924.00	0.0041205	1.59556	2.3432	0.00081	1.50170	2.4708
* 85.572	0.036365	12898.65	21.618	5684.65	0.0041813	1.57519	2.2363	0.00080	1.49798	2.3929
* 85.572	0.000087	2413.80	3.968	0.59	0.0125182	0.07983	0.0641	0.03020	1.00144	0.7585
86	0.000087	2426.87	3.967	0.59	0.0124435	0.08024	0.0644	0.03053	1.00133	0.7581
88	0.000085	2488.44	3.966	0.59	0.0121046	0.08214	0.0660	0.03212	1.00101	0.7560
90	0.000083	2549.78	3.965	0.59	0.0117861	0.08405	0.0675	0.03374	1.00068	0.7541
92	0.000081	2610.90	3.964	0.59	0.0114860	0.08596	0.0690	0.03539	1.00096	0.7523
94	0.000079	2671.83	3.963	0.59	0.0112027	0.08788	0.0705	0.03708	1.00094	0.7508
96	0.000077	2732.58	3.962	0.59	0.0109345	0.08980	0.0721	0.03880	1.00092	0.7494
98	0.000076	2793.18	3.961	0.59	0.0106803	0.09171	0.0736	0.04056	1.00090	0.7480
100	0.000074	2853.63	3.960	0.59	0.0104388	0.09363	0.0751	0.04236	1.00088	0.7468
102	0.000073	2913.95	3.960	0.59	0.0102090	0.09555	0.0766	0.04419	1.00086	0.7457
104	0.000071	2974.14	3.959	0.59	0.0099900	0.09747	0.0782	0.04605	1.00085	0.7447
106	0.000070	3034.22	3.958	0.59	0.0097811	0.09939	0.0797	0.04795	1.00083	0.7438
108	0.000069	3094.20	3.958	0.59	0.0095814	0.10131	0.0812	0.04988	1.00081	0.7429
110	0.000067	3154.08	3.957	0.59	0.0093903	0.10323	0.0828	0.05185	1.00080	0.7421
112	0.000066	3213.87	3.957	0.59	0.0092072	0.10514	0.0843	0.05385	1.00078	0.7413
114	0.000065	3273.58	3.957	0.59	0.0090317	0.10705	0.0858	0.05589	1.00077	0.7406
116	0.000064	3333.21	3.956	0.59	0.0088632	0.10896	0.0873	0.05796	1.00076	0.7399
118	0.000063	3392.77	3.956	0.59	0.0087012	0.11087	0.0888	0.06006	1.00074	0.7393
120	0.000061	3452.27	3.956	0.59	0.0085455	0.11277	0.0904	0.06220	1.00073	0.7387
122	0.000060	3511.70	3.955	0.60	0.0083955	0.11467	0.0919	0.06437	1.00072	0.7381
124	0.000059	3571.08	3.955	0.60	0.0082510	0.11657	0.0934	0.06657	1.00071	0.7376
126	0.000058	3630.41	3.955	0.60	0.0081116	0.11846	0.0949	0.06881	1.00069	0.7371
128	0.000058	3689.68	3.954	0.60	0.0079772	0.12035	0.0964	0.07107	1.00068	0.7366
130	0.000057	3748.91	3.954	0.60	0.0078473	0.12223	0.0979	0.07337	1.00067	0.7362
132	0.000056	3808.09	3.954	0.60	0.0077218	0.12411	0.0994	0.07570	1.00066	0.7357
134	0.000055	3867.24	3.954	0.60	0.0076004	0.12599	0.1009	0.07807	1.00065	0.7353
136	0.000054	3926.34	3.954	0.60	0.0074829	0.12786	0.1023	0.08046	1.00064	0.7349
138	0.000053	3985.41	3.953	0.60	0.0073692	0.12972	0.1038	0.08289	1.00063	0.7346
140	0.000053	4044.45	3.953	0.60	0.0072590	0.13158	0.1053	0.08535	1.00062	0.7342
142	0.000052	4103.45	3.953	0.60	0.0071522	0.13345	0.1068	0.08785	1.00061	0.7337
144	0.000051	4162.42	3.953	0.60	0.0070486	0.13531	0.1082	0.09038	1.00061	0.7333
146	0.000050	4221.37	3.953	0.60	0.0069480	0.13717	0.1097	0.09293	1.00060	0.7329
148	0.000050	4280.30	3.953	0.60	0.0068504	0.13901	0.1111	0.09552	1.00059	0.7326
150	0.000049	4339.19	3.952	0.60	0.0067556	0.14085	0.1126	0.09813	1.00058	0.7323
152	0.000048	4398.07	3.952	0.60	0.0066634	0.14268	0.1140	0.10078	1.00057	0.7319
154	0.000048	4456.93	3.952	0.60	0.0065739	0.14450	0.1155	0.10345	1.00057	0.7316
156	0.000047	4515.77	3.952	0.60	0.0064867	0.14632	0.1169	0.10615	1.00056	0.7314
158	0.000046	4574.59	3.952	0.60	0.0064019	0.14812	0.1183	0.10888	1.00055	0.7311
160	0.000046	4633.40	3.952	0.60	0.0063194	0.14992	0.1197	0.11164	1.00054	0.7308
165	0.000044	4780.35	3.951	0.60	0.0061222	0.15440	0.1233	0.11865	1.00053	0.7303
170	0.000043	4927.25	3.951	0.60	0.0059373	0.15883	0.1268	0.12585	1.00051	0.7297
175	0.000042	5074.14	3.951	0.60	0.0057635	0.16322	0.1302	0.13321	1.00050	0.7292
180	0.000041	5220.93	3.950	0.60	0.0055997	0.16758	0.1337	0.14075	1.00048	0.7288
185	0.000040	5367.77	3.950	0.60	0.0054452	0.17189	0.1371	0.14845	1.00047	0.7283
190	0.000039	5514.64	3.949	0.60	0.0052991	0.17617	0.1404	0.15632	1.00046	0.7279
195	0.000038	5661.55	3.949	0.60	0.0051608	0.18042	0.1438	0.16435	1.00045	0.7276
200	0.000037	5808.55	3.948	0.60	0.0050296	0.18463	0.1471	0.17255	1.00043	0.7272
210	0.000035	6102.87	3.946	0.60	0.0047865	0.19293	0.1536	0.18940	1.00041	0.7267
220	0.000033	6397.83	3.944	0.60	0.0045661	0.20111	0.1600	0.20688	1.00039	0.7262
230	0.000032	6693.64	3.941	0.60	0.0043653	0.20915	0.1662	0.22490	1.00038	0.7258
240	0.000030	6990.54	3.938	0.60	0.0041815	0.21707	0.1724	0.24351	1.00036	0.7255
250	0.000029	7288.76	3.933	0.60	0.0040127	0.22486	0.1784	0.26265	1.00035	0.7253
260	0.000028	7588.53	3.928	0.60	0.0038571	0.23254	0.1844	0.28230	1.00033	0.7253
270	0.000027	7890.07	3.922	0.60	0.0037132	0.24010	0.1902	0.30244	1.00032	0.7253
280	0.000026	8193.59	3.915	0.60	0.0035797	0.24755	0.1959	0.32304	1.00031	0.7255
290	0.000025	8499.29	3.907	0.60	0.0034555	0.25490	0.2016	0.34407	1.00030	0.7258
300	0.000024	8807.32	3.898	0.60	0.0033397	0.26215	0.2071	0.36554	1.00029	0.7263
310	0.000024	9117.86	3.889	0.60	0.0032314	0.26932	0.2126	0.38741	1.00028	0.7268
320	0.000023	9431.01	3.878	0.60	0.0031300	0.27640	0.2180	0.40968	1.00027	0.7275
330	0.000022	9746.89	3.867	0.60	0.0030347	0.28340	0.2233	0.43232	1.00026	0.7283
340	0.000022	10065.58	3.854	0.60	0.0029451	0.29033	0.2285	0.45533	1.00026	0.7292

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

0.700 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p J/G MOLE -K	VELOCITY OF SOUND M/SEC
* 54.359	24.49	284245	38.93	-6189.5	-6187.7	67.11	35.65	53.26	1160
56	24.63	276472	37.99	-6102.1	-6100.3	68.69	35.29	53.26	1149
58	24.79	267170	36.87	-5995.6	-5993.8	70.56	34.87	53.25	1137
60	24.96	258051	35.78	-5889.1	-5887.3	72.37	34.46	53.25	1124
62	25.14	249115	34.78	-5782.6	-5780.8	74.11	34.06	53.25	1111
64	25.32	240356	33.66	-5676.1	-5674.3	75.80	33.68	53.27	1097
66	25.50	231772	32.63	-5569.5	-5567.7	77.44	33.30	53.28	1084
68	25.68	223360	31.63	-5462.9	-5461.1	79.03	32.94	53.31	1070
70	25.87	215117	30.66	-5356.3	-5354.5	80.58	32.60	53.34	1056
72	26.06	207039	29.70	-5249.6	-5247.7	82.08	32.26	53.38	1042
74	26.26	199124	28.77	-5142.8	-5140.9	83.55	31.93	53.42	1027
76	26.46	191368	27.86	-5035.9	-5034.0	84.97	31.62	53.48	1012
78	26.67	183767	26.96	-4928.9	-4927.0	86.36	31.31	53.55	998
80	26.88	176319	26.09	-4821.7	-4819.8	87.72	31.01	53.63	983
82	27.10	169020	25.24	-4714.3	-4712.4	89.04	30.73	53.73	967
84	27.32	161868	24.41	-4606.8	-4604.8	90.34	30.45	53.84	952
86	27.55	154857	23.60	-4499.0	-4497.0	91.61	30.18	53.96	936
* 86.908	27.65	151722	23.24	-4458.0	-4448.0	92.17	30.06	54.02	929
* 86.908	9922.30	6759	0.008	1761.8	2465.6	171.69	21.16	30.36	175
88	10056.97	6857	0.008	1785.4	2498.7	172.07	21.15	30.31	176
90	10382.78	7038	0.008	1828.5	2559.3	172.75	21.12	30.23	179
92	10547.68	7217	0.008	1871.5	2619.7	173.42	21.10	30.15	181
94	10792.13	7395	0.008	1914.4	2679.9	174.07	21.08	30.08	183
96	11035.82	7572	0.008	1957.2	2740.0	174.70	21.06	30.02	185
98	11278.93	7748	0.007	2000.0	2800.8	175.32	21.05	29.96	187
100	11521.51	7924	0.007	2042.6	2859.8	175.92	21.03	29.91	189
102	11763.61	8099	0.007	2085.2	2919.6	176.51	21.02	29.86	191
104	12005.27	8273	0.007	2127.8	2979.3	177.09	21.00	29.82	193
106	12246.52	8447	0.007	2170.3	3038.9	177.66	20.99	29.78	195
108	12487.39	8620	0.007	2212.7	3098.4	178.22	20.98	29.74	197
110	12727.92	8793	0.007	2255.1	3157.8	178.76	20.97	29.71	199
112	12968.13	8965	0.006	2297.4	3217.2	179.30	20.96	29.67	200
114	13208.04	9137	0.006	2339.7	3276.5	179.82	20.95	29.65	202
116	13447.66	9308	0.006	2382.0	3335.8	180.34	20.94	29.62	204
118	13687.06	9479	0.006	2424.2	3395.0	180.84	20.93	29.59	206
120	13926.28	9650	0.006	2466.4	3454.2	181.34	20.93	29.57	208
122	14165.12	9820	0.006	2508.6	3513.3	181.83	20.92	29.55	210
124	14403.83	9990	0.006	2550.7	3572.4	182.31	20.91	29.53	211
126	14642.35	10160	0.006	2592.9	3631.4	182.78	20.91	29.51	213
128	14880.69	10329	0.006	2634.9	3690.4	183.25	20.90	29.49	215
130	15118.85	10499	0.005	2677.0	3749.4	183.70	20.90	29.47	217
132	15356.86	10668	0.005	2719.1	3808.3	184.15	20.89	29.46	218
134	15594.71	10837	0.005	2761.1	3867.2	184.60	20.89	29.44	220
136	15832.43	11005	0.005	2803.1	3926.0	185.03	20.88	29.43	222
138	16070.01	11174	0.005	2845.1	3984.9	185.46	20.88	29.41	223
140	16307.46	11342	0.005	2887.1	4043.7	185.88	20.88	29.40	225
142	16544.80	11510	0.005	2929.0	4102.5	186.30	20.87	29.39	227
144	16782.02	11678	0.005	2971.0	4161.3	186.71	20.87	29.38	228
146	17019.14	11846	0.005	3012.9	4220.0	187.12	20.87	29.37	230
148	17256.16	12014	0.005	3054.8	4278.7	187.52	20.86	29.36	231
150	17493.08	12181	0.005	3096.7	4337.4	187.91	20.86	29.35	233
152	17729.92	12349	0.005	3138.6	4396.1	188.30	20.86	29.34	235
154	17966.67	12516	0.005	3180.5	4454.8	188.68	20.86	29.33	236
156	18203.33	12683	0.005	3222.3	4513.4	189.06	20.85	29.32	238
158	18439.93	12851	0.004	3264.2	4572.1	189.43	20.85	29.32	239
160	18676.44	13018	0.004	3306.0	4630.7	189.80	20.85	29.31	241
165	19267.44	13435	0.004	3410.6	4777.2	190.71	20.85	29.29	244
170	19858.86	13851	0.004	3515.2	4923.6	191.58	20.84	29.28	248
175	20448.33	14267	0.004	3619.7	5070.8	192.43	20.84	29.27	252
180	21038.30	14683	0.004	3724.1	5216.3	193.25	20.84	29.26	255
185	21627.99	15098	0.004	3828.5	5362.6	194.05	20.84	29.25	259
190	22217.44	15513	0.004	3933.0	5508.8	194.83	20.83	29.24	263
195	22806.67	15928	0.004	4037.3	5655.0	195.59	20.83	29.23	266
200	23395.70	16342	0.004	4141.7	5801.1	196.33	20.84	29.23	269
210	24573.23	17170	0.003	4350.5	6093.4	197.76	20.84	29.22	276
220	25750.16	17997	0.003	4559.2	6385.6	199.12	20.85	29.22	283
230	26926.59	18824	0.003	4768.1	6677.9	200.42	20.86	29.23	289
240	28102.59	19649	0.003	4977.0	6970.3	201.66	20.88	29.24	295
250	29278.24	20475	0.003	5186.1	7262.7	202.85	20.90	29.26	301
260	30453.57	21300	0.003	5395.4	7555.4	204.00	20.92	29.28	307
270	31628.64	22124	0.003	5605.0	7848.3	205.11	20.95	29.30	313
280	32803.47	22948	0.003	5814.8	8141.5	206.18	20.99	29.34	319
290	33978.10	23772	0.002	6025.1	8435.1	207.21	21.03	29.37	324
300	35152.55	24596	0.002	6235.7	8729.0	208.20	21.07	29.42	330
310	36326.84	25419	0.002	6446.9	9023.5	209.17	21.13	29.47	335
320	37500.98	26242	0.002	6658.6	9318.4	210.10	21.18	29.52	340
330	38675.00	27065	0.002	6870.8	9613.9	211.01	21.24	29.58	345
340	39848.91	27888	0.002	7083.7	9910.1	211.90	21.31	29.65	351

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

0.700 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	V(DH/DV)$_P$ J/GMOLE	V(DP/DU)$_V$ CC-ATM/J	-V(DP/DV)$_T$ ATM	(DV/DT)/V 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S x 10^5	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 54.359	0.040834	15879.58	25.744	11606.74	0.0033541	1.92955	6.1960	0.00089	1.56870	5.3449
56	0.040608	15737.36	25.511	11227.68	0.0033840	1.91451	5.8506	0.00089	1.56569	5.0859
58	0.040333	15562.35	25.219	10775.74	0.0034217	1.89548	5.4580	0.00088	1.56068	4.7918
60	0.040056	15385.21	25.921	10336.59	0.0034611	1.87572	5.0942	0.00088	1.55625	4.5198
62	0.039778	15206.02	25.616	9909.37	0.0035022	1.85526	4.7572	0.00088	1.55161	4.2675
64	0.039499	15024.63	25.304	9493.82	0.0035452	1.83415	4.4449	0.00087	1.54736	4.0341
66	0.039218	14840.94	24.986	9089.65	0.0035902	1.81244	4.1557	0.00087	1.54290	3.8179
68	0.038936	14654.85	24.662	8696.70	0.0036374	1.79017	3.8878	0.00086	1.53841	3.6177
70	0.038652	14466.26	24.332	8314.63	0.0036870	1.76736	3.6393	0.00086	1.53391	3.4324
72	0.038366	14275.08	23.998	7943.21	0.0037391	1.74406	3.4093	0.00085	1.52939	3.2607
74	0.038078	14081.17	23.659	7582.23	0.0037941	1.72030	3.1961	0.00085	1.52484	3.1019
76	0.037788	13884.46	23.315	7231.35	0.0038520	1.69611	2.9980	0.00084	1.52027	2.9550
78	0.037495	13684.77	22.967	6890.44	0.0039132	1.67152	2.8157	0.00083	1.51568	2.8191
80	0.037201	13482.03	22.616	6559.21	0.0039781	1.64656	2.6461	0.00083	1.51105	2.6936
82	0.036903	13276.07	22.260	6237.44	0.0040469	1.62125	2.4890	0.00082	1.50640	2.5777
84	0.036603	13066.74	21.902	5924.90	0.0041203	1.59562	2.3435	0.00081	1.50171	2.4710
86	0.036300	12853.93	21.540	5621.35	0.0041987	1.56968	2.2086	0.00080	1.49698	2.3727
* 86.913	0.036162	12756.13	21.376	5486.49	0.0042359	1.55781	2.1500	0.00080	1.49462	2.3307
* 86.908	0.000101	2442.32	3.970	0.68	0.0124308	0.08140	0.0654	0.02660	1.00120	0.7619
88	0.000099	2476.08	3.969	0.68	0.0122412	0.08243	0.0662	0.02735	1.00118	0.7605
90	0.000097	2537.96	3.968	0.68	0.0119095	0.08433	0.0677	0.02875	1.00115	0.7583
92	0.000095	2599.59	3.967	0.68	0.0115979	0.08624	0.0692	0.03017	1.00113	0.7562
94	0.000093	2660.99	3.965	0.69	0.0113044	0.08815	0.0707	0.03162	1.00110	0.7544
96	0.000091	2722.18	3.964	0.69	0.0110273	0.09006	0.0723	0.03311	1.00108	0.7527
98	0.000089	2783.19	3.963	0.69	0.0107652	0.09197	0.0738	0.03462	1.00105	0.7512
100	0.000087	2844.02	3.963	0.69	0.0105166	0.09389	0.0753	0.03617	1.00103	0.7498
102	0.000085	2904.69	3.962	0.69	0.0102805	0.09580	0.0768	0.03774	1.00101	0.7485
104	0.000083	2965.22	3.961	0.69	0.0100559	0.09771	0.0784	0.03934	1.00099	0.7473
106	0.000082	3025.61	3.960	0.69	0.0098419	0.09963	0.0799	0.04097	1.00097	0.7462
108	0.000080	3085.89	3.960	0.69	0.0096376	0.10154	0.0814	0.04263	1.00095	0.7451
110	0.000079	3146.05	3.959	0.69	0.0094424	0.10345	0.0829	0.04433	1.00093	0.7442
112	0.000077	3206.10	3.959	0.69	0.0092556	0.10536	0.0845	0.04605	1.00092	0.7433
114	0.000076	3266.06	3.958	0.69	0.0090767	0.10727	0.0860	0.04779	1.00090	0.7425
116	0.000074	3325.93	3.958	0.69	0.0089051	0.10918	0.0875	0.04957	1.00088	0.7417
118	0.000073	3385.72	3.957	0.69	0.0087403	0.11108	0.0890	0.05138	1.00087	0.7410
120	0.000072	3445.43	3.957	0.69	0.0085820	0.11298	0.0905	0.05321	1.00085	0.7403
122	0.000071	3505.06	3.957	0.69	0.0084296	0.11488	0.0920	0.05507	1.00084	0.7397
124	0.000069	3564.63	3.956	0.69	0.0082830	0.11677	0.0935	0.05697	1.00082	0.7390
126	0.000068	3624.14	3.956	0.69	0.0081416	0.11866	0.0950	0.05888	1.00081	0.7385
128	0.000067	3683.59	3.956	0.69	0.0080053	0.12054	0.0965	0.06083	1.00080	0.7379
130	0.000066	3742.98	3.956	0.69	0.0078737	0.12243	0.0980	0.06280	1.00079	0.7374
132	0.000065	3802.33	3.955	0.69	0.0077467	0.12430	0.0995	0.06481	1.00077	0.7369
134	0.000064	3861.62	3.955	0.69	0.0076238	0.12617	0.1010	0.06683	1.00076	0.7365
136	0.000063	3920.87	3.955	0.70	0.0075050	0.12804	0.1025	0.06889	1.00075	0.7360
138	0.000062	3980.08	3.955	0.70	0.0073901	0.12990	0.1040	0.07097	1.00074	0.7356
140	0.000061	4039.25	3.954	0.70	0.0072787	0.13176	0.1054	0.07308	1.00073	0.7352
142	0.000060	4098.38	3.954	0.70	0.0071708	0.13363	0.1069	0.07523	1.00072	0.7347
144	0.000060	4157.48	3.954	0.70	0.0070662	0.13549	0.1084	0.07740	1.00071	0.7342
146	0.000059	4216.55	3.954	0.70	0.0069647	0.13734	0.1098	0.07959	1.00070	0.7338
148	0.000058	4275.58	3.954	0.70	0.0068663	0.13919	0.1113	0.08181	1.00069	0.7334
150	0.000057	4334.59	3.954	0.70	0.0067706	0.14102	0.1127	0.08406	1.00068	0.7330
152	0.000056	4393.57	3.953	0.70	0.0066777	0.14285	0.1141	0.08633	1.00067	0.7326
154	0.000056	4452.53	3.953	0.70	0.0065874	0.14467	0.1156	0.08862	1.00066	0.7323
156	0.000055	4511.47	3.953	0.70	0.0064996	0.14649	0.1170	0.09094	1.00065	0.7320
158	0.000054	4570.38	3.953	0.70	0.0064142	0.14829	0.1184	0.09328	1.00064	0.7317
160	0.000054	4629.28	3.953	0.70	0.0063311	0.15009	0.1199	0.09564	1.00064	0.7314
165	0.000052	4776.45	3.952	0.70	0.0061325	0.15456	0.1234	0.10158	1.00062	0.7308
170	0.000050	4923.54	3.952	0.70	0.0059466	0.15899	0.1269	0.10783	1.00060	0.7302
175	0.000049	5070.57	3.952	0.70	0.0057718	0.16337	0.1303	0.11415	1.00058	0.7297
180	0.000048	5217.57	3.951	0.70	0.0056072	0.16772	0.1338	0.12061	1.00056	0.7292
185	0.000046	5364.56	3.951	0.70	0.0054519	0.17204	0.1372	0.12722	1.00055	0.7287
190	0.000045	5511.57	3.950	0.70	0.0053052	0.17631	0.1406	0.13397	1.00053	0.7283
195	0.000044	5658.62	3.950	0.70	0.0051663	0.18055	0.1439	0.14086	1.00052	0.7279
200	0.000043	5805.74	3.949	0.70	0.0050345	0.18476	0.1472	0.14790	1.00051	0.7275
210	0.000041	6100.29	3.947	0.71	0.0047906	0.19306	0.1537	0.16233	1.00048	0.7269
220	0.000039	6395.44	3.945	0.70	0.0045695	0.20122	0.1600	0.17730	1.00046	0.7264
230	0.000037	6691.43	3.942	0.70	0.0043682	0.20926	0.1663	0.19277	1.00044	0.7260
240	0.000036	6988.48	3.938	0.70	0.0041840	0.21717	0.1725	0.20873	1.00042	0.7257
250	0.000034	7286.85	3.934	0.70	0.0040149	0.22496	0.1785	0.22514	1.00041	0.7255
260	0.000032	7586.75	3.929	0.70	0.0038590	0.23263	0.1845	0.24198	1.00039	0.7254
270	0.000032	7888.41	3.923	0.70	0.0037148	0.24019	0.1903	0.25925	1.00038	0.7255
280	0.000030	8192.04	3.916	0.70	0.0035811	0.24764	0.1960	0.27691	1.00036	0.7257
290	0.000029	8497.84	3.908	0.70	0.0034567	0.25499	0.2016	0.29494	1.00035	0.7260
300	0.000028	8805.97	3.899	0.70	0.0033408	0.26224	0.2072	0.31335	1.00034	0.7264
310	0.000028	9116.59	3.889	0.70	0.0032324	0.26940	0.2127	0.33210	1.00033	0.7269
320	0.000027	9429.82	3.879	0.70	0.0031308	0.27647	0.2180	0.35119	1.00032	0.7276
330	0.000026	9745.79	3.867	0.70	0.0030355	0.28347	0.2233	0.37060	1.00031	0.7284
340	0.000025	10064.55	3.855	0.70	0.0029459	0.29040	0.2286	0.39032	1.00030	0.7293

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

0.800 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p	VELOCITY OF SOUND M/SEC
* 54.360	24.49	284258	38.93	-6189.4	-6187.5	67.11	35.65	53.26	1160
56	24.63	276490	37.99	-6102.1	-6100.1	68.69	35.29	53.25	1149
58	24.79	267188	36.87	-5995.6	-5993.6	70.56	34.87	53.25	1137
60	24.96	258070	35.78	-5889.1	-5887.1	72.37	34.46	53.25	1124
62	25.14	249133	34.71	-5782.6	-5780.6	74.11	34.06	53.25	1111
64	25.32	240375	33.66	-5676.1	-5674.1	75.80	33.68	53.26	1097
66	25.50	231791	32.63	-5569.6	-5567.5	77.44	33.30	53.28	1084
68	25.68	223380	31.63	-5463.0	-5460.9	79.03	32.94	53.31	1070
70	25.87	215137	30.66	-5356.4	-5354.3	80.58	32.60	53.34	1056
72	26.06	207059	29.70	-5249.7	-5247.6	82.08	32.26	53.38	1042
74	26.26	199144	28.77	-5142.9	-5140.7	83.54	31.93	53.42	1027
76	26.46	191388	27.86	-5036.0	-5033.8	84.97	31.62	53.48	1012
78	26.67	183788	26.96	-4928.9	-4926.8	86.36	31.31	53.55	998
80	26.88	176340	26.09	-4821.8	-4819.6	87.72	31.02	53.63	983
82	27.10	169042	25.24	-4714.4	-4712.2	89.04	30.73	53.73	967
84	27.32	161889	24.41	-4606.9	-4604.6	90.34	30.45	53.83	952
86	27.55	154880	23.60	-4499.1	-4496.8	91.61	30.18	53.96	936
88	27.78	148009	22.81	-4391.0	-4388.8	92.85	29.92	54.10	921
* 88.102	27.79	147662	22.77	-4385.5	-4383.2	92.91	29.91	54.11	920
* 88.102	8777.32	6814	0.010	1782.5	2493.9	170.94	21.20	30.50	176
90	8982.89	6986	0.009	1823.6	2551.7	171.59	21.18	30.41	178
92	9198.75	7168	0.009	1866.8	2612.9	172.26	21.15	30.32	180
94	9413.88	7348	0.009	1909.9	2673.0	172.91	21.13	30.23	182
96	9628.36	7527	0.009	1952.9	2733.4	173.54	21.10	30.16	185
98	9842.25	7705	0.008	1995.8	2793.7	174.16	21.08	30.09	187
100	10055.60	7883	0.008	2038.7	2853.8	174.77	21.07	30.03	189
102	10268.46	8059	0.008	2081.4	2913.8	175.36	21.05	29.98	191
104	10480.87	8235	0.008	2124.1	2973.7	175.95	21.03	29.93	193
106	10692.86	8410	0.008	2166.7	3033.5	176.52	21.02	29.88	195
108	10904.47	8585	0.008	2209.3	3093.2	177.07	21.01	29.84	196
110	11115.73	8759	0.007	2251.8	3152.8	177.62	21.00	29.80	198
112	11326.66	8932	0.007	2294.3	3212.4	178.16	20.98	29.76	200
114	11537.29	9105	0.007	2336.7	3271.9	178.68	20.97	29.72	202
116	11747.65	9277	0.007	2379.0	3331.3	179.20	20.96	29.69	204
118	11957.74	9449	0.007	2421.4	3390.7	179.71	20.96	29.66	206
120	12167.60	9621	0.007	2463.7	3450.0	180.21	20.95	29.64	208
122	12377.23	9792	0.007	2505.9	3509.2	180.70	20.94	29.61	209
124	12586.65	9963	0.007	2548.1	3568.4	181.18	20.93	29.59	211
126	12795.87	10134	0.006	2590.3	3627.6	181.65	20.93	29.56	213
128	13004.91	10304	0.006	2632.5	3686.7	182.12	20.92	29.54	215
130	13213.78	10474	0.006	2674.6	3745.7	182.57	20.91	29.52	216
132	13422.49	10644	0.006	2716.7	3804.8	183.02	20.91	29.51	218
134	13631.05	10814	0.006	2758.8	3863.8	183.47	20.90	29.49	220
136	13839.46	10983	0.006	2800.9	3922.7	183.91	20.90	29.47	221
138	14047.74	11152	0.006	2842.9	3981.7	184.34	20.89	29.46	223
140	14255.90	11321	0.006	2885.0	4040.6	184.76	20.89	29.44	225
142	14463.93	11490	0.006	2927.0	4099.4	185.18	20.88	29.43	226
144	14671.85	11659	0.006	2969.0	4158.3	185.59	20.88	29.42	228
146	14879.67	11827	0.006	3010.9	4217.1	185.99	20.88	29.40	230
148	15087.39	11995	0.005	3052.9	4275.9	186.39	20.87	29.39	231
150	15295.01	12163	0.005	3094.9	4334.7	186.79	20.87	29.38	233
152	15502.54	12331	0.005	3136.8	4393.4	187.18	20.87	29.37	234
154	15709.98	12499	0.005	3178.7	4452.2	187.56	20.86	29.36	236
156	15917.35	12667	0.005	3220.6	4510.9	187.94	20.86	29.35	238
158	16124.64	12834	0.005	3262.5	4569.6	188.31	20.86	29.34	239
160	16331.85	13002	0.005	3304.4	4628.3	188.68	20.86	29.34	241
165	16849.59	13420	0.005	3409.1	4774.9	189.59	20.85	29.32	244
170	17366.94	13837	0.005	3513.7	4921.4	190.46	20.85	29.30	248
175	17883.95	14254	0.005	3618.2	5067.9	191.31	20.84	29.29	252
180	18400.65	14670	0.004	3722.8	5214.3	192.13	20.84	29.28	255
185	18917.06	15086	0.004	3827.3	5360.7	192.94	20.84	29.27	259
190	19433.27	15502	0.004	3931.7	5507.0	193.72	20.84	29.26	263
195	19949.23	15917	0.004	4036.2	5653.3	194.48	20.84	29.25	266
200	20464.99	16332	0.004	4140.6	5799.5	195.22	20.84	29.24	269
210	21495.99	17161	0.004	4349.4	6091.9	196.64	20.84	29.24	276
220	22526.39	17989	0.004	4558.3	6384.3	198.00	20.85	29.24	283
230	23556.28	18816	0.003	4767.2	6676.6	199.30	20.86	29.24	289
240	24585.75	19643	0.003	4976.1	6969.1	200.55	20.88	29.25	295
250	25614.86	20469	0.003	5185.3	7261.6	201.74	20.90	29.26	301
260	26643.66	21294	0.003	5394.6	7554.4	202.89	20.92	29.28	307
270	27672.19	22119	0.003	5604.2	7847.3	204.00	20.95	29.31	313
280	28700.49	22944	0.003	5814.1	8140.6	205.06	20.99	29.34	319
290	29728.58	23766	0.003	6024.4	8434.2	206.09	21.03	29.38	324
300	30756.49	24593	0.003	6235.1	8728.2	207.09	21.08	29.42	330
310	31784.25	25416	0.003	6446.3	9022.7	208.06	21.13	29.47	335
320	32811.86	26240	0.003	6658.0	9317.7	208.99	21.18	29.53	340
330	33839.35	27063	0.002	6870.3	9613.3	209.90	21.25	29.59	345
340	34866.72	27886	0.002	7083.2	9909.5	210.79	21.31	29.65	351

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

0.800 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	$V(\partial H/\partial V)_p$ J/GMOLE	$V(\partial P/\partial U)_v$ CC-ATM/J	$-V(\partial P/\partial V)_T$ ATM	$(\partial V/\partial T)_P/V$ 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S X 10^5	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 54.360	0.040834	15880.19	25.744	11607.30	0.0033540	1.92956	6.1963	0.00089	1.56871	5.3451
56	0.040609	15738.08	25.511	11227.92	0.0033838	1.91454	5.8512	0.00089	1.56510	5.0863
58	0.040333	15563.04	25.219	10776.58	0.0034215	1.89551	5.4585	0.00088	1.56068	4.7922
60	0.040057	15385.97	25.921	10337.43	0.0034609	1.87575	5.0947	0.00088	1.55626	4.5199
62	0.039779	15206.80	25.616	9910.22	0.0035020	1.85529	4.7577	0.00088	1.55182	4.2678
64	0.039499	15025.43	25.304	9494.67	0.0035450	1.83419	4.4454	0.00087	1.54737	4.0344
66	0.039219	14841.76	24.986	9090.54	0.0035900	1.81248	4.1561	0.00087	1.54290	3.8182
68	0.038936	14655.79	24.662	8697.56	0.0036372	1.79020	3.8880	0.00086	1.53842	3.6180
70	0.038652	14467.13	24.333	8315.49	0.0036867	1.76740	3.6397	0.00086	1.53392	3.4326
72	0.038366	14275.98	23.998	7944.07	0.0037388	1.74410	3.4096	0.00085	1.52939	3.2610
74	0.038078	14082.10	23.659	7583.07	0.0037937	1.72034	3.1965	0.00085	1.52485	3.1021
76	0.037788	13885.41	23.315	7232.23	0.0038517	1.69616	2.9990	0.00084	1.52028	2.9552
78	0.037496	13685.76	22.967	6891.32	0.0039129	1.67157	2.8150	0.00083	1.51569	2.8193
80	0.037201	13483.04	22.616	6560.10	0.0039777	1.64661	2.6465	0.00083	1.51106	2.6938
82	0.036904	13277.12	22.261	6238.34	0.0040465	1.62130	2.4893	0.00082	1.50641	2.5779
84	0.036604	13067.83	21.902	5925.80	0.0041196	1.59567	2.3438	0.00081	1.50172	2.4711
86	0.036301	12855.05	21.541	5622.25	0.0041975	1.56974	2.2088	0.00080	1.49699	2.3728
88	0.035994	12638.58	21.177	5327.48	0.0042806	1.54352	2.0838	0.00079	1.49222	2.2825
* 88.102	0.035979	12627.43	21.158	5312.66	0.0042850	1.54217	2.0776	0.00079	1.49197	2.2781
* 88.102	0.000114	2467.04	3.973	0.78	0.0123628	0.08282	0.0665	0.02383	1.00135	0.7651
90	0.000111	2526.11	3.971	0.78	0.0120364	0.08462	0.0679	0.02500	1.00132	0.7626
92	0.000109	2588.26	3.969	0.78	0.0117127	0.08652	0.0694	0.02625	1.00129	0.7602
94	0.000106	2650.13	3.968	0.78	0.0114086	0.08842	0.0709	0.02753	1.00126	0.7581
96	0.000104	2711.76	3.967	0.78	0.0111222	0.09032	0.0725	0.02883	1.00123	0.7561
98	0.000102	2773.18	3.966	0.78	0.0108516	0.09223	0.0740	0.03016	1.00121	0.7544
100	0.000099	2834.39	3.965	0.78	0.0105959	0.09414	0.0755	0.03152	1.00118	0.7527
102	0.000097	2895.43	3.964	0.78	0.0103533	0.09605	0.0770	0.03290	1.00116	0.7512
104	0.000095	2956.29	3.963	0.79	0.0101228	0.09796	0.0785	0.03431	1.00113	0.7499
106	0.000094	3017.00	3.962	0.79	0.0099036	0.09987	0.0801	0.03574	1.00111	0.7486
108	0.000092	3077.57	3.962	0.79	0.0096946	0.10177	0.0816	0.03720	1.00109	0.7474
110	0.000090	3138.01	3.961	0.79	0.0094952	0.10368	0.0831	0.03868	1.00107	0.7463
112	0.000088	3198.33	3.961	0.79	0.0093046	0.10559	0.0846	0.04019	1.00105	0.7453
114	0.000087	3258.54	3.960	0.79	0.0091222	0.10749	0.0861	0.04172	1.00103	0.7444
116	0.000085	3318.65	3.960	0.79	0.0089474	0.10939	0.0877	0.04328	1.00101	0.7435
118	0.000084	3378.66	3.959	0.79	0.0087798	0.11129	0.0892	0.04486	1.00099	0.7427
120	0.000082	3438.58	3.959	0.79	0.0086188	0.11319	0.0907	0.04647	1.00098	0.7419
122	0.000081	3498.42	3.958	0.79	0.0084640	0.11508	0.0922	0.04810	1.00096	0.7412
124	0.000079	3558.19	3.958	0.79	0.0083152	0.11697	0.0937	0.04976	1.00094	0.7405
126	0.000078	3617.88	3.958	0.79	0.0081718	0.11886	0.0952	0.05144	1.00093	0.7399
128	0.000077	3677.50	3.957	0.79	0.0080336	0.12074	0.0967	0.05315	1.00091	0.7393
130	0.000076	3737.06	3.957	0.79	0.0079004	0.12262	0.0982	0.05488	1.00090	0.7387
132	0.000075	3796.56	3.957	0.79	0.0077717	0.12449	0.0997	0.05663	1.00088	0.7381
134	0.000073	3856.01	3.956	0.79	0.0076474	0.12636	0.1011	0.05841	1.00087	0.7376
136	0.000072	3915.41	3.956	0.79	0.0075273	0.12822	0.1026	0.06021	1.00086	0.7371
138	0.000071	3974.75	3.956	0.79	0.0074110	0.13008	0.1041	0.06203	1.00084	0.7366
140	0.000070	4034.06	3.956	0.79	0.0072985	0.13194	0.1056	0.06388	1.00083	0.7362
142	0.000069	4093.32	3.956	0.79	0.0071895	0.13381	0.1070	0.06576	1.00082	0.7356
144	0.000068	4152.54	3.955	0.79	0.0070839	0.13567	0.1085	0.06767	1.00081	0.7351
146	0.000067	4211.72	3.955	0.79	0.0069815	0.13752	0.1099	0.06959	1.00080	0.7346
148	0.000066	4270.87	3.955	0.80	0.0068822	0.13936	0.1114	0.07154	1.00079	0.7342
150	0.000065	4329.99	3.955	0.80	0.0067857	0.14120	0.1128	0.07350	1.00078	0.7337
152	0.000065	4389.07	3.955	0.80	0.0066920	0.14303	0.1143	0.07549	1.00077	0.7334
154	0.000064	4448.13	3.954	0.80	0.0066010	0.14485	0.1157	0.07750	1.00076	0.7330
156	0.000063	4507.17	3.954	0.80	0.0065126	0.14666	0.1171	0.07953	1.00075	0.7327
158	0.000062	4566.18	3.954	0.80	0.0064265	0.14846	0.1186	0.08158	1.00074	0.7323
160	0.000061	4625.16	3.954	0.80	0.0063428	0.15026	0.1200	0.08365	1.00073	0.7320
165	0.000059	4772.54	3.953	0.80	0.0061430	0.15472	0.1235	0.08892	1.00070	0.7313
170	0.000058	4919.83	3.953	0.80	0.0059558	0.15914	0.1270	0.09432	1.00068	0.7307
175	0.000056	5067.04	3.953	0.80	0.0057801	0.16353	0.1304	0.09985	1.00066	0.7301
180	0.000054	5214.20	3.952	0.80	0.0056146	0.16787	0.1339	0.10551	1.00065	0.7296
185	0.000053	5361.35	3.952	0.80	0.0054586	0.17218	0.1373	0.11130	1.00063	0.7291
190	0.000051	5508.50	3.951	0.80	0.0053112	0.17645	0.1406	0.11721	1.00061	0.7286
195	0.000050	5655.68	3.950	0.80	0.0051717	0.18069	0.1439	0.12324	1.00059	0.7282
200	0.000049	5802.92	3.950	0.80	0.0050395	0.18489	0.1472	0.12939	1.00058	0.7278
210	0.000047	6097.70	3.948	0.80	0.0047948	0.19318	0.1537	0.14203	1.00055	0.7272
220	0.000044	6393.05	3.946	0.80	0.0045730	0.20134	0.1601	0.15514	1.00053	0.7266
230	0.000042	6689.22	3.943	0.80	0.0043711	0.20937	0.1664	0.16868	1.00050	0.7262
240	0.000041	6986.43	3.939	0.80	0.0041865	0.21728	0.1726	0.18264	1.00048	0.7259
250	0.000039	7284.94	3.935	0.80	0.0040170	0.22506	0.1786	0.19700	1.00046	0.7257
260	0.000038	7584.97	3.929	0.80	0.0038608	0.23273	0.1845	0.21175	1.00045	0.7256
270	0.000036	7886.75	3.923	0.80	0.0037164	0.24028	0.1904	0.22686	1.00043	0.7256
280	0.000035	8190.49	3.916	0.80	0.0035825	0.24773	0.1961	0.24231	1.00041	0.7258
290	0.000034	8496.39	3.908	0.80	0.0034580	0.25507	0.2017	0.25809	1.00040	0.7261
300	0.000033	8804.61	3.900	0.80	0.0033418	0.26232	0.2073	0.27420	1.00039	0.7265
310	0.000031	9115.32	3.890	0.80	0.0032333	0.26948	0.2127	0.29061	1.00037	0.7270
320	0.000030	9428.64	3.879	0.80	0.0031316	0.27655	0.2181	0.30732	1.00036	0.7277
330	0.000030	9744.68	3.868	0.80	0.0030362	0.28355	0.2234	0.32430	1.00035	0.7285
340	0.000029	10063.52	3.855	0.80	0.0029464	0.29048	0.2286	0.34157	1.00034	0.7294

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

0.900 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p J/G MOLE -K	VELOCITY OF SOUND M/SEC
* 54.361	24.49	284270	38.93	-6189.4	-6187.2	67.11	35.65	53.26	1160
56	24.63	276508	37.99	-6102.2	-6099.9	68.69	35.29	53.25	1149
58	24.79	267206	36.87	-5995.7	-5993.4	70.56	34.87	53.25	1137
60	24.96	258089	35.78	-5889.2	-5886.9	72.36	34.46	53.25	1124
62	25.14	249152	34.71	-5782.7	-5780.4	74.11	34.06	53.25	1111
64	25.32	240394	33.66	-5676.2	-5673.9	75.80	33.68	53.26	1097
66	25.50	231811	32.64	-5569.6	-5567.3	77.44	33.30	53.28	1084
68	25.68	223399	31.64	-5463.1	-5460.7	79.03	32.94	53.30	1070
70	25.87	215157	30.66	-5356.4	-5354.1	80.58	32.60	53.34	1056
72	26.06	207079	29.70	-5249.7	-5247.4	82.08	32.26	53.37	1042
74	26.26	199164	28.77	-5142.9	-5140.6	83.54	31.93	53.42	1027
76	26.46	191409	27.86	-5036.1	-5033.6	84.97	31.62	53.48	1013
78	26.67	183809	26.97	-4929.0	-4926.6	86.36	31.31	53.55	998
80	26.88	176361	26.10	-4821.9	-4819.4	87.72	31.02	53.63	983
82	27.10	169063	25.24	-4714.5	-4712.0	89.04	30.73	53.72	967
84	27.32	161911	24.41	-4606.9	-4604.5	90.34	30.45	53.83	952
86	27.55	154902	23.60	-4499.2	-4496.7	91.61	30.18	53.96	936
88	27.78	148031	22.81	-4391.1	-4388.6	92.85	29.92	54.10	921
* 89.186	27.92	144822	22.34	-4326.9	-4324.4	93.57	29.77	54.19	911
* 89.186	7877.17	6860	0.011	1800.9	2519.2	178.27	21.24	30.64	177
90	7956.86	6934	0.011	1818.6	2544.1	178.55	21.23	30.59	178
92	8149.26	7118	0.010	1862.8	2605.2	179.22	21.20	30.49	180
94	8341.72	7301	0.010	1905.4	2666.1	179.88	21.17	30.39	182
96	8533.51	7482	0.010	1948.6	2726.8	172.52	21.15	30.31	184
98	8724.69	7662	0.010	1991.7	2787.3	173.14	21.12	30.23	186
100	8915.32	7841	0.009	2034.7	2847.7	173.75	21.10	30.16	188
102	9105.45	8019	0.009	2077.6	2907.9	174.35	21.08	30.09	190
104	9295.12	8197	0.009	2120.4	2968.1	174.93	21.07	30.04	192
106	9484.36	8373	0.009	2163.2	3028.1	175.50	21.05	29.98	194
108	9673.22	8549	0.009	2205.9	3088.0	176.06	21.03	29.93	196
110	9861.72	8725	0.008	2248.5	3147.8	176.61	21.02	29.89	198
112	10049.89	8899	0.008	2291.1	3207.6	177.15	21.01	29.84	200
114	10237.76	9073	0.008	2333.6	3267.2	177.68	21.00	29.81	202
116	10425.35	9247	0.008	2376.1	3326.8	178.20	20.99	29.77	204
118	10612.67	9420	0.008	2418.5	3386.3	178.70	20.98	29.74	206
120	10799.75	9593	0.008	2460.9	3445.7	179.20	20.97	29.70	207
122	10986.60	9765	0.008	2503.2	3505.1	179.69	20.96	29.68	209
124	11173.24	9937	0.007	2545.5	3564.4	180.18	20.95	29.65	211
126	11359.69	10108	0.007	2587.8	3623.7	180.65	20.94	29.62	213
128	11545.95	10279	0.007	2630.0	3682.9	181.12	20.93	29.60	215
130	11732.03	10450	0.007	2672.2	3742.1	181.58	20.93	29.58	216
132	11917.96	10621	0.007	2714.4	3801.2	182.03	20.92	29.56	218
134	12103.73	10791	0.007	2756.6	3860.3	182.47	20.92	29.54	220
136	12289.36	10961	0.007	2798.7	3919.4	182.91	20.91	29.52	221
138	12474.85	11131	0.007	2840.8	3978.4	183.34	20.90	29.50	223
140	12660.22	11300	0.007	2882.9	4037.4	183.76	20.90	29.48	225
142	12845.46	11470	0.006	2924.9	4096.4	184.18	20.90	29.47	226
144	13030.60	11639	0.006	2967.0	4155.3	184.59	20.89	29.46	228
146	13215.63	11808	0.006	3009.0	4214.2	185.00	20.89	29.44	230
148	13400.55	11976	0.006	3051.0	4273.1	185.40	20.88	29.43	231
150	13585.38	12145	0.006	3093.0	4331.9	185.80	20.88	29.42	233
152	13770.12	12313	0.006	3135.0	4390.7	186.19	20.88	29.40	234
154	13954.78	12482	0.006	3176.9	4449.5	186.57	20.87	29.39	236
156	14139.35	12650	0.006	3218.9	4508.3	186.95	20.87	29.38	237
158	14323.85	12818	0.006	3260.8	4567.1	187.32	20.87	29.37	239
160	14508.27	12985	0.006	3302.8	4625.8	187.69	20.86	29.36	241
165	14969.03	13405	0.006	3407.5	4772.6	188.60	20.86	29.34	244
170	15429.40	13823	0.005	3512.2	4919.2	189.47	20.85	29.33	248
175	15889.42	14241	0.005	3616.8	5065.8	190.32	20.85	29.31	252
180	16349.15	14658	0.005	3721.4	5212.3	191.15	20.85	29.30	255
185	16808.59	15075	0.005	3826.0	5358.8	191.95	20.84	29.28	259
190	17267.79	15491	0.005	3930.5	5505.2	192.73	20.84	29.27	262
195	17726.77	15907	0.005	4035.0	5651.5	193.49	20.84	29.27	266
200	18185.55	16322	0.005	4139.5	5797.8	194.23	20.84	29.26	269
210	19102.58	17152	0.004	4348.4	6090.4	195.66	20.85	29.25	276
220	20019.01	17981	0.004	4557.3	6382.9	197.02	20.85	29.25	283
230	20934.93	18809	0.004	4766.2	6675.3	198.32	20.86	29.25	289
240	21850.43	19637	0.004	4975.3	6967.9	199.57	20.88	29.26	295
250	22765.57	20463	0.004	5184.5	7260.5	200.76	20.90	29.27	301
260	23680.39	21289	0.003	5393.9	7553.3	201.91	20.92	29.29	307
270	24594.95	22115	0.003	5603.5	7846.4	203.01	20.95	29.32	313
280	25509.28	22940	0.003	5813.4	8139.7	204.08	20.99	29.35	319
290	26423.40	23765	0.003	6023.7	8433.4	205.11	21.03	29.39	324
300	27337.34	24589	0.003	6234.5	8727.4	206.11	21.08	29.43	330
310	28251.13	25414	0.003	6445.7	9022.0	207.07	21.13	29.48	335
320	29164.77	26238	0.003	6657.4	9317.0	208.01	21.18	29.53	340
330	30078.28	27061	0.003	6869.7	9612.6	208.92	21.25	29.59	345
340	30991.68	27885	0.003	7082.6	9908.8	209.80	21.31	29.65	351

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

0.900 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	$V(\partial H/\partial V)_p$ J/GMOLE	$V(\partial P/\partial U)_v$ CC-ATM/J	$-V(\partial P/\partial V)_T$ ATM	$(\partial V/\partial T)_p/V$ 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S x 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 54.361	0.040834	15660.80	25.744	11607.86	0.0033538	1.92958	5.1986	0.00089	1.56871	5.3453
56	0.040609	15738.80	25.511	11228.75	0.0033836	1.91457	5.0517	0.00089	1.56510	5.0867
58	0.040334	15563.78	25.219	10777.42	0.0034214	1.89554	5.4590	0.00088	1.56069	4.7925
60	0.040057	15386.73	23.921	10338.28	0.0034667	1.87578	5.0952	0.00088	1.55626	4.5202
62	0.039779	15207.58	25.616	9911.07	0.0035018	1.85532	4.7581	0.00088	1.55183	4.2681
64	0.039500	15026.23	25.304	9495.52	0.0035448	1.83422	4.4458	0.00087	1.54738	4.0346
66	0.039219	14842.59	24.986	9091.39	0.0035898	1.81252	4.1585	0.00087	1.54291	3.8185
68	0.038937	14656.55	24.662	8698.42	0.0036369	1.79024	3.8885	0.00086	1.53843	3.6182
70	0.038653	14468.01	24.333	8316.35	0.0036865	1.76744	3.6401	0.00086	1.53392	3.4328
72	0.038367	14276.88	23.998	7944.94	0.0037386	1.74414	3.4100	0.00085	1.52940	3.2612
74	0.038079	14083.03	23.659	7583.94	0.0037934	1.72039	3.1968	0.00085	1.52486	3.1023
76	0.037789	13886.37	23.315	7233.11	0.0038513	1.69620	2.9993	0.00084	1.52029	2.9554
78	0.037497	13686.74	22.967	6892.20	0.0039125	1.67162	2.8163	0.00083	1.51569	2.8195
80	0.037202	13484.06	22.616	6560.99	0.0039773	1.64666	2.6466	0.00083	1.51107	2.6940
82	0.036905	13278.16	22.261	6239.23	0.0040461	1.62136	2.4896	0.00082	1.50641	2.5781
84	0.036605	13068.91	21.902	5926.69	0.0041192	1.59573	2.3440	0.00081	1.50172	2.4713
86	0.036301	12856.16	21.541	5623.16	0.0041970	1.56980	2.2091	0.00080	1.49700	2.3730
88	0.035995	12639.74	21.177	5328.39	0.0042801	1.54358	2.0840	0.00079	1.49223	2.2827
* 89.186	0.035812	12509.62	20.960	5157.68	0.0043321	1.52791	2.0143	0.00079	1.48938	2.2327
* 89.186	0.000127	2488.81	3.975	0.87	0.0123095	0.08414	0.0675	0.02163	1.00151	0.7683
90	0.000126	2514.23	3.974	0.87	0.0121669	0.08491	0.0681	0.02208	1.00149	0.7671
92	0.000123	2576.89	3.972	0.87	0.0118304	0.08680	0.0696	0.02320	1.00146	0.7644
94	0.000120	2639.25	3.971	0.88	0.0115152	0.08869	0.0711	0.02434	1.00142	0.7619
96	0.000117	2701.33	3.969	0.88	0.0112191	0.09059	0.0727	0.02551	1.00139	0.7597
98	0.000115	2763.16	3.968	0.88	0.0109401	0.09249	0.0742	0.02669	1.00136	0.7576
100	0.000112	2824.76	3.967	0.88	0.0106766	0.09439	0.0757	0.02790	1.00133	0.7558
102	0.000110	2886.15	3.966	0.88	0.0104273	0.09630	0.0772	0.02914	1.00130	0.7541
104	0.000108	2947.36	3.965	0.88	0.0101909	0.09820	0.0787	0.03039	1.00128	0.7525
106	0.000105	3008.39	3.964	0.88	0.0099662	0.10010	0.0802	0.03167	1.00125	0.7511
108	0.000103	3069.26	3.964	0.88	0.0097524	0.10201	0.0818	0.03297	1.00123	0.7498
110	0.000101	3129.98	3.963	0.88	0.0095486	0.10391	0.0833	0.03429	1.00120	0.7485
112	0.000100	3190.56	3.962	0.89	0.0093541	0.10581	0.0848	0.03563	1.00118	0.7474
114	0.000098	3251.03	3.962	0.89	0.0091682	0.10771	0.0863	0.03700	1.00116	0.7463
116	0.000096	3311.37	3.961	0.89	0.0089902	0.10961	0.0878	0.03838	1.00114	0.7453
118	0.000094	3371.61	3.961	0.89	0.0088196	0.11150	0.0893	0.03980	1.00112	0.7444
120	0.000093	3431.74	3.960	0.89	0.0086559	0.11340	0.0908	0.04123	1.00110	0.7436
122	0.000091	3491.78	3.960	0.89	0.0084988	0.11529	0.0923	0.04268	1.00108	0.7427
124	0.000089	3551.74	3.959	0.89	0.0083476	0.11717	0.0938	0.04416	1.00106	0.7420
126	0.000088	3611.61	3.959	0.89	0.0082022	0.11905	0.0953	0.04565	1.00104	0.7413
128	0.000087	3671.41	3.959	0.89	0.0080622	0.12093	0.0968	0.04717	1.00103	0.7406
130	0.000085	3731.14	3.958	0.89	0.0079272	0.12281	0.0983	0.04871	1.00101	0.7399
132	0.000084	3790.80	3.958	0.89	0.0077969	0.12468	0.0998	0.05027	1.00100	0.7393
134	0.000083	3850.40	3.958	0.89	0.0076711	0.12654	0.1013	0.05186	1.00098	0.7388
136	0.000081	3909.94	3.957	0.89	0.0075496	0.12840	0.1028	0.05346	1.00097	0.7382
138	0.000080	3969.43	3.957	0.89	0.0074321	0.13026	0.1042	0.05508	1.00095	0.7377
140	0.000079	4028.86	3.957	0.89	0.0073184	0.13211	0.1057	0.05673	1.00094	0.7371
142	0.000078	4088.25	3.957	0.89	0.0072084	0.13398	0.1072	0.05840	1.00092	0.7365
144	0.000077	4147.60	3.957	0.89	0.0071017	0.13585	0.1086	0.06010	1.00091	0.7360
146	0.000076	4206.90	3.956	0.89	0.0069984	0.13770	0.1101	0.06181	1.00090	0.7354
148	0.000075	4266.16	3.956	0.89	0.0068981	0.13954	0.1115	0.06354	1.00089	0.7349
150	0.000074	4325.39	3.956	0.89	0.0068009	0.14138	0.1130	0.06529	1.00087	0.7345
152	0.000073	4384.58	3.956	0.89	0.0067064	0.14320	0.1144	0.06706	1.00086	0.7341
154	0.000072	4443.74	3.955	0.89	0.0066147	0.14502	0.1158	0.06885	1.00085	0.7337
156	0.000071	4502.87	3.955	0.89	0.0065255	0.14683	0.1173	0.07065	1.00084	0.7333
158	0.000070	4561.97	3.955	0.89	0.0064389	0.14863	0.1187	0.07248	1.00083	0.7330
160	0.000069	4621.05	3.955	0.90	0.0063545	0.15042	0.1201	0.07432	1.00082	0.7326
165	0.000067	4768.64	3.955	0.90	0.0061535	0.15488	0.1236	0.07901	1.00079	0.7319
170	0.000065	4916.12	3.954	0.90	0.0059651	0.15930	0.1271	0.08362	1.00077	0.7312
175	0.000063	5063.51	3.954	0.90	0.0057884	0.16368	0.1306	0.08874	1.00075	0.7306
180	0.000061	5210.84	3.953	0.90	0.0056221	0.16802	0.1340	0.09377	1.00073	0.7300
185	0.000059	5358.14	3.953	0.90	0.0054653	0.17232	0.1374	0.09891	1.00071	0.7295
190	0.000058	5505.43	3.952	0.90	0.0053173	0.17659	0.1407	0.10417	1.00069	0.7290
195	0.000056	5652.75	3.951	0.90	0.0051772	0.18082	0.1440	0.10953	1.00067	0.7286
200	0.000055	5800.12	3.951	0.90	0.0050445	0.18502	0.1473	0.11500	1.00065	0.7281
210	0.000052	6095.12	3.949	0.90	0.0047989	0.19331	0.1538	0.12624	1.00062	0.7275
220	0.000050	6390.67	3.946	0.90	0.0045765	0.20146	0.1602	0.13790	1.00059	0.7269
230	0.000048	6687.01	3.943	0.90	0.0043748	0.20948	0.1665	0.14994	1.00057	0.7264
240	0.000046	6984.38	3.940	0.90	0.0041890	0.21738	0.1726	0.16235	1.00054	0.7261
250	0.000044	7283.03	3.935	0.90	0.0040191	0.22516	0.1787	0.17512	1.00052	0.7259
260	0.000042	7583.19	3.930	0.90	0.0038626	0.23283	0.1846	0.18823	1.00050	0.7257
270	0.000041	7885.09	3.924	0.90	0.0037188	0.24038	0.1904	0.20166	1.00048	0.7258
280	0.000039	8188.94	3.917	0.90	0.0035839	0.24782	0.1961	0.21540	1.00047	0.7259
290	0.000038	8494.94	3.909	0.90	0.0034592	0.25515	0.2018	0.22944	1.00045	0.7262
300	0.000037	8803.26	3.900	0.90	0.0033429	0.26240	0.2073	0.24375	1.00043	0.7266
310	0.000035	9114.05	3.890	0.90	0.0032342	0.26955	0.2128	0.25834	1.00042	0.7271
320	0.000034	9427.45	3.880	0.90	0.0031325	0.27663	0.2181	0.27320	1.00041	0.7278
330	0.000033	9743.57	3.868	0.90	0.0030369	0.28362	0.2235	0.28830	1.00039	0.7286
340	0.000032	10062.48	3.856	0.90	0.0029471	0.29055	0.2287	0.30364	1.00038	0.7295

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p J/G MOLE -K	VELOCITY OF SOUND M/SEC
* 54.362	24.49	284283	38.93	-6189.4	-6186.9	67.11	35.65	53.26	1160
56	24.62	276527	37.99	-6102.2	-6099.7	68.69	35.29	53.25	1149
58	24.79	267225	36.87	-5995.7	-5993.2	70.56	34.87	53.25	1137
60	24.96	258107	35.78	-5889.2	-5886.7	72.36	34.46	53.25	1124
62	25.14	249171	34.71	-5782.7	-5780.2	74.11	34.06	53.25	1111
64	25.32	240413	33.66	-5676.2	-5673.7	75.80	33.68	53.26	1097
66	25.50	231830	32.64	-5569.7	-5567.1	77.44	33.31	53.28	1084
68	25.68	223419	31.64	-5463.1	-5460.5	79.03	32.95	53.30	1070
70	25.87	215176	30.66	-5356.5	-5353.9	80.58	32.60	53.34	1056
72	26.06	207099	29.70	-5249.8	-5247.2	82.08	32.26	53.37	1042
74	26.26	199185	28.77	-5143.0	-5140.4	83.54	31.93	53.42	1027
76	26.46	191429	27.86	-5036.1	-5033.4	84.97	31.62	53.48	1013
78	26.67	183830	26.97	-4929.1	-4926.4	86.36	31.31	53.55	998
80	26.88	176383	26.10	-4821.9	-4819.2	87.71	31.02	53.63	983
82	27.10	169085	25.25	-4714.6	-4711.8	89.04	30.73	53.72	967
84	27.32	161933	24.41	-4607.0	-4604.3	90.34	30.45	53.83	952
86	27.55	154924	23.60	-4499.3	-4496.5	91.60	30.18	53.96	936
88	27.78	148054	22.81	-4391.2	-4388.4	92.85	29.92	54.10	921
90	28.02	141319	22.03	-4282.9	-4280.0	94.06	29.67	54.26	905
* 90.188	28.04	140720	21.96	-4273.1	-4270.3	94.17	29.64	54.28	903
* 90.188	7158.15	6899	0.012	1817.5	2542.0	169.68	21.28	30.77	178
92	7309.46	7068	0.012	1857.2	2597.9	170.29	21.25	30.66	180
94	7483.81	7253	0.011	1900.8	2659.1	170.95	21.22	30.55	182
96	7657.47	7436	0.011	1944.2	2720.1	171.59	21.19	30.46	184
98	7830.51	7619	0.011	1987.5	2780.9	172.22	21.16	30.37	186
100	8002.98	7800	0.010	2030.7	2841.6	172.83	21.14	30.29	188
102	8174.94	7980	0.010	2073.7	2902.1	173.43	21.12	30.21	190
104	8346.42	8158	0.010	2116.7	2962.4	174.02	21.10	30.15	192
106	8517.48	8337	0.010	2159.6	3022.7	174.59	21.08	30.09	194
108	8688.15	8514	0.010	2202.4	3082.8	175.15	21.06	30.03	196
110	8858.45	8690	0.009	2245.2	3142.8	175.71	21.05	29.98	198
112	9028.42	8866	0.009	2287.9	3202.7	176.25	21.03	29.93	200
114	9198.08	9042	0.009	2330.5	3262.5	176.77	21.02	29.89	202
116	9367.46	9216	0.009	2373.1	3322.3	177.29	21.01	29.85	204
118	9536.57	9390	0.009	2415.6	3381.9	177.80	21.00	29.81	205
120	9705.43	9564	0.009	2458.1	3441.5	178.30	20.99	29.77	207
122	9874.07	9737	0.008	2500.5	3501.0	178.80	20.98	29.74	209
124	10042.49	9910	0.008	2542.9	3560.5	179.28	20.97	29.71	211
126	10210.71	10082	0.008	2585.3	3619.9	179.76	20.96	29.68	213
128	10378.75	10254	0.008	2627.6	3679.2	180.22	20.95	29.66	214
130	10546.61	10426	0.008	2669.8	3738.5	180.68	20.94	29.63	216
132	10714.31	10597	0.008	2712.1	3797.7	181.13	20.94	29.61	218
134	10881.86	10768	0.008	2754.3	3856.9	181.58	20.93	29.59	220
136	11049.26	10939	0.007	2796.5	3916.1	182.02	20.92	29.57	221
138	11216.52	11109	0.007	2838.7	3975.2	182.45	20.92	29.55	223
140	11383.66	11279	0.007	2880.8	4034.2	182.87	20.91	29.53	225
142	11550.68	11449	0.007	2922.9	4093.3	183.29	20.91	29.51	226
144	11717.58	11619	0.007	2965.0	4152.3	183.71	20.90	29.49	228
146	11884.38	11788	0.007	3007.1	4211.3	184.11	20.90	29.48	229
148	12051.07	11958	0.007	3049.1	4270.2	184.51	20.89	29.46	231
150	12217.67	12127	0.007	3091.2	4329.1	184.91	20.89	29.45	233
152	12384.18	12295	0.007	3133.2	4388.0	185.30	20.88	29.44	234
154	12550.61	12464	0.007	3175.2	4446.9	185.68	20.88	29.43	236
156	12716.95	12633	0.006	3217.2	4505.7	186.06	20.88	29.41	237
158	12883.21	12801	0.006	3259.1	4564.5	186.44	20.87	29.40	239
160	13049.40	12969	0.006	3301.1	4623.3	186.81	20.87	29.39	240
165	13464.57	13389	0.006	3405.9	4770.2	187.71	20.86	29.37	244
170	13879.36	13809	0.006	3510.7	4917.0	188.59	20.86	29.35	248
175	14293.80	14227	0.006	3615.4	5063.7	189.44	20.85	29.33	252
180	14707.94	14645	0.006	3720.1	5210.4	190.26	20.85	29.32	255
185	15121.80	15063	0.005	3824.7	5356.9	191.07	20.85	29.30	259
190	15535.41	15480	0.005	3929.3	5503.4	191.85	20.85	29.29	262
195	15948.81	15896	0.005	4033.8	5649.8	192.61	20.85	29.28	266
200	16362.00	16312	0.005	4138.3	5796.2	193.35	20.85	29.27	269
210	17187.85	17143	0.005	4347.3	6088.9	194.78	20.85	29.26	276
220	18013.10	17973	0.005	4556.3	6381.5	196.14	20.85	29.26	283
230	18837.85	18802	0.004	4765.3	6674.1	197.44	20.86	29.26	289
240	19662.17	19630	0.004	4974.4	6966.7	198.69	20.88	29.27	295
250	20486.13	20457	0.004	5183.7	7259.4	199.88	20.90	29.28	301
260	21309.78	21284	0.004	5393.1	7552.3	201.03	20.92	29.30	307
270	22133.17	22110	0.004	5602.8	7845.4	202.14	20.95	29.32	313
280	22956.31	22936	0.004	5812.7	8138.8	203.20	20.99	29.35	319
290	23779.26	23761	0.003	6023.1	8432.5	204.23	21.03	29.39	324
300	24602.02	24586	0.003	6233.8	8726.6	205.23	21.08	29.43	330
310	25424.63	25411	0.003	6445.1	9021.2	206.20	21.13	29.48	335
320	26247.09	26235	0.003	6656.8	9316.3	207.13	21.18	29.54	340
330	27069.43	27059	0.003	6869.1	9611.9	208.04	21.25	29.59	345
340	27891.65	27883	0.003	7082.1	9908.2	208.93	21.31	29.66	351

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	$V(\partial H/\partial V)_p$ J/GMOLE	$V(\partial P/\partial U)_v$ CC-ATM/J	$-V(\partial P/\partial V)_T$ ATM	$(\partial V/\partial T)_P/V$ 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S x 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 54.362	0.040834	15881.40	25.744	11608.42	0.0033537	1.92959	6.1969	0.00089	1.56871	5.3455
56	0.040609	15739.53	25.511	11229.59	0.0033834	1.91459	5.8523	0.00089	1.56511	5.0870
58	0.040334	15564.52	26.220	10778.26	0.0034212	1.89557	5.4595	0.00088	1.56070	4.7928
60	0.040057	15387.49	25.921	10339.12	0.0034605	1.87581	5.0957	0.00088	1.55627	4.5205
62	0.039780	15208.37	25.616	9911.92	0.0035016	1.85536	4.7586	0.00088	1.55183	4.2684
64	0.039500	15027.04	25.304	9496.38	0.0035445	1.83426	4.4463	0.00087	1.54738	4.0349
66	0.039219	14843.42	24.986	9092.25	0.0035895	1.81255	4.1569	0.00087	1.54292	3.8187
68	0.038937	14657.40	24.662	8699.28	0.0036367	1.79028	3.8889	0.00086	1.53843	3.6185
70	0.038653	14468.88	24.333	8317.22	0.0036862	1.76748	3.6405	0.00086	1.53393	3.4331
72	0.038367	14277.78	23.998	7945.81	0.0037383	1.74419	3.4104	0.00085	1.52941	3.2614
74	0.038079	14083.95	23.659	7584.82	0.0037931	1.72043	3.1972	0.00085	1.52487	3.1026
76	0.037789	13887.33	23.315	7233.99	0.0038510	1.69625	2.9997	0.00084	1.52030	2.9556
78	0.037497	13687.73	22.968	6893.09	0.0039122	1.67167	2.8167	0.00083	1.51570	2.8197
80	0.037202	13485.07	22.616	6561.87	0.0039770	1.64671	2.6471	0.00083	1.51108	2.6941
82	0.036905	13279.21	22.261	6240.12	0.0040457	1.62141	2.4900	0.00082	1.50642	2.5783
84	0.036605	13069.99	21.903	5927.59	0.0041187	1.59579	2.3443	0.00081	1.50173	2.4714
86	0.036302	12857.28	21.541	5624.06	0.0041965	1.56986	2.2094	0.00080	1.49701	2.3731
88	0.035996	12640.89	21.177	5329.30	0.0042796	1.54365	2.0843	0.00079	1.49224	2.2828
90	0.035686	12420.66	20.810	5043.09	0.0043686	1.51717	1.9684	0.00078	1.48742	2.2000
* 90.180	0.035658	12400.65	20.777	5017.74	0.0043769	1.51477	1.9584	0.00078	1.48699	2.1929
* 90.180	0.000140	2508.22	3.977	0.96	0.0122676	0.08537	0.0685	0.01984	1.00166	0.7714
92	0.000137	2565.50	3.975	0.97	0.0119513	0.08708	0.0699	0.02076	1.00162	0.7686
94	0.000134	2628.35	3.973	0.97	0.0116245	0.08897	0.0714	0.02179	1.00159	0.7658
96	0.000131	2690.86	3.972	0.97	0.0113182	0.09086	0.0729	0.02284	1.00155	0.7633
98	0.000128	2753.13	3.971	0.97	0.0110302	0.09275	0.0744	0.02392	1.00152	0.7610
100	0.000125	2815.12	3.969	0.97	0.0107589	0.09465	0.0759	0.02501	1.00148	0.7589
102	0.000122	2876.88	3.968	0.98	0.0105026	0.09655	0.0774	0.02612	1.00145	0.7570
104	0.000120	2938.42	3.967	0.98	0.0102600	0.09844	0.0789	0.02725	1.00142	0.7552
106	0.000117	2999.77	3.966	0.98	0.0100298	0.10034	0.0804	0.02841	1.00139	0.7536
108	0.000115	3060.94	3.966	0.98	0.0098110	0.10224	0.0819	0.02958	1.00137	0.7521
110	0.000113	3121.94	3.965	0.98	0.0096028	0.10414	0.0834	0.03077	1.00134	0.7507
112	0.000111	3182.79	3.964	0.98	0.0094043	0.10604	0.0850	0.03198	1.00131	0.7495
114	0.000109	3243.51	3.964	0.98	0.0092147	0.10793	0.0865	0.03322	1.00129	0.7483
116	0.000107	3304.09	3.963	0.98	0.0090334	0.10983	0.0880	0.03447	1.00127	0.7472
118	0.000105	3364.55	3.962	0.98	0.0088598	0.11172	0.0895	0.03574	1.00124	0.7462
120	0.000103	3424.90	3.962	0.99	0.0086934	0.11361	0.0910	0.03703	1.00122	0.7452
122	0.000101	3485.14	3.961	0.99	0.0085338	0.11549	0.0925	0.03834	1.00120	0.7443
124	0.000100	3545.29	3.961	0.99	0.0083804	0.11737	0.0940	0.03967	1.00118	0.7435
126	0.000098	3605.35	3.961	0.99	0.0082329	0.11925	0.0955	0.04102	1.00116	0.7427
128	0.000096	3665.32	3.960	0.99	0.0080909	0.12113	0.0970	0.04239	1.00114	0.7419
130	0.000095	3725.22	3.960	0.99	0.0079541	0.12300	0.0985	0.04378	1.00113	0.7412
132	0.000093	3785.04	3.959	0.99	0.0078223	0.12487	0.0999	0.04519	1.00111	0.7405
134	0.000092	3844.79	3.959	0.99	0.0076950	0.12673	0.1014	0.04661	1.00109	0.7399
136	0.000091	3904.48	3.959	0.99	0.0075721	0.12859	0.1029	0.04806	1.00107	0.7393
138	0.000089	3964.10	3.958	0.99	0.0074533	0.13044	0.1044	0.04952	1.00106	0.7387
140	0.000088	4023.67	3.958	0.99	0.0073384	0.13229	0.1058	0.05100	1.00104	0.7381
142	0.000087	4083.19	3.958	0.99	0.0072273	0.13416	0.1073	0.05251	1.00103	0.7375
144	0.000085	4142.66	3.958	0.99	0.0071196	0.13602	0.1087	0.05404	1.00101	0.7369
146	0.000084	4202.08	3.957	0.99	0.0070153	0.13788	0.1102	0.05558	1.00100	0.7363
148	0.000083	4261.45	3.957	0.99	0.0069142	0.13972	0.1116	0.05715	1.00098	0.7357
150	0.000082	4320.79	3.957	0.99	0.0068161	0.14155	0.1131	0.05872	1.00097	0.7353
152	0.000081	4380.08	3.957	0.99	0.0067209	0.14338	0.1145	0.06032	1.00096	0.7348
154	0.000080	4439.34	3.957	0.99	0.0066284	0.14519	0.1159	0.06193	1.00095	0.7344
156	0.000079	4498.57	3.956	0.99	0.0065386	0.14700	0.1174	0.06355	1.00093	0.7340
158	0.000078	4557.77	3.956	0.99	0.0064513	0.14880	0.1188	0.06520	1.00092	0.7336
160	0.000077	4616.93	3.956	0.99	0.0063663	0.15059	0.1202	0.06686	1.00091	0.7332
165	0.000074	4764.74	3.956	0.99	0.0061639	0.15505	0.1237	0.07108	1.00088	0.7324
170	0.000072	4912.41	3.955	0.99	0.0059745	0.15946	0.1272	0.07541	1.00086	0.7317
175	0.000070	5059.98	3.955	1.00	0.0057967	0.16383	0.1307	0.07984	1.00083	0.7310
180	0.000068	5207.48	3.954	1.00	0.0056295	0.16817	0.1341	0.08437	1.00081	0.7304
185	0.000066	5354.93	3.953	1.00	0.0054720	0.17247	0.1375	0.08900	1.00078	0.7299
190	0.000064	5502.37	3.953	1.00	0.0053233	0.17673	0.1408	0.09374	1.00076	0.7294
195	0.000063	5649.82	3.952	1.00	0.0051827	0.18096	0.1441	0.09856	1.00074	0.7289
200	0.000061	5797.31	3.951	1.00	0.0050495	0.18515	0.1474	0.10349	1.00073	0.7284
210	0.000058	6092.53	3.950	1.00	0.0048030	0.19343	0.1539	0.11361	1.00069	0.7277
220	0.000056	6388.28	3.947	1.00	0.0045799	0.20158	0.1603	0.12410	1.00066	0.7271
230	0.000053	6684.80	3.944	1.00	0.0043769	0.20959	0.1666	0.13494	1.00063	0.7266
240	0.000051	6982.33	3.941	1.00	0.0041915	0.21749	0.1727	0.14612	1.00060	0.7263
250	0.000049	7281.12	3.936	1.00	0.0040212	0.22526	0.1787	0.15761	1.00058	0.7260
260	0.000047	7581.41	3.931	1.00	0.0038645	0.23292	0.1847	0.16941	1.00056	0.7259
270	0.000045	7883.43	3.925	1.00	0.0037196	0.24047	0.1905	0.18151	1.00054	0.7259
280	0.000044	8187.39	3.918	1.00	0.0035853	0.24791	0.1962	0.19388	1.00052	0.7260
290	0.000042	8493.49	3.910	1.00	0.0034604	0.25524	0.2018	0.20651	1.00050	0.7263
300	0.000041	8801.90	3.901	1.00	0.0033440	0.26248	0.2074	0.21940	1.00048	0.7267
310	0.000039	9112.79	3.891	1.00	0.0032352	0.26963	0.2128	0.23253	1.00047	0.7272
320	0.000038	9426.27	3.880	1.00	0.0031333	0.27670	0.2182	0.24590	1.00045	0.7279
330	0.000037	9742.46	3.869	1.00	0.0030377	0.28370	0.2235	0.25949	1.00044	0.7287
340	0.000036	10061.45	3.857	1.00	0.0029477	0.29062	0.2287	0.27331	1.00043	0.7295

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

2 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p	VELOCITY OF SOUND M/SEC
* 54.374	24.49	284437	38.93	-6189.2	-6184.3	67.11	35.69	53.26	1160
56	24.62	276764	38.00	-6102.7	-6097.7	68.68	34.23	53.25	1150
58	24.79	267408	36.88	-5996.2	-5991.2	70.55	34.87	53.24	1137
60	24.96	258293	35.79	-5889.3	-5884.7	72.35	34.46	53.24	1124
62	25.14	249359	34.72	-5783.3	-5778.2	74.10	34.06	53.25	1111
64	25.31	240603	33.67	-5676.8	-5671.7	75.79	33.68	53.26	1098
66	25.49	232023	32.65	-5570.3	-5565.2	77.43	33.31	53.27	1084
68	25.68	223614	31.65	-5463.8	-5458.6	79.02	32.95	53.30	1070
70	25.87	215374	30.67	-5357.2	-5351.9	80.57	32.60	53.33	1056
72	26.06	207300	29.71	-5250.5	-5245.2	82.07	32.26	53.37	1042
74	26.26	199388	28.78	-5143.8	-5138.4	83.53	31.94	53.41	1028
76	26.46	191635	27.87	-5036.9	-5031.6	84.96	31.62	53.47	1013
78	26.66	184033	26.98	-4929.9	-4924.5	86.35	31.32	53.54	998
80	26.88	176594	26.11	-4822.8	-4817.4	87.70	31.02	53.62	983
82	27.09	169299	25.26	-4715.5	-4710.0	89.03	30.73	53.71	969
84	27.31	162151	24.43	-4608.0	-4602.5	90.32	30.46	53.82	953
86	27.54	155145	23.61	-4500.3	-4494.7	91.59	30.19	53.94	937
88	27.78	148278	22.82	-4392.3	-4386.6	92.83	29.93	54.08	921
90	28.02	141547	22.04	-4284.1	-4278.3	94.05	29.67	54.24	905
92	28.26	134949	21.28	-4175.4	-4169.6	95.25	29.43	54.43	889
94	28.52	128473	20.54	-4066.3	-4060.6	96.42	29.19	54.63	873
96	28.79	122135	19.82	-3956.9	-3951.0	97.57	28.95	54.87	856
* 97.371	28.97	117855	19.33	-3881.6	-3875.7	98.35	28.80	55.04	845
* 97.371	3773.83	7104	0.023	1929.2	2694.0	165.79	21.64	32.01	182
98	3842.66	7166	0.023	1943.5	2714.1	166.00	21.62	31.94	183
100	3893.92	7368	0.022	1988.7	2777.8	166.64	21.56	31.74	185
102	3944.55	7567	0.022	2033.6	2841.1	167.27	21.50	31.55	187
104	4074.60	7764	0.021	2078.3	2904.0	167.88	21.46	31.39	190
106	4134.14	7958	0.020	2122.8	2966.6	168.48	21.41	31.24	192
108	4253.22	8153	0.020	2167.1	3029.0	169.06	21.37	31.10	194
110	4341.87	8341	0.020	2211.2	3091.0	169.63	21.33	30.98	195
112	4430.13	8530	0.019	2255.1	3152.9	170.19	21.30	30.87	198
114	4518.04	8718	0.019	2298.9	3214.5	170.73	21.27	30.77	200
116	4605.63	8904	0.018	2342.6	3276.0	171.27	21.24	30.67	202
118	4692.92	9090	0.018	2386.2	3337.2	171.79	21.22	30.59	204
120	4779.93	9274	0.018	2429.7	3398.3	172.30	21.19	30.51	206
122	4866.70	9456	0.017	2473.0	3459.2	172.81	21.17	30.43	207
124	4953.22	9639	0.017	2516.3	3520.0	173.30	21.15	30.36	209
126	5039.53	9820	0.017	2559.4	3580.7	173.79	21.13	30.30	211
128	5125.64	10000	0.016	2602.5	3641.3	174.26	21.11	30.24	213
130	5211.56	10180	0.016	2645.6	3701.7	174.73	21.10	30.19	215
132	5297.30	10358	0.016	2688.5	3762.0	175.19	21.08	30.14	217
134	5382.88	10537	0.016	2731.4	3822.2	175.64	21.07	30.09	218
136	5468.31	10714	0.015	2774.2	3882.4	176.09	21.05	30.05	220
138	5553.59	10891	0.015	2817.0	3942.4	176.53	21.04	30.00	222
140	5638.74	11068	0.015	2859.7	4002.4	176.96	21.03	29.97	223
142	5723.76	11244	0.015	2902.4	4062.3	177.38	21.02	29.93	225
144	5808.66	11419	0.014	2945.0	4122.1	177.80	21.01	29.89	227
146	5893.45	11594	0.014	2987.5	4181.9	178.21	21.00	29.86	228
148	5978.13	11769	0.014	3030.1	4241.6	178.62	20.99	29.83	230
150	6062.71	11943	0.014	3072.5	4301.2	179.02	20.98	29.80	232
152	6147.20	12117	0.014	3115.1	4360.8	179.42	20.97	29.78	233
154	6231.60	12291	0.013	3157.5	4420.3	179.80	20.97	29.75	235
156	6315.91	12463	0.013	3199.9	4479.8	180.19	20.96	29.73	237
158	6400.15	12636	0.013	3242.2	4539.2	180.57	20.95	29.70	238
160	6484.31	12808	0.013	3284.6	4598.6	180.94	20.95	29.68	240
165	6694.39	13238	0.012	3390.3	4746.9	181.85	20.93	29.63	244
170	6904.08	13667	0.012	3495.8	4894.9	182.74	20.92	29.59	247
175	7113.41	14094	0.012	3601.3	5042.8	183.59	20.91	29.55	251
180	7322.43	14520	0.011	3706.6	5190.5	184.43	20.90	29.52	255
185	7531.17	14944	0.011	3811.8	5338.0	185.23	20.89	29.49	258
190	7739.66	15364	0.011	3916.9	5485.4	186.02	20.89	29.46	262
195	7947.92	15784	0.010	4022.0	5632.6	186.79	20.88	29.44	266
200	8155.98	16202	0.010	4127.0	5779.8	187.53	20.88	29.42	269
210	8571.56	17034	0.010	4336.8	6073.8	188.97	20.87	29.39	276
220	8986.53	17893	0.009	4546.5	6367.6	190.33	20.88	29.37	282
230	9400.99	18731	0.009	4756.2	6661.3	191.64	20.88	29.36	289
240	9815.03	19566	0.008	4965.8	6954.8	192.89	20.90	29.35	295
250	10228.70	20400	0.008	5175.5	7248.4	194.08	20.91	29.36	301
260	10642.05	21233	0.008	5385.4	7542.0	195.24	20.94	29.37	307
270	11055.14	22065	0.007	5595.5	7835.8	196.35	20.96	29.39	313
280	11467.99	22895	0.007	5805.9	8129.8	197.41	21.00	29.41	319
290	11880.64	23725	0.007	6016.5	8424.1	198.45	21.04	29.44	324
300	12293.11	24555	0.007	6227.5	8718.7	199.45	21.08	29.48	330
310	12705.41	25383	0.006	6439.0	9013.7	200.41	21.13	29.53	335
320	13117.58	26211	0.006	6651.0	9309.2	201.35	21.19	29.58	340
330	13529.62	27039	0.006	6863.5	9605.3	202.26	21.25	29.63	346
340	13941.54	27866	0.006	7076.7	9901.9	203.15	21.32	29.69	351

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

2 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	$V(\partial H/\partial V)_p$ J/GMOLE	$V(\partial P/\partial U)_v$ CC-ATM/J	$-V(\partial P/\partial V)_T$ ATM	$(\partial V/\partial T)_p/V$ 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S X 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 54.374	0.040836	15887.44	25.743	11614.05	0.0033522	1.92974	6.2080	0.00069	1.56874	5.3473
56	0.040613	15746.73	25.512	11237.97	0.0033816	1.91486	5.8576	0.00069	1.56517	5.0906
58	0.040338	15571.92	25.220	10786.67	0.0034192	1.89586	5.4647	0.00068	1.56076	4.7962
60	0.040061	15395.09	23.922	10347.57	0.0034585	1.87612	5.1006	0.00068	1.55633	4.5237
62	0.039784	15216.18	25.617	9920.40	0.0034994	1.85568	4.7633	0.00068	1.55190	4.2714
64	0.039504	15035.07	25.305	9504.90	0.0035423	1.83460	4.4588	0.00067	1.54745	4.0378
66	0.039224	14851.67	24.987	9100.61	0.0035871	1.81292	4.1612	0.00067	1.54299	3.8215
68	0.038942	14665.90	24.663	8707.88	0.0036341	1.79067	3.8930	0.00066	1.53850	3.6211
70	0.038658	14477.63	24.334	8325.86	0.0036835	1.76789	3.6444	0.00066	1.53401	3.4355
72	0.038372	14286.79	23.999	7954.50	0.0037354	1.74462	3.4141	0.00065	1.52949	3.2638
74	0.038084	14093.23	23.660	7593.54	0.0037900	1.72088	3.2088	0.00065	1.52495	3.1047
76	0.037795	13896.88	23.317	7242.76	0.0038477	1.69672	3.0031	0.00064	1.52038	2.9576
78	0.037503	13697.58	22.969	6901.91	0.0039086	1.67216	2.8200	0.00063	1.51579	2.8216
80	0.037208	13495.23	22.618	6570.74	0.0039732	1.64723	2.6502	0.00063	1.51117	2.6960
82	0.036911	13289.69	22.263	6249.04	0.0040416	1.62195	2.4930	0.00062	1.50652	2.5800
84	0.036611	13080.81	21.905	5936.56	0.0041143	1.59635	2.3472	0.00061	1.50183	2.4738
86	0.036309	12868.46	21.544	5633.09	0.0041918	1.57045	2.2122	0.00060	1.49711	2.3746
88	0.036002	12652.45	21.180	5338.39	0.0042745	1.54427	2.0870	0.00059	1.49234	2.2842
90	0.035693	12432.61	20.813	5052.24	0.0043630	1.51781	1.9709	0.00058	1.48753	2.2013
92	0.035379	12208.74	20.445	4774.42	0.0044580	1.49111	1.8634	0.00057	1.48268	2.1255
94	0.035062	11980.65	20.073	4504.72	0.0045601	1.46417	1.7636	0.00056	1.47776	2.0565
96	0.034740	11748.89	19.700	4242.93	0.0046703	1.43700	1.6710	0.00055	1.47279	1.9939
* 97.371	0.034516	11585.93	19.443	4067.91	0.0047510	1.41824	1.6115	0.00055	1.46935	1.9546
* 97.371	0.000265	2631.33	3.994	1.88	0.0121652	0.09487	0.0760	0.01118	1.00315	0.8009
98	0.000263	2651.87	3.993	1.88	0.0120448	0.09545	0.0764	0.01136	1.00312	0.7991
100	0.000257	2717.97	3.991	1.89	0.0116762	0.09727	0.0779	0.01194	1.00305	0.7939
102	0.000251	2783.53	3.989	1.90	0.0113358	0.09911	0.0793	0.01252	1.00298	0.7893
104	0.000245	2848.61	3.987	1.91	0.0110188	0.10095	0.0808	0.01311	1.00292	0.7851
106	0.000240	2913.26	3.985	1.91	0.0107223	0.10279	0.0823	0.01370	1.00285	0.7814
108	0.000235	2977.52	3.984	1.92	0.0104456	0.10463	0.0837	0.01431	1.00279	0.7779
110	0.000230	3041.42	3.982	1.92	0.0101858	0.10648	0.0852	0.01492	1.00274	0.7748
112	0.000226	3104.99	3.981	1.93	0.0099412	0.10833	0.0867	0.01555	1.00268	0.7720
114	0.000221	3168.26	3.980	1.93	0.0097104	0.11018	0.0882	0.01618	1.00263	0.7694
116	0.000217	3231.25	3.979	1.93	0.0094921	0.11283	0.0896	0.01682	1.00258	0.7670
118	0.000213	3294.00	3.978	1.94	0.0092852	0.11388	0.0911	0.01747	1.00253	0.7648
120	0.000209	3356.50	3.977	1.94	0.0090886	0.11572	0.0926	0.01813	1.00248	0.7627
122	0.000205	3418.79	3.976	1.94	0.0089015	0.11757	0.0941	0.01880	1.00244	0.7608
124	0.000202	3480.88	3.975	1.95	0.0087232	0.11942	0.0955	0.01948	1.00240	0.7591
126	0.000198	3542.79	3.975	1.95	0.0085530	0.12126	0.0970	0.02017	1.00236	0.7575
128	0.000195	3604.52	3.974	1.95	0.0083903	0.12310	0.0985	0.02086	1.00232	0.7559
130	0.000192	3666.09	3.973	1.95	0.0082346	0.12494	0.0999	0.02157	1.00228	0.7545
132	0.000189	3727.51	3.973	1.96	0.0080852	0.12677	0.1014	0.02228	1.00224	0.7532
134	0.000186	3788.78	3.972	1.96	0.0079420	0.12860	0.1028	0.02301	1.00221	0.7519
136	0.000183	3849.93	3.972	1.96	0.0078043	0.13043	0.1043	0.02374	1.00217	0.7507
138	0.000180	3910.95	3.971	1.96	0.0076719	0.13225	0.1057	0.02448	1.00214	0.7496
140	0.000177	3971.85	3.971	1.96	0.0075445	0.13410	0.1072	0.02523	1.00211	0.7484
142	0.000175	4032.65	3.970	1.96	0.0074217	0.13597	0.1086	0.02600	1.00207	0.7471
144	0.000172	4093.34	3.970	1.97	0.0073032	0.13783	0.1101	0.02678	1.00204	0.7459
146	0.000170	4153.94	3.969	1.97	0.0071889	0.13968	0.1115	0.02757	1.00201	0.7449
148	0.000167	4214.45	3.969	1.97	0.0070784	0.14151	0.1129	0.02836	1.00199	0.7439
150	0.000165	4274.87	3.968	1.97	0.0069717	0.14333	0.1143	0.02916	1.00196	0.7430
152	0.000163	4335.22	3.968	1.97	0.0068684	0.14514	0.1158	0.02996	1.00193	0.7421
154	0.000160	4395.49	3.968	1.97	0.0067683	0.14694	0.1172	0.03078	1.00191	0.7414
156	0.000158	4455.68	3.967	1.97	0.0066715	0.14873	0.1186	0.03160	1.00188	0.7406
158	0.000156	4515.82	3.967	1.97	0.0065776	0.15051	0.1200	0.03243	1.00186	0.7400
160	0.000154	4575.89	3.967	1.98	0.0064865	0.15228	0.1214	0.03327	1.00183	0.7394
165	0.000149	4725.62	3.966	1.98	0.0062702	0.15668	0.1249	0.03540	1.00177	0.7379
170	0.000145	4875.44	3.965	1.98	0.0060690	0.16104	0.1283	0.03758	1.00172	0.7367
175	0.000141	5024.80	3.964	1.98	0.0058810	0.16537	0.1317	0.03981	1.00167	0.7356
180	0.000137	5173.96	3.964	1.98	0.0057050	0.16966	0.1351	0.04209	1.00162	0.7346
185	0.000133	5322.94	3.963	1.98	0.0055399	0.17391	0.1385	0.04442	1.00158	0.7337
190	0.000129	5471.81	3.962	1.99	0.0053845	0.17813	0.1418	0.04679	1.00153	0.7329
195	0.000126	5620.58	3.961	1.99	0.0052380	0.18232	0.1451	0.04922	1.00149	0.7322
200	0.000123	5769.31	3.960	1.99	0.0050997	0.18647	0.1484	0.05169	1.00146	0.7315
210	0.000117	6066.78	3.958	1.99	0.0048446	0.19467	0.1548	0.05677	1.00139	0.7304
220	0.000111	6364.52	3.955	1.99	0.0046147	0.20275	0.1611	0.06204	1.00132	0.7295
230	0.000106	6662.60	3.952	1.99	0.0044063	0.21071	0.1674	0.06747	1.00126	0.7288
240	0.000102	6961.91	3.948	1.99	0.0042164	0.21855	0.1735	0.07307	1.00121	0.7282
250	0.000098	7262.13	3.943	1.99	0.0040426	0.22627	0.1795	0.07884	1.00116	0.7277
260	0.000094	7563.72	3.938	2.00	0.0038829	0.23388	0.1854	0.08475	1.00112	0.7275
270	0.000090	7866.92	3.932	2.00	0.0037355	0.24139	0.1912	0.09081	1.00107	0.7273
280	0.000087	8171.97	3.924	2.00	0.0035991	0.24879	0.1969	0.09701	1.00104	0.7273
290	0.000084	8479.08	3.916	2.00	0.0034725	0.25608	0.2025	0.10333	1.00100	0.7275
300	0.000081	8788.42	3.907	2.00	0.0033546	0.26330	0.2080	0.10979	1.00097	0.7278
310	0.000079	9100.18	3.897	2.00	0.0032446	0.27042	0.2134	0.11637	1.00093	0.7282
320	0.000076	9414.48	3.886	2.00	0.0031416	0.27747	0.2188	0.12306	1.00090	0.7288
330	0.000074	9731.44	3.875	2.00	0.0030450	0.28444	0.2241	0.12987	1.00088	0.7295
340	0.000072	10051.15	3.862	2.00	0.0029543	0.29134	0.2293	0.13679	1.00085	0.7303

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

3 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p	VELOCITY OF SOUND M/SEC
* 54.386	24.49	284531	38.93	-6189.1	-6181.6	67.11	35.65	53.25	1160
56	24.62	276890	38.01	-6103.1	-6095.7	68.67	35.30	53.25	1150
58	24.79	267592	36.89	-5996.7	-5989.2	70.54	34.87	53.24	1137
60	24.96	258479	35.80	-5890.3	-5882.7	72.35	34.46	53.24	1124
62	25.13	249547	34.72	-5783.8	-5776.2	74.09	34.07	53.24	1111
64	25.31	240794	33.68	-5677.4	-5669.7	75.78	33.68	53.25	1098
66	25.49	232215	32.65	-5570.9	-5563.2	77.42	33.31	53.27	1084
68	25.68	223809	31.65	-5464.4	-5456.6	79.01	32.95	53.29	1071
70	25.86	215572	30.68	-5357.9	-5350.0	80.56	32.61	53.32	1057
72	26.06	207500	29.72	-5251.2	-5243.3	82.06	32.27	53.36	1042
74	26.25	199591	28.79	-5144.5	-5136.5	83.52	31.94	53.41	1028
76	26.46	191841	27.88	-5037.7	-5029.7	84.95	31.63	53.46	1013
78	26.66	184247	26.99	-4930.8	-4922.7	86.34	31.32	53.53	999
80	26.87	176806	26.12	-4823.7	-4815.5	87.69	31.03	53.61	984
82	27.09	169514	25.27	-4716.4	-4708.2	89.02	30.74	53.70	968
84	27.31	162368	24.44	-4609.0	-4600.7	90.31	30.46	53.81	953
86	27.54	155366	23.62	-4501.3	-4492.9	91.58	30.19	53.93	937
88	27.77	148503	22.83	-4393.3	-4384.9	92.82	29.93	54.07	922
90	28.01	141775	22.05	-4285.1	-4276.6	94.04	29.68	54.23	906
92	28.26	135181	21.30	-4176.5	-4167.9	95.23	29.43	54.41	890
94	28.51	128715	20.55	-4067.6	-4058.9	96.41	29.19	54.61	873
96	28.78	122375	19.83	-3958.2	-3949.4	97.56	28.96	54.84	857
98	29.05	116156	19.12	-3848.3	-3839.5	98.69	28.73	55.11	840
100	29.33	110055	18.42	-3737.9	-3729.0	99.81	28.52	55.40	823
102	29.63	104069	17.74	-3626.8	-3617.8	100.91	28.30	55.74	806
* 102.178	29.65	103540	17.68	-3616.9	-3607.9	101.01	28.28	55.77	804
* 102.178	2589.24	7151	0.034	1994.6	2781.6	163.52	21.96	33.16	185
104	2647.00	7346	0.033	2037.1	2841.8	164.10	21.88	32.88	187
106	2709.82	7560	0.032	2083.5	2907.3	164.72	21.80	32.60	189
108	2772.09	7770	0.031	2129.6	2972.2	165.33	21.72	32.36	191
110	2833.85	7977	0.031	2175.3	3036.7	165.92	21.66	32.14	194
112	2895.16	8181	0.030	2220.7	3100.8	166.50	21.60	31.94	196
114	2956.07	8383	0.029	2265.9	3164.5	167.06	21.55	31.76	198
116	3016.61	8583	0.028	2310.9	3227.8	167.61	21.50	31.60	200
118	3076.81	8780	0.028	2355.6	3290.9	168.15	21.46	31.45	202
120	3136.70	8975	0.027	2400.2	3353.7	168.68	21.42	31.32	204
122	3196.32	9169	0.027	2444.6	3416.2	169.20	21.38	31.19	206
124	3255.67	9361	0.026	2488.8	3478.4	169.70	21.35	31.08	208
126	3314.79	9552	0.026	2532.9	3540.5	170.20	21.32	30.97	210
128	3373.69	9741	0.025	2576.8	3602.3	170.69	21.29	30.88	212
130	3432.38	9929	0.025	2620.7	3664.0	171.17	21.26	30.79	213
132	3490.88	10116	0.024	2664.4	3725.5	171.64	21.24	30.71	215
134	3549.21	10302	0.024	2708.0	3786.8	172.10	21.21	30.63	217
136	3607.37	10486	0.023	2751.5	3848.0	172.55	21.19	30.56	219
138	3665.38	10670	0.023	2794.9	3909.1	173.00	21.17	30.49	221
140	3723.25	10853	0.023	2838.2	3970.0	173.43	21.15	30.43	222
142	3780.98	11036	0.022	2881.5	4030.8	173.86	21.14	30.37	224
144	3838.59	11217	0.022	2924.6	4091.5	174.29	21.12	30.31	226
146	3896.08	11398	0.022	2967.7	4152.1	174.71	21.10	30.26	227
148	3953.46	11578	0.021	3010.8	4212.5	175.12	21.09	30.21	229
150	4010.73	11757	0.021	3053.8	4272.9	175.52	21.08	30.17	231
152	4067.90	11936	0.021	3096.7	4333.2	175.92	21.06	30.13	233
154	4124.99	12115	0.020	3139.5	4393.4	176.32	21.05	30.09	234
156	4181.98	12292	0.020	3182.3	4453.6	176.70	21.04	30.05	236
158	4238.89	12470	0.020	3225.1	4513.6	177.09	21.03	30.01	237
160	4295.72	12646	0.019	3267.8	4573.6	177.46	21.02	29.98	239
165	4437.49	13087	0.019	3374.4	4723.3	178.39	21.00	29.90	243
170	4578.84	13524	0.018	3480.8	4872.7	179.28	20.98	29.83	247
175	4719.83	13960	0.018	3587.0	5021.7	180.14	20.96	29.78	251
180	4860.50	14393	0.017	3693.1	5170.4	180.98	20.95	29.72	254
185	5000.89	14825	0.017	3798.8	5318.9	181.79	20.94	29.66	258
190	5141.01	15256	0.016	3904.5	5467.2	182.58	20.93	29.64	262
195	5280.91	15685	0.016	4010.1	5615.3	183.35	20.92	29.60	265
200	5420.61	16113	0.015	4115.5	5763.3	184.10	20.91	29.57	269
210	5699.45	16965	0.015	4326.2	6058.7	185.54	20.90	29.52	275
220	5977.67	17814	0.014	4536.7	6353.7	186.92	20.90	29.48	282
230	6255.38	18659	0.013	4747.0	6648.5	188.23	20.90	29.46	289
240	6532.66	19502	0.013	4957.2	6943.0	189.48	20.91	29.44	295
250	6809.57	20343	0.012	5167.4	7237.3	190.68	20.93	29.44	301
260	7086.16	21182	0.012	5377.7	7531.7	191.84	20.95	29.44	307
270	7362.48	22019	0.011	5588.2	7826.2	192.95	20.97	29.45	313
280	7638.57	22855	0.011	5798.8	8120.8	194.02	21.01	29.47	319
290	7914.46	23690	0.010	6009.8	8415.6	195.05	21.04	29.50	324
300	8190.16	24523	0.010	6221.1	8710.7	196.05	21.09	29.53	330
310	8465.70	25356	0.010	6432.9	9006.2	197.02	21.14	29.57	335
320	8741.10	26188	0.009	6645.1	9302.2	197.96	21.19	29.62	340
330	9016.37	27019	0.009	6857.9	9598.6	198.87	21.25	29.67	346
340	9291.53	27849	0.009	7071.2	9895.6	199.76	21.32	29.73	351

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

3 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	V(DH/DV)$_P$ J/GMOLE	V(DP/DU)$_V$ CC-ATM/J	-V(DP/DV)$_T$ ATM	(DV/DT)$_P$/V 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S X 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 54.386	0.040838	15893.49	25.742	11619.67	0.0033506	1.92989	6.2030	0.00089	1.56878	5.3492
56	0.040617	15753.93	25.512	11246.34	0.0033798	1.91513	5.8630	0.00089	1.56522	5.0942
58	0.040342	15579.31	25.221	10795.08	0.0034173	1.89615	5.4698	0.00088	1.56081	4.7996
60	0.040065	15402.69	25.923	10356.01	0.0034565	1.87642	5.1055	0.00088	1.55639	4.5269
62	0.039788	15223.99	25.617	9928.88	0.0034973	1.85601	4.7680	0.00088	1.55196	4.2745
64	0.039509	15043.10	25.306	9513.42	0.0035400	1.83495	4.4553	0.00087	1.54752	4.0407
66	0.039228	14859.93	24.988	9109.37	0.0035847	1.81328	4.1655	0.00087	1.54305	3.8242
68	0.038946	14674.39	24.664	8716.48	0.0036316	1.79105	3.8971	0.00086	1.53858	3.6237
70	0.038662	14486.37	24.335	8334.50	0.0036808	1.76829	3.6483	0.00086	1.53408	3.4380
72	0.038377	14295.79	24.001	7963.18	0.0037325	1.74504	3.4179	0.00085	1.52956	3.2661
74	0.038089	14102.49	23.662	7602.27	0.0037870	1.72133	3.2044	0.00085	1.52502	3.1069
76	0.037800	13906.43	23.318	7251.53	0.0038444	1.69719	3.0066	0.00084	1.52046	2.9597
78	0.037508	13707.42	22.971	6910.72	0.0039051	1.67266	2.8233	0.00083	1.51587	2.8236
80	0.037214	13505.38	22.619	6579.61	0.0039694	1.64775	2.6534	0.00083	1.51126	2.6978
82	0.036917	13300.16	22.265	6257.96	0.0040376	1.62250	2.4960	0.00082	1.50661	2.5817
84	0.036618	13091.62	21.907	5945.53	0.0041100	1.59692	2.3501	0.00081	1.50193	2.4746
86	0.036315	12879.62	21.546	5642.11	0.0041871	1.57104	2.2150	0.00080	1.49721	2.3761
88	0.036009	12663.98	21.182	5347.47	0.0042694	1.54488	2.0897	0.00079	1.49245	2.2855
90	0.035700	12444.54	20.816	5061.38	0.0043575	1.51846	1.9735	0.00078	1.48764	2.2025
92	0.035387	12221.09	20.448	4783.62	0.0044520	1.49179	1.8658	0.00077	1.48279	2.1266
94	0.035070	11993.45	20.077	4513.99	0.0045535	1.46488	1.7660	0.00076	1.47788	2.0575
96	0.034748	11761.36	19.704	4252.27	0.0046631	1.43774	1.6733	0.00075	1.47292	1.9948
98	0.034421	11524.59	19.329	3998.25	0.0047817	1.41038	1.5874	0.00074	1.46789	1.9383
100	0.034089	11282.85	18.952	3751.72	0.0049104	1.38280	1.5076	0.00073	1.46279	1.8877
102	0.033752	11035.82	18.572	3512.48	0.0050506	1.35502	1.4336	0.00072	1.45761	1.8429
* 102.178	0.033721	11013.54	18.538	3491.50	0.0050638	1.35253	1.4272	0.00072	1.45715	1.8391
* 102.178	0.000386	2695.42	4.007	2.76	0.0123026	0.10196	0.0815	0.00796	1.00459	0.8284
104	0.000378	2757.69	4.004	2.78	0.0119231	0.10357	0.0828	0.00834	1.00449	0.8214
106	0.000369	2825.90	4.002	2.79	0.0115378	0.10534	0.0842	0.00876	1.00439	0.8145
108	0.000361	2893.45	4.000	2.80	0.0111836	0.10712	0.0856	0.00918	1.00429	0.8084
110	0.000353	2960.40	3.998	2.81	0.0108563	0.10891	0.0871	0.00960	1.00419	0.8029
112	0.000345	3026.82	3.997	2.83	0.0105527	0.11070	0.0885	0.01003	1.00410	0.7979
114	0.000338	3092.76	3.995	2.84	0.0102698	0.11250	0.0899	0.01047	1.00402	0.7934
116	0.000331	3158.25	3.994	2.85	0.0100054	0.11430	0.0914	0.01091	1.00394	0.7894
118	0.000325	3223.34	3.992	2.85	0.0097575	0.11610	0.0928	0.01136	1.00386	0.7857
120	0.000319	3288.06	3.991	2.86	0.0095244	0.11790	0.0942	0.01181	1.00379	0.7823
122	0.000313	3352.44	3.990	2.87	0.0093046	0.11970	0.0957	0.01227	1.00372	0.7791
124	0.000307	3416.51	3.989	2.88	0.0090968	0.12151	0.0971	0.01273	1.00365	0.7763
126	0.000302	3480.29	3.988	2.88	0.0089001	0.12331	0.0985	0.01320	1.00358	0.7736
128	0.000296	3543.80	3.987	2.89	0.0087133	0.12511	0.1000	0.01367	1.00352	0.7712
130	0.000291	3607.05	3.986	2.89	0.0085357	0.12691	0.1014	0.01415	1.00346	0.7689
132	0.000286	3670.08	3.985	2.90	0.0083665	0.12871	0.1028	0.01463	1.00340	0.7668
134	0.000282	3732.89	3.985	2.90	0.0082051	0.13051	0.1043	0.01512	1.00335	0.7648
136	0.000277	3795.50	3.984	2.91	0.0080509	0.13231	0.1057	0.01562	1.00329	0.7629
138	0.000273	3857.92	3.983	2.91	0.0079033	0.13410	0.1071	0.01612	1.00324	0.7612
140	0.000269	3920.17	3.983	2.92	0.0077618	0.13596	0.1085	0.01664	1.00319	0.7592
142	0.000264	3982.25	3.982	2.92	0.0076262	0.13782	0.1100	0.01716	1.00314	0.7573
144	0.000261	4044.17	3.981	2.92	0.0074959	0.13968	0.1114	0.01769	1.00309	0.7555
146	0.000257	4105.95	3.981	2.93	0.0073706	0.14151	0.1128	0.01822	1.00305	0.7538
148	0.000253	4167.59	3.980	2.93	0.0072500	0.14333	0.1142	0.01875	1.00300	0.7524
150	0.000249	4229.11	3.980	2.93	0.0071338	0.14513	0.1156	0.01929	1.00296	0.7510
152	0.000246	4290.50	3.979	2.93	0.0070218	0.14693	0.1170	0.01984	1.00292	0.7498
154	0.000242	4351.78	3.979	2.94	0.0069136	0.14871	0.1184	0.02039	1.00288	0.7486
156	0.000239	4412.95	3.978	2.94	0.0068092	0.15048	0.1198	0.02094	1.00284	0.7476
158	0.000236	4474.01	3.978	2.94	0.0067082	0.15224	0.1212	0.02150	1.00280	0.7466
160	0.000233	4534.99	3.977	2.94	0.0066106	0.15399	0.1226	0.02206	1.00276	0.7457
165	0.000225	4687.04	3.976	2.95	0.0063797	0.15834	0.1260	0.02350	1.00268	0.7436
170	0.000218	4838.61	3.975	2.95	0.0061660	0.16264	0.1294	0.02496	1.00259	0.7419
175	0.000212	4989.77	3.974	2.96	0.0059673	0.16692	0.1328	0.02646	1.00252	0.7403
180	0.000206	5140.58	3.973	2.96	0.0057822	0.17116	0.1362	0.02799	1.00244	0.7389
185	0.000200	5291.10	3.972	2.96	0.0056091	0.17536	0.1395	0.02955	1.00237	0.7377
190	0.000195	5441.39	3.971	2.97	0.0054468	0.17954	0.1428	0.03114	1.00231	0.7366
195	0.000189	5591.50	3.970	2.97	0.0052942	0.18368	0.1461	0.03277	1.00225	0.7356
200	0.000184	5741.47	3.969	2.97	0.0051506	0.18780	0.1493	0.03442	1.00219	0.7347
210	0.000175	6041.19	3.966	2.98	0.0048867	0.19592	0.1557	0.03782	1.00208	0.7332
220	0.000167	6340.90	3.963	2.98	0.0046498	0.20392	0.1620	0.04134	1.00199	0.7319
230	0.000160	6640.94	3.960	2.98	0.0044359	0.21182	0.1682	0.04498	1.00190	0.7309
240	0.000153	6941.64	3.956	2.99	0.0042415	0.21960	0.1742	0.04872	1.00182	0.7301
250	0.000147	7243.28	3.951	2.99	0.0040640	0.22728	0.1802	0.05258	1.00174	0.7295
260	0.000141	7546.15	3.945	2.99	0.0039013	0.23485	0.1861	0.05653	1.00168	0.7290
270	0.000136	7850.54	3.939	2.99	0.0037515	0.24231	0.1919	0.06057	1.00161	0.7287
280	0.000131	8156.67	3.931	2.99	0.0036130	0.24967	0.1975	0.06471	1.00155	0.7286
290	0.000126	8464.77	3.923	2.99	0.0034846	0.25693	0.2031	0.06894	1.00150	0.7287
300	0.000122	8775.04	3.913	2.99	0.0033652	0.26411	0.2086	0.07325	1.00145	0.7289
310	0.000118	9087.66	3.903	3.00	0.0032539	0.27121	0.2140	0.07764	1.00140	0.7292
320	0.000114	9402.76	3.892	3.00	0.0031499	0.27823	0.2194	0.08212	1.00136	0.7297
330	0.000111	9720.49	3.880	3.00	0.0030524	0.28518	0.2246	0.08666	1.00132	0.7304
340	0.000108	10040.91	3.868	3.00	0.0029608	0.29206	0.2298	0.09128	1.00128	0.7311

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

4 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p	VELOCITY OF SOUND M/SEC
* 54.397	24.49	284656	38.93	-6188.9	-6179.8	67.12	35.65	53.25	1160
56	24.62	277071	38.02	-6103.6	-6093.6	68.66	35.30	53.24	1150
58	24.79	267776	36.90	-5997.2	-5987.2	70.53	34.88	53.24	1138
60	24.96	258665	35.80	-5890.6	-5880.7	72.34	34.47	53.23	1125
62	25.13	249735	34.73	-5784.4	-5774.2	74.08	34.07	53.24	1112
64	25.31	240984	33.69	-5678.0	-5667.7	75.77	33.69	53.25	1098
66	25.49	232408	32.66	-5571.5	-5561.2	77.41	33.32	53.26	1085
68	25.67	224004	31.66	-5465.1	-5454.7	79.00	32.96	53.28	1071
70	25.86	215769	30.69	-5358.5	-5348.1	80.55	32.61	53.31	1057
72	26.05	207700	29.73	-5251.9	-5241.4	82.05	32.27	53.35	1043
74	26.25	199793	28.80	-5145.3	-5134.6	83.51	31.95	53.40	1028
76	26.45	192046	27.89	-5038.5	-5027.8	84.94	31.63	53.45	1014
78	26.66	184455	27.00	-4931.6	-4920.8	86.33	31.33	53.52	999
80	26.87	177017	26.13	-4824.5	-4813.6	87.68	31.03	53.60	984
82	27.08	169728	25.28	-4717.3	-4706.3	89.01	30.75	53.69	969
84	27.30	162586	24.45	-4609.9	-4598.8	90.30	30.47	53.79	953
86	27.53	155587	23.64	-4502.3	-4491.1	91.57	30.20	53.91	938
88	27.77	148727	22.84	-4394.4	-4383.1	92.81	29.94	54.05	922
90	28.01	142003	22.07	-4286.2	-4274.9	94.03	29.68	54.21	906
92	28.25	135412	21.31	-4177.7	-4166.2	95.22	29.44	54.39	890
94	28.51	128950	20.57	-4068.8	-4057.2	96.39	29.20	54.59	874
96	28.77	122614	19.84	-3959.5	-3947.8	97.54	28.97	54.82	857
98	29.04	116400	19.13	-3849.7	-3837.9	98.68	28.74	55.08	840
100	29.33	110304	18.44	-3739.3	-3727.4	99.79	28.52	55.38	823
102	29.62	104322	17.76	-3628.4	-3616.4	100.89	28.31	55.71	806
104	29.92	98451	17.09	-3516.7	-3504.6	101.98	28.10	56.08	789
* 105.903	30.23	92962	16.46	-3409.7	-3397.5	103.00	27.91	56.49	772
* 105.903	1977.46	7131	0.045	2039.2	2840.6	161.89	22.25	34.27	186
106	1979.85	7139	0.045	2041.5	2844.0	161.92	22.25	34.25	187
108	2029.08	7370	0.044	2089.7	2912.8	162.56	22.13	33.85	189
110	2077.71	7596	0.043	2137.3	2979.4	163.17	22.03	33.50	191
112	2125.81	7818	0.041	2184.5	3046.1	163.77	21.94	33.18	193
114	2173.44	8036	0.040	2231.3	3112.1	164.36	21.86	32.90	196
116	2220.64	8250	0.039	2277.7	3177.7	164.93	21.79	32.65	198
118	2267.46	8460	0.038	2323.8	3242.8	165.48	21.72	32.42	200
120	2313.94	8666	0.037	2369.6	3307.4	166.03	21.66	32.22	202
122	2360.10	8874	0.037	2415.1	3371.7	166.56	21.61	32.03	204
124	2405.98	9077	0.036	2460.4	3435.6	167.08	21.56	31.86	206
126	2451.59	9278	0.035	2505.5	3499.1	167.59	21.51	31.71	208
128	2496.97	9477	0.034	2550.4	3562.4	168.09	21.47	31.57	210
130	2542.12	9674	0.034	2595.1	3625.4	168.57	21.43	31.44	212
132	2587.07	9869	0.033	2639.6	3688.2	169.05	21.40	31.32	214
134	2631.82	10063	0.032	2684.0	3750.7	169.52	21.37	31.20	216
136	2676.41	10255	0.032	2728.2	3813.0	169.98	21.34	31.10	218
138	2720.83	10446	0.031	2772.3	3875.1	170.44	21.31	31.01	219
140	2765.09	10636	0.031	2816.3	3937.0	170.88	21.28	30.92	221
142	2809.22	10825	0.030	2860.2	3998.8	171.32	21.26	30.83	223
144	2853.21	11013	0.030	2903.9	4060.3	171.75	21.23	30.76	225
146	2897.08	11200	0.029	2947.6	4121.8	172.18	21.21	30.68	226
148	2940.83	11385	0.029	2991.2	4183.1	172.59	21.19	30.62	228
150	2984.48	11570	0.028	3034.6	4244.3	173.00	21.17	30.55	230
152	3028.02	11754	0.028	3078.0	4305.3	173.41	21.16	30.49	232
154	3071.46	11938	0.027	3121.4	4366.2	173.81	21.14	30.44	233
156	3114.81	12120	0.027	3164.6	4427.0	174.20	21.12	30.38	235
158	3158.08	12302	0.027	3207.8	4487.8	174.58	21.11	30.33	237
160	3201.27	12484	0.026	3250.9	4548.4	174.97	21.10	30.29	238
165	3308.90	12934	0.025	3358.4	4699.5	175.90	21.07	30.18	242
170	3416.11	13381	0.025	3465.6	4850.2	176.80	21.04	30.09	246
175	3522.95	13826	0.024	3572.6	5000.4	177.67	21.02	30.01	250
180	3629.47	14267	0.023	3679.3	5150.3	178.51	21.00	29.93	254
185	3735.69	14707	0.022	3785.7	5299.8	179.33	20.98	29.87	258
190	3841.65	15144	0.022	3892.0	5449.0	180.13	20.96	29.82	261
195	3947.38	15579	0.021	3998.1	5598.0	180.90	20.95	29.77	265
200	4052.89	16013	0.021	4104.1	5746.7	181.65	20.94	29.72	268
210	4263.38	16876	0.020	4315.6	6043.6	183.10	20.93	29.65	275
220	4473.24	17734	0.019	4526.8	6339.8	184.48	20.92	29.60	282
230	4682.56	18588	0.018	4737.8	6635.6	185.79	20.92	29.56	288
240	4891.48	19439	0.017	4948.5	6931.1	187.05	20.93	29.53	295
250	5100.01	20286	0.016	5159.3	7226.3	188.26	20.94	29.52	301
260	5308.23	21131	0.016	5370.0	7521.4	189.41	20.96	29.51	307
270	5516.17	21974	0.015	5580.9	7816.6	190.53	20.98	29.52	313
280	5723.88	22815	0.014	5791.9	8111.8	191.60	21.01	29.53	319
290	5931.38	23655	0.014	6003.2	8407.2	192.64	21.05	29.55	324
300	6138.70	24492	0.013	6214.8	8702.8	193.64	21.09	29.58	330
310	6345.86	25329	0.013	6426.8	8998.8	194.61	21.14	29.62	335
320	6552.88	26165	0.013	6639.3	9295.1	195.55	21.20	29.66	340
330	6759.77	26999	0.012	6852.2	9592.0	196.47	21.26	29.71	346
340	6966.54	27833	0.012	7065.6	9889.3	197.35	21.32	29.76	351

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

4 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	$V(\partial H/\partial V)_p$ J/GMOLE	$V(\partial P/\partial U)_V$ CC-ATM/J	$-V(\partial P/\partial V)_T$ ATM	$(\partial V/\partial T)_P/V$ 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S x 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 54.397	0.040840	15899.53	26.741	11625.29	0.0033491	1.93004	6.2061	0.00089	1.56881	5.3510
56	0.040620	15761.12	25.513	11254.71	0.0033780	1.91540	5.8684	0.00089	1.56528	5.0977
58	0.040345	15586.70	25.222	10803.48	0.0034154	1.89643	5.4750	0.00088	1.56087	4.8030
60	0.040069	15410.28	25.923	10364.45	0.0034544	1.87673	5.1105	0.00088	1.55646	4.5301
62	0.039792	15231.79	25.618	9937.36	0.0034952	1.85634	4.7727	0.00088	1.552.3	4.2775
64	0.039513	15051.12	25.307	9521.93	0.0035377	1.83529	4.4598	0.00087	1.54758	4.0436
66	0.039232	14868.18	24.989	9117.92	0.0035823	1.81365	4.1698	0.00087	1.54312	3.8269
68	0.038951	14682.88	24.665	8725.07	0.0036290	1.79144	3.9012	0.00086	1.53865	3.6263
70	0.038667	14495.10	24.336	8343.13	0.0036780	1.76870	3.6523	0.00086	1.53415	3.4404
72	0.038382	14304.78	24.002	7971.86	0.0037296	1.74547	3.4217	0.00085	1.52964	3.2684
74	0.038094	14111.75	23.663	7610.99	0.0037839	1.72178	3.2080	0.00085	1.52510	3.1091
76	0.037805	13915.97	23.320	7260.30	0.0038411	1.69766	3.0100	0.00084	1.52054	2.9618
78	0.037513	13717.25	22.972	6919.54	0.0039016	1.67315	2.8265	0.00083	1.51596	2.8255
80	0.037219	13515.52	22.621	6588.47	0.0039656	1.64827	2.6566	0.00083	1.51135	2.6996
82	0.036923	13310.62	22.267	6266.87	0.0040335	1.62304	2.4990	0.00082	1.50670	2.5834
84	0.036624	13102.42	21.909	5954.50	0.0041056	1.59749	2.3530	0.00081	1.50202	2.4762
86	0.036321	12890.78	21.548	5651.13	0.0041824	1.57163	2.2177	0.00080	1.49731	2.3776
88	0.036016	12675.51	21.185	5356.54	0.0042644	1.54550	2.0923	0.00079	1.49255	2.2869
90	0.035707	12456.46	20.819	5070.51	0.0043520	1.51911	1.9761	0.00078	1.48775	2.2038
92	0.035394	12233.43	20.451	4792.82	0.0044460	1.49246	1.8683	0.00078	1.48291	2.1278
94	0.035077	12006.23	20.081	4523.25	0.0045470	1.46558	1.7683	0.00077	1.47800	2.0585
96	0.034756	11774.61	19.708	4261.60	0.0046560	1.43847	1.6756	0.00075	1.47305	1.9957
98	0.034430	11538.34	19.334	4007.65	0.0047739	1.41115	1.5896	0.00074	1.46802	1.9391
100	0.034099	11297.14	18.957	3761.20	0.0049018	1.38361	1.5098	0.00073	1.46293	1.8884
102	0.033761	11050.66	18.578	3522.04	0.0050411	1.35586	1.4356	0.00072	1.45776	1.8434
104	0.033418	10798.66	18.196	3289.98	0.0051935	1.32789	1.3668	0.00071	1.45250	1.8040
* 105.903	0.033084	10553.28	17.830	3075.56	0.0053525	1.30108	1.3057	0.00070	1.44741	1.7716
* 105.903	0.003506	2734.33	4.017	3.61	0.0125336	0.10794	0.0862	0.00623	1.00601	0.8551
106	0.000505	2737.17	4.016	3.61	0.0125135	0.10802	0.0862	0.00624	1.00601	0.8546
108	0.000493	2808.32	4.014	3.63	0.0120536	0.10973	0.0876	0.00658	1.00586	0.8447
110	0.000481	2878.57	4.012	3.66	0.0116365	0.11144	0.0890	0.00691	1.00572	0.8359
112	0.000470	2948.04	4.010	3.68	0.0112558	0.11317	0.0904	0.00725	1.00559	0.8281
114	0.000460	3016.79	4.009	3.70	0.0109064	0.11490	0.0918	0.00759	1.00547	0.8211
116	0.000450	3084.90	4.007	3.71	0.0105841	0.11664	0.0931	0.00793	1.00535	0.8148
118	0.000441	3152.44	4.006	3.73	0.0102855	0.11839	0.0945	0.00828	1.00524	0.8092
120	0.000432	3219.45	4.004	3.75	0.0100073	0.12014	0.0959	0.00863	1.00514	0.8041
122	0.000424	3285.99	4.003	3.76	0.0097485	0.12189	0.0973	0.00898	1.00504	0.7994
124	0.000416	3352.08	4.002	3.77	0.0095058	0.12365	0.0987	0.00934	1.00494	0.7952
126	0.000408	3417.77	4.001	3.78	0.0092777	0.12541	0.1001	0.00970	1.00485	0.7913
128	0.000400	3483.09	4.000	3.80	0.0090629	0.12717	0.1015	0.01006	1.00476	0.7877
130	0.000393	3548.07	3.999	3.81	0.0088601	0.12893	0.1029	0.01043	1.00468	0.7844
132	0.000387	3612.73	3.998	3.81	0.0086681	0.13069	0.1043	0.01080	1.00459	0.7814
134	0.000380	3677.09	3.997	3.82	0.0084861	0.13245	0.1056	0.01117	1.00452	0.7786
136	0.000374	3741.18	3.996	3.83	0.0083132	0.13421	0.1072	0.01155	1.00444	0.7760
138	0.000368	3805.01	3.995	3.84	0.0081485	0.13598	0.1086	0.01193	1.00437	0.7735
140	0.000362	3868.60	3.994	3.85	0.0079916	0.13786	0.1099	0.01233	1.00430	0.7706
142	0.000356	3931.97	3.994	3.85	0.0078417	0.13972	0.1113	0.01273	1.00423	0.7679
144	0.000350	3995.13	3.993	3.86	0.0076983	0.14156	0.1127	0.01313	1.00416	0.7654
146	0.000345	4058.09	3.992	3.87	0.0075610	0.14338	0.1141	0.01354	1.00410	0.7632
148	0.000340	4120.87	3.991	3.87	0.0074293	0.14519	0.1155	0.01395	1.00404	0.7612
150	0.000335	4183.48	3.991	3.88	0.0073030	0.14697	0.1169	0.01436	1.00398	0.7594
152	0.000330	4245.92	3.990	3.88	0.0071815	0.14875	0.1183	0.01477	1.00392	0.7577
154	0.000326	4308.21	3.990	3.89	0.0070646	0.15051	0.1197	0.01519	1.00387	0.7561
156	0.000321	4370.35	3.989	3.89	0.0069521	0.15226	0.1210	0.01561	1.00381	0.7547
158	0.000317	4432.35	3.988	3.90	0.0068436	0.15400	0.1224	0.01603	1.00376	0.7534
160	0.000312	4494.23	3.988	3.90	0.0067389	0.15572	0.1238	0.01646	1.00371	0.7523
165	0.000302	4648.41	3.986	3.91	0.0064924	0.16001	0.1272	0.01754	1.00359	0.7495
170	0.000293	4801.93	3.985	3.92	0.0062656	0.16426	0.1305	0.01865	1.00348	0.7472
175	0.000284	4954.88	3.984	3.92	0.0060557	0.16848	0.1339	0.01978	1.00337	0.7452
180	0.000276	5107.35	3.983	3.93	0.0058610	0.17267	0.1372	0.02094	1.00327	0.7434
185	0.000268	5259.41	3.981	3.94	0.0056796	0.17682	0.1405	0.02211	1.00318	0.7418
190	0.000260	5411.13	3.980	3.94	0.0055101	0.18095	0.1438	0.02332	1.00309	0.7403
195	0.000253	5562.56	3.979	3.95	0.0053513	0.18506	0.1470	0.02454	1.00301	0.7390
200	0.000247	5713.77	3.978	3.95	0.0052022	0.18913	0.1502	0.02579	1.00293	0.7378
210	0.000235	6015.74	3.975	3.96	0.0049292	0.19717	0.1566	0.02835	1.00279	0.7359
220	0.000224	6317.43	3.972	3.96	0.0046853	0.20510	0.1628	0.03100	1.00266	0.7344
230	0.000214	6619.24	3.968	3.97	0.0044657	0.21293	0.1690	0.03373	1.00254	0.7331
240	0.000204	6921.50	3.963	3.97	0.0042668	0.22066	0.1750	0.03655	1.00243	0.7320
250	0.000196	7224.55	3.958	3.98	0.0040856	0.22829	0.1810	0.03944	1.00233	0.7312
260	0.000188	7528.72	3.952	3.98	0.0039198	0.23581	0.1868	0.04241	1.00224	0.7306
270	0.000181	7834.27	3.945	3.98	0.0037675	0.24323	0.1925	0.04546	1.00215	0.7302
280	0.000175	8141.46	3.938	3.99	0.0036269	0.25055	0.1982	0.04857	1.00207	0.7299
290	0.000169	8450.57	3.929	3.99	0.0034968	0.25777	0.2037	0.05174	1.00200	0.7299
300	0.000163	8761.76	3.920	3.99	0.0033759	0.26493	0.2092	0.05496	1.00193	0.7300
310	0.000158	9075.23	3.909	3.99	0.0032633	0.27200	0.2146	0.05828	1.00187	0.7303
320	0.000153	9391.13	3.898	3.99	0.0031582	0.27899	0.2199	0.06164	1.00181	0.7307
330	0.000148	9709.60	3.886	3.99	0.0030597	0.28592	0.2252	0.06506	1.00176	0.7312
340	0.000144	10030.74	3.873	4.00	0.0029673	0.29277	0.2304	0.06852	1.00170	0.7319

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

5 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p	VELOCITY OF SOUND M/SEC
* 54.409	24.48	284784	38.94	-6188.7	-6176.3	67.12	35.65	53.25	1161
56	24.62	277253	38.03	-6104.1	-6091.6	68.66	35.30	53.24	1151
58	24.78	267959	36.91	-5997.7	-5985.1	70.52	34.88	53.23	1138
60	24.95	256856	35.81	-5891.3	-5878.7	72.33	34.47	53.23	1125
62	25.13	249923	34.74	-5784.9	-5772.2	74.07	34.08	53.23	1112
64	25.31	241174	33.69	-5678.6	-5665.7	75.76	33.69	53.24	1099
66	25.49	232600	32.67	-5572.1	-5559.2	77.40	33.32	53.26	1085
68	25.67	224199	31.67	-5465.7	-5452.7	78.99	32.96	53.28	1071
70	25.86	215966	30.70	-5359.2	-5346.1	80.54	32.61	53.31	1057
72	26.05	207900	29.74	-5252.6	-5239.4	82.04	32.28	53.34	1043
74	26.25	199996	28.81	-5146.0	-5132.7	83.50	31.95	53.39	1029
76	26.45	192251	27.90	-5039.3	-5025.9	84.93	31.64	53.44	1014
78	26.65	184663	27.01	-4932.4	-4918.9	86.32	31.33	53.51	999
80	26.86	177228	26.14	-4825.4	-4811.8	87.67	31.04	53.59	984
82	27.08	169942	25.29	-4718.2	-4704.5	89.00	30.75	53.68	969
84	27.30	162803	24.46	-4610.9	-4597.0	90.29	30.47	53.78	954
86	27.53	155807	23.65	-4503.3	-4489.3	91.56	30.20	53.90	938
88	27.76	148951	22.85	-4395.4	-4381.4	92.80	29.94	54.04	923
90	28.00	142231	22.08	-4287.3	-4273.1	94.01	29.69	54.19	907
92	28.25	135644	21.32	-4178.9	-4164.5	95.21	29.44	54.37	891
94	28.50	129186	20.58	-4070.0	-4055.6	96.38	29.21	54.57	874
96	28.77	122854	19.86	-3960.8	-3946.2	97.53	28.97	54.80	858
98	29.04	116644	19.15	-3851.1	-3836.3	98.66	28.75	55.06	841
100	29.32	110552	18.45	-3740.8	-3725.9	99.78	28.53	55.35	824
102	29.61	104575	17.77	-3629.9	-3614.9	100.88	28.31	55.68	807
104	29.92	98709	17.10	-3518.3	-3503.2	101.96	28.11	56.05	789
106	30.23	92950	16.45	-3406.0	-3390.7	103.04	27.90	56.47	772
108	30.56	87293	15.80	-3292.7	-3277.3	104.10	27.71	56.95	754
* 108.992	30.73	84525	15.49	-3236.2	-3220.6	104.62	27.61	57.21	745
* 108.992	1601.44	7075	0.057	2071.8	2883.1	100.61	22.53	35.36	188
110	1622.05	7196	0.056	2096.9	2910.6	100.93	22.46	35.10	189
112	1642.49	7438	0.054	2146.1	2988.4	101.56	22.33	34.63	191
114	1702.37	7674	0.052	2194.7	3057.2	102.17	22.21	34.22	193
116	1741.76	7904	0.051	2242.8	3125.3	102.76	22.11	33.85	196
118	1780.71	8130	0.050	2290.5	3192.6	103.34	22.02	33.52	198
120	1819.27	8352	0.048	2337.7	3259.4	103.90	21.93	33.23	200
122	1857.46	8570	0.047	2384.5	3325.6	104.45	21.86	32.97	202
124	1895.37	8785	0.046	2431.0	3391.3	104.98	21.79	32.73	204
126	1932.96	8997	0.045	2477.2	3456.5	105.50	21.73	32.51	206
128	1970.30	9206	0.044	2523.1	3521.3	106.01	21.67	32.32	209
130	2007.39	9413	0.043	2568.8	3585.8	106.51	21.62	32.14	210
132	2044.26	9618	0.042	2614.2	3649.9	107.00	21.57	31.97	212
134	2080.93	9820	0.041	2659.4	3713.7	107.48	21.53	31.82	214
136	2117.41	10021	0.041	2704.5	3777.2	107.95	21.49	31.68	216
138	2153.71	10219	0.040	2749.3	3840.4	108.41	21.45	31.55	218
140	2189.86	10417	0.039	2794.0	3903.4	108.87	21.41	31.43	220
142	2225.85	10612	0.038	2838.5	3966.2	109.31	21.38	31.32	222
144	2261.70	10806	0.038	2882.9	4028.7	109.75	21.35	31.22	224
146	2297.42	10999	0.037	2927.1	4091.0	110.18	21.32	31.12	225
148	2333.03	11191	0.037	2971.2	4153.2	110.60	21.30	31.03	227
150	2368.51	11382	0.036	3015.2	4215.2	111.02	21.27	30.95	229
152	2403.89	11571	0.035	3059.1	4277.0	111.43	21.25	30.87	231
154	2439.17	11760	0.035	3102.9	4338.7	111.83	21.23	30.80	232
156	2474.35	11947	0.034	3146.6	4400.2	112.23	21.21	30.73	234
158	2509.44	12134	0.034	3190.3	4461.6	112.62	21.19	30.66	236
160	2544.45	12320	0.033	3233.8	4522.9	113.00	21.17	30.60	237
165	2631.64	12781	0.032	3342.3	4675.5	113.94	21.13	30.47	242
170	2718.39	13238	0.031	3450.4	4827.6	114.85	21.10	30.35	246
175	2804.76	13691	0.030	3558.1	4979.0	115.73	21.07	30.24	249
180	2890.79	14141	0.029	3665.4	5130.0	116.58	21.04	30.15	253
185	2976.53	14587	0.028	3772.6	5280.5	117.40	21.02	30.07	257
190	3062.00	15032	0.027	3879.4	5430.7	118.20	21.00	30.00	261
195	3147.23	15473	0.027	3986.1	5580.5	118.98	20.99	29.93	264
200	3232.25	15913	0.026	4092.5	5730.1	119.74	20.98	29.88	268
210	3401.73	16787	0.025	4305.0	6028.4	121.20	20.96	29.79	275
220	3570.58	17655	0.023	4516.9	6325.9	122.58	20.94	29.72	282
230	3738.90	18517	0.022	4728.5	6622.7	123.90	20.94	29.66	288
240	3906.78	19375	0.021	4939.9	6919.1	125.16	20.94	29.62	295
250	4074.29	20230	0.020	5151.1	7215.2	126.37	20.95	29.60	301
260	4241.48	21081	0.020	5362.3	7511.1	127.53	20.97	29.58	307
270	4408.40	21929	0.019	5573.5	7806.9	128.65	20.99	29.58	313
280	4575.08	22775	0.018	5784.9	8102.8	129.72	21.02	29.59	319
290	4741.55	23619	0.017	5996.5	8398.7	130.76	21.06	29.60	324
300	4907.84	24462	0.017	6208.4	8694.9	131.76	21.10	29.63	330
310	5073.97	25302	0.016	6420.7	8991.3	132.74	21.15	29.66	335
320	5239.96	26142	0.016	6633.4	9288.1	133.68	21.20	29.70	341
330	5405.82	26980	0.015	6846.6	9585.3	134.59	21.26	29.75	346
340	5571.56	27816	0.015	7060.4	9883.1	135.48	21.33	29.80	351

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

5 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	$V(\partial H/\partial V)_p$ J/GMOLE	$V(\partial P/\partial U)_V$ CC-ATM/J	$-V(\partial P/\partial V)_T$ ATM	$(\partial V/\partial T)_P/V$ 1/ KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S x 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 54.409	0.040842	15905.57	25.740	11630.91	0.0033476	1.93019	6.2092	0.00089	1.56884	5.3528
56	0.040624	15768.32	25.514	11263.08	0.0033762	1.91567	5.8736	0.00089	1.56534	5.1013
58	0.040349	15594.09	25.223	10811.89	0.0034135	1.89672	5.4801	0.00088	1.56093	4.8654
60	0.040073	15417.87	25.924	10372.89	0.0034524	1.87704	5.1154	0.00088	1.55652	4.5333
62	0.039796	15239.59	25.619	9945.83	0.0034930	1.85666	4.7774	0.00088	1.55209	4.2836
64	0.039517	15059.14	25.307	9530.45	0.0035355	1.83564	4.4643	0.00087	1.54765	4.0465
66	0.039237	14876.43	24.990	9126.48	0.0035799	1.81401	4.1741	0.00087	1.54319	3.8297
68	0.038955	14691.36	24.666	8733.67	0.0036265	1.79182	3.9053	0.00086	1.53872	3.6269
70	0.038672	14503.83	24.337	8351.77	0.0036753	1.76911	3.6562	0.00086	1.53423	3.4429
72	0.038386	14313.76	24.003	7980.53	0.0037267	1.74590	3.4254	0.00085	1.52971	3.2707
74	0.038099	14121.01	23.664	7619.71	0.0037808	1.72223	3.2116	0.00085	1.52518	3.1113
76	0.037810	13925.50	23.321	7269.06	0.0038379	1.69813	3.0134	0.00084	1.52063	2.9639
78	0.037519	13727.08	22.974	6928.34	0.0038981	1.67364	2.8298	0.00083	1.51604	2.8275
80	0.037225	13525.65	22.623	6597.33	0.0039619	1.64878	2.6597	0.00083	1.51143	2.7015
82	0.036929	13321.08	22.269	6275.77	0.0040295	1.62358	2.5021	0.00082	1.50679	2.5851
84	0.036630	13113.21	21.911	5963.45	0.0041013	1.59805	2.3568	0.00081	1.50212	2.4778
86	0.036328	12901.92	21.551	5660.14	0.0041778	1.57222	2.2205	0.00080	1.49741	2.3791
88	0.036023	12687.03	21.188	5365.61	0.0042593	1.54612	2.0950	0.00079	1.49266	2.2883
90	0.035714	12468.37	20.822	5079.63	0.0043465	1.51975	1.9787	0.00079	1.48786	2.2050
92	0.035402	12245.75	20.454	4802.01	0.0044401	1.49313	1.8706	0.00078	1.48302	2.1289
94	0.035085	12018.99	20.084	4532.50	0.0045406	1.46628	1.7707	0.00077	1.47812	2.0596
96	0.034764	11787.84	19.712	4270.92	0.0046489	1.43921	1.6779	0.00076	1.47317	1.9966
98	0.034439	11552.07	19.338	4017.04	0.0047661	1.41191	1.5918	0.00074	1.46815	1.9399
100	0.034108	11311.40	18.962	3770.66	0.0048932	1.38441	1.5119	0.00073	1.46307	1.8890
102	0.033771	11065.52	18.583	3531.59	0.0050317	1.35669	1.4377	0.00072	1.45791	1.8439
104	0.033428	10814.11	18.202	3299.62	0.0051830	1.32877	1.3687	0.00071	1.45266	1.8043
106	0.033078	10556.79	17.818	3074.55	0.0053492	1.30063	1.3047	0.00070	1.44732	1.7703
108	0.032720	10293.10	17.431	2856.20	0.0055326	1.27226	1.2451	0.00068	1.44187	1.7416
109	0.032539	10159.82	17.237	2750.35	0.0056309	1.25811	1.2170	0.00068	1.43912	1.7295
109	0.000624	2759.15	4.025	4.42	0.0128172	0.11327	0.0903	0.00513	1.00743	0.8815
110	0.000617	2795.51	4.024	4.44	0.0125572	0.11409	0.0910	0.00527	1.00733	0.8751
112	0.000602	2868.29	4.022	4.47	0.0120742	0.11574	0.0923	0.00556	1.00715	0.8634
114	0.000587	2940.08	4.021	4.51	0.0116383	0.11740	0.0937	0.00584	1.00699	0.8531
116	0.000574	3011.00	4.019	4.54	0.0112422	0.11907	0.0950	0.00613	1.00683	0.8440
118	0.000562	3081.12	4.018	4.57	0.0108802	0.12076	0.0963	0.00641	1.00668	0.8358
120	0.000550	3150.53	4.016	4.59	0.0105475	0.12245	0.0977	0.00670	1.00654	0.8286
122	0.000538	3219.31	4.015	4.61	0.0102404	0.12415	0.0991	0.00699	1.00640	0.8220
124	0.000528	3287.50	4.014	4.64	0.0099556	0.12585	0.1004	0.00729	1.00627	0.8161
126	0.000517	3355.16	4.013	4.65	0.0096904	0.12756	0.1018	0.00758	1.00615	0.8107
128	0.000508	3422.34	4.012	4.67	0.0094428	0.12928	0.1031	0.00788	1.00603	0.8058
130	0.000498	3489.07	4.011	4.69	0.0092107	0.13099	0.1045	0.00818	1.00592	0.8013
132	0.000489	3555.39	4.010	4.70	0.0089926	0.13271	0.1059	0.00849	1.00582	0.7972
134	0.000481	3621.33	4.009	4.72	0.0087871	0.13444	0.1073	0.00879	1.00571	0.7934
136	0.000472	3686.92	4.008	4.73	0.0085929	0.13616	0.1086	0.00910	1.00561	0.7899
138	0.000464	3752.17	4.007	4.75	0.0084092	0.13794	0.1100	0.00942	1.00552	0.7863
140	0.000457	3817.13	4.006	4.76	0.0082348	0.13981	0.1114	0.00974	1.00543	0.7825
142	0.000449	3881.80	4.005	4.77	0.0080691	0.14166	0.1127	0.01007	1.00534	0.7790
144	0.000442	3946.20	4.004	4.78	0.0079113	0.14349	0.1141	0.01040	1.00526	0.7759
146	0.000435	4010.35	4.003	4.79	0.0077609	0.14530	0.1155	0.01073	1.00517	0.7730
148	0.000429	4074.28	4.003	4.80	0.0076171	0.14708	0.1168	0.01106	1.00509	0.7704
150	0.000422	4137.98	4.002	4.81	0.0074796	0.14885	0.1182	0.01139	1.00502	0.7681
152	0.000416	4201.47	4.001	4.81	0.0073479	0.15060	0.1196	0.01173	1.00494	0.7659
154	0.000410	4264.77	4.000	4.82	0.0072216	0.15234	0.1209	0.01207	1.00487	0.7640
156	0.000404	4327.89	4.000	4.83	0.0071003	0.15406	0.1223	0.01241	1.00480	0.7622
158	0.000398	4390.83	3.999	4.84	0.0069838	0.15578	0.1236	0.01275	1.00474	0.7605
160	0.000392	4453.62	3.998	4.84	0.0068716	0.15747	0.1250	0.01309	1.00467	0.7590
165	0.000380	4609.92	3.997	4.86	0.0066086	0.16170	0.1283	0.01397	1.00452	0.7556
170	0.000368	4765.39	3.995	4.87	0.0063679	0.16589	0.1317	0.01486	1.00437	0.7526
175	0.000357	4920.14	3.994	4.88	0.0061463	0.17005	0.1350	0.01577	1.00424	0.7501
180	0.000346	5074.28	3.992	4.89	0.0059415	0.17419	0.1383	0.01670	1.00411	0.7479
185	0.000336	5227.87	3.991	4.90	0.0057515	0.17829	0.1415	0.01765	1.00399	0.7459
190	0.000327	5381.02	3.989	4.91	0.0055746	0.18238	0.1448	0.01862	1.00388	0.7441
195	0.000318	5533.78	3.988	4.92	0.0054094	0.18644	0.1480	0.01960	1.00378	0.7425
200	0.000309	5686.23	3.986	4.92	0.0052546	0.19047	0.1512	0.02061	1.00368	0.7411
210	0.000294	5990.44	3.983	4.93	0.0049723	0.19842	0.1575	0.02266	1.00349	0.7388
220	0.000280	6294.12	3.980	4.94	0.0047211	0.20629	0.1637	0.02479	1.00333	0.7369
230	0.000267	6597.68	3.976	4.95	0.0044957	0.21405	0.1698	0.02698	1.00318	0.7353
240	0.000256	6901.51	3.971	4.96	0.0042922	0.22172	0.1758	0.02924	1.00304	0.7340
250	0.000245	7205.98	3.966	4.97	0.0041073	0.22929	0.1817	0.03156	1.00292	0.7330
260	0.000236	7511.42	3.959	4.97	0.0039384	0.23677	0.1875	0.03395	1.00280	0.7322
270	0.000227	7818.13	3.952	4.97	0.0037835	0.24415	0.1932	0.03639	1.00269	0.7316
280	0.000219	8126.40	3.945	4.98	0.0036408	0.25143	0.1988	0.03888	1.00260	0.7312
290	0.000211	8436.47	3.936	4.98	0.0035089	0.25861	0.2044	0.04142	1.00250	0.7311
300	0.000204	8748.57	3.926	4.98	0.0033865	0.26574	0.2098	0.04402	1.00242	0.7311
310	0.000197	9062.89	3.916	4.99	0.0032727	0.27279	0.2152	0.04667	1.00234	0.7313
320	0.000191	9379.58	3.904	4.99	0.0031664	0.27976	0.2205	0.04936	1.00227	0.7316
330	0.000185	9698.79	3.892	4.99	0.0030671	0.28666	0.2257	0.05209	1.00220	0.7321
340	0.000179	10020.63	3.879	4.99	0.0029739	0.29349	0.2309	0.05487	1.00213	0.7327

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

6 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p J/G MOLE -K	VELOCITY OF SOUND M/SEC
* 54.421	24.48	284904	38.94	-6188.6	-6173.7	67.12	35.65	53.24	1161
56	24.61	277434	38.03	-6104.6	-6089.6	68.65	35.31	53.23	1151
58	24.78	268143	36.91	-5998.2	-5983.1	70.52	34.88	53.23	1138
60	24.95	259036	35.82	-5891.8	-5876.7	72.32	34.48	53.22	1125
62	25.13	250111	34.75	-5785.5	-5770.2	74.06	34.08	53.23	1112
64	25.38	241364	33.70	-5679.1	-5663.8	75.75	33.70	53.24	1099
66	25.48	232793	32.68	-5572.8	-5557.3	77.39	33.33	53.25	1085
68	25.67	224394	31.68	-5466.3	-5450.7	78.98	32.97	53.27	1072
70	25.86	216164	30.70	-5359.9	-5344.2	80.53	32.62	53.30	1058
72	26.05	208100	29.75	-5253.4	-5237.5	82.03	32.28	53.34	1043
74	26.24	200198	28.82	-5146.7	-5130.8	83.49	31.96	53.38	1029
76	26.44	192457	27.91	-5040.0	-5024.0	84.92	31.64	53.44	1014
78	26.65	184871	27.02	-4933.2	-4917.0	86.31	31.34	53.50	1000
80	26.86	177439	26.15	-4826.3	-4809.9	87.66	31.04	53.58	985
82	27.07	170156	25.30	-4719.1	-4702.7	88.98	30.76	53.67	970
84	27.30	163020	24.47	-4611.8	-4595.2	90.28	30.48	53.77	954
86	27.52	156028	23.66	-4504.3	-4487.5	91.55	30.21	53.89	939
88	27.76	149175	22.87	-4396.5	-4379.6	92.79	29.95	54.02	923
90	27.99	142458	22.09	-4288.4	-4271.4	94.00	29.70	54.16	907
92	28.24	135875	21.33	-4180.0	-4162.9	95.20	29.45	54.35	891
94	28.50	129421	20.59	-4071.3	-4053.9	96.37	29.21	54.55	875
96	28.76	123093	19.87	-3962.1	-3944.6	97.52	28.98	54.78	858
98	29.03	116887	19.16	-3852.4	-3834.8	98.65	28.75	55.03	842
100	29.31	110800	18.46	-3742.2	-3724.4	99.76	28.53	55.32	825
102	29.60	104828	17.78	-3631.4	-3613.4	100.86	28.32	55.65	808
104	29.91	98967	17.12	-3520.0	-3501.8	101.95	28.11	56.02	790
106	30.22	93213	16.46	-3407.7	-3389.3	103.02	27.91	56.43	773
108	30.55	87562	15.82	-3294.6	-3276.0	104.08	27.71	56.91	755
110	30.90	82010	15.19	-3180.5	-3161.7	105.13	27.52	57.44	736
* 111.655	31.20	77487	14.67	-3085.2	-3066.2	105.99	27.37	57.94	721
* 111.655	1345.87	6997	0.068	2096.4	2914.6	159.55	22.79	36.46	188
112	1351.96	7038	0.068	2105.3	2927.2	159.66	22.76	36.35	189
114	1386.90	7295	0.066	2156.1	2999.3	160.38	22.61	35.75	191
116	1421.27	7545	0.064	2206.2	3070.2	160.91	22.46	35.23	194
118	1455.14	7788	0.062	2255.6	3140.2	161.51	22.34	34.77	196
120	1488.55	8025	0.060	2304.4	3209.4	162.09	22.23	34.37	198
122	1521.57	8258	0.059	2352.7	3277.8	162.66	22.13	34.01	200
124	1554.23	8486	0.057	2400.6	3345.4	163.21	22.04	33.69	203
126	1586.56	8710	0.056	2448.0	3412.5	163.75	21.96	33.40	205
128	1618.61	8930	0.054	2495.0	3479.1	164.27	21.88	33.13	207
130	1650.39	9147	0.053	2541.7	3545.1	164.78	21.81	32.90	209
132	1681.93	9362	0.052	2588.1	3610.7	165.28	21.75	32.68	211
134	1713.25	9573	0.051	2634.2	3675.8	165.77	21.70	32.48	213
136	1744.37	9782	0.050	2680.1	3740.6	166.25	21.64	32.30	215
138	1775.30	9989	0.049	2725.7	3805.0	166.72	21.60	32.14	217
140	1806.06	10194	0.048	2771.2	3869.2	167.18	21.55	31.98	219
142	1836.66	10397	0.047	2816.4	3933.0	167.64	21.51	31.84	221
144	1867.11	10598	0.046	2861.4	3996.5	168.08	21.47	31.71	223
146	1897.43	10797	0.045	2906.3	4059.8	168.52	21.44	31.59	224
148	1927.61	10995	0.045	2951.0	4122.9	168.95	21.41	31.47	225
150	1957.68	11191	0.044	2995.5	4185.7	169.37	21.38	31.37	226
152	1987.63	11386	0.043	3040.0	4248.4	169.78	21.35	31.27	230
154	2017.48	11580	0.042	3084.3	4310.8	170.19	21.32	31.18	232
156	2047.23	11773	0.042	3128.4	4373.1	170.59	21.30	31.09	233
158	2076.89	11964	0.041	3172.5	4435.2	170.99	21.27	31.01	235
160	2106.46	12155	0.040	3216.5	4497.1	171.38	21.25	30.93	237
165	2180.84	12627	0.039	3326.1	4651.3	172.33	21.20	30.76	241
170	2253.16	13094	0.038	3434.9	4804.7	173.24	21.16	30.61	245
175	2325.90	13556	0.036	3543.4	4957.5	174.13	21.13	30.48	249
180	2398.29	14014	0.035	3651.5	5109.6	174.98	21.09	30.37	253
185	2470.38	14468	0.034	3759.3	5261.2	175.82	21.07	30.27	257
190	2542.20	14919	0.033	3866.8	5412.3	176.62	21.04	30.18	260
195	2613.77	15368	0.032	3974.0	5563.0	177.40	21.02	30.10	264
200	2685.13	15814	0.031	4080.9	5713.3	178.17	21.01	30.04	268
210	2827.29	16698	0.030	4294.3	6013.1	179.63	20.98	29.92	275
220	2968.80	17576	0.028	4507.0	6311.9	181.02	20.97	29.83	281
230	3109.79	18446	0.027	4719.2	6609.8	182.34	20.96	29.76	288
240	3250.32	19312	0.026	4931.2	6907.2	183.61	20.96	29.71	294
250	3390.49	20173	0.025	5142.9	7204.2	184.82	20.97	29.68	301
260	3530.33	21031	0.024	5354.5	7500.8	185.98	20.98	29.66	307
270	3669.90	21885	0.023	5566.2	7797.3	187.10	21.00	29.65	313
280	3809.23	22736	0.022	5777.9	8093.8	188.18	21.03	29.65	319
290	3948.35	23585	0.021	5989.9	8390.3	189.22	21.06	29.66	324
300	4087.28	24431	0.020	6202.1	8686.9	190.23	21.11	29.68	330
310	4226.06	25276	0.020	6414.5	8983.8	191.20	21.15	29.70	335
320	4364.69	26119	0.019	6627.3	9281.1	192.14	21.21	29.74	341
330	4503.20	26960	0.018	6841.0	9578.7	193.06	21.26	29.79	346
340	4641.59	27800	0.018	7054.9	9876.8	193.95	21.33	29.84	351

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

6 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	$V(\partial H/\partial V)_p$ J/GMOLE	$V(\partial P/\partial U)_v$ CC-ATM/J	$-V(\partial P/\partial V)_T$ ATM	$(\partial V/\partial T)_p/V$ 1/ KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S X 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 54.421	0.040844	15911.61	25.739	11636.53	0.0033461	1.93034	6.2123	0.00089	1.56887	5.3546
56	0.040628	15775.51	25.515	11271.45	0.0033744	1.91594	5.8792	0.00089	1.56540	5.1049
58	0.040353	15601.47	25.223	10820.29	0.0034116	1.89701	5.4853	0.00088	1.56099	4.8098
60	0.040077	15425.46	25.925	10381.33	0.0034504	1.87734	5.1203	0.00088	1.55658	4.5366
62	0.039800	15247.39	25.620	9954.31	0.0034909	1.85699	4.7821	0.00088	1.55215	4.2836
64	0.039521	15067.15	25.308	9538.96	0.0035332	1.83598	4.4687	0.00087	1.54771	4.0494
66	0.039241	14884.67	24.991	9135.02	0.0035775	1.81438	4.1784	0.00087	1.54326	3.8324
68	0.038959	14699.84	24.667	8742.25	0.0036239	1.79221	3.9094	0.00086	1.53879	3.6314
70	0.038676	14512.56	24.338	8360.40	0.0036726	1.76951	3.6601	0.00086	1.53430	3.4453
72	0.038391	14322.74	24.004	7989.23	0.0037239	1.74632	3.4292	0.00085	1.52979	3.2730
74	0.038104	14130.26	23.666	7628.42	0.0037778	1.72268	3.2152	0.00085	1.52526	3.1135
76	0.037815	13935.03	23.322	7277.82	0.0038346	1.69860	3.0169	0.00084	1.52071	2.9659
78	0.037524	13736.90	22.975	6937.15	0.0038946	1.67414	2.8331	0.00083	1.51613	2.8294
80	0.037231	13535.78	22.625	6606.18	0.0039581	1.64930	2.6629	0.00083	1.51152	2.7033
82	0.036935	13331.52	22.270	6284.68	0.0040255	1.62412	2.5051	0.00082	1.50689	2.5868
84	0.036636	13123.99	21.913	5972.41	0.0040970	1.59861	2.3589	0.00081	1.50221	2.4794
86	0.036334	12913.05	21.553	5669.15	0.0041731	1.57281	2.2233	0.00080	1.49751	2.3806
88	0.036029	12698.53	21.190	5374.67	0.0042543	1.54674	2.0977	0.00079	1.49276	2.2897
90	0.035721	12480.27	20.825	5088.76	0.0043411	1.52039	1.9812	0.00079	1.48797	2.2063
92	0.035409	12258.06	20.458	4811.19	0.0044341	1.49381	1.8732	0.00078	1.48313	2.1301
94	0.035093	12031.74	20.088	4541.75	0.0045341	1.46699	1.7731	0.00077	1.47824	2.0606
96	0.034772	11801.05	19.717	4280.23	0.0046419	1.43994	1.6802	0.00076	1.47330	1.9975
98	0.034447	11565.78	19.343	4026.42	0.0047584	1.41268	1.5940	0.00075	1.46829	1.9406
100	0.034117	11325.64	18.967	3780.12	0.0048847	1.38521	1.5140	0.00073	1.46321	1.8897
102	0.033780	11080.33	18.589	3541.13	0.0050222	1.35753	1.4397	0.00072	1.45805	1.8444
104	0.033438	10829.54	18.209	3309.24	0.0051725	1.32965	1.3707	0.00071	1.45281	1.8047
106	0.033088	10572.88	17.825	3084.27	0.0053375	1.30155	1.3066	0.00070	1.44748	1.7704
108	0.032731	10309.92	17.439	2866.01	0.0055195	1.27322	1.2469	0.00068	1.44204	1.7416
110	0.032365	10040.18	17.048	2654.29	0.0057213	1.24467	1.1914	0.00067	1.43649	1.7183
* 111.655	0.032055	9811.40	16.721	2483.69	0.0059058	1.22084	1.1483	0.00066	1.43180	1.7032
* 111.655	0.000743	2774.96	4.033	5.20	0.0131372	0.11817	0.0942	0.00436	1.00884	0.9079
112	0.000740	2787.18	4.032	5.21	0.0130405	0.11844	0.0944	0.00441	1.00880	0.9052
114	0.000721	2862.31	4.031	5.26	0.0124900	0.12001	0.0957	0.00466	1.00858	0.8905
116	0.000704	2936.26	4.030	5.31	0.0119984	0.12160	0.0969	0.00491	1.00837	0.8776
118	0.000687	3009.16	4.028	5.35	0.0115559	0.12321	0.0982	0.00516	1.00818	0.8663
120	0.000672	3081.13	4.027	5.39	0.0111547	0.12484	0.0995	0.00541	1.00799	0.8562
122	0.000657	3152.27	4.026	5.43	0.0107888	0.12647	0.1008	0.00566	1.00782	0.8473
124	0.000643	3222.66	4.025	5.46	0.0104531	0.12812	0.1021	0.00591	1.00765	0.8393
126	0.000630	3292.37	4.024	5.49	0.0101437	0.12978	0.1035	0.00617	1.00750	0.8321
128	0.000618	3361.46	4.023	5.52	0.0098573	0.13144	0.1048	0.00642	1.00735	0.8256
130	0.000606	3430.00	4.022	5.54	0.0095911	0.13311	0.1061	0.00668	1.00721	0.8197
132	0.000595	3498.02	4.021	5.57	0.0093427	0.13478	0.1075	0.00694	1.00707	0.8143
134	0.000584	3565.57	4.020	5.59	0.0091103	0.13646	0.1088	0.00720	1.00694	0.8094
136	0.000573	3632.68	4.019	5.61	0.0088921	0.13814	0.1101	0.00746	1.00682	0.8049
138	0.000563	3699.39	4.018	5.63	0.0086867	0.13997	0.1115	0.00773	1.00670	0.7999
140	0.000554	3765.72	4.017	5.64	0.0084929	0.14182	0.1128	0.00801	1.00658	0.7951
142	0.000544	3831.70	4.016	5.66	0.0083096	0.14366	0.1142	0.00829	1.00647	0.7908
144	0.000536	3897.36	4.015	5.68	0.0081359	0.14547	0.1155	0.00857	1.00637	0.7868
146	0.000527	3962.72	4.014	5.69	0.0079709	0.14726	0.1168	0.00885	1.00627	0.7833
148	0.000519	4027.79	4.013	5.70	0.0078139	0.14902	0.1182	0.00913	1.00617	0.7801
150	0.000511	4092.59	4.013	5.72	0.0076643	0.15076	0.1195	0.00941	1.00607	0.7772
152	0.000503	4157.14	4.012	5.73	0.0075215	0.15249	0.1209	0.00969	1.00598	0.7745
154	0.000496	4221.46	4.011	5.74	0.0073850	0.15420	0.1222	0.00998	1.00589	0.7721
156	0.000488	4285.56	4.010	5.75	0.0072544	0.15590	0.1235	0.01027	1.00581	0.7699
158	0.000481	4349.45	4.010	5.76	0.0071291	0.15758	0.1249	0.01055	1.00572	0.7678
160	0.000475	4413.14	4.009	5.77	0.0070089	0.15925	0.1262	0.01085	1.00564	0.7660
165	0.000459	4571.57	4.007	5.79	0.0067284	0.16342	0.1295	0.01158	1.00545	0.7618
170	0.000444	4729.00	4.005	5.81	0.0064730	0.16754	0.1328	0.01233	1.00528	0.7583
175	0.000430	4885.55	4.004	5.83	0.0062391	0.17164	0.1361	0.01310	1.00511	0.7552
180	0.000417	5041.35	4.002	5.84	0.0060238	0.17572	0.1393	0.01388	1.00496	0.7525
185	0.000405	5196.46	4.000	5.86	0.0058249	0.17978	0.1426	0.01467	1.00481	0.7501
190	0.000393	5351.06	3.999	5.87	0.0056402	0.18381	0.1458	0.01546	1.00468	0.7480
195	0.000383	5505.15	3.997	5.88	0.0054683	0.18783	0.1490	0.01631	1.00455	0.7461
200	0.000372	5658.84	3.995	5.89	0.0053077	0.19182	0.1521	0.01715	1.00443	0.7444
210	0.000354	5965.30	3.992	5.91	0.0050159	0.19968	0.1584	0.01887	1.00420	0.7416
220	0.000337	6270.95	3.988	5.92	0.0047572	0.20747	0.1645	0.02065	1.00400	0.7394
230	0.000322	6576.26	3.984	5.93	0.0045260	0.21517	0.1706	0.02248	1.00382	0.7375
240	0.000308	6881.66	3.979	5.94	0.0043177	0.22278	0.1766	0.02437	1.00366	0.7360
250	0.000295	7187.54	3.973	5.95	0.0041290	0.23030	0.1824	0.02631	1.00350	0.7347
260	0.000283	7494.25	3.967	5.96	0.0039571	0.23773	0.1882	0.02830	1.00337	0.7338
270	0.000272	7802.12	3.959	5.96	0.0037996	0.24507	0.1939	0.03034	1.00324	0.7331
280	0.000263	8111.44	3.951	5.97	0.0036548	0.25232	0.1995	0.03242	1.00312	0.7326
290	0.000253	8422.49	3.942	5.97	0.0035211	0.25945	0.2050	0.03454	1.00301	0.7324
300	0.000245	8735.46	3.932	5.98	0.0033972	0.26655	0.2105	0.03671	1.00291	0.7322
310	0.000237	9050.63	3.922	5.98	0.0032821	0.27357	0.2158	0.03892	1.00281	0.7323
320	0.000229	9368.11	3.910	5.98	0.0031747	0.28052	0.2211	0.04117	1.00272	0.7325
330	0.000222	9688.05	3.898	5.99	0.0030744	0.28739	0.2263	0.04345	1.00264	0.7330
340	0.000215	10010.56	3.885	5.99	0.0029804	0.29421	0.2315	0.04577	1.00256	0.7335

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

7 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p J/G MOLE -K	VELOCITY OF SOUND M/SEC
* 54.432	24.48	285028	38.94	-6188.4	-6171.8	67.13	35.65	53.24	1161
56	24.61	277615	38.04	-6105.J	-6087.6	68.64	35.31	53.23	1151
58	24.78	268326	36.92	-5998.7	-5981.1	70.51	34.89	53.22	1138
60	24.95	259221	35.83	-5892.4	-5874.7	72.31	34.48	53.22	1125
62	25.12	250298	34.76	-5786.0	-5768.2	74.06	34.08	53.22	1112
64	25.30	241554	33.71	-5679.7	-5661.8	75.75	33.70	53.23	1099
66	25.48	232985	32.69	-5573.4	-5555.3	77.38	33.33	53.24	1086
68	25.66	224588	31.69	-5467.0	-5448.8	78.97	32.97	53.26	1072
70	25.85	216361	30.71	-5360.5	-5342.2	80.52	32.62	53.29	1058
72	26.04	208299	29.76	-5254.1	-5235.6	82.02	32.29	53.33	1044
74	26.24	200401	28.83	-5147.5	-5128.9	83.48	31.96	53.37	1029
76	26.44	192662	27.92	-5040.8	-5022.1	84.91	31.65	53.43	1015
78	26.65	185079	27.03	-4934.0	-4915.1	86.29	31.34	53.49	1000
80	26.86	177650	26.16	-4827.1	-4808.1	87.65	31.05	53.57	985
82	27.07	170370	25.31	-4720.0	-4700.8	88.97	30.76	53.65	970
84	27.29	163237	24.48	-4612.8	-4593.4	90.27	30.48	53.76	955
86	27.52	156246	23.67	-4505.3	-4485.8	91.53	30.22	53.87	939
88	27.75	149398	22.88	-4397.5	-4377.9	92.77	29.96	54.01	924
90	27.99	142685	22.10	-4289.5	-4269.7	93.99	29.70	54.16	908
92	28.24	136105	21.35	-4181.2	-4161.2	95.18	29.46	54.34	892
94	28.49	129655	20.61	-4072.5	-4052.3	96.35	29.22	54.53	875
96	28.75	123331	19.88	-3963.4	-3943.0	97.50	28.99	54.76	859
98	29.02	117130	19.17	-3853.8	-3833.2	98.64	28.76	55.01	842
100	29.30	111048	18.48	-3743.7	-3722.9	99.75	28.54	55.30	825
102	29.59	105083	17.80	-3633.0	-3612.0	100.85	28.33	55.62	808
104	29.90	99225	17.13	-3521.6	-3500.4	101.93	28.12	55.98	791
106	30.21	93476	16.48	-3409.4	-3388.0	103.08	27.92	56.40	773
108	30.54	87831	15.84	-3296.4	-3274.8	104.06	27.72	56.86	755
110	30.89	82285	15.20	-3182.4	-3160.5	105.11	27.53	57.40	737
112	31.25	76834	14.58	-3067.3	-3045.1	106.15	27.34	58.00	718
114	31.63	71474	13.97	-2950.9	-2928.4	107.18	27.16	58.70	699
* 114.011	31.63	71444	13.96	-2950.2	-2927.8	107.19	27.16	58.70	699
* 114.011	1160.34	6904	0.080	2115.3	2938.3	158.63	23.35	37.55	189
116	1191.15	7169	0.078	2167.4	3012.3	159.28	22.86	36.84	191
118	1221.54	7431	0.075	2218.9	3085.3	159.90	22.70	36.21	194
120	1251.42	7686	0.073	2269.6	3157.2	160.51	22.55	35.66	196
122	1280.85	7935	0.071	2319.5	3228.0	161.39	22.42	35.18	199
124	1309.87	8177	0.069	2368.9	3297.9	161.66	22.31	34.75	201
126	1338.53	8415	0.067	2417.7	3367.0	162.21	22.20	34.37	203
128	1366.87	8647	0.065	2466.0	3435.4	162.75	22.11	34.03	205
130	1394.92	8876	0.064	2513.8	3503.2	163.28	22.02	33.73	207
132	1422.71	9100	0.062	2561.3	3570.4	163.79	21.95	33.45	210
134	1450.25	9322	0.061	2608.4	3637.0	164.29	21.87	33.20	212
136	1477.58	9540	0.059	2655.2	3703.2	164.78	21.81	32.97	214
138	1504.71	9755	0.058	2701.6	3768.9	165.26	21.75	32.76	216
140	1531.65	9968	0.057	2747.9	3834.2	165.73	21.70	32.56	218
142	1558.43	10178	0.056	2793.8	3899.2	166.19	21.65	32.39	220
144	1585.04	10386	0.055	2839.5	3963.8	166.64	21.60	32.22	222
146	1611.52	10592	0.054	2885.1	4028.1	167.09	21.56	32.07	223
148	1637.85	10797	0.053	2930.4	4092.1	167.52	21.52	31.93	225
150	1664.06	10999	0.052	2975.5	4155.8	167.95	21.48	31.80	227
152	1690.16	11200	0.051	3020.5	4219.3	168.37	21.45	31.68	229
154	1716.14	11399	0.050	3065.3	4282.5	168.78	21.42	31.57	231
156	1742.02	11597	0.049	3110.0	4345.6	169.19	21.39	31.46	232
158	1767.81	11794	0.049	3154.5	4408.4	169.59	21.36	31.36	234
160	1793.50	11989	0.048	3198.9	4471.0	169.98	21.33	31.27	236
165	1857.38	12472	0.046	3309.5	4626.9	170.94	21.27	31.06	240
170	1920.79	12949	0.044	3419.3	4781.7	171.87	21.22	30.88	244
175	1983.81	13420	0.043	3528.7	4935.7	172.76	21.18	30.73	248
180	2046.47	13887	0.041	3637.5	5089.0	173.62	21.14	30.59	252
185	2108.81	14349	0.040	3746.J	5241.7	174.46	21.11	30.47	256
190	2170.89	14807	0.039	3854.0	5393.8	175.27	21.08	30.37	260
195	2232.72	15262	0.038	3961.8	5545.4	176.06	21.06	30.28	264
200	2294.33	15714	0.037	4069.3	5696.6	176.83	21.04	30.19	267
210	2416.97	16610	0.035	4283.5	5997.8	178.30	21.01	30.06	274
220	2538.96	17497	0.033	4497.J	6297.8	179.69	20.99	29.95	281
230	2660.42	18376	0.031	4709.9	6596.9	181.02	20.98	29.87	288
240	2781.43	19249	0.030	4922.5	6895.3	182.29	20.97	29.80	294
250	2902.06	20117	0.029	5134.7	7193.1	183.51	20.98	29.76	301
260	3022.37	20981	0.028	5346.8	7490.5	184.67	20.99	29.73	307
270	3142.40	21840	0.027	5558.9	7787.7	185.79	21.01	29.71	313
280	3262.20	22697	0.026	5771.0	8084.7	186.87	21.04	29.70	319
290	3381.78	23550	0.025	5983.2	8381.8	187.92	21.07	29.71	324
300	3501.18	24401	0.024	6195.7	8679.0	188.92	21.11	29.73	330
310	3620.42	25250	0.023	6408.5	8976.4	189.90	21.16	29.75	335
320	3739.51	26096	0.022	6621.7	9274.0	190.84	21.21	29.78	341
330	3858.48	26941	0.022	6835.3	9572.0	191.76	21.27	29.82	346
340	3977.33	27784	0.021	7049.5	9870.5	192.65	21.33	29.87	351

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

7 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	$V(\partial H/\partial V)_p$ J/GMOLE	$V(\partial P/\partial U)_v$ CC-ATM/J	$-V(\partial P/\partial V)_T$ ATM	$(\partial V/\partial T)_p/V$ 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S X 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 54.432	0.040846	15917.65	25.738	11642.15	0.0033445	1.93049	6.2153	0.00089	1.56890	5.3565
56	0.040631	15782.69	25.515	11279.81	0.0033726	1.91621	5.8846	0.00089	1.56546	5.1084
58	0.040356	15608.86	25.224	10828.69	0.0034097	1.89730	5.4904	0.00088	1.56156	4.8131
60	0.040081	15433.05	25.926	10389.76	0.0034484	1.87765	5.1252	0.00088	1.55764	4.5398
62	0.039804	15255.16	25.621	9962.78	0.0034888	1.85731	4.7863	0.00088	1.55362	4.2867
64	0.039525	15075.16	25.309	9547.46	0.0035310	1.83633	4.4732	0.00087	1.54778	4.0522
66	0.039245	14892.91	24.991	9143.57	0.0035751	1.81474	4.1827	0.00087	1.54333	3.8351
68	0.038964	14708.31	24.668	8750.84	0.0036214	1.79259	3.9135	0.00086	1.53886	3.6340
70	0.038681	14521.28	24.339	8369.02	0.0036700	1.76992	3.6641	0.00086	1.53437	3.4478
72	0.038396	14331.72	24.005	7997.87	0.0037210	1.74675	3.4329	0.00085	1.52987	3.2754
74	0.038109	14139.50	23.667	7637.13	0.0037747	1.72312	3.2188	0.00085	1.52534	3.1157
76	0.037821	13944.55	23.324	7286.57	0.0038313	1.69907	3.0203	0.00084	1.52079	2.9680
78	0.037530	13746.71	22.977	6945.95	0.0038911	1.67463	2.8364	0.00083	1.51621	2.8314
80	0.037236	13545.89	22.626	6615.03	0.0039544	1.64981	2.6660	0.00083	1.51161	2.7051
82	0.036941	13341.96	22.272	6293.57	0.0040215	1.62466	2.5081	0.00082	1.50698	2.5886
84	0.036642	13134.76	21.915	5981.36	0.0040927	1.59918	2.3618	0.00081	1.50231	2.4811
86	0.036341	12924.17	21.555	5678.15	0.0041685	1.57340	2.2261	0.00080	1.49761	2.3821
88	0.036036	12710.02	21.193	5383.73	0.0042493	1.54735	2.1004	0.00080	1.49287	2.2911
90	0.035728	12492.15	20.828	5097.87	0.0043357	1.52104	1.9838	0.00079	1.48808	2.2076
92	0.035416	12270.35	20.461	4820.36	0.0044282	1.49448	1.8757	0.00078	1.48325	2.1312
94	0.035101	12044.47	20.092	4550.99	0.0045277	1.46769	1.7755	0.00077	1.47836	2.0616
96	0.034781	11814.25	19.721	4289.54	0.0046349	1.44067	1.6825	0.00076	1.47342	1.9985
98	0.034456	11579.47	19.347	4035.80	0.0047507	1.41344	1.5962	0.00075	1.46842	1.9414
100	0.034126	11339.86	18.972	3789.57	0.0048762	1.38601	1.5161	0.00073	1.46335	1.8903
102	0.033790	11095.12	18.595	3551.66	0.0050129	1.35837	1.4418	0.00072	1.45820	1.8449
104	0.033448	10844.94	18.215	3318.86	0.0051621	1.33052	1.3727	0.00071	1.45297	1.8050
106	0.033099	10588.94	17.833	3093.97	0.0053259	1.30246	1.3085	0.00070	1.44764	1.7706
108	0.032743	10326.70	17.447	2875.81	0.0055065	1.27418	1.2488	0.00068	1.44222	1.7417
110	0.032378	10057.75	17.057	2664.20	0.0057066	1.24567	1.1932	0.00067	1.43667	1.7181
112	0.032003	9781.52	16.663	2458.94	0.0059297	1.21691	1.1414	0.00066	1.43100	1.7001
114	0.031618	9497.35	16.262	2259.87	0.0061802	1.18788	1.0930	0.00064	1.42519	1.6878
* 114.611	0.031616	9495.71	16.260	2258.74	0.0061817	1.18771	1.0927	0.00064	1.42515	1.6877
* 114.011	0.000862	2784.48	4.040	5.95	0.0134861	0.12276	0.0978	0.00379	1.01026	0.9345
116	0.000840	2860.37	4.038	6.02	0.0128780	0.12425	0.0990	0.00402	1.01000	0.9168
118	0.000819	2936.31	4.037	6.08	0.0123315	0.12577	0.1002	0.00424	1.00975	0.9013
120	0.000799	3011.04	4.037	6.14	0.0118437	0.12732	0.1014	0.00447	1.00951	0.8878
122	0.000781	3084.70	4.036	6.20	0.0114047	0.12888	0.1027	0.00469	1.00929	0.8758
124	0.000763	3157.41	4.035	6.24	0.0110069	0.13046	0.1039	0.00492	1.00909	0.8653
126	0.000747	3229.28	4.034	6.29	0.0106443	0.13206	0.1052	0.00514	1.00889	0.8558
128	0.000732	3300.38	4.033	6.33	0.0103117	0.13366	0.1065	0.00537	1.00871	0.8474
130	0.000717	3370.78	4.032	6.36	0.0100054	0.13528	0.1078	0.00560	1.00853	0.8398
132	0.000703	3440.56	4.032	6.40	0.0097218	0.13690	0.1091	0.00582	1.00836	0.8329
134	0.000690	3509.76	4.031	6.43	0.0094584	0.13853	0.1104	0.00605	1.00820	0.8266
136	0.000677	3578.43	4.030	6.46	0.0092127	0.14020	0.1117	0.00628	1.00805	0.8208
138	0.000665	3646.62	4.029	6.48	0.0089829	0.14206	0.1130	0.00653	1.00791	0.8143
140	0.000653	3714.35	4.028	6.51	0.0087673	0.14390	0.1143	0.00677	1.00777	0.8084
142	0.000642	3781.67	4.027	6.53	0.0085643	0.14571	0.1156	0.00701	1.00763	0.8031
144	0.000631	3848.60	4.026	6.55	0.0083729	0.14750	0.1169	0.00726	1.00751	0.7984
146	0.000621	3915.17	4.025	6.57	0.0081920	0.14926	0.1182	0.00750	1.00738	0.7941
148	0.000611	3981.40	4.024	6.59	0.0080205	0.15100	0.1196	0.00774	1.00726	0.7902
150	0.000601	4047.31	4.023	6.61	0.0078577	0.15271	0.1209	0.00799	1.00715	0.7867
152	0.000592	4112.93	4.023	6.63	0.0077028	0.15441	0.1222	0.00824	1.00704	0.7835
154	0.000583	4178.27	4.022	6.64	0.0075553	0.15610	0.1235	0.00849	1.00693	0.7805
156	0.000574	4243.35	4.021	6.66	0.0074145	0.15776	0.1248	0.00874	1.00683	0.7779
158	0.000566	4308.19	4.020	6.67	0.0072800	0.15942	0.1261	0.00899	1.00673	0.7754
160	0.000558	4372.79	4.019	6.68	0.0071512	0.16105	0.1274	0.00924	1.00663	0.7733
165	0.000538	4533.37	4.017	6.71	0.0068520	0.16515	0.1307	0.00988	1.00640	0.7682
170	0.000521	4692.75	4.015	6.74	0.0065810	0.16921	0.1340	0.01052	1.00619	0.7640
175	0.000504	4851.11	4.013	6.76	0.0063342	0.17325	0.1372	0.01119	1.00599	0.7604
180	0.000489	5008.57	4.012	6.79	0.0061079	0.17727	0.1404	0.01186	1.00581	0.7572
185	0.000474	5165.25	4.010	6.80	0.0058996	0.18127	0.1436	0.01254	1.00564	0.7544
190	0.000461	5321.25	4.008	6.82	0.0057070	0.18525	0.1468	0.01324	1.00548	0.7519
195	0.000448	5476.67	4.006	6.84	0.0055282	0.18922	0.1499	0.01395	1.00532	0.7497
200	0.000436	5631.61	4.004	6.85	0.0053616	0.19317	0.1531	0.01468	1.00518	0.7477
210	0.000414	5940.31	4.000	6.87	0.0050600	0.20105	0.1593	0.01616	1.00492	0.7445
220	0.000394	6247.94	3.996	6.89	0.0047937	0.20866	0.1654	0.01769	1.00468	0.7419
230	0.000376	6555.00	3.991	6.91	0.0045565	0.21629	0.1714	0.01927	1.00447	0.7397
240	0.000360	6861.96	3.986	6.92	0.0043435	0.22385	0.1774	0.02089	1.00427	0.7380
250	0.000345	7169.24	3.980	6.93	0.0041509	0.23131	0.1832	0.02256	1.00409	0.7365
260	0.000331	7477.21	3.974	6.94	0.0039756	0.23870	0.1889	0.02427	1.00393	0.7354
270	0.000318	7786.23	3.966	6.95	0.0038158	0.24599	0.1946	0.02602	1.00378	0.7345
280	0.000307	8096.60	3.958	6.96	0.0036688	0.25320	0.2002	0.02781	1.00364	0.7339
290	0.000296	8408.61	3.949	6.96	0.0035333	0.26029	0.2057	0.02963	1.00351	0.7336
300	0.000286	8722.50	3.939	6.97	0.0034079	0.26737	0.2111	0.03149	1.00339	0.7333
310	0.000276	9038.47	3.928	6.97	0.0032915	0.27436	0.2164	0.03339	1.00328	0.7333
320	0.000267	9356.72	3.916	6.98	0.0031830	0.28128	0.2217	0.03532	1.00318	0.7335
330	0.000259	9677.38	3.904	6.98	0.0030817	0.28813	0.2269	0.03728	1.00308	0.7338
340	0.000251	10000.59	3.890	6.99	0.0029869	0.29492	0.2320	0.03927	1.00299	0.7343

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

8 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p	VELOCITY OF SOUND M/SEC
* 54.444	24.48	285152	38.94	-6188.2	-6168.4	67.13	35.65	53.23	1161
56	24.61	277796	38.05	-6105.5	-6085.5	68.63	35.31	53.22	1151
58	24.78	268509	36.93	-5999.2	-5979.1	70.50	34.89	53.22	1139
60	24.95	259407	35.84	-5892.9	-5872.7	72.30	34.48	53.21	1126
62	25.12	250486	34.77	-5786.6	-5766.2	74.05	34.09	53.22	1113
64	25.30	241744	33.72	-5680.3	-5659.8	75.74	33.70	53.22	1099
66	25.48	233177	32.70	-5574.0	-5553.3	77.37	33.33	53.24	1086
68	25.66	224783	31.70	-5467.6	-5446.8	78.96	32.98	53.26	1072
70	25.85	216558	30.72	-5361.2	-5340.3	80.51	32.63	53.29	1058
72	26.04	208499	29.77	-5254.8	-5233.7	82.01	32.29	53.32	1044
74	26.24	200603	28.84	-5148.2	-5127.0	83.47	31.97	53.36	1030
76	26.44	192866	27.93	-5041.6	-5020.2	84.90	31.65	53.42	1015
78	26.64	185287	27.04	-4934.8	-4913.3	86.28	31.35	53.48	1000
80	26.85	177860	26.17	-4828.0	-4806.2	87.64	31.05	53.56	986
82	27.07	170584	25.32	-4720.9	-4699.0	88.96	30.77	53.64	970
84	27.29	163454	24.49	-4613.7	-4591.6	90.26	30.49	53.74	955
86	27.51	156468	23.68	-4506.3	-4484.0	91.52	30.22	53.86	940
88	27.74	149622	22.89	-4398.6	-4376.1	92.76	29.96	53.99	924
90	27.98	142912	22.11	-4290.6	-4267.9	93.98	29.71	54.15	908
92	28.23	136336	21.36	-4182.3	-4159.5	95.17	29.46	54.32	892
94	28.48	129890	20.62	-4073.7	-4050.6	96.34	29.22	54.51	876
96	28.75	123570	19.89	-3964.7	-3941.4	97.49	28.99	54.74	859
98	29.02	117373	19.19	-3855.2	-3831.6	98.62	28.77	54.99	843
100	29.30	111295	18.49	-3745.1	-3721.4	99.74	28.55	55.27	825
102	29.59	105333	17.81	-3634.5	-3610.5	100.83	28.33	55.59	809
104	29.89	99482	17.15	-3523.2	-3499.0	101.92	28.13	55.95	792
106	30.20	93739	16.49	-3411.2	-3386.7	102.99	27.92	56.36	774
108	30.53	88100	15.85	-3298.3	-3273.5	104.04	27.73	56.82	756
110	30.87	82560	15.22	-3184.4	-3159.3	105.09	27.54	57.35	738
112	31.23	77116	14.60	-3069.4	-3044.1	106.13	27.35	57.95	719
114	31.61	71762	13.99	-2953.1	-2927.5	107.16	27.17	58.63	700
116	32.01	66495	13.38	-2835.4	-2809.4	108.19	26.99	59.42	681
* 116.134	32.04	66145	13.34	-2827.5	-2801.5	108.26	26.98	59.48	679
* 116.134	1019.22	6799	0.092	2129.9	2956.1	157.83	23.29	38.66	189
118	1045.31	7060	0.089	2180.1	3027.4	158.44	23.10	37.88	191
120	1072.68	7334	0.086	2232.9	3102.5	159.07	22.91	37.14	194
122	1099.54	7601	0.084	2284.8	3176.1	159.68	22.74	36.51	197
124	1125.93	7859	0.081	2335.8	3248.5	160.27	22.60	35.95	199
126	1151.92	8111	0.079	2386.2	3319.9	160.84	22.47	35.46	201
128	1177.55	8357	0.077	2435.3	3390.4	161.40	22.35	35.02	204
130	1202.86	8598	0.075	2483.0	3460.0	161.94	22.25	34.63	206
132	1227.88	8834	0.073	2533.6	3529.0	162.46	22.15	34.28	208
134	1252.65	9065	0.071	2581.8	3597.2	162.98	22.06	33.97	210
136	1277.17	9293	0.070	2629.6	3664.8	163.48	21.98	33.68	212
138	1301.48	9517	0.068	2677.0	3731.9	163.97	21.91	33.42	214
140	1325.59	9739	0.067	2724.0	3798.6	164.45	21.85	33.19	216
142	1349.52	9957	0.065	2770.6	3864.7	164.91	21.79	32.97	218
144	1373.29	10172	0.064	2817.3	3930.4	165.37	21.73	32.77	220
146	1396.90	10386	0.063	2863.5	3995.8	165.83	21.68	32.59	222
148	1420.36	10596	0.061	2909.4	4060.8	166.27	21.63	32.42	224
150	1443.70	10805	0.060	2955.2	4125.5	166.70	21.59	32.26	226
152	1466.91	11012	0.059	3000.8	4189.8	167.13	21.55	32.11	228
154	1490.01	11217	0.058	3046.1	4253.9	167.55	21.51	31.98	230
156	1513.00	11420	0.057	3091.3	4317.8	167.96	21.48	31.85	232
158	1535.90	11622	0.056	3136.3	4381.3	168.36	21.44	31.73	233
160	1558.69	11822	0.055	3181.2	4444.7	168.76	21.41	31.62	235
165	1615.31	12317	0.053	3292.8	4602.2	169.73	21.34	31.37	239
170	1671.46	12804	0.051	3403.6	4758.5	170.66	21.29	31.16	244
175	1727.19	13284	0.049	3513.8	4913.8	171.57	21.24	30.98	248
180	1782.56	13759	0.048	3623.4	5068.3	172.44	21.19	30.82	252
185	1837.61	14229	0.046	3732.5	5222.1	173.28	21.16	30.68	255
190	1892.38	14695	0.045	3841.2	5375.2	174.09	21.12	30.56	259
195	1946.91	15156	0.044	3949.5	5527.7	174.89	21.10	30.45	263
200	2001.21	15614	0.042	4057.5	5679.7	175.66	21.07	30.36	267
210	2109.22	16521	0.040	4272.7	5982.5	177.13	21.04	30.20	274
220	2216.58	17418	0.038	4487.0	6283.8	178.54	21.01	30.07	281
230	2323.40	18306	0.036	4700.6	6584.0	179.87	21.00	29.97	288
240	2429.77	19186	0.035	4913.7	6883.3	181.14	20.99	29.90	294
250	2535.75	20061	0.033	5126.5	7182.0	182.36	20.99	29.84	301
260	2641.41	20931	0.032	5339.0	7480.2	183.53	21.00	29.80	307
270	2746.79	21796	0.030	5551.5	7778.0	184.66	21.02	29.78	313
280	2851.93	22658	0.029	5764.0	8075.7	185.74	21.05	29.76	319
290	2956.86	23516	0.028	5976.5	8373.4	186.78	21.08	29.76	324
300	3061.61	24371	0.027	6189.3	8671.1	187.79	21.12	29.77	330
310	3166.20	25224	0.026	6402.4	8968.9	188.77	21.16	29.79	335
320	3270.64	26074	0.025	6615.8	9267.0	189.72	21.21	29.82	341
330	3374.95	26922	0.025	6829.7	9565.4	190.63	21.27	29.86	346
340	3479.15	27769	0.024	7044.0	9864.3	191.53	21.33	29.91	351

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

8 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	$V(\partial H/\partial V)_P$ J/GMOLE	$V(\partial P/\partial U)_V$ CC-ATM/J	$-V(\partial P/\partial V)_T$ ATM	$(\partial V/\partial T)_P/V$ 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S X 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 54.444	0.040848	15923.69	25.737	11647.77	0.0033430	1.93064	6.2184	0.00089	1.56843	5.3583
56	0.040635	15789.88	25.516	11288.17	0.0033768	1.91648	5.8900	0.00089	1.56591	5.1120
58	0.040360	15616.23	25.225	10837.08	0.0034078	1.89758	5.4956	0.00088	1.56111	4.8165
60	0.040085	15440.63	25.927	10398.20	0.0034464	1.87795	5.1301	0.00088	1.55670	4.5430
62	0.039808	15262.97	25.621	9971.24	0.0034867	1.85763	4.7915	0.00088	1.55268	4.2897
64	0.039529	15083.17	25.310	9555.97	0.0035287	1.83667	4.4777	0.00087	1.54905	4.0551
66	0.039250	14901.14	24.992	9152.11	0.0035728	1.81511	4.1870	0.00087	1.54580	3.8379
68	0.038968	14716.78	24.669	8759.42	0.0036189	1.79298	3.9176	0.00086	1.54293	3.6366
70	0.038685	14529.99	24.340	8377.64	0.0036673	1.77032	3.6680	0.00086	1.54045	3.4503
72	0.038401	14340.69	24.006	8006.53	0.0037181	1.74717	3.4367	0.00085	1.53834	3.2777
74	0.038114	14148.74	23.668	7645.84	0.0037717	1.72357	3.2224	0.00085	1.53662	3.1179
76	0.037826	13954.07	23.325	7295.32	0.0038281	1.69954	3.0238	0.00084	1.53527	2.9701
78	0.037535	13756.52	22.978	6954.75	0.0038877	1.67512	2.8398	0.00083	1.53430	2.8333
80	0.037242	13556.04	22.628	6623.87	0.0039507	1.65033	2.6692	0.00083	1.53370	2.7070
82	0.036946	13352.39	22.274	6302.47	0.0040175	1.62519	2.5112	0.00082	1.53347	2.5903
84	0.036648	13145.52	21.917	5990.30	0.0040884	1.59974	2.3647	0.00081	1.53361	2.4827
86	0.036347	12935.29	21.558	5687.14	0.0041638	1.57399	2.2289	0.00080	1.53411	2.3836
88	0.036043	12721.56	21.195	5392.78	0.0042443	1.54797	2.1031	0.00080	1.53497	2.2924
90	0.035735	12504.02	20.831	5106.98	0.0043303	1.52168	1.9864	0.00079	1.53619	2.2089
92	0.035424	12282.63	20.464	4829.53	0.0044224	1.49515	1.8782	0.00078	1.53776	2.1324
94	0.035108	12057.18	20.095	4560.22	0.0045213	1.46839	1.7779	0.00077	1.53968	2.0627
96	0.034789	11827.42	19.725	4298.83	0.0046279	1.44140	1.6848	0.00076	1.54195	1.9994
98	0.034464	11593.13	19.352	4045.17	0.0047430	1.41421	1.5984	0.00075	1.54455	1.9422
100	0.034135	11354.05	18.977	3799.02	0.0048678	1.38681	1.5183	0.00074	1.54748	1.8910
102	0.033799	11109.88	18.601	3560.18	0.0050036	1.35920	1.4438	0.00072	1.55074	1.8454
104	0.033458	10860.30	18.222	3328.46	0.0051518	1.33139	1.3747	0.00071	1.55432	1.8054
106	0.033110	10604.96	17.840	3103.66	0.0053144	1.30337	1.3104	0.00070	1.55821	1.7708
108	0.032754	10343.44	17.455	2885.60	0.0054935	1.27514	1.2507	0.00069	1.56239	1.7417
110	0.032390	10075.27	17.066	2674.09	0.0056919	1.24668	1.1950	0.00067	1.56686	1.7179
112	0.032016	9799.91	16.673	2468.94	0.0059130	1.21797	1.1431	0.00066	1.57160	1.6997
114	0.031632	9516.70	16.274	2269.99	0.0061611	1.18899	1.0947	0.00064	1.57660	1.6871
116	0.031236	9224.92	15.868	2077.05	0.0064414	1.15971	1.0495	0.00062	1.58183	1.6805
* 116.134	0.031209	9205.05	15.840	2064.33	0.0064615	1.15774	1.0466	0.00062	1.58219	1.6803
* 116.134	0.000981	2789.38	4.046	6.67	0.0138604	0.12712	0.1012	0.00335	1.01169	0.9615
118	0.000957	2862.25	4.045	6.75	0.0132327	0.12845	0.1022	0.00354	1.01140	0.9420
120	0.000932	2940.01	4.045	6.84	0.0126334	0.12990	0.1034	0.00375	1.01110	0.9239
122	0.000909	3016.41	4.044	6.91	0.0121025	0.13138	0.1046	0.00396	1.01083	0.9082
124	0.000888	3091.62	4.044	6.98	0.0116279	0.13288	0.1058	0.00416	1.01058	0.8944
126	0.000868	3165.77	4.043	7.04	0.0112004	0.13441	0.1070	0.00437	1.01034	0.8822
128	0.000849	3238.98	4.043	7.10	0.0108126	0.13595	0.1082	0.00457	1.01011	0.8715
130	0.000831	3311.34	4.042	7.15	0.0104587	0.13750	0.1095	0.00478	1.00990	0.8618
132	0.000814	3382.94	4.042	7.19	0.0101340	0.13907	0.1107	0.00498	1.00970	0.8532
134	0.000798	3453.85	4.041	7.24	0.0098347	0.14065	0.1120	0.00519	1.00950	0.8453
136	0.000783	3524.13	4.040	7.28	0.0095576	0.14239	0.1133	0.00540	1.00932	0.8383
138	0.000768	3593.83	4.039	7.31	0.0092999	0.14422	0.1145	0.00562	1.00915	0.8325
140	0.000754	3662.99	4.038	7.35	0.0090596	0.14603	0.1158	0.00583	1.00898	0.8225
142	0.000741	3731.67	4.038	7.38	0.0088347	0.14782	0.1171	0.00605	1.00882	0.8162
144	0.000728	3799.89	4.037	7.41	0.0086236	0.14958	0.1184	0.00627	1.00867	0.8105
146	0.000716	3867.69	4.036	7.43	0.0084250	0.15132	0.1197	0.00649	1.00852	0.8054
148	0.000704	3935.09	4.035	7.46	0.0082375	0.15302	0.1210	0.00671	1.00838	0.8007
150	0.000693	4002.13	4.034	7.48	0.0080603	0.15471	0.1222	0.00692	1.00824	0.7966
152	0.000682	4068.83	4.033	7.51	0.0078923	0.15638	0.1235	0.00714	1.00811	0.7928
154	0.000671	4135.20	4.032	7.53	0.0077328	0.15803	0.1248	0.00736	1.00799	0.7893
156	0.000661	4201.27	4.031	7.55	0.0075811	0.15966	0.1261	0.00758	1.00786	0.7862
158	0.000651	4267.05	4.030	7.57	0.0074366	0.16129	0.1274	0.00781	1.00775	0.7833
160	0.000642	4332.57	4.030	7.58	0.0072986	0.16289	0.1287	0.00803	1.00763	0.7808
165	0.000619	4495.30	4.027	7.62	0.0069795	0.16691	0.1319	0.00859	1.00736	0.7749
170	0.000598	4656.65	4.025	7.66	0.0066922	0.17090	0.1351	0.00917	1.00712	0.7699
175	0.000579	4816.81	4.023	7.69	0.0064316	0.17487	0.1383	0.00975	1.00689	0.7657
180	0.000561	4975.94	4.021	7.72	0.0061940	0.17883	0.1415	0.01034	1.00667	0.7621
185	0.000544	5134.16	4.019	7.74	0.0059759	0.18277	0.1446	0.01095	1.00647	0.7588
190	0.000528	5291.60	4.017	7.77	0.0057750	0.18670	0.1478	0.01156	1.00628	0.7560
195	0.000514	5448.35	4.015	7.78	0.0055890	0.19062	0.1509	0.01219	1.00611	0.7534
200	0.000500	5604.53	4.013	7.80	0.0054162	0.19453	0.1540	0.01282	1.00594	0.7511
210	0.000474	5915.48	4.009	7.83	0.0051046	0.20222	0.1602	0.01413	1.00564	0.7475
220	0.000451	6225.08	4.004	7.86	0.0048305	0.20985	0.1663	0.01547	1.00536	0.7445
230	0.000430	6533.89	3.999	7.88	0.0045872	0.21742	0.1722	0.01685	1.00512	0.7420
240	0.000412	6842.40	3.994	7.90	0.0043693	0.22491	0.1781	0.01828	1.00489	0.7400
250	0.000394	7151.06	3.988	7.91	0.0041729	0.23233	0.1839	0.01974	1.00469	0.7383
260	0.000379	7460.31	3.981	7.92	0.0039946	0.23966	0.1897	0.02124	1.00450	0.7370
270	0.000364	7770.47	3.973	7.94	0.0038319	0.24691	0.1953	0.02278	1.00433	0.7360
280	0.000351	8081.88	3.965	7.94	0.0036828	0.25408	0.2008	0.02435	1.00417	0.7352
290	0.000338	8394.84	3.956	7.95	0.0035455	0.26114	0.2063	0.02594	1.00402	0.7348
300	0.000327	8709.61	3.945	7.96	0.0034186	0.26818	0.2117	0.02758	1.00388	0.7345
310	0.000316	9026.40	3.934	7.97	0.0033008	0.27514	0.2170	0.02924	1.00375	0.7343
320	0.000306	9345.41	3.922	7.97	0.0031913	0.28204	0.2222	0.03093	1.00363	0.7344
330	0.000296	9666.73	3.910	7.98	0.0030891	0.28887	0.2274	0.03265	1.00352	0.7347
340	0.000287	9990.67	3.896	7.98	0.0029934	0.29564	0.2325	0.03439	1.00341	0.7352

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

9 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p	VELOCITY OF SOUND M/SEC
* 54.455	24.48	285276	38.94	-6188.1	-6165.7	67.13	35.65	53.23	1161
56	24.61	277977	38.06	-6106.0	-6083.5	68.62	35.32	53.22	1152
58	24.77	268692	36.94	-5999.7	-5977.1	70.49	34.90	53.21	1139
60	24.94	259592	35.84	-5893.4	-5870.7	72.29	34.49	53.21	1125
62	25.12	250674	34.77	-5787.1	-5764.2	74.04	34.09	53.21	1113
64	25.30	241934	33.73	-5680.9	-5657.8	75.73	33.71	53.22	1100
66	25.48	233369	32.71	-5574.6	-5551.3	77.37	33.34	53.23	1086
68	25.66	224977	31.71	-5468.3	-5444.9	78.96	32.98	53.25	1073
70	25.85	216755	30.73	-5361.9	-5338.3	80.50	32.63	53.28	1059
72	26.04	208698	29.78	-5255.5	-5231.7	82.00	32.30	53.31	1044
74	26.23	200805	28.85	-5149.1	-5125.0	83.46	31.97	53.36	1030
76	26.43	193071	27.94	-5042.4	-5018.3	84.89	31.66	53.41	1016
78	26.64	185494	27.05	-4935.7	-4911.4	86.27	31.35	53.47	1001
80	26.85	178071	26.18	-4828.8	-4804.3	87.63	31.06	53.54	986
82	27.06	170797	25.33	-4721.8	-4697.2	88.95	30.77	53.63	971
84	27.28	163671	24.50	-4614.7	-4589.8	90.25	30.50	53.73	956
86	27.51	156688	23.69	-4507.3	-4482.2	91.51	30.23	53.85	940
88	27.74	149845	22.90	-4399.6	-4374.3	92.75	29.97	53.98	924
90	27.98	143139	22.13	-4291.7	-4266.2	93.97	29.71	54.13	909
92	28.22	136567	21.37	-4183.5	-4157.8	95.16	29.47	54.30	893
94	28.48	130124	20.63	-4074.9	-4049.0	96.33	29.23	54.49	876
96	28.74	123808	19.91	-3965.9	-3939.7	97.48	29.00	54.71	860
98	29.01	117616	19.20	-3856.5	-3830.1	98.61	28.77	54.96	843
100	29.29	111542	18.51	-3746.6	-3719.8	99.72	28.55	55.24	827
102	29.58	105584	17.83	-3636.0	-3609.0	100.82	28.34	55.56	810
104	29.88	99739	17.16	-3524.8	-3497.6	101.90	28.13	55.92	792
106	30.19	94001	16.51	-3412.9	-3385.3	102.97	27.93	56.32	775
108	30.52	88367	15.87	-3300.1	-3272.2	104.03	27.73	56.78	757
110	30.86	82834	15.24	-3186.3	-3158.2	105.07	27.54	57.30	739
112	31.22	77396	14.62	-3071.5	-3043.0	106.11	27.36	57.89	720
114	31.60	72050	14.00	-2955.4	-2926.5	107.14	27.17	58.57	701
116	32.00	66791	13.40	-2837.8	-2808.6	108.17	27.00	59.35	682
118	32.42	61614	12.80	-2718.6	-2689.0	109.19	26.83	60.25	662
* 118.072	32.44	61429	12.78	-2714.3	-2684.7	109.23	26.82	60.28	661
* 118.072	908.09	6686	0.105	2141.0	2969.1	157.11	23.53	39.79	189
120	932.76	6967	0.101	2194.3	3044.9	157.75	23.30	38.86	192
122	957.75	7254	0.098	2248.3	3121.7	158.38	23.10	38.02	194
124	982.21	7530	0.095	2301.3	3197.0	159.00	22.92	37.30	197
126	1006.21	7798	0.092	2353.4	3271.0	159.59	22.75	36.67	199
128	1029.81	8059	0.089	2404.7	3343.8	160.16	22.61	36.12	202
130	1053.05	8313	0.086	2455.2	3415.5	160.72	22.48	35.63	204
132	1075.97	8561	0.084	2505.1	3486.3	161.26	22.37	35.19	207
134	1098.61	8804	0.082	2554.5	3556.3	161.78	22.26	34.80	209
136	1120.99	9042	0.080	2603.3	3625.6	162.30	22.17	34.45	211
138	1143.14	9276	0.078	2651.7	3694.1	162.80	22.08	34.14	213
140	1165.08	9506	0.076	2699.7	3762.1	163.29	22.00	33.86	215
142	1186.83	9732	0.075	2747.3	3829.5	163.76	21.93	33.59	217
144	1208.39	9956	0.073	2794.5	3896.5	164.23	21.87	33.35	219
146	1229.80	10176	0.072	2841.5	3962.9	164.69	21.81	33.13	221
148	1251.05	10394	0.070	2888.1	4029.0	165.14	21.75	32.92	223
150	1272.17	10609	0.069	2934.5	4094.7	165.58	21.70	32.74	225
152	1293.15	10822	0.068	2980.7	4159.9	166.01	21.65	32.56	227
154	1314.02	11033	0.066	3026.6	4224.9	166.44	21.61	32.40	229
156	1334.77	11242	0.065	3072.4	4289.6	166.86	21.57	32.25	231
158	1355.42	11449	0.064	3117.9	4353.9	167.27	21.53	32.12	233
160	1375.98	11654	0.063	3163.3	4418.0	167.67	21.50	31.99	234
165	1426.97	12160	0.061	3275.9	4577.2	168.65	21.42	31.70	239
170	1477.48	12658	0.058	3387.7	4735.1	169.59	21.35	31.45	243
175	1527.56	13148	0.056	3498.8	4891.8	170.50	21.29	31.24	247
180	1577.27	13632	0.054	3609.2	5047.5	171.38	21.24	31.05	251
185	1626.65	14109	0.053	3719.0	5202.4	172.23	21.20	30.89	255
190	1675.75	14582	0.051	3828.3	5356.5	173.05	21.15	30.75	259
195	1724.60	15051	0.049	3937.2	5509.9	173.84	21.13	30.63	263
200	1773.21	15515	0.048	4045.8	5662.8	174.62	21.11	30.52	267
210	1869.86	16433	0.045	4261.9	5967.1	176.10	21.06	30.34	274
220	1965.84	17339	0.043	4477.0	6269.7	177.51	21.03	30.19	281
230	2061.28	18236	0.041	4691.3	6571.0	178.85	21.01	30.08	287
240	2156.25	19124	0.039	4905.0	6871.3	180.13	21.01	29.99	294
250	2250.85	20006	0.037	5118.3	7170.9	181.35	21.01	29.92	300
260	2345.12	20881	0.036	5331.3	7469.8	182.52	21.01	29.87	307
270	2439.10	21752	0.034	5544.1	7768.4	183.65	21.03	29.84	313
280	2532.85	22619	0.033	5757.0	8066.7	184.74	21.05	29.82	319
290	2626.38	23482	0.032	5969.9	8364.9	185.78	21.08	29.82	324
300	2719.73	24341	0.031	6182.9	8663.1	186.79	21.12	29.82	330
310	2812.92	25198	0.030	6396.3	8961.4	187.77	21.17	29.84	335
320	2905.97	26052	0.029	6609.9	9260.0	188.72	21.22	29.87	341
330	2998.88	26904	0.028	6824.0	9558.8	189.64	21.28	29.90	345
340	3091.69	27753	0.027	7038.6	9858.0	190.53	21.34	29.94	351

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

9 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	V(DH/DV)$_P$ J/GMOLE	V(DP/DV)$_H$ CC-ATM/J	-V(DP/DV)$_T$ ATM	(DV/DT)$_P$/V 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S x 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 54.455	0.040849	15929.74	26.736	11653.38	0.0033415	1.93079	6.2215	0.00089	1.56846	5.3601
56	0.040638	15737.00	25.517	11296.53	0.0033690	1.91674	5.8954	0.00089	1.56557	5.1156
58	0.040364	15623.61	25.226	11045.48	0.0034059	1.89787	5.5068	0.00088	1.56117	4.8199
60	0.040088	15448.20	25.027	10806.63	0.0034444	1.87826	5.1351	0.00088	1.55676	4.5452
62	0.039812	15270.76	25.622	9979.71	0.0034845	1.85798	4.7962	0.00088	1.55234	4.2928
64	0.039533	15091.18	25.311	9564.47	0.0035265	1.83701	4.4822	0.00087	1.54791	4.0580
66	0.039254	14909.37	24.993	9160.65	0.0035704	1.81547	4.1913	0.00087	1.54346	3.8406
68	0.038973	14725.25	24.670	8768.00	0.0036164	1.79336	3.9217	0.00086	1.53900	3.6392
70	0.038690	14538.70	24.341	8386.26	0.0036646	1.77072	3.6719	0.00086	1.53452	3.4527
72	0.038406	14349.66	24.008	8015.13	0.0037153	1.74760	3.4405	0.00085	1.53002	3.2800
74	0.038119	14157.97	23.669	7654.54	0.0037686	1.72402	3.2260	0.00085	1.52550	3.1201
76	0.037831	13963.57	23.327	7304.47	0.0038245	1.70001	3.0272	0.00084	1.52095	2.9721
78	0.037540	13766.31	22.980	6963.54	0.0038842	1.67561	2.8431	0.00083	1.51638	2.8353
80	0.037248	13566.10	22.630	6632.71	0.0039473	1.65084	2.6724	0.00083	1.51179	2.7088
82	0.036952	13362.80	22.276	6311.35	0.0040135	1.62573	2.5142	0.00082	1.50716	2.5920
84	0.036654	13156.27	21.919	5999.24	0.0040841	1.60030	2.3676	0.00081	1.50250	2.4843
86	0.036353	12946.39	21.560	5696.13	0.0041592	1.57458	2.2317	0.00080	1.49781	2.3851
88	0.036049	12732.97	21.198	5401.82	0.0042393	1.54858	2.1057	0.00080	1.49307	2.2938
90	0.035742	12515.87	20.834	5116.08	0.0043249	1.52232	1.9884	0.00079	1.48826	2.2101
92	0.035431	12294.90	20.467	4838.69	0.0044165	1.49582	1.8807	0.00078	1.48347	2.1336
94	0.035116	12069.88	20.099	4569.44	0.0045149	1.46908	1.7802	0.00077	1.47860	2.0637
96	0.034797	11840.56	19.729	4308.13	0.0046209	1.44213	1.6871	0.00076	1.47367	2.0003
98	0.034473	11606.78	19.356	4054.53	0.0047354	1.41497	1.6006	0.00075	1.46868	1.9430
100	0.034144	11368.22	18.982	3808.45	0.0048594	1.38760	1.5204	0.00074	1.46362	1.8916
102	0.033809	11124.61	18.606	3569.69	0.0049943	1.36003	1.4459	0.00072	1.45849	1.8459
104	0.033468	10875.64	18.228	3338.05	0.0051415	1.33226	1.3767	0.00071	1.45327	1.8058
106	0.033120	10620.95	17.847	3113.34	0.0053029	1.30428	1.3124	0.00070	1.44797	1.7710
108	0.032765	10360.14	17.463	2895.38	0.0054807	1.27609	1.2525	0.00069	1.44256	1.7417
110	0.032402	10092.75	17.075	2683.96	0.0056774	1.24768	1.1963	0.00067	1.43704	1.7177
112	0.032029	9818.24	16.683	2478.93	0.0058965	1.21902	1.1449	0.00066	1.43140	1.6992
114	0.031646	9535.99	16.285	2280.09	0.0061421	1.19010	1.0965	0.00064	1.42561	1.6864
116	0.031251	9245.27	15.881	2087.23	0.0064195	1.16088	1.0512	0.00063	1.41966	1.6795
118	0.030843	8945.23	15.468	1900.34	0.0067354	1.13132	1.0088	0.00061	1.41353	1.6790
* 118.072	0.030828	8934.25	15.453	1893.73	0.0067476	1.13025	1.0073	0.00061	1.41330	1.6791
* 118.072	0.001101	2790.73	4.051	7.36	0.0142586	0.13131	0.1044	0.00301	1.01313	0.9890
120	0.001072	2867.74	4.051	7.47	0.0135496	0.13260	0.1055	0.00318	1.01278	0.9659
122	0.001044	2947.17	4.051	7.57	0.0129008	0.13398	0.1066	0.00338	1.01244	0.9452
124	0.001018	3025.09	4.052	7.67	0.0123299	0.13540	0.1077	0.00357	1.01213	0.9274
126	0.000994	3101.70	4.052	7.75	0.0118226	0.13684	0.1089	0.00375	1.01184	0.9118
128	0.000971	3177.15	4.052	7.83	0.0113678	0.13831	0.1101	0.00394	1.01157	0.8982
130	0.000950	3251.58	4.051	7.89	0.0109573	0.13979	0.1112	0.00413	1.01131	0.8861
132	0.000929	3325.09	4.051	7.96	0.0105841	0.14130	0.1125	0.00432	1.01107	0.8753
134	0.000910	3397.78	4.050	8.01	0.0102430	0.14286	0.1137	0.00451	1.01084	0.8654
136	0.000892	3469.72	4.050	8.07	0.0099295	0.14467	0.1149	0.00471	1.01062	0.8551
138	0.000875	3540.97	4.049	8.11	0.0096402	0.14647	0.1161	0.00491	1.01042	0.8458
140	0.000858	3611.61	4.049	8.16	0.0093719	0.14825	0.1174	0.00510	1.01022	0.8375
142	0.000843	3681.68	4.048	8.20	0.0091223	0.15000	0.1186	0.00530	1.01003	0.8300
144	0.000828	3751.21	4.047	8.24	0.0088893	0.15172	0.1199	0.00550	1.00985	0.8233
146	0.000813	3820.26	4.046	8.27	0.0086710	0.15343	0.1211	0.00570	1.00968	0.8172
148	0.000799	3888.86	4.045	8.31	0.0084660	0.15510	0.1224	0.00589	1.00952	0.8118
150	0.000786	3957.03	4.045	8.34	0.0082729	0.15675	0.1236	0.00609	1.00936	0.8070
152	0.000773	4024.81	4.044	8.37	0.0080906	0.15838	0.1249	0.00629	1.00920	0.8025
154	0.000761	4092.23	4.043	8.40	0.0079182	0.16000	0.1262	0.00649	1.00906	0.7985
156	0.000749	4159.30	4.042	8.42	0.0077547	0.16160	0.1274	0.00669	1.00892	0.7949
158	0.000738	4226.04	4.041	8.45	0.0075993	0.16319	0.1287	0.00689	1.00878	0.7915
160	0.000727	4292.48	4.040	8.47	0.0074515	0.16475	0.1300	0.00709	1.00865	0.7885
165	0.000701	4457.36	4.038	8.52	0.0071111	0.16870	0.1331	0.00759	1.00834	0.7817
170	0.000677	4620.69	4.035	8.57	0.0068065	0.17261	0.1363	0.00811	1.00805	0.7760
175	0.000655	4782.66	4.033	8.61	0.0065316	0.17651	0.1394	0.00863	1.00779	0.7712
180	0.000634	4943.46	4.031	8.64	0.0062819	0.18040	0.1426	0.00916	1.00754	0.7670
185	0.000615	5103.23	4.029	8.67	0.0060538	0.18429	0.1457	0.00970	1.00731	0.7633
190	0.000597	5262.10	4.027	8.70	0.0058442	0.18816	0.1488	0.01025	1.00710	0.7601
195	0.000580	5420.19	4.024	8.73	0.0056509	0.19203	0.1519	0.01081	1.00690	0.7572
200	0.000564	5577.63	4.022	8.75	0.0054717	0.19589	0.1550	0.01138	1.00671	0.7546
210	0.000535	5890.80	4.018	8.79	0.0051497	0.20349	0.1611	0.01254	1.00636	0.7505
220	0.000509	6202.37	4.013	8.82	0.0048677	0.21105	0.1671	0.01374	1.00605	0.7471
230	0.000485	6512.92	4.007	8.85	0.0046182	0.21855	0.1731	0.01498	1.00577	0.7443
240	0.000464	6822.99	4.002	8.87	0.0043954	0.22598	0.1789	0.01625	1.00551	0.7420
250	0.000444	7133.05	3.995	8.89	0.0041950	0.23334	0.1847	0.01755	1.00528	0.7402
260	0.000426	7443.53	3.988	8.90	0.0040135	0.24062	0.1904	0.01889	1.00507	0.7387
270	0.000410	7754.83	3.980	8.92	0.0038482	0.24782	0.1960	0.02026	1.00487	0.7375
280	0.000395	8067.27	3.972	8.93	0.0036968	0.25496	0.2015	0.02165	1.00469	0.7366
290	0.000381	8381.16	3.962	8.94	0.0035577	0.26198	0.2069	0.02308	1.00452	0.7361
300	0.000368	8696.82	3.952	8.95	0.0034292	0.26899	0.2123	0.02453	1.00437	0.7356
310	0.000356	9014.46	3.941	8.96	0.0033102	0.27593	0.2176	0.02601	1.00422	0.7354
320	0.000344	9334.16	3.928	8.96	0.0031996	0.28280	0.2228	0.02752	1.00409	0.7354
330	0.000333	9656.25	3.916	8.97	0.0030964	0.28960	0.2280	0.02905	1.00396	0.7356
340	0.000323	9980.81	3.902	8.98	0.0029999	0.29635	0.2331	0.03060	1.00384	0.7360

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

16 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p J/G MOLE -K	VELOCITY OF SOUND M/SEC
* 54.467	24.48	265400	38.94	-6187.9	-6163.1	67.14	35.65	53.23	1162
56	24.61	278154	38.07	-6106.4	-6081.5	68.61	35.32	53.22	1152
58	24.77	268875	36.95	-6000.2	-5975.1	70.48	34.96	53.21	1139
60	24.94	259777	35.85	-5893.9	-5868.7	72.28	34.69	53.21	1125
62	25.12	250861	34.78	-5787.7	-5762.2	74.03	34.09	53.21	1113
64	25.29	242123	33.74	-5681.4	-5655.8	75.72	33.71	53.21	1103
66	25.47	233561	32.72	-5575.2	-5549.4	77.36	33.34	53.23	1087
68	25.66	225172	31.72	-5468.9	-5442.9	78.95	32.98	53.25	1073
70	25.84	216952	30.74	-5362.6	-5336.4	80.49	32.64	53.27	1059
72	26.03	208898	29.79	-5256.2	-5229.8	81.99	32.30	53.31	1045
74	26.23	201007	28.86	-5149.7	-5123.1	83.45	31.98	53.35	1030
76	26.43	193276	27.95	-5043.1	-5016.4	84.88	31.66	53.40	1016
78	26.63	185702	27.06	-4936.5	-4909.5	86.26	31.36	53.46	1001
80	26.84	178281	26.19	-4829.7	-4802.5	87.62	31.06	53.53	986
82	27.06	171010	25.34	-4722.7	-4695.3	88.94	30.78	53.62	971
84	27.28	163887	24.51	-4615.6	-4588.0	90.23	30.50	53.72	956
86	27.50	156907	23.70	-4508.3	-4480.4	91.50	30.23	53.83	941
88	27.73	150068	22.91	-4400.7	-4372.6	92.74	29.97	53.96	925
90	27.97	143365	22.14	-4292.8	-4264.5	93.95	29.72	54.11	909
92	28.22	136797	21.38	-4184.7	-4156.1	95.14	29.48	54.28	893
94	28.47	130358	20.64	-4076.1	-4047.3	96.31	29.24	54.48	877
96	28.73	124046	19.92	-3967.2	-3938.1	97.46	29.01	54.69	861
98	29.00	117854	19.21	-3857.9	-3828.5	98.59	28.78	54.94	844
100	29.28	111789	18.52	-3748.3	-3718.3	99.71	28.56	55.22	827
102	29.57	105836	17.84	-3637.5	-3607.6	100.80	28.35	55.53	810
104	29.87	99995	17.18	-3526.4	-3496.2	101.89	28.14	55.89	793
106	30.18	94263	16.53	-3414.6	-3384.0	102.95	27.94	56.29	775
108	30.51	88635	15.89	-3301.9	-3271.0	104.01	27.74	56.74	758
110	30.85	83107	15.26	-3188.3	-3157.0	105.06	27.55	57.25	740
112	31.21	77676	14.64	-3073.5	-3041.9	106.09	27.36	57.84	721
114	31.59	72337	14.02	-2957.6	-2925.6	107.12	27.18	58.51	702
116	31.98	67086	13.42	-2840.2	-2807.8	108.15	27.00	59.28	683
118	32.41	61917	12.82	-2721.2	-2688.3	109.17	26.84	60.17	663
* 119.860	32.82	57181	12.27	-2618.8	-2575.6	110.12	26.68	61.12	644
* 119.860	818.19	6566	0.118	2149.2	2978.2	156.45	23.76	40.95	189
120	819.87	6582	0.117	2153.2	2984.0	156.50	23.74	40.87	189
122	843.52	6892	0.113	2209.9	3064.6	157.17	23.49	39.77	192
124	866.55	7183	0.109	2265.1	3143.2	157.81	23.26	38.84	195
126	889.06	7475	0.105	2319.2	3220.0	158.42	23.07	38.04	198
128	911.11	7752	0.102	2372.2	3295.4	159.02	22.89	37.34	200
130	932.77	8020	0.099	2424.3	3369.4	159.59	22.74	36.73	203
132	954.07	8281	0.096	2475.6	3442.3	160.15	22.60	36.19	205
134	975.06	8536	0.094	2526.3	3514.2	160.69	22.47	35.71	207
136	995.76	8786	0.091	2576.3	3585.2	161.21	22.36	35.29	210
138	1016.22	9031	0.089	2625.7	3655.4	161.73	22.26	34.90	212
140	1036.45	9269	0.087	2674.7	3724.9	162.23	22.17	34.56	214
142	1056.47	9505	0.085	2723.2	3793.7	162.71	22.09	34.24	216
144	1076.30	9736	0.083	2771.3	3861.9	163.19	22.01	33.96	218
146	1095.95	9964	0.081	2819.0	3929.5	163.66	21.94	33.70	220
148	1115.45	10189	0.080	2866.4	3996.7	164.11	21.87	33.46	222
150	1134.81	10411	0.078	2913.5	4063.3	164.56	21.82	33.24	224
152	1154.02	10631	0.076	2960.3	4129.6	165.00	21.76	33.04	226
154	1173.12	10848	0.075	3006.8	4195.5	165.43	21.71	32.85	228
156	1192.09	11062	0.074	3053.1	4261.0	165.85	21.66	32.67	230
158	1210.96	11275	0.072	3099.2	4326.2	166.27	21.62	32.51	232
160	1229.72	11485	0.071	3145.1	4391.1	166.68	21.58	32.36	234
165	1276.24	12003	0.068	3258.3	4552.0	167.67	21.49	32.03	238
170	1322.24	12512	0.066	3371.7	4711.5	168.62	21.41	31.75	242
175	1367.61	13011	0.063	3483.6	4869.6	169.54	21.35	31.50	247
180	1413.00	13504	0.061	3594.8	5026.6	170.42	21.29	31.29	251
185	1457.86	13989	0.059	3705.4	5182.6	171.27	21.25	31.11	255
190	1502.43	14467	0.057	3815.4	5337.7	172.10	21.21	30.95	259
195	1546.73	14940	0.055	3924.9	5492.1	172.90	21.17	30.81	262
200	1590.81	15409	0.054	4033.9	5645.8	173.68	21.14	30.68	266
210	1678.37	16344	0.051	4251.0	5951.6	175.17	21.09	30.48	273
220	1765.25	17261	0.049	4466.9	6255.5	176.59	21.06	30.31	281
230	1851.58	18166	0.046	4681.9	6558.0	177.93	21.03	30.18	287
240	1937.45	19062	0.044	4896.2	6859.3	179.22	21.02	30.06	294
250	2022.93	19952	0.042	5110.0	7159.7	180.44	21.02	30.01	300
260	2108.09	20832	0.040	5323.5	7459.5	181.62	21.02	29.95	307
270	2192.96	21709	0.038	5536.8	7758.8	182.75	21.04	29.91	313
280	2277.59	22580	0.037	5749.9	8057.7	183.83	21.06	29.88	319
290	2362.01	23448	0.035	5963.2	8356.5	184.88	21.09	29.87	324
300	2446.24	24312	0.034	6176.5	8655.2	185.90	21.13	29.87	330
310	2530.31	25172	0.033	6390.1	8954.0	186.88	21.17	29.88	335
320	2614.24	26030	0.032	6604.1	9252.9	187.82	21.22	29.91	341
330	2698.04	26885	0.031	6818.4	9552.2	188.74	21.28	29.94	346
340	2781.72	27738	0.030	7033.2	9851.7	189.64	21.34	29.98	351

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

10 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	$V(\partial H/\partial V)_p$ J/GMOLE	$V(\partial P/\partial U)_v$ CC-ATM/J	$-V(\partial P/\partial V)_T$ ATM	$(\partial V/\partial T)_p/V$ 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S X 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 54.467	0.040851	15935.78	25.735	11659.00	0.0033400	1.93094	6.2245	0.00069	1.56899	5.3620
56	0.040642	15804.24	26.517	11384.89	0.0033672	1.91701	5.9008	0.00069	1.56563	5.1192
58	0.040368	15630.98	25.226	10853.87	0.0034040	1.89815	5.5059	0.00068	1.56123	4.8233
60	0.040092	15455.78	25.928	10415.05	0.0034424	1.87856	5.1400	0.00068	1.55683	4.5494
62	0.039816	15278.54	25.623	9988.17	0.0034824	1.85828	4.8009	0.00068	1.55241	4.2958
64	0.039538	15099.18	25.312	9572.97	0.0035243	1.83736	4.4867	0.00067	1.54798	4.0609
66	0.039258	14917.60	24.994	9169.19	0.0035680	1.81583	4.1956	0.00067	1.54353	3.8434
68	0.038977	14733.71	24.671	8776.58	0.0036138	1.79374	3.9258	0.00066	1.53907	3.6418
70	0.038695	14547.41	24.342	8394.88	0.0036619	1.77113	3.6759	0.00066	1.53459	3.4552
72	0.038410	14358.61	24.009	8023.85	0.0037124	1.74802	3.4442	0.00065	1.53009	3.2823
74	0.038124	14167.19	23.671	7663.24	0.0037656	1.72446	3.2296	0.00065	1.52558	3.1223
76	0.037836	13973.08	23.328	7312.81	0.0038216	1.70048	3.0307	0.00064	1.52103	2.9742
78	0.037546	13776.11	22.981	6972.33	0.0038807	1.67610	2.8464	0.00064	1.51647	2.8372
80	0.037253	13576.20	22.631	6641.55	0.0039433	1.65135	2.6755	0.00063	1.51188	2.7106
82	0.036958	13373.21	22.278	6320.24	0.0040095	1.62627	2.5172	0.00062	1.50725	2.5937
84	0.036660	13167.01	21.921	6008.17	0.0040798	1.60086	2.3705	0.00061	1.50260	2.4859
86	0.036360	12957.48	21.562	5705.12	0.0041546	1.57517	2.2345	0.00060	1.49791	2.3866
88	0.036056	12744.43	21.201	5410.86	0.0042343	1.54919	2.1084	0.00060	1.49318	2.2952
90	0.035749	12527.72	20.837	5125.18	0.0043195	1.52296	1.9915	0.00059	1.48841	2.2114
92	0.035438	12307.15	20.471	4847.85	0.0044107	1.49648	1.8831	0.00058	1.48359	2.1347
94	0.035124	12082.56	20.102	4578.66	0.0045086	1.46978	1.7826	0.00057	1.47872	2.0648
96	0.034805	11853.72	19.733	4317.41	0.0046140	1.44286	1.6894	0.00056	1.47380	2.0012
98	0.034481	11620.41	19.361	4063.88	0.0047278	1.41573	1.6028	0.00055	1.46881	1.9438
100	0.034153	11382.37	18.987	3817.87	0.0048511	1.38840	1.5225	0.00054	1.46376	1.8923
102	0.033818	11139.31	18.612	3579.19	0.0049851	1.36086	1.4480	0.00052	1.45863	1.8465
104	0.033478	10890.94	18.234	3347.63	0.0051313	1.33313	1.3787	0.00051	1.45343	1.8062
106	0.033131	10636.91	17.854	3123.01	0.0052916	1.30519	1.3143	0.00050	1.44813	1.7713
108	0.032777	10376.80	17.471	2905.14	0.0054679	1.27705	1.2544	0.00049	1.44273	1.7417
110	0.032414	10110.18	17.084	2693.83	0.0056630	1.24868	1.1986	0.00047	1.43722	1.7176
112	0.032042	9836.53	16.693	2488.90	0.0058802	1.22007	1.1467	0.00046	1.43159	1.6988
114	0.031660	9555.21	16.297	2290.18	0.0061234	1.19120	1.0982	0.00044	1.42582	1.6857
116	0.031266	9265.54	15.894	2097.50	0.0063978	1.16205	1.0529	0.00043	1.41988	1.6785
118	0.030859	8966.69	15.482	1910.70	0.0067101	1.13256	1.0105	0.00041	1.41377	1.6776
* 119.860	0.030467	8679.67	15.090	1742.14	0.0070421	1.10479	0.9734	0.00039	1.40790	1.6829
* 119.860	0.001222	2789.27	4.056	8.02	0.0146801	0.13535	0.1076	0.00270	1.01457	1.0171
120	0.001220	2793.85	4.055	8.03	0.0146282	0.13544	0.1077	0.00272	1.01454	1.0152
122	0.001186	2876.68	4.057	8.17	0.0138252	0.13670	0.1087	0.00298	1.01413	0.9881
124	0.001154	2957.60	4.058	8.30	0.0131314	0.13802	0.1097	0.00308	1.01376	0.9650
126	0.001125	3036.89	4.059	8.41	0.0125243	0.13937	0.1108	0.00326	1.01341	0.9452
128	0.001098	3114.76	4.059	8.51	0.0119876	0.14075	0.1119	0.00343	1.01308	0.9280
130	0.001072	3191.39	4.060	8.60	0.0115087	0.14216	0.1131	0.00361	1.01278	0.9129
132	0.001048	3266.93	4.060	8.68	0.0110779	0.14359	0.1142	0.00379	1.01249	0.8996
134	0.001026	3341.48	4.060	8.75	0.0106878	0.14529	0.1154	0.00397	1.01222	0.8863
136	0.001004	3415.15	4.059	8.82	0.0103322	0.14706	0.1166	0.00415	1.01197	0.8740
138	0.000984	3488.02	4.059	8.89	0.0100064	0.14881	0.1177	0.00433	1.01172	0.8631
140	0.000965	3560.17	4.058	8.94	0.0097064	0.15054	0.1189	0.00452	1.01149	0.8533
142	0.000947	3631.66	4.058	9.00	0.0094290	0.15225	0.1202	0.00470	1.01127	0.8446
144	0.000929	3702.54	4.057	9.05	0.0091713	0.15393	0.1214	0.00488	1.01107	0.8367
146	0.000912	3772.87	4.056	9.09	0.0089313	0.15559	0.1226	0.00506	1.01087	0.8297
148	0.000896	3842.68	4.056	9.13	0.0087068	0.15723	0.1238	0.00524	1.01068	0.8234
150	0.000881	3912.01	4.055	9.17	0.0084963	0.15883	0.1251	0.00542	1.01049	0.8178
152	0.000867	3980.89	4.054	9.21	0.0082984	0.16043	0.1263	0.00560	1.01032	0.8127
154	0.000852	4049.35	4.053	9.25	0.0081118	0.16201	0.1275	0.00579	1.01015	0.8080
156	0.000839	4117.43	4.052	9.28	0.0079356	0.16357	0.1288	0.00597	1.00999	0.8039
158	0.000826	4185.14	4.051	9.31	0.0077686	0.16512	0.1300	0.00615	1.00983	0.8000
160	0.000813	4252.51	4.050	9.34	0.0076102	0.16664	0.1312	0.00633	1.00968	0.7966
165	0.000784	4419.56	4.048	9.41	0.0072472	0.17050	0.1344	0.00679	1.00933	0.7888
170	0.000756	4584.87	4.046	9.46	0.0069241	0.17433	0.1375	0.00726	1.00900	0.7823
175	0.000731	4748.66	4.043	9.51	0.0066341	0.17816	0.1406	0.00774	1.00870	0.7768
180	0.000708	4911.13	4.041	9.56	0.0063719	0.18199	0.1437	0.00822	1.00842	0.7721
185	0.000686	5072.45	4.038	9.60	0.0061332	0.18581	0.1468	0.00871	1.00816	0.7679
190	0.000666	5232.75	4.036	9.63	0.0059147	0.18964	0.1498	0.00921	1.00792	0.7643
195	0.000647	5392.18	4.034	9.66	0.0057137	0.19345	0.1529	0.00971	1.00769	0.7610
200	0.000629	5550.84	4.031	9.69	0.0055280	0.19727	0.1560	0.01023	1.00748	0.7581
210	0.000596	5866.28	4.026	9.74	0.0051953	0.20477	0.1620	0.01128	1.00709	0.7535
220	0.000566	6179.82	4.021	9.78	0.0049052	0.21225	0.1680	0.01236	1.00674	0.7497
230	0.000540	6492.11	4.015	9.81	0.0046494	0.21968	0.1739	0.01348	1.00642	0.7466
240	0.000516	6803.73	4.009	9.84	0.0044216	0.22705	0.1797	0.01462	1.00614	0.7441
250	0.000494	7115.17	4.003	9.86	0.0042171	0.23435	0.1854	0.01580	1.00588	0.7420
260	0.000474	7426.90	3.995	9.88	0.0040324	0.24159	0.1911	0.01701	1.00564	0.7403
270	0.000456	7739.31	3.987	9.90	0.0038644	0.24875	0.1967	0.01824	1.00542	0.7390
280	0.000439	8052.78	3.979	9.91	0.0037109	0.25584	0.2022	0.01954	1.00522	0.7379
290	0.000423	8367.63	3.969	9.93	0.0035699	0.26282	0.2076	0.02078	1.00503	0.7373
300	0.000409	8684.13	3.958	9.94	0.0034399	0.26980	0.2129	0.02209	1.00486	0.7367
310	0.000395	9002.53	3.947	9.95	0.0033196	0.27671	0.2182	0.02343	1.00470	0.7364
320	0.000383	9323.03	3.935	9.96	0.0032078	0.28356	0.2234	0.02479	1.00455	0.7363
330	0.000371	9645.81	3.922	9.96	0.0031037	0.29034	0.2285	0.02617	1.00440	0.7365
340	0.000359	9971.00	3.908	9.97	0.0030065	0.29706	0.2336	0.02757	1.00427	0.7368

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

15 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p	VELOCITY OF SOUND M/SEC
* 54.525	24.47	286021	38.95	-6187.3	-6149.8	67.15	35.66	53.21	1163
56	24.59	279063	38.11	-6108.8	-6071.4	68.57	35.34	53.20	1153
58	24.76	269790	36.99	-6002.6	-5965.6	70.44	34.92	53.19	1141
60	24.93	260702	35.89	-5896.5	-5858.6	72.24	34.51	53.18	1128
62	25.10	251797	34.83	-5790.4	-5752.3	73.99	34.11	53.18	1115
64	25.28	243070	33.78	-5684.3	-5645.9	75.67	33.73	53.19	1102
66	25.46	234520	32.76	-5578.2	-5539.5	77.31	33.36	53.20	1088
68	25.64	226142	31.76	-5472.1	-5433.1	78.90	33.00	53.21	1074
70	25.83	217934	30.79	-5365.9	-5326.6	80.44	32.66	53.24	1061
72	26.02	209893	29.83	-5259.7	-5220.1	81.94	32.32	53.27	1047
74	26.21	202015	28.90	-5153.4	-5113.5	83.40	32.00	53.31	1032
76	26.41	194297	28.00	-5047.0	-5006.9	84.82	31.69	53.36	1018
78	26.62	186737	27.11	-4940.5	-4900.1	86.21	31.34	53.41	1003
80	26.82	179330	26.24	-4833.9	-4793.2	87.56	31.09	53.48	988
82	27.04	172075	25.39	-4727.2	-4686.1	88.89	30.80	53.56	973
84	27.25	164967	24.57	-4620.3	-4578.9	90.18	30.53	53.66	958
86	27.48	158003	23.76	-4513.2	-4471.4	91.44	30.26	53.77	943
88	27.71	151180	22.97	-4405.9	-4363.7	92.68	30.00	53.89	927
90	27.95	144495	22.20	-4298.3	-4255.8	93.89	29.75	54.03	912
92	28.19	137944	21.44	-4190.4	-4147.6	95.08	29.51	54.20	896
94	28.44	131525	20.71	-4082.2	-4039.0	96.25	29.27	54.38	880
96	28.70	125233	19.99	-3973.6	-3930.0	97.40	29.04	54.59	863
98	28.97	119065	19.28	-3864.6	-3820.6	98.52	28.81	54.82	847
100	29.24	113018	18.59	-3755.1	-3710.7	99.64	28.59	55.09	830
102	29.53	107088	17.91	-3645.1	-3600.2	100.73	28.38	55.39	814
104	29.83	101271	17.25	-3534.4	-3489.1	101.81	28.17	55.73	796
106	30.14	95565	16.60	-3423.0	-3377.2	102.87	27.97	56.11	779
108	30.46	89965	15.97	-3310.9	-3264.6	103.93	27.77	56.54	762
110	30.79	84467	15.34	-3197.9	-3151.1	104.97	27.58	57.03	744
112	31.15	79068	14.72	-3083.8	-3036.5	106.00	27.39	57.58	725
114	31.52	73763	14.12	-2968.6	-2920.7	107.03	27.21	58.21	707
116	31.91	68549	13.52	-2852.0	-2803.5	108.04	27.03	58.94	688
118	32.32	63421	12.93	-2733.9	-2684.8	109.06	26.86	59.77	668
120	32.76	58375	12.34	-2614.1	-2564.3	110.07	26.70	60.73	648
122	33.23	53408	11.75	-2492.2	-2441.7	111.09	26.54	61.85	628
124	33.74	48511	11.17	-2367.9	-2316.6	112.10	26.39	63.13	606
126	34.28	43685	10.59	-2240.7	-2188.6	113.13	26.26	64.76	584
* 127.251	34.65	40693	10.22	-2159.4	-2106.8	113.77	26.19	65.91	569
* 127.251	541.54	5934	0.187	2160.1	2983.2	153.78	24.85	47.29	189
128	548.44	6041	0.184	2184.7	3018.3	154.05	24.70	46.50	190
130	566.36	6412	0.176	2248.6	3109.4	154.76	24.34	44.65	193
132	583.62	6762	0.168	2310.1	3197.1	155.43	24.02	43.12	196
134	600.32	7096	0.162	2369.6	3282.0	156.07	23.75	41.84	199
136	616.55	7416	0.156	2427.5	3364.6	156.68	23.51	40.76	202
138	632.38	7723	0.151	2484.0	3445.2	157.27	23.30	39.83	204
140	647.85	8020	0.146	2539.3	3524.0	157.84	23.12	39.02	207
142	663.02	8309	0.142	2593.6	3601.3	158.38	22.95	38.31	210
144	677.92	8589	0.138	2646.9	3677.3	158.92	22.81	37.68	212
146	692.58	8861	0.134	2699.4	3752.1	159.43	22.67	37.12	214
148	707.01	9126	0.131	2751.2	3825.8	159.93	22.55	36.62	217
150	721.26	9388	0.128	2802.4	3898.6	160.42	22.44	36.18	219
152	735.32	9644	0.125	2852.9	3970.5	160.90	22.34	35.77	221
154	749.23	9895	0.122	2903.0	4041.7	161.36	22.25	35.40	223
156	762.99	10141	0.119	2952.5	4112.2	161.82	22.17	35.07	225
158	776.61	10384	0.117	3001.7	4182.0	162.26	22.09	34.76	227
160	790.10	10622	0.114	3050.4	4251.2	162.70	22.02	34.48	229
165	823.36	11205	0.109	3170.6	4422.1	163.75	21.87	33.87	234
170	856.02	11771	0.104	3289.0	4590.1	164.75	21.75	33.36	239
175	888.17	12322	0.100	3405.9	4755.8	165.71	21.64	32.93	244
180	919.89	12860	0.096	3521.4	4919.5	166.64	21.55	32.57	248
185	951.24	13388	0.092	3635.8	5081.6	167.52	21.48	32.26	252
190	982.27	13906	0.089	3749.3	5242.2	168.38	21.41	31.99	257
195	1013.01	14416	0.086	3861.9	5401.6	169.21	21.35	31.76	261
200	1043.50	14918	0.083	3973.8	5559.8	170.01	21.31	31.55	265
210	1103.84	15905	0.078	4195.9	5873.6	171.54	21.23	31.21	272
220	1163.47	16871	0.074	4416.0	6184.3	172.99	21.17	30.94	279
230	1222.51	17820	0.070	4634.6	6492.6	174.36	21.13	30.73	286
240	1281.08	18754	0.067	4852.0	6799.1	175.66	21.10	30.56	293
250	1339.24	19677	0.064	5068.5	7104.0	176.91	21.08	30.43	300
260	1397.06	20590	0.061	5284.3	7407.7	178.10	21.08	30.32	306
270	1454.60	21495	0.058	5499.7	7710.5	179.24	21.09	30.24	312
280	1511.88	22392	0.056	5714.8	8012.6	180.34	21.10	30.18	318
290	1568.95	23283	0.054	5929.7	8314.3	181.40	21.12	30.14	324
300	1625.83	24168	0.052	6144.5	8615.6	182.42	21.16	30.12	330
310	1682.55	25048	0.050	6359.5	8916.8	183.41	21.19	30.11	336
320	1739.13	25924	0.048	6574.6	9217.9	184.36	21.24	30.11	341
330	1795.57	26797	0.047	6790.1	9519.1	185.29	21.29	30.13	346
340	1851.90	27666	0.045	7005.9	9820.5	186.19	21.35	30.15	352

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

15 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	V(DH/DV)$_p$ J/GMOLE	V(DP/DV)$_h$ CC-ATM/J	-V(DP/DV)$_T$ ATM	(DV/DT)$_p$/V 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S X 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 54.525	0.040861	15965.97	25.731	11687.07	0.0033325	1.93168	6.2399	0.00889	1.56915	5.3712
56	0.040660	15840.09	25.521	11346.64	0.0033583	1.91634	5.9279	0.00869	1.56592	5.1371
58	0.040386	15667.80	26.230	10895.79	0.0033946	1.89958	5.5318	0.00868	1.56153	4.8403
60	0.040111	15493.60	25.932	10457.15	0.0034325	1.88088	5.1647	0.00868	1.55713	4.5656
62	0.039835	15317.40	25.627	10030.45	0.0034719	1.85989	4.8245	0.00868	1.55273	4.3111
64	0.039558	15139.12	25.316	9615.43	0.0035131	1.83907	4.5093	0.00867	1.54831	4.0754
66	0.039280	14958.66	24.999	9211.83	0.0035562	1.81764	4.2172	0.00867	1.54387	3.8571
68	0.038999	14775.94	24.676	8819.41	0.0036013	1.79565	3.9464	0.00867	1.53942	3.6549
70	0.038718	14590.86	24.348	8437.91	0.0036486	1.77314	3.6956	0.00866	1.53496	3.4675
72	0.038434	14403.33	24.014	8067.08	0.0036983	1.75014	3.4631	0.00865	1.53047	3.2940
74	0.038149	14213.23	23.677	7706.68	0.0037505	1.72668	3.2476	0.00865	1.52597	3.1333
76	0.037862	14020.49	23.335	7356.47	0.0038056	1.70281	3.0480	0.00864	1.52144	2.9846
78	0.037573	13824.96	22.989	7016.21	0.0038636	1.67854	2.8629	0.00864	1.51689	2.8471
80	0.037281	13626.55	22.640	6685.66	0.0039249	1.65391	2.6914	0.00863	1.51231	2.7199
82	0.036987	13425.14	22.287	6364.59	0.0039898	1.62894	2.5324	0.00862	1.50771	2.6024
84	0.036691	13220.58	21.932	6052.77	0.0040587	1.60366	2.3851	0.00861	1.50307	2.4940
86	0.036392	13012.77	21.574	5749.97	0.0041319	1.57809	2.2485	0.00861	1.49840	2.3941
88	0.036089	12801.54	21.213	5455.98	0.0042098	1.55224	2.1218	0.00860	1.49369	2.3022
90	0.035784	12586.74	20.851	5170.57	0.0042930	1.52614	2.0044	0.00859	1.48894	2.2178
92	0.035475	12368.19	20.486	4893.53	0.0043819	1.49981	1.8955	0.00858	1.48415	2.1406
94	0.035162	12145.74	20.120	4624.65	0.0044773	1.47325	1.7945	0.00857	1.47931	2.0701
96	0.034845	11919.15	19.752	4363.72	0.0045799	1.44648	1.7008	0.00856	1.47441	2.0059
98	0.034523	11688.25	19.383	4110.52	0.0046905	1.41951	1.6139	0.00855	1.46946	1.9479
100	0.034197	11452.77	19.012	3864.87	0.0048101	1.39234	1.5332	0.00854	1.46444	1.8957
102	0.033865	11212.46	18.648	3626.56	0.0049399	1.36499	1.4583	0.00853	1.45935	1.8492
104	0.033528	10967.04	18.285	3395.48	0.0050812	1.33744	1.3886	0.00852	1.45419	1.8082
106	0.033184	10716.18	17.889	3171.20	0.0052358	1.30970	1.3239	0.00870	1.44893	1.7725
108	0.032832	10459.53	17.518	2953.77	0.0054055	1.28177	1.2637	0.00859	1.44358	1.7420
110	0.032473	10196.67	17.128	2742.94	0.0055927	1.25363	1.2077	0.00868	1.43813	1.7169
112	0.032106	9927.16	16.743	2538.53	0.0058004	1.22527	1.1555	0.00866	1.43256	1.6970
114	0.031728	9650.41	15.353	2340.38	0.0060323	1.19666	1.1068	0.00865	1.42685	1.6826
116	0.031340	9365.84	15.957	2148.31	0.0062927	1.16782	1.0613	0.00863	1.42099	1.6739
118	0.030939	9072.72	15.554	1962.17	0.0065877	1.13866	1.0187	0.00862	1.41497	1.6711
120	0.030524	8770.15	15.142	1781.82	0.0069247	1.10916	0.9788	0.00860	1.40875	1.6749
122	0.030093	8457.15	14.718	1607.13	0.0073139	1.07925	0.9413	0.00858	1.40230	1.6859
124	0.029642	8132.47	14.279	1437.98	0.0077687	1.04887	0.9059	0.00856	1.39559	1.7052
126	0.029170	7794.68	13.828	1274.29	0.0083081	1.01792	0.8723	0.00854	1.38858	1.7343
* 127.251	0.028862	7575.92	13.519	1174.64	0.0087002	0.99821	0.8558	0.00852	1.38401	1.7660
* 127.251	0.001847	2754.32	4.079	10.90	0.0171684	0.15715	0.1224	0.00180	1.02208	1.1511
128	0.001823	2787.58	4.080	11.01	0.0166813	0.15732	0.1226	0.00186	1.02188	1.1327
130	0.001756	2878.94	4.086	11.32	0.0155076	0.15795	0.1233	0.00200	1.02118	1.0891
132	0.001713	2967.40	4.090	11.59	0.0145312	0.15883	0.1248	0.00215	1.02047	1.0523
134	0.001666	3053.47	4.094	11.82	0.0137035	0.15987	0.1248	0.00229	1.01990	1.0210
136	0.001622	3137.51	4.097	12.03	0.0129908	0.16103	0.1257	0.00244	1.01937	0.9941
138	0.001581	3219.82	4.099	12.21	0.0123692	0.16226	0.1266	0.00258	1.01888	0.9709
140	0.001544	3300.62	4.101	12.38	0.0118211	0.16354	0.1275	0.00272	1.01843	0.9506
142	0.001508	3380.10	4.102	12.53	0.0113332	0.16485	0.1285	0.00285	1.01801	0.9329
144	0.001475	3458.41	4.103	12.67	0.0108953	0.16618	0.1295	0.00299	1.01761	0.9173
146	0.001444	3535.67	4.104	12.79	0.0104996	0.16750	0.1305	0.00312	1.01723	0.9036
148	0.001414	3612.00	4.104	12.91	0.0101397	0.16882	0.1315	0.00326	1.01688	0.8915
150	0.001386	3687.47	4.104	13.02	0.0098106	0.17012	0.1325	0.00339	1.01654	0.8807
152	0.001360	3762.16	4.104	13.12	0.0095080	0.17144	0.1336	0.00352	1.01623	0.8711
154	0.001335	3836.15	4.103	13.21	0.0092287	0.17275	0.1347	0.00366	1.01592	0.8625
156	0.001311	3909.47	4.103	13.29	0.0089698	0.17405	0.1358	0.00379	1.01563	0.8548
158	0.001288	3982.19	4.102	13.37	0.0087289	0.17536	0.1369	0.00392	1.01536	0.8478
160	0.001266	4054.35	4.101	13.44	0.0085040	0.17663	0.1380	0.00405	1.01510	0.8416
165	0.001215	4232.52	4.099	13.61	0.0080012	0.17996	0.1408	0.00438	1.01448	0.8278
170	0.001168	4407.91	4.096	13.75	0.0075678	0.18331	0.1436	0.00470	1.01393	0.8166
175	0.001126	4580.91	4.093	13.87	0.0071891	0.18671	0.1464	0.00504	1.01342	0.8072
180	0.001087	4751.82	4.090	13.98	0.0068544	0.19016	0.1493	0.00537	1.01296	0.7993
185	0.001051	4920.93	4.087	14.07	0.0065558	0.19363	0.1522	0.00571	1.01253	0.7924
190	0.001018	5088.44	4.083	14.16	0.0062871	0.19715	0.1551	0.00605	1.01213	0.7865
195	0.000987	5254.54	4.080	14.23	0.0060438	0.20069	0.1580	0.00640	1.01176	0.7812
200	0.000958	5419.42	4.077	14.30	0.0058221	0.20424	0.1609	0.00675	1.01142	0.7766
210	0.000906	5746.06	4.070	14.41	0.0054318	0.21125	0.1666	0.00747	1.01079	0.7693
220	0.000859	6069.41	4.063	14.50	0.0050982	0.21830	0.1723	0.00821	1.01023	0.7634
230	0.000818	6390.34	4.056	14.58	0.0048088	0.22536	0.1780	0.00897	1.00974	0.7586
240	0.000781	6709.60	4.049	14.64	0.0045548	0.23242	0.1836	0.00974	1.00929	0.7547
250	0.000747	7027.86	4.041	14.69	0.0043295	0.23944	0.1892	0.01054	1.00889	0.7514
260	0.000716	7345.70	4.032	14.74	0.0041280	0.24643	0.1947	0.01135	1.00852	0.7487
270	0.000687	7663.63	4.023	14.78	0.0039463	0.25336	0.2001	0.01219	1.00818	0.7465
280	0.000661	7982.09	4.013	14.81	0.0037816	0.26025	0.2055	0.01304	1.00787	0.7448
290	0.000637	8301.49	4.002	14.84	0.0036312	0.26702	0.2106	0.01390	1.00758	0.7436
300	0.000615	8622.17	3.991	14.86	0.0034934	0.27385	0.2160	0.01478	1.00732	0.7425
310	0.000594	8944.42	3.979	14.89	0.0033665	0.28063	0.2212	0.01568	1.00707	0.7416
320	0.000575	9268.50	3.965	14.91	0.0032491	0.28734	0.2263	0.01659	1.00684	0.7411
330	0.000557	9594.62	3.952	14.92	0.0031402	0.29400	0.2313	0.01752	1.00662	0.7409
340	0.000540	9922.95	3.937	14.94	0.0030389	0.30062	0.2363	0.01846	1.00642	0.7408

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

20 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p	VELOCITY OF SOUND M/SEC
* 54.533	24.47	286640	38.95	-6186.2	-6136.6	67.17	35.65	53.19	1163
56	24.58	279965	38.15	-6111.1	-6061.3	68.53	35.35	53.18	1155
58	24.75	270703	37.03	-6005.1	-5954.9	70.40	34.93	53.16	1142
60	24.92	261626	35.93	-5899.1	-5848.6	72.20	34.53	53.16	1129
62	25.09	252731	34.87	-5793.1	-5742.3	73.94	34.13	53.16	1116
64	25.27	244015	33.82	-5687.2	-5636.0	75.63	33.75	53.16	1103
66	25.44	235476	32.80	-5581.2	-5529.6	77.26	33.38	53.17	1090
68	25.63	227110	31.81	-5475.2	-5423.3	78.85	33.03	53.18	1078
70	25.81	218914	30.83	-5369.2	-5316.9	80.39	32.68	53.20	1062
72	26.00	210885	29.88	-5263.1	-5210.4	81.89	32.35	53.23	1048
74	26.20	203020	28.95	-5157.0	-5103.9	83.35	32.02	53.27	1034
76	26.39	195316	28.04	-5050.8	-4997.3	84.77	31.71	53.31	1020
78	26.60	187769	27.16	-4944.5	-4890.6	86.16	31.41	53.37	1005
80	26.80	180376	26.29	-4838.2	-4783.8	87.51	31.12	53.43	990
82	27.02	173135	25.45	-4731.6	-4676.9	88.83	30.83	53.51	975
84	27.23	166042	24.62	-4624.9	-4569.8	90.12	30.56	53.60	960
86	27.46	159094	23.81	-4518.1	-4462.4	91.38	30.29	53.70	945
88	27.68	152287	23.03	-4411.0	-4354.9	92.62	30.03	53.82	930
90	27.92	145619	22.26	-4303.7	-4247.1	93.83	29.78	53.96	914
92	28.16	139086	21.50	-4196.1	-4139.0	95.02	29.54	54.11	898
94	28.41	132685	20.77	-4088.2	-4030.6	96.19	29.30	54.29	882
96	28.67	126412	20.05	-3979.9	-3921.8	97.33	29.07	54.49	866
98	28.93	120265	19.35	-3871.3	-3812.6	98.46	28.84	54.71	850
100	29.20	114239	18.66	-3762.1	-3702.9	99.56	28.63	54.96	833
102	29.49	108331	17.99	-3652.5	-3592.7	100.66	28.41	55.25	817
104	29.78	102539	17.33	-3542.3	-3481.9	101.73	28.21	55.57	800
106	30.09	96857	16.68	-3431.4	-3370.4	102.79	28.00	55.94	783
108	30.41	91284	16.05	-3319.8	-3258.1	103.84	27.80	56.35	765
110	30.74	85815	15.42	-3207.3	-3145.0	104.88	27.61	56.81	748
112	31.09	80446	14.81	-3093.9	-3030.9	105.91	27.42	57.33	730
114	31.45	75174	14.21	-2979.3	-2915.6	106.93	27.24	57.93	712
116	31.84	69995	13.62	-2863.6	-2799.1	107.94	27.06	58.61	693
118	32.24	64906	13.03	-2746.4	-2681.1	108.95	26.89	59.39	674
120	32.67	59901	12.45	-2627.6	-2561.4	109.96	26.72	60.29	654
122	33.13	54979	11.87	-2506.8	-2439.7	110.96	26.56	61.33	634
124	33.62	50134	11.30	-2383.9	-2315.8	111.97	26.41	62.55	613
126	34.15	45364	10.72	-2258.3	-2189.1	112.98	26.27	64.00	592
128	34.73	40666	10.14	-2129.7	-2059.3	114.01	26.15	65.73	569
130	35.36	36002	10.32	-1995.9	-1924.2	115.05	26.60	74.22	570
132	36.05	32376	9.63	-1857.9	-1784.9	116.12	26.48	76.31	544
* 133.031	36.44	29720	8.79	-1785.2	-1711.4	116.67	26.42	72.94	510
* 133.031	397.48	5169	0.267	2136.3	2941.8	151.66	25.87	55.17	187
134	405.25	5395	0.259	2173.1	2994.4	152.05	25.60	53.38	189
136	420.58	5833	0.246	2245.7	3098.0	152.82	25.12	50.35	192
138	435.12	6242	0.234	2314.4	3196.2	153.54	24.71	47.97	196
140	449.03	6625	0.224	2380.2	3290.2	154.21	24.36	46.04	199
142	462.43	6989	0.215	2443.5	3380.6	154.85	24.06	44.45	202
144	475.39	7336	0.207	2504.7	3468.1	155.47	23.80	43.11	205
146	487.99	7669	0.200	2564.3	3553.2	156.05	23.57	41.97	208
148	500.26	7990	0.194	2622.3	3636.1	156.62	23.37	40.98	211
150	512.26	8300	0.188	2679.1	3717.2	157.16	23.18	40.12	213
152	524.01	8600	0.182	2734.7	3796.6	157.69	23.02	39.37	216
154	535.55	8893	0.177	2789.4	3874.7	158.20	22.88	38.70	218
156	546.90	9177	0.173	2843.2	3951.5	158.69	22.74	38.10	221
158	558.06	9455	0.168	2896.2	4027.1	159.18	22.63	37.56	223
160	569.08	9726	0.164	2948.5	4101.8	159.64	22.52	37.08	225
165	596.00	10385	0.155	3076.7	4284.5	160.77	22.29	36.06	231
170	622.21	11015	0.147	3201.9	4462.7	161.83	22.10	35.24	236
175	647.82	11622	0.140	3324.3	4637.1	162.84	21.95	34.57	241
180	672.93	12210	0.134	3444.8	4808.5	163.81	21.82	34.01	245
185	697.63	12782	0.129	3563.6	4977.4	164.74	21.71	33.54	250
190	721.96	13341	0.124	3681.0	5144.0	165.62	21.62	33.13	254
195	745.98	13888	0.119	3797.1	5308.8	166.48	21.54	32.79	259
200	769.73	14424	0.115	3912.1	5472.0	167.31	21.47	32.49	263
210	816.54	15470	0.108	4139.5	5794.3	168.88	21.36	31.99	271
220	862.59	16487	0.101	4364.1	6112.2	170.36	21.28	31.61	278
230	908.02	17480	0.096	4586.5	6426.6	171.76	21.22	31.30	286
240	952.96	18454	0.091	4807.2	6738.4	173.08	21.18	31.06	293
250	997.47	19411	0.086	5026.6	7048.0	174.35	21.15	30.86	299
260	1041.64	20355	0.083	5244.9	7355.8	175.55	21.14	30.71	305
270	1085.51	21287	0.079	5462.4	7662.2	176.71	21.13	30.59	312
280	1129.13	22210	0.076	5679.4	7967.6	177.82	21.14	30.49	319
290	1172.52	23124	0.073	5896.0	8272.1	178.89	21.16	30.42	324
300	1215.73	24030	0.070	6112.4	8576.1	179.92	21.18	30.37	330
310	1258.77	24931	0.068	6328.7	8879.6	180.92	21.22	30.34	336
320	1301.67	25825	0.065	6545.1	9182.9	181.88	21.26	30.32	342
330	1344.44	26714	0.063	6761.7	9486.2	182.81	21.31	30.32	347
340	1387.09	27599	0.061	6978.5	9789.4	183.72	21.36	30.33	352

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

25 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	$V(\partial H/\partial V)_P$ J/GMOLE	$V(\partial P/\partial U)_V$ CC-ATM/J	$-V(\partial P/\partial V)_T$ ATM	$(\partial V/\partial T)_P/V$ 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S x 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 54.583	0.040871	15996.16	25.726	11715.11	0.0033249	1.93243	5.2553	0.00089	1.56930	5.3804
56	0.040678	15875.68	25.524	11388.34	0.0033495	1.91967	5.2550	0.00089	1.56620	5.1551
58	0.040405	15704.55	25.234	10937.66	0.0033853	1.90099	5.2577	0.00088	1.56163	4.8674
60	0.040131	15531.34	25.936	10499.13	0.0034226	1.88159	5.1894	0.00088	1.55704	4.5817
62	0.039855	15356.17	25.631	10072.66	0.0034615	1.86150	4.8482	0.00088	1.55234	4.3264
64	0.039579	15178.96	25.320	9657.82	0.0035021	1.84077	4.5319	0.00087	1.54863	4.0900
66	0.039301	14999.63	25.003	9254.41	0.0035446	1.81944	4.2386	0.00087	1.54461	3.8709
68	0.039021	14818.07	24.680	8862.17	0.0035890	1.79755	3.9671	0.00087	1.53977	3.6679
70	0.038741	14634.19	24.353	8480.86	0.0036355	1.77513	3.7153	0.00086	1.53532	3.4799
72	0.038458	14447.92	24.020	8110.23	0.0036843	1.75224	3.4820	0.00086	1.53085	3.3057
74	0.038174	14259.12	23.683	7750.04	0.0037357	1.72889	3.2657	0.00085	1.52636	3.1444
76	0.037888	14067.75	23.341	7400.04	0.0037897	1.70512	3.0653	0.00084	1.52184	2.9951
78	0.037599	13873.63	22.996	7059.99	0.0038467	1.68097	2.8795	0.00084	1.51731	2.8569
80	0.037309	13676.71	22.648	6729.66	0.0039068	1.65645	2.7073	0.00083	1.51275	2.7292
82	0.037016	13476.85	22.296	6408.82	0.0039705	1.63160	2.5477	0.00082	1.50816	2.6111
84	0.036721	13273.92	21.942	6097.24	0.0040379	1.60644	2.3997	0.00082	1.50354	2.5021
86	0.036423	13067.82	21.585	5794.70	0.0041095	1.58099	2.2625	0.00081	1.49889	2.4017
88	0.036122	12858.37	21.226	5500.96	0.0041857	1.55527	2.1353	0.00080	1.49421	2.3092
90	0.035818	12645.45	20.864	5215.82	0.0042669	1.52930	2.0173	0.00079	1.48948	2.2243
92	0.035511	12428.86	20.502	4939.05	0.0043537	1.50311	1.9079	0.00078	1.48471	2.1465
94	0.035200	12208.52	20.137	4670.47	0.0044467	1.47669	1.8065	0.00077	1.47989	2.0754
96	0.034885	11984.15	19.772	4409.84	0.0045465	1.45007	1.7123	0.00076	1.47503	2.0107
98	0.034565	11755.59	19.405	4156.97	0.0046540	1.42326	1.6250	0.00075	1.47010	1.9521
100	0.034241	11522.62	19.036	3911.66	0.0047701	1.39625	1.5439	0.00074	1.46512	1.8993
102	0.033912	11284.97	18.667	3673.79	0.0048959	1.36907	1.4685	0.00073	1.46006	1.8521
104	0.033577	11042.41	18.296	3442.92	0.0050326	1.34170	1.3980	0.00072	1.45494	1.8103
106	0.033236	10794.64	17.923	3219.12	0.0051818	1.31416	1.3335	0.00071	1.44973	1.7738
108	0.032888	10541.32	17.548	3002.12	0.0053452	1.28643	1.2731	0.00069	1.44442	1.7426
110	0.032532	10282.09	17.171	2791.74	0.0055250	1.25852	1.2166	0.00068	1.43902	1.7164
112	0.032168	10016.54	16.791	2587.82	0.0057240	1.23040	1.1643	0.00067	1.43351	1.6955
114	0.031795	9744.15	16.407	2390.19	0.0059452	1.20206	1.1154	0.00065	1.42786	1.6799
116	0.031412	9464.42	16.019	2198.68	0.0061928	1.17349	1.0697	0.00064	1.42208	1.6697
118	0.031017	9176.71	15.624	2013.16	0.0064720	1.14465	1.0270	0.00062	1.41614	1.6653
120	0.030608	8880.24	15.221	1833.48	0.0067892	1.11550	0.9869	0.00060	1.41001	1.6670
122	0.030185	8574.20	14.808	1659.53	0.0071531	1.08599	0.9493	0.00059	1.40368	1.6755
124	0.029744	8257.54	14.382	1491.18	0.0075752	1.05607	0.9139	0.00057	1.39710	1.6916
126	0.029282	7929.14	13.935	1328.38	0.0080711	1.02564	0.8803	0.00055	1.39025	1.7166
128	0.028797	7587.64	13.471	1171.08	0.0086627	0.99461	0.8529	0.00053	1.38306	1.7614
130	0.028283	7488.90	13.713	1040.86	0.0099112	0.96282	0.8271	0.00046	1.37547	1.9927
132	0.027737	7114.11	13.113	898.01	0.0107272	0.93032	0.8005	0.00044	1.36744	2.0523
* 133.031	0.027443	6768.75	12.121	815.61	0.0107754	0.91335	0.7860	0.00046	1.36313	1.9630
* 133.031	0.002516	2690.26	4.098	13.00	0.0205066	0.18291	0.1360	0.00132	1.03016	1.2872
134	0.002468	2741.07	4.104	13.31	0.0194741	0.18211	0.1366	0.00138	1.02957	1.2511
136	0.002378	2841.95	4.114	13.87	0.0177166	0.18107	0.1368	0.00151	1.02849	1.1884
138	0.002298	2938.47	4.123	14.34	0.0163236	0.18065	0.1371	0.00164	1.02752	1.1375
140	0.002227	3031.53	4.130	14.75	0.0151868	0.18064	0.1375	0.00176	1.02666	1.0954
142	0.002163	3121.78	4.135	15.11	0.0142376	0.18090	0.1381	0.00188	1.02589	1.0601
144	0.002104	3209.67	4.140	15.43	0.0134305	0.18135	0.1387	0.00200	1.02517	1.0301
146	0.002049	3295.56	4.143	15.72	0.0127339	0.18194	0.1394	0.00212	1.02452	1.0045
148	0.001999	3379.74	4.146	15.97	0.0121251	0.18261	0.1401	0.00223	1.02391	0.9824
150	0.001952	3462.43	4.148	16.20	0.0115874	0.18334	0.1409	0.00234	1.02335	0.9632
152	0.001908	3543.80	4.150	16.41	0.0111082	0.18414	0.1417	0.00245	1.02282	0.9464
154	0.001867	3623.99	4.151	16.60	0.0106777	0.18500	0.1425	0.00256	1.02232	0.9315
156	0.001829	3703.14	4.151	16.78	0.0102883	0.18588	0.1434	0.00267	1.02186	0.9184
158	0.001792	3781.33	4.151	16.94	0.0099339	0.18680	0.1443	0.00278	1.02142	0.9067
160	0.001757	3858.65	4.151	17.09	0.0096096	0.18770	0.1452	0.00288	1.02100	0.8964
165	0.001678	4048.62	4.150	17.42	0.0089060	0.19026	0.1476	0.00314	1.02004	0.8741
170	0.001607	4234.51	4.147	17.70	0.0083214	0.19296	0.1501	0.00341	1.01920	0.8564
175	0.001544	4416.97	4.144	17.94	0.0078257	0.19580	0.1526	0.00367	1.01843	0.8419
180	0.001486	4596.50	4.140	18.14	0.0073986	0.19876	0.1552	0.00393	1.01774	0.8299
185	0.001433	4773.48	4.136	18.32	0.0070256	0.20182	0.1578	0.00420	1.01711	0.8197
190	0.001385	4948.25	4.132	18.48	0.0066962	0.20496	0.1605	0.00447	1.01653	0.8109
195	0.001341	5121.07	4.128	18.62	0.0064025	0.20817	0.1632	0.00474	1.01599	0.8033
200	0.001299	5292.16	4.124	18.74	0.0061387	0.21143	0.1659	0.00501	1.01550	0.7967
210	0.001225	5629.96	4.115	18.95	0.0056824	0.21787	0.1713	0.00556	1.01460	0.7863
220	0.001159	5963.62	4.106	19.11	0.0053003	0.22446	0.1768	0.00613	1.01382	0.7780
230	0.001101	6292.46	4.097	19.25	0.0049742	0.23113	0.1822	0.00671	1.01313	0.7712
240	0.001049	6619.22	4.088	19.36	0.0046919	0.23784	0.1876	0.00730	1.01250	0.7657
250	0.001003	6944.12	4.079	19.46	0.0044444	0.24456	0.1930	0.00791	1.01194	0.7612
260	0.000960	7267.88	4.069	19.54	0.0042251	0.25129	0.1983	0.00852	1.01144	0.7574
270	0.000921	7591.10	4.059	19.61	0.0040291	0.25799	0.2036	0.00916	1.01097	0.7544
280	0.000886	7914.34	4.048	19.67	0.0038527	0.26466	0.2088	0.00980	1.01055	0.7519
290	0.000853	8238.07	4.036	19.72	0.0036925	0.27122	0.2140	0.01045	1.01016	0.7501
300	0.000823	8562.70	4.024	19.77	0.0035469	0.27790	0.2191	0.01112	1.00979	0.7493
310	0.000794	8888.58	4.011	19.81	0.0034133	0.28453	0.2242	0.01181	1.00946	0.7489
320	0.000768	9216.01	3.997	19.84	0.0032903	0.29112	0.2292	0.01250	1.00914	0.7490
330	0.000744	9545.24	3.983	19.87	0.0031766	0.29766	0.2341	0.01320	1.00885	0.7493
340	0.000721	9876.47	3.967	19.90	0.0030711	0.30416	0.2390	0.01391	1.00858	0.7499

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

25 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p	VELOCITY OF SOUND M/SEC
* 54.641	24.46	287258	38.96	-6185.5	-6123.4	67.18	35.66	53.17	1164
56	24.57	280866	36.18	-6113.4	-6051.1	68.49	35.37	53.16	1155
58	24.74	271613	37.07	-6007.5	-5944.6	70.35	34.95	53.14	1144
60	24.91	262547	35.98	-5901.7	-5838.6	72.15	34.54	53.13	1131
62	25.08	253663	34.91	-5795.8	-5732.3	73.90	34.15	53.13	1116
64	25.25	244956	33.87	-5690.1	-5626.2	75.58	33.77	53.13	1105
66	25.43	236430	32.85	-5584.2	-5519.8	77.22	33.40	53.14	1091
68	25.61	228075	31.85	-5478.3	-5413.5	78.81	33.05	53.15	1078
70	25.80	219892	30.88	-5372.5	-5307.1	80.35	32.70	53.17	1064
72	25.99	211875	29.93	-5266.8	-5200.8	81.84	32.37	53.19	1050
74	26.18	204022	29.00	-5160.8	-5094.3	83.30	32.05	53.23	1036
76	26.38	196331	28.09	-5054.8	-4987.8	84.72	31.74	53.27	1022
78	26.58	188797	27.21	-4948.5	-4881.2	86.11	31.43	53.32	1007
80	26.78	181419	26.34	-4842.3	-4774.5	87.46	31.14	53.38	992
82	26.99	174192	25.50	-4736.0	-4667.6	88.78	30.86	53.46	977
84	27.21	167113	24.67	-4629.6	-4560.6	90.07	30.58	53.54	962
86	27.43	160181	23.87	-4522.9	-4453.4	91.33	30.32	53.64	947
88	27.66	153390	23.08	-4416.1	-4346.0	92.56	30.05	53.75	932
90	27.89	146738	22.31	-4309.3	-4238.4	93.77	29.81	53.88	916
92	28.13	140223	21.56	-4201.7	-4130.5	94.96	29.57	54.03	901
94	28.38	133839	20.83	-4094.1	-4022.2	96.12	29.33	54.20	885
96	28.63	127585	20.11	-3986.2	-3913.6	97.26	29.10	54.39	869
98	28.90	121458	19.41	-3877.3	-3804.6	98.39	28.88	54.60	853
100	29.17	115452	18.73	-3769.1	-3695.6	99.49	28.66	54.84	836
102	29.45	109567	18.06	-3659.8	-3585.2	100.58	28.45	55.12	820
104	29.74	103797	17.40	-3550.3	-3474.7	101.66	28.24	55.42	803
106	30.04	98140	16.76	-3439.6	-3363.5	102.72	28.04	55.77	785
108	30.36	92592	16.13	-3328.5	-3251.6	103.76	27.84	56.16	769
110	30.68	87150	15.51	-3216.6	-3138.8	104.80	27.64	56.60	752
112	31.03	81811	14.90	-3103.7	-3025.1	105.82	27.45	57.10	734
114	31.39	76570	14.30	-2989.9	-2910.4	106.84	27.27	57.66	716
116	31.75	71425	13.71	-2874.9	-2794.4	107.84	27.09	58.30	698
118	32.16	66372	13.13	-2758.6	-2677.1	108.85	26.91	59.03	679
120	32.58	61407	12.55	-2640.7	-2558.2	109.85	26.74	59.87	660
122	33.03	56528	11.98	-2521.1	-2437.4	110.85	26.58	60.84	640
124	33.51	51730	11.42	-2399.4	-2314.5	111.84	26.42	61.97	620
126	34.02	47012	10.85	-2275.4	-2189.2	112.85	26.28	63.30	599
128	34.58	42372	10.29	-2148.5	-2060.9	113.86	26.15	64.87	577
130	35.19	38408	10.36	-2016.6	-1927.5	114.89	26.01	69.57	564
132	35.86	34042	9.52	-1881.3	-1790.4	115.94	26.49	72.24	542
134	36.60	29370	8.75	-1741.4	-1648.6	117.00	26.37	73.73	510
136	37.44	25395	8.07	-1594.3	-1500.0	118.10	26.29	76.45	481
* 137.843	38.33	21044	7.48	-1452.0	-1356.9	119.16	26.30	80.87	453
* 137.849	307.82	4401	0.359	2086.3	2866.1	149.79	26.87	65.71	185
138	308.99	4445	0.357	2093.3	2876.0	149.86	26.81	65.18	185
140	323.64	4907	0.334	2180.4	3000.2	150.76	26.13	59.36	189
142	337.17	5478	0.315	2260.4	3114.5	151.57	25.57	55.17	193
144	349.85	5930	0.299	2335.3	3221.5	152.32	25.10	51.99	197
146	361.88	6351	0.285	2406.2	3322.9	153.02	24.71	49.48	201
148	373.39	6748	0.273	2473.3	3419.8	153.68	24.39	47.45	204
150	384.46	7124	0.262	2539.0	3512.9	154.30	24.08	45.77	207
152	395.17	7484	0.253	2602.3	3603.0	154.90	23.83	44.35	210
154	405.57	7829	0.244	2663.1	3690.5	155.47	23.60	43.14	213
156	415.70	8162	0.236	2722.6	3775.7	156.02	23.41	42.09	216
158	425.59	8483	0.229	2780.8	3858.9	156.55	23.23	41.18	218
160	435.28	8795	0.223	2837.8	3940.4	157.06	23.07	40.37	221
165	458.73	9539	0.208	2976.1	4138.0	158.28	22.74	38.73	227
170	481.28	10242	0.196	3109.2	4328.3	159.41	22.48	37.46	232
175	503.13	10911	0.186	3238.5	4513.0	160.49	22.27	36.45	236
180	524.40	11554	0.177	3364.8	4693.2	161.50	22.09	35.64	243
185	545.20	12174	0.169	3488.6	4869.6	162.47	21.95	34.96	249
190	565.59	12776	0.161	3610.3	5043.0	163.39	21.83	34.39	252
195	585.63	13361	0.155	3730.2	5213.7	164.28	21.73	33.91	257
200	605.38	13932	0.149	3848.7	5382.2	165.13	21.64	33.50	261
210	644.13	15040	0.139	4082.8	5713.6	166.75	21.50	32.82	270
220	682.08	16104	0.130	4311.4	6039.2	168.26	21.39	32.30	278
230	719.37	17147	0.123	4537.8	6360.1	169.69	21.32	31.90	285
240	756.14	18160	0.116	4761.9	6677.3	171.04	21.26	31.57	292
250	792.48	19156	0.110	4984.3	6991.7	172.32	21.22	31.31	298
260	828.46	20127	0.105	5205.1	7303.7	173.55	21.19	31.10	305
270	864.14	21087	0.100	5424.9	7613.9	174.72	21.18	30.94	312
280	899.55	22035	0.096	5643.9	7922.6	175.84	21.18	30.80	319
290	934.75	22972	0.092	5862.2	8230.1	176.92	21.19	30.70	325
300	969.75	23900	0.089	6080.2	8536.7	177.96	21.21	30.62	331
310	1004.59	24819	0.085	6297.9	8842.6	178.96	21.24	30.57	336
320	1039.27	25732	0.082	6515.5	9148.1	179.93	21.27	30.53	342
330	1073.83	26638	0.080	6733.2	9453.3	180.87	21.32	30.51	347
340	1108.28	27539	0.077	6951.0	9758.4	181.78	21.37	30.51	353

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

25 ATM ISOBAR

	TEMPERATURE	DENSITY	$V(\partial H/\partial V)_p$	$V(\partial P/\partial U)_v$	$-V(\partial P/\partial V)_T$	$(\partial V/\partial T)_P/V$	THERMAL CONDUCTIVITY	VISCOSITY	THERMAL DIFFUSIVITY	DIELECTRIC CONSTANT	PRANDTL NUMBER
	KELVIN	GMOLE/CC	J/GMOLE	CC-ATM/J	ATM	1/KELVIN	MW/CM-K	G/CM-S x 10^3	SQ CM/SEC		
*	54.641	0.040881	16026.34	25.721	11743.14	0.0033175	1.93317	6.2707	0.00049	1.56945	5.3896
	56	0.040696	15911.53	25.523	11429.96	0.0033407	1.92098	5.9822	0.00049	1.56649	5.1731
	58	0.040423	15741.21	25.237	10979.46	0.0033761	1.90240	5.5836	0.00049	1.56212	4.8745
	60	0.040150	15569.00	25.939	10541.16	0.0034129	1.88309	5.2142	0.00048	1.55774	4.5979
	62	0.039875	15394.86	25.635	10114.60	0.0034512	1.86309	4.8716	0.00048	1.55336	4.3418
	64	0.039599	15218.72	25.324	9700.14	0.0034912	1.84246	4.5545	0.00048	1.54896	4.1045
	66	0.039322	15040.49	25.007	9296.91	0.0035330	1.82122	4.2604	0.00047	1.54455	3.8847
	68	0.039043	14860.08	24.685	8904.86	0.0035767	1.79943	3.9873	0.00047	1.54012	3.6810
	70	0.038763	14677.40	24.358	8523.74	0.0036225	1.77712	3.7351	0.00046	1.53568	3.4923
	72	0.038482	14492.37	24.025	8153.30	0.0036705	1.75433	3.5009	0.00046	1.53122	3.3175
	74	0.038198	14304.87	23.689	7793.31	0.0037210	1.73108	3.2838	0.00045	1.52674	3.1555
	76	0.037913	14114.85	23.348	7443.51	0.0037741	1.70742	3.0826	0.00045	1.52225	3.0056
	78	0.037626	13922.14	23.003	7103.67	0.0038300	1.68338	2.8961	0.00044	1.51773	2.8668
	80	0.037337	13726.69	22.656	6773.56	0.0038890	1.65897	2.7232	0.00043	1.51318	2.7385
	82	0.037045	13528.36	22.305	6452.95	0.0039514	1.63424	2.5629	0.00043	1.50861	2.6199
	84	0.036751	13327.03	21.951	6141.60	0.0040174	1.60919	2.4143	0.00042	1.50401	2.5103
	86	0.036454	13122.61	21.596	5839.29	0.0040875	1.58387	2.2765	0.00041	1.49938	2.4093
	88	0.036155	12914.92	21.238	5545.81	0.0041620	1.55828	2.1488	0.00040	1.49472	2.3163
	90	0.035852	12703.85	20.878	5260.93	0.0042413	1.53244	2.0303	0.00039	1.49001	2.2309
	92	0.035547	12489.23	20.517	4984.44	0.0043260	1.50638	1.9204	0.00038	1.48527	2.1525
	94	0.035237	12270.92	20.154	4716.13	0.0044167	1.48011	1.8184	0.00038	1.48048	2.0809
	96	0.034924	12048.72	19.790	4455.80	0.0045139	1.45363	1.7238	0.00037	1.47564	2.0156
	98	0.034607	11822.46	19.426	4203.23	0.0046184	1.42697	1.6360	0.00036	1.47074	1.9563
	100	0.034285	11591.92	19.060	3958.24	0.0047311	1.40013	1.5545	0.00034	1.46579	1.9029
	102	0.033958	11356.88	18.693	3720.63	0.0048530	1.37311	1.4789	0.00033	1.46077	1.8551
	104	0.033625	11117.10	18.325	3490.20	0.0049853	1.34592	1.4085	0.00032	1.45568	1.8126
	106	0.033287	10872.31	17.956	3266.78	0.0051294	1.31857	1.3432	0.00031	1.45051	1.7754
	108	0.032942	10622.22	17.585	3050.18	0.0052869	1.29104	1.2824	0.00030	1.44525	1.7433
	110	0.032590	10366.47	17.213	2840.24	0.0054598	1.26334	1.2258	0.00028	1.43990	1.7162
	112	0.032230	10104.72	16.838	2636.77	0.0056505	1.23545	1.1731	0.00027	1.43444	1.6943
	114	0.031861	9836.50	16.460	2439.63	0.0058619	1.20737	1.1240	0.00026	1.42886	1.6775
	116	0.031483	9561.36	16.078	2248.65	0.0060977	1.17907	1.0781	0.00024	1.42315	1.6660
	118	0.031093	9278.77	15.691	2063.70	0.0063623	1.15052	1.0352	0.00023	1.41728	1.6610
	120	0.030691	8988.03	15.297	1884.63	0.0066615	1.12171	0.9950	0.00021	1.41125	1.6598
	122	0.030275	8688.48	14.895	1711.34	0.0070028	1.09258	0.9573	0.00019	1.40502	1.6660
	124	0.029842	8379.25	14.481	1543.73	0.0073958	1.06308	0.9218	0.00017	1.39857	1.6793
	126	0.029391	8059.45	14.052	1381.72	0.0078537	1.03314	0.8882	0.00016	1.39185	1.7007
	128	0.028918	7728.06	13.602	1225.28	0.0083942	1.00268	0.8594	0.00013	1.38484	1.7376
	130	0.028416	7549.93	13.298	1091.38	0.0092145	0.97141	0.8341	0.00049	1.37743	1.8668
	132	0.027887	7206.54	12.884	949.35	0.0100245	0.93966	0.8082	0.00047	1.36965	1.9419
	134	0.027324	6765.34	12.138	802.50	0.0108977	0.90713	0.7814	0.00045	1.36139	1.9848
	136	0.026711	6347.73	11.496	670.31	0.0120435	0.87319	0.7532	0.00043	1.35244	2.0607
*	137.849	0.026086	5935.09	10.904	548.96	0.0136261	0.84016	0.7253	0.00041	1.34336	2.1818
*	137.849	0.003249	2613.98	4.118	14.33	0.0251386	0.21213	0.1503	0.00099	1.03906	1.4603
	138	0.003236	2623.11	4.119	14.33	0.0248466	0.21167	0.1508	0.00100	1.03891	1.4510
	140	0.003090	2738.68	4.137	15.41	0.0216736	0.20691	0.1501	0.00113	1.03712	1.3460
	142	0.002966	2846.71	4.152	16.25	0.0193794	0.20393	0.1498	0.00125	1.03562	1.2665
	144	0.002858	2949.18	4.164	16.95	0.0176274	0.20202	0.1497	0.00136	1.03431	1.2039
	146	0.002763	3047.37	4.173	17.55	0.0162367	0.20081	0.1498	0.00147	1.03316	1.1534
	148	0.002678	3142.15	4.180	18.07	0.0151004	0.20005	0.1500	0.00157	1.03212	1.1119
	150	0.002601	3234.13	4.186	18.53	0.0141508	0.19961	0.1503	0.00168	1.03119	1.0772
	152	0.002531	3323.77	4.191	18.94	0.0133429	0.19944	0.1506	0.00178	1.03034	1.0477
	154	0.002466	3411.43	4.194	19.30	0.0126452	0.19948	0.1513	0.00188	1.02955	1.0223
	156	0.002406	3497.37	4.197	19.63	0.0120353	0.19962	0.1518	0.00197	1.02882	1.0005
	158	0.002350	3581.81	4.199	19.93	0.0114964	0.19991	0.1524	0.00207	1.02815	0.9813
	160	0.002297	3664.92	4.200	20.21	0.0110161	0.20024	0.1531	0.00216	1.02751	0.9648
	165	0.002180	3867.79	4.200	20.80	0.0100126	0.20166	0.1549	0.00239	1.02610	0.9299
	170	0.002078	4064.79	4.199	21.28	0.0092152	0.20344	0.1570	0.00261	1.02486	0.9032
	175	0.001988	4257.05	4.196	21.69	0.0085627	0.20554	0.1591	0.00284	1.02377	0.8819
	180	0.001917	4445.34	4.192	22.03	0.0080162	0.20789	0.1614	0.00306	1.02280	0.8646
	185	0.001834	4630.37	4.187	22.33	0.0075501	0.21043	0.1637	0.00328	1.02193	0.8501
	190	0.001768	4812.49	4.182	22.59	0.0071466	0.21312	0.1662	0.00350	1.02113	0.8379
	195	0.001708	4991.93	4.177	22.81	0.0067930	0.21594	0.1686	0.00373	1.02040	0.8275
	200	0.001652	5169.27	4.172	23.01	0.0064798	0.21885	0.1711	0.00396	1.01973	0.8184
	210	0.001552	5518.15	4.161	23.35	0.0059481	0.22466	0.1762	0.00441	1.01854	0.8044
	220	0.001466	5860.79	4.150	23.62	0.0055118	0.23073	0.1813	0.00487	1.01750	0.7933
	230	0.001390	6198.57	4.139	23.84	0.0051456	0.23697	0.1865	0.00534	1.01659	0.7845
	240	0.001323	6532.65	4.129	24.02	0.0048327	0.24332	0.1917	0.00583	1.01578	0.7772
	250	0.001262	6864.07	4.118	24.17	0.0045615	0.24973	0.1969	0.00632	1.01505	0.7713
	260	0.001207	7193.46	4.107	24.29	0.0043236	0.25617	0.2021	0.00682	1.01439	0.7664
	270	0.001157	7521.76	4.095	24.40	0.0041127	0.26263	0.2071	0.00734	1.01380	0.7624
	280	0.001112	7849.55	4.083	24.50	0.0039242	0.26908	0.2122	0.00786	1.01325	0.7591
	290	0.001070	8177.38	4.071	24.58	0.0037544	0.27541	0.2172	0.00839	1.01275	0.7567
	300	0.001031	8505.73	4.058	24.65	0.0036004	0.28194	0.2222	0.00893	1.01229	0.7543
	310	0.000995	8835.00	4.044	24.71	0.0034600	0.28843	0.2271	0.00948	1.01186	0.7523
	320	0.000962	9165.55	4.029	24.76	0.0033313	0.29485	0.2320	0.01004	1.01146	0.7509
	330	0.000931	9497.66	4.014	24.81	0.0032127	0.30130	0.2369	0.01060	1.01109	0.7498
	340	0.000902	9831.59	3.998	24.85	0.0031031	0.30768	0.2417	0.01118	1.01075	0.7491

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

30 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p	VELOCITY OF SOUND M/SEC
* 54.673	24.46	267876	38.96	-6134.5	-6110.1	67.20	35.67	53.15	1165
56	24.56	261764	38.22	-6115.7	-6141.0	68.45	35.39	53.14	1157
58	24.73	272522	37.11	-6009.9	-5934.8	70.31	34.97	53.12	1145
60	24.90	263466	36.02	-5904.2	-5828.5	72.11	34.56	53.11	1132
62	25.07	254592	34.95	-5798.5	-5722.3	73.85	34.17	53.11	1119
64	25.24	245899	33.91	-5692.8	-5616.1	75.54	33.79	53.11	1106
66	25.42	237382	32.89	-5587.1	-5509.9	77.17	33.42	53.11	1093
68	25.60	229039	31.89	-5481.4	-5403.6	78.76	33.07	53.12	1079
70	25.78	220866	30.92	-5375.7	-5297.4	80.30	32.72	53.14	1066
72	25.97	212862	29.97	-5270.0	-5191.1	81.80	32.39	53.16	1052
74	26.16	205021	29.05	-5164.2	-5084.7	83.25	32.07	53.19	1038
76	26.36	197343	28.14	-5058.4	-4978.3	84.67	31.76	53.23	1023
78	26.56	189822	27.26	-4952.5	-4871.8	86.06	31.46	53.28	1009
80	26.76	182457	26.39	-4846.5	-4765.1	87.41	31.17	53.33	994
82	26.97	175245	25.55	-4740.4	-4658.4	88.72	30.89	53.40	980
84	27.19	168181	24.73	-4634.1	-4551.5	90.01	30.61	53.48	965
86	27.41	161263	23.92	-4527.7	-4444.4	91.27	30.35	53.58	949
88	27.63	154486	23.14	-4421.1	-4337.1	92.50	30.09	53.68	934
90	27.87	147853	22.37	-4314.3	-4229.6	93.71	29.84	53.81	919
92	28.10	141354	21.62	-4207.3	-4121.9	94.90	29.60	53.95	903
94	28.35	134988	20.89	-4100.0	-4013.8	96.06	29.36	54.11	888
96	28.60	128752	20.18	-3992.3	-3905.4	97.20	29.13	54.29	872
98	28.86	122644	19.48	-3884.3	-3796.6	98.32	28.91	54.49	856
100	29.13	116659	18.79	-3775.9	-3687.4	99.42	28.69	54.72	839
102	29.41	110794	18.13	-3667.1	-3577.7	100.51	28.48	54.98	823
104	29.70	105047	17.47	-3557.7	-3467.4	101.58	28.27	55.28	806
106	30.00	99413	16.83	-3447.7	-3356.5	102.64	28.07	55.61	790
108	30.31	93890	16.20	-3337.1	-3244.9	103.68	27.87	55.98	773
110	30.63	88475	15.59	-3225.7	-3132.6	104.71	27.67	56.40	755
112	30.97	83163	14.98	-3113.5	-3019.3	105.73	27.48	56.87	738
114	31.32	77953	14.39	-3000.3	-2905.1	106.74	27.30	57.40	720
116	31.69	72839	13.81	-2886.0	-2789.6	107.75	27.12	58.01	702
118	32.08	67821	13.23	-2770.5	-2672.9	108.75	26.94	58.70	684
120	32.50	62893	12.66	-2653.5	-2554.7	109.74	26.76	59.48	665
122	32.94	58054	12.09	-2535.0	-2434.8	110.73	26.60	60.39	646
124	33.40	53300	11.53	-2414.5	-2313.0	111.72	26.43	61.43	625
126	33.90	48630	10.98	-2291.8	-2188.8	112.71	26.28	62.65	606
128	34.44	44043	10.42	-2166.6	-2061.9	113.71	26.15	64.09	585
130	35.03	39994	10.11	-2036.6	-1930.1	114.73	26.63	67.91	568
132	35.68	35683	9.56	-1903.5	-1795.1	115.76	26.49	70.13	547
134	36.38	31259	8.88	-1766.8	-1656.2	116.81	26.37	71.67	519
136	37.17	27040	8.26	-1624.1	-1511.1	117.88	26.28	74.37	492
138	38.07	22809	7.58	-1474.8	-1359.1	118.99	26.25	77.36	461
140	39.13	18555	6.84	-1316.3	-1197.4	120.16	26.33	81.11	425
142	40.42	14245	5.22	-1144.2	-1121.3	121.40	26.51	71.46	349
* 142.011	40.44	14436	6.43	-1142.1	-1019.2	121.42	26.52	94.01	403
* 142.011	245.60	3595	0.470	2011.0	2757.6	148.02	27.90	81.24	182
144	260.19	4254	0.432	2116.4	2907.4	149.07	26.99	70.33	187
146	273.25	4831	0.403	2209.9	3040.6	149.99	26.28	63.32	192
148	285.21	5350	0.379	2295.1	3162.6	150.81	25.70	58.39	196
150	296.36	5826	0.359	2374.1	3274.9	151.57	25.23	54.71	200
152	306.89	6269	0.342	2448.5	3381.4	152.28	24.83	51.84	204
154	316.93	6686	0.327	2519.3	3482.7	152.94	24.48	49.54	207
156	326.56	7081	0.314	2587.2	3579.8	153.57	24.19	47.64	210
158	335.86	7457	0.302	2652.6	3673.5	154.16	23.93	46.05	213
160	344.86	7818	0.292	2715.9	3764.2	154.73	23.70	44.70	216
165	366.37	8666	0.270	2867.1	3980.7	156.07	23.24	42.06	223
170	386.73	9452	0.252	3010.4	4186.0	157.29	22.88	40.13	229
175	406.24	10191	0.236	3147.9	4382.8	158.43	22.60	38.65	235
180	425.07	10893	0.224	3280.9	4573.0	159.51	22.38	37.49	240
185	443.35	11565	0.212	3410.4	4758.1	160.52	22.20	36.56	246
190	461.18	12212	0.202	3537.0	4938.9	161.48	22.05	35.78	251
195	478.63	12837	0.194	3661.2	5116.1	162.40	21.92	35.14	255
200	495.75	13445	0.186	3783.5	5290.4	163.29	21.81	34.59	260
210	529.16	14616	0.172	4023.1	5631.7	164.95	21.64	33.71	269
220	561.75	15738	0.161	4257.7	5965.3	166.50	21.51	33.04	277
230	593.64	16821	0.151	4488.4	6292.9	167.96	21.41	32.52	284
240	624.99	17874	0.142	4716.1	6615.9	169.34	21.34	32.10	292
250	655.88	18901	0.135	4941.5	6935.2	170.64	21.28	31.77	299
260	686.41	19907	0.128	5165.1	7251.6	171.88	21.24	31.51	306
270	716.62	20895	0.122	5387.2	7565.5	173.06	21.22	31.29	312
280	746.58	21867	0.117	5608.2	7877.6	174.20	21.21	31.12	319
290	776.30	22827	0.112	5828.3	8188.1	175.29	21.22	30.98	325
300	805.83	23776	0.108	6047.8	8497.4	176.34	21.23	30.88	331
310	835.20	24715	0.104	6267.0	8805.7	177.35	21.26	30.80	337
320	864.41	25645	0.100	6485.8	9113.4	178.33	21.29	30.74	342
330	893.50	26568	0.097	6704.7	9420.7	179.27	21.33	30.71	348
340	922.47	27484	0.093	6923.5	9727.6	180.19	21.38	30.68	353

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

30 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	V(DH/DV)$_p$ J/GMOLE	V(DP/DU)$_v$ CC-ATM/J	-V(DP/DV)$_T$ ATM	(DV/DT)$_P$/V 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S x 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 54.643	0.040890	16256.5	25.716	11771.14	0.0033100	1.93391	6.2861	0.00089	1.56901	5.3908
56	0.040713	15947.24	25.631	11471.57	0.0033320	1.92229	6.0094	0.00089	1.56678	5.1912
58	0.040442	15777.81	25.241	11021.22	0.0033669	1.90380	5.6096	0.00089	1.56242	4.8916
60	0.040169	15646.58	25.943	10583.67	0.0034032	1.88458	5.239.	0.00088	1.55805	4.6142
62	0.039895	15433.46	25.639	10156.89	0.0034413	1.86468	4.8856	0.00086	1.55367	4.3572
64	0.039620	15268.39	25.326	9742.39	0.0034804	1.84414	4.5772	0.00088	1.54928	4.1192
66	0.039343	15081.25	25.012	9339.34	0.0035216	1.82300	4.2821	0.00087	1.54488	3.8986
68	0.039065	14901.93	24.690	8947.47	0.0035646	1.80131	4.0085	0.00087	1.54047	3.6942
70	0.038786	14720.49	24.363	8566.53	0.0036097	1.77910	3.7554	0.00086	1.53604	3.5048
72	0.038505	14536.71	24.031	8196.29	0.0036569	1.75640	3.5194	0.00086	1.53159	3.3293
74	0.038223	14350.48	23.695	7836.49	0.0037065	1.73327	3.3020	0.00085	1.52713	3.1667
76	0.037939	14161.79	23.354	7486.89	0.0037586	1.70971	3.1004	0.00085	1.52265	3.0161
78	0.037652	13970.48	23.010	7147.26	0.0038135	1.68577	2.9128	0.00084	1.51814	2.8768
80	0.037364	13776.48	22.663	6817.36	0.0038714	1.66148	2.7392	0.00083	1.51361	2.7479
82	0.037074	13579.67	22.313	6496.96	0.0039325	1.63686	2.5782	0.00083	1.50906	2.6287
84	0.036781	13379.92	21.961	6185.84	0.0039972	1.61193	2.4290	0.00082	1.50446	2.5186
86	0.036486	13177.16	21.606	5883.77	0.0040658	1.58673	2.2906	0.00081	1.49987	2.4170
88	0.036187	12971.21	21.250	5590.53	0.0041387	1.56126	2.1623	0.00080	1.49522	2.3235
90	0.035886	12761.95	20.891	5305.90	0.0042162	1.53556	2.0433	0.00080	1.49054	2.2375
92	0.035582	12549.24	20.532	5029.67	0.0042989	1.50963	1.9328	0.00079	1.48582	2.1586
94	0.035274	12332.95	20.171	4761.63	0.0043873	1.48349	1.8304	0.00078	1.48105	2.0864
96	0.034963	12112.87	19.809	4501.58	0.0044819	1.45716	1.7354	0.00077	1.47624	2.0205
98	0.034648	11888.85	19.446	4249.31	0.0045836	1.43065	1.6471	0.00076	1.47137	1.9607
100	0.034328	11660.76	19.083	4004.63	0.0046931	1.40396	1.5652	0.00075	1.46645	1.9067
102	0.034003	11428.19	18.719	3767.34	0.0048113	1.37711	1.4892	0.00074	1.46146	1.8582
104	0.033673	11191.12	18.354	3537.25	0.0049394	1.35010	1.4185	0.00073	1.45641	1.8150
106	0.033338	10949.23	17.988	3314.19	0.0050787	1.32293	1.3528	0.00071	1.45128	1.7771
108	0.032996	10702.24	17.622	3097.97	0.0052305	1.29560	1.2917	0.00070	1.44607	1.7442
110	0.032647	10449.86	17.254	2888.43	0.0053969	1.26810	1.2349	0.00069	1.44076	1.7163
112	0.032291	10191.75	16.884	2685.40	0.0055799	1.24044	1.1819	0.00068	1.43536	1.6933
114	0.031926	9927.52	16.511	2488.71	0.0057821	1.21260	1.1325	0.00066	1.42984	1.6754
116	0.031552	9656.76	16.136	2298.22	0.0060069	1.18456	1.0865	0.00065	1.42419	1.6626
118	0.031167	9379.01	15.756	2113.79	0.0062581	1.15630	1.0434	0.00063	1.41840	1.6552
120	0.030771	9093.66	15.371	1935.33	0.0065410	1.12780	1.0031	0.00062	1.41245	1.6533
122	0.030362	8800.18	14.978	1762.62	0.0068618	1.09902	0.9652	0.00060	1.40632	1.6574
124	0.029937	8497.85	14.576	1595.66	0.0072289	1.06992	0.9296	0.00058	1.39998	1.6681
126	0.029495	8185.96	14.160	1434.37	0.0076533	1.04043	0.8961	0.00056	1.39341	1.6862
128	0.029033	7863.77	13.727	1278.70	0.0081497	1.01050	0.8657	0.00054	1.38655	1.7158
130	0.028543	7671.35	13.298	1141.56	0.0086530	0.97973	0.8409	0.00051	1.37931	1.8216
132	0.028031	7333.82	12.882	1000.21	0.0095629	0.94867	0.8156	0.00048	1.37176	1.8843
134	0.027489	6937.43	12.245	859.27	0.0103369	0.91705	0.7896	0.00047	1.36381	1.9286
136	0.026903	6546.35	11.690	727.45	0.0113610	0.88421	0.7624	0.00044	1.35524	2.0040
138	0.026264	6111.07	10.999	599.67	0.0126589	0.85006	0.7336	0.00042	1.34595	2.0865
140	0.025555	5622.53	10.165	474.17	0.0144267	0.81397	0.7029	0.00039	1.33567	2.1889
142	0.024740	4825.66	7.956	352.43	0.0148084	0.77468	0.6689	0.00044	1.32394	1.9279
* 142.011	0.024728	5215.43	8.612	356.97	0.0180244	0.77428	0.6684	0.00033	1.32376	2.5361
* 142.011	0.004072	2529.93	4.138	14.64	0.0321115	0.24765	0.1660	0.00075	1.04911	1.7001
144	0.003843	2661.23	4.165	15.35	0.0264271	0.23626	0.1641	0.00087	1.04632	1.5265
146	0.003660	2781.03	4.186	17.68	0.0227683	0.22922	0.1629	0.00099	1.04407	1.4061
148	0.003506	2892.57	4.202	18.76	0.0201872	0.22457	0.1621	0.00110	1.04220	1.3172
150	0.003374	2998.12	4.215	19.66	0.0182487	0.22135	0.1616	0.00120	1.04059	1.2485
152	0.003259	3099.09	4.224	20.43	0.0167286	0.21908	0.1614	0.00130	1.03918	1.1936
154	0.003155	3196.45	4.232	21.10	0.0154981	0.21748	0.1613	0.00139	1.03792	1.1485
156	0.003062	3290.85	4.238	21.68	0.0144773	0.21630	0.1614	0.00148	1.03679	1.1111
158	0.002977	3382.84	4.243	22.20	0.0136139	0.21549	0.1616	0.00157	1.03576	1.0794
160	0.002900	3472.66	4.246	22.67	0.0128720	0.21488	0.1619	0.00166	1.03481	1.0526
165	0.002730	3689.92	4.251	23.65	0.0113980	0.21451	0.1630	0.00187	1.03275	0.9986
170	0.002586	3898.86	4.251	24.44	0.0102920	0.21500	0.1644	0.00207	1.03140	0.9589
175	0.002462	4101.45	4.249	25.09	0.0094246	0.21610	0.1661	0.00227	1.03050	0.9283
180	0.002353	4298.84	4.245	25.63	0.0087219	0.21765	0.1679	0.00247	1.02818	0.9040
185	0.002256	4491.93	4.240	26.08	0.0081383	0.21953	0.1699	0.00266	1.02741	0.8842
190	0.002168	4681.34	4.234	26.45	0.0076440	0.22168	0.1720	0.00286	1.02596	0.8678
195	0.002089	4867.57	4.227	26.82	0.0072185	0.22403	0.1742	0.00305	1.02500	0.8539
200	0.002017	5051.01	4.221	27.12	0.0068476	0.22654	0.1765	0.00325	1.02413	0.8420
210	0.001890	5410.81	4.208	27.62	0.0062296	0.23164	0.1811	0.00364	1.02260	0.8237
220	0.001780	5762.86	4.195	28.02	0.0057329	0.23714	0.1859	0.00403	1.02128	0.8096
230	0.001685	6138.79	4.182	28.34	0.0053228	0.24291	0.1908	0.00443	1.02013	0.7983
240	0.001600	6449.97	4.170	28.60	0.0049771	0.24886	0.1958	0.00484	1.01911	0.7892
250	0.001525	6787.54	4.157	28.82	0.0046809	0.25493	0.2007	0.00526	1.01820	0.7818
260	0.001457	7122.48	4.145	29.00	0.0044233	0.26108	0.2057	0.00569	1.01739	0.7757
270	0.001395	7455.63	4.132	29.16	0.0041970	0.26728	0.2106	0.00612	1.01665	0.7706
280	0.001339	7787.74	4.119	29.29	0.0039960	0.27351	0.2155	0.00656	1.01598	0.7664
290	0.001288	8119.43	4.106	29.40	0.0038161	0.27961	0.2204	0.00701	1.01537	0.7634
300	0.001241	8451.26	4.092	29.50	0.0036538	0.28597	0.2253	0.00746	1.01480	0.7613
310	0.001197	8783.69	4.077	29.59	0.0035065	0.29231	0.2301	0.00793	1.01428	0.7578
320	0.001157	9117.13	4.062	29.67	0.0033720	0.29863	0.2349	0.00840	1.01379	0.7558
330	0.001119	9451.94	4.046	29.73	0.0032486	0.30492	0.2397	0.00887	1.01334	0.7543
340	0.001084	9788.30	4.030	29.79	0.0031348	0.31119	0.2444	0.00936	1.01292	0.7532

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

35 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p	VELOCITY OF SOUND M/SEC
* 54.757	24.45	288493	38.97	-6183.5	-6096.9	67.21	35.67	53.13	1166
56	24.55	282662	38.26	-6118.0	-6030.9	68.41	35.40	53.12	1159
58	24.72	273429	37.15	-6012.3	-5924.7	70.27	34.98	53.10	1146
60	24.88	264383	36.06	-5906.7	-5818.5	72.07	34.58	53.09	1134
62	25.05	255520	34.99	-5801.2	-5712.3	73.81	34.19	53.08	1121
64	25.23	246837	33.95	-5695.5	-5606.2	75.49	33.81	53.08	1108
66	25.40	238331	32.93	-5590.1	-5500.0	77.13	33.44	53.08	1094
68	25.58	229999	31.94	-5484.5	-5393.8	78.71	33.09	53.09	1081
70	25.77	221839	30.97	-5379.0	-5287.6	80.25	32.75	53.10	1067
72	25.95	213846	30.02	-5273.4	-5181.4	81.75	32.41	53.12	1053
74	26.15	206018	29.09	-5167.8	-5075.1	83.20	32.09	53.15	1039
76	26.34	198352	28.19	-5062.2	-4968.7	84.62	31.78	53.19	1025
78	26.54	190844	27.30	-4956.4	-4862.3	86.00	31.48	53.23	1011
80	26.74	183493	26.44	-4850.6	-4755.8	87.35	31.19	53.29	996
82	26.95	176294	25.60	-4744.7	-4649.1	88.67	30.91	53.35	982
84	27.17	169244	24.78	-4638.7	-4542.3	89.96	30.64	53.43	967
86	27.38	162341	23.98	-4532.5	-4435.4	91.21	30.37	53.51	952
88	27.61	155581	23.19	-4426.1	-4328.2	92.45	30.12	53.62	937
90	27.84	148962	22.43	-4319.6	-4220.9	93.65	29.87	53.73	921
92	28.08	142480	21.68	-4212.8	-4113.2	94.84	29.63	53.87	906
94	28.32	136131	20.95	-4105.8	-4005.3	96.00	29.39	54.02	890
96	28.57	129913	20.24	-3998.4	-3897.1	97.13	29.16	54.19	874
98	28.83	123823	19.54	-3890.8	-3788.5	98.25	28.94	54.39	858
100	29.09	117856	18.86	-3782.7	-3679.5	99.36	28.72	54.61	842
102	29.37	112014	18.19	-3674.2	-3570.0	100.44	28.51	54.86	825
104	29.66	106286	17.54	-3565.2	-3460.1	101.51	28.30	55.14	810
106	29.95	100677	16.91	-3455.7	-3349.5	102.56	28.10	55.45	793
108	30.26	95178	16.28	-3345.5	-3238.2	103.60	27.90	55.80	775
110	30.58	89788	15.67	-3234.7	-3126.2	104.63	27.71	56.20	759
112	30.91	84503	15.07	-3123.0	-3013.4	105.65	27.51	56.65	742
114	31.26	79321	14.48	-3010.4	-2899.6	106.65	27.33	57.15	725
116	31.63	74239	13.90	-2896.9	-2784.7	107.65	27.14	57.73	707
118	32.01	69252	13.33	-2782.1	-2668.6	108.64	26.96	58.37	689
120	32.42	64360	12.76	-2666.0	-2551.1	109.63	26.79	59.11	671
122	32.84	59559	12.20	-2548.5	-2432.2	110.62	26.61	59.95	652
124	33.30	54846	11.65	-2429.1	-2311.0	111.60	26.45	60.92	632
126	33.79	50221	11.10	-2307.8	-2188.0	112.58	26.29	62.05	613
128	34.31	45682	10.55	-2184.1	-2062.4	113.57	26.15	63.37	592
130	34.88	41562	10.12	-2055.3	-1932.1	114.58	26.04	66.11	572
132	35.50	37294	9.66	-1924.9	-1798.9	115.60	26.49	68.71	553
134	36.17	33065	9.03	-1790.8	-1662.5	116.62	26.38	70.16	528
136	36.93	28899	8.44	-1651.4	-1520.5	117.68	26.27	72.64	503
138	37.77	24776	7.82	-1506.5	-1372.6	118.76	26.22	75.46	475
140	38.74	20675	7.17	-1354.2	-1216.8	119.88	26.26	79.26	445
142	39.90	16604	6.48	-1191.5	-1050.0	121.06	26.38	84.36	410
144	41.33	12522	5.76	-1013.0	-866.4	122.34	26.62	92.68	372
* 145.630	42.92	9138	5.37	-841.0	-688.8	123.57	27.00	112.79	348
* 145.690	198.77	2746	0.607	1905.4	2610.3	146.22	29.03	107.43	179
146	201.42	2885	0.596	1928.5	2642.8	146.44	28.81	102.66	180
148	216.48	3672	0.537	2058.2	2825.9	147.69	27.65	82.77	187
150	229.26	4330	0.494	2166.6	2979.6	148.72	26.79	71.85	192
152	240.66	4908	0.461	2262.3	3115.8	149.62	26.13	64.78	196
154	251.13	5431	0.434	2349.5	3240.1	150.43	25.59	59.77	200
156	260.90	5913	0.412	2430.4	3355.7	151.18	25.14	56.00	204
158	270.13	6363	0.393	2506.6	3464.6	151.87	24.76	53.06	208
160	278.94	6788	0.376	2579.1	3568.3	152.53	24.43	50.68	211
165	299.52	7761	0.342	2747.9	3810.1	154.02	23.79	46.35	219
170	318.61	8644	0.315	2904.1	4034.1	155.35	23.32	43.40	226
175	336.63	9461	0.294	3051.6	4245.4	156.58	22.96	41.26	232
180	353.84	10228	0.276	3192.7	4447.5	157.72	22.68	39.64	238
185	370.41	10955	0.260	3328.8	4642.4	158.78	22.45	38.36	243
190	386.47	11650	0.247	3461.0	4831.5	159.79	22.27	37.33	249
195	402.10	12318	0.235	3590.0	5016.0	160.75	22.11	36.48	254
200	417.38	12963	0.225	3716.4	5196.6	161.67	21.98	35.77	258
210	447.07	14198	0.207	3962.9	5548.4	163.38	21.78	34.65	267
220	475.63	15374	0.193	4203.0	5890.5	164.97	21.62	33.81	276
230	503.88	16504	0.180	4438.3	6225.2	166.46	21.50	33.16	284
240	531.35	17596	0.170	4669.8	6554.2	167.86	21.41	32.65	291
250	558.37	18658	0.160	4898.4	6878.6	169.19	21.35	32.25	299
260	585.00	19694	0.152	5124.7	7199.4	170.45	21.30	31.92	306
270	611.32	20710	0.145	5349.2	7517.2	171.64	21.27	31.65	312
280	637.37	21707	0.139	5572.3	7832.6	172.79	21.25	31.44	319
290	663.19	22689	0.133	5794.2	8146.2	173.89	21.25	31.27	325
300	688.81	23659	0.127	6015.4	8458.2	174.95	21.25	31.14	331
310	714.27	24617	0.122	6235.9	8769.0	175.97	21.27	31.03	337
320	739.57	25565	0.118	6456.1	9078.9	176.95	21.30	30.95	343
330	764.75	26504	0.114	6676.1	9388.1	177.90	21.34	30.90	349
340	789.81	27436	0.110	6896.0	9696.9	178.83	21.39	30.86	354

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

35 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	$V(\partial M/\partial V)_p$ J/GMOLE	$V(\partial P/\partial U)_v$ CC-ATM/J	$-V(\partial P/\partial V)_T$ ATM	$(\partial V/\partial T)/V$ 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S x 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 54.757	0.040899	16086.66	25.712	11799.12	0.0033026	1.93464	6.3316	0.00089	1.56976	5.4081
56	0.040731	15982.82	25.535	11613.11	0.0033234	1.92360	6.0367	0.00089	1.56726	5.2893
58	0.040460	15814.33	26.244	11062.91	0.0033578	1.90526	5.6357	0.00089	1.56271	4.9088
60	0.040188	15644.08	25.946	11024.93	0.0033936	1.88687	5.2639	0.00088	1.55835	4.6305
62	0.039914	15471.98	25.642	11198.91	0.0034308	1.86826	4.9193	0.00088	1.55398	4.3727
64	0.039640	15297.95	25.332	9784.58	0.0034697	1.84581	4.5999	0.00088	1.54961	4.1338
66	0.039364	15121.91	25.016	9381.70	0.0035102	1.82477	4.3038	0.00087	1.54522	3.9125
68	0.039087	14943.78	24.694	8990.01	0.0035526	1.80317	4.0293	0.00087	1.54081	3.7074
70	0.038809	14763.46	24.367	8609.25	0.0035969	1.78106	3.7748	0.00086	1.53640	3.5173
72	0.038529	14580.90	24.036	8239.19	0.0036434	1.75847	3.5389	0.00086	1.53196	3.3411
74	0.038247	14395.95	23.700	7879.58	0.0036921	1.73544	3.3202	0.00085	1.52751	3.1779
76	0.037964	14208.59	23.361	7530.18	0.0037433	1.71199	3.1175	0.00085	1.52305	3.0267
78	0.037679	14018.66	23.017	7190.75	0.0037972	1.68816	2.9295	0.00084	1.51856	2.8868
80	0.037391	13826.09	22.671	6861.06	0.0038540	1.66397	2.7552	0.00084	1.51404	2.7573
82	0.037102	13630.78	22.322	6540.87	0.0039140	1.63947	2.5936	0.00083	1.50951	2.6375
84	0.036811	13432.60	21.970	6229.97	0.0039773	1.61466	2.4437	0.00082	1.50494	2.5269
86	0.036516	13231.46	21.617	5928.12	0.0040445	1.58957	2.3047	0.00081	1.50035	2.4248
88	0.036220	13027.22	21.261	5635.12	0.0041158	1.56423	2.1758	0.00081	1.49572	2.3307
90	0.035920	12819.76	20.904	5350.73	0.0041915	1.53865	2.0562	0.00080	1.49106	2.2442
92	0.035617	12608.93	20.546	5074.75	0.0042722	1.51285	1.9453	0.00079	1.48636	2.1647
94	0.035311	12394.61	20.187	4806.97	0.0043584	1.48685	1.8424	0.00078	1.48162	2.0919
96	0.035002	12176.62	19.827	4547.19	0.0044507	1.46066	1.7469	0.00077	1.47683	2.0255
98	0.034688	11954.80	19.466	4295.20	0.0045496	1.43430	1.6583	0.00076	1.47200	1.9651
100	0.034370	11728.98	19.105	4050.82	0.0046563	1.40777	1.5760	0.00075	1.46710	1.9105
102	0.034048	11498.93	18.744	3813.84	0.0047707	1.38108	1.4995	0.00074	1.46215	1.8614
104	0.033720	11264.49	18.382	3584.08	0.0048948	1.35423	1.4285	0.00073	1.45713	1.8176
106	0.033388	11025.41	18.020	3361.36	0.0050294	1.32724	1.3625	0.00072	1.45204	1.7789
108	0.033049	10781.43	17.657	3145.50	0.0051760	1.30010	1.3010	0.00070	1.44687	1.7452
110	0.032703	10532.29	17.293	2936.34	0.0053361	1.27281	1.2439	0.00069	1.44162	1.7165
112	0.032350	10277.63	16.928	2733.71	0.0055119	1.24536	1.1907	0.00068	1.43626	1.6926
114	0.031990	10017.28	16.561	2537.45	0.0057056	1.21775	1.1411	0.00067	1.43080	1.6737
116	0.031620	9750.69	16.192	2347.42	0.0059201	1.18996	1.0946	0.00065	1.42522	1.6597
118	0.031240	9477.52	15.819	2163.48	0.0061591	1.16198	1.0515	0.00064	1.41950	1.6508
120	0.030850	9197.27	15.442	1985.50	0.0064269	1.13378	1.0114	0.00062	1.41363	1.6473
122	0.030447	8909.46	15.059	1813.38	0.0067292	1.10533	0.9741	0.00061	1.40759	1.6495
124	0.030030	8613.56	14.667	1647.02	0.0070731	1.07660	0.9394	0.00059	1.40136	1.6578
126	0.029596	8308.98	14.264	1486.37	0.0074673	1.04754	0.9073	0.00057	1.39491	1.6731
128	0.029145	7995.20	13.846	1331.38	0.0079258	1.01808	0.8774	0.00055	1.38820	1.6962
130	0.028666	7671.64	13.410	1181.42	0.0084914	0.98780	0.8494	0.00052	1.38112	1.7274
132	0.028168	7338.85	12.951	1050.69	0.0091989	0.95736	0.8227	0.00049	1.37377	1.8450
134	0.027645	7104.61	12.379	914.07	0.0098754	0.92654	0.7974	0.00048	1.36609	1.8871
136	0.027081	6731.88	11.868	782.61	0.0107961	0.89463	0.7714	0.00045	1.35785	1.9564
138	0.026475	6329.47	11.266	655.92	0.0119222	0.86172	0.7435	0.00043	1.34900	2.0346
140	0.025810	5896.01	10.584	533.63	0.0134426	0.82737	0.7143	0.00040	1.33936	2.1384
142	0.025065	5415.09	9.806	416.17	0.0155793	0.79087	0.6828	0.00037	1.32861	2.2763
144	0.024198	4874.12	8.944	303.01	0.0190144	0.75096	0.6478	0.00033	1.31617	2.4984
* 145.690	0.023301	4472.59	8.534	212.93	0.0252171	0.71234	0.6132	0.00027	1.30338	3.0341
* 145.690	0.005031	2442.56	4.159	13.81	0.0439807	0.29697	0.1828	0.00055	1.06092	2.0667
146	0.004965	2467.98	4.166	14.32	0.0415982	0.29140	0.1821	0.00057	1.06010	2.0045
148	0.004619	2615.90	4.202	16.96	0.0316397	0.26803	0.1784	0.00070	1.05584	1.7218
150	0.004362	2745.79	4.228	18.89	0.0261663	0.25530	0.1761	0.00081	1.05268	1.5487
152	0.004155	2864.68	4.248	20.39	0.0226133	0.24729	0.1745	0.00092	1.05014	1.4287
154	0.003982	2976.04	4.263	21.63	0.0200835	0.24182	0.1734	0.00102	1.04812	1.3395
156	0.003833	3081.84	4.275	22.67	0.0181722	0.23785	0.1727	0.00111	1.04619	1.2706
158	0.003702	3183.35	4.284	23.56	0.0166672	0.23495	0.1722	0.00120	1.04459	1.2153
160	0.003585	3281.44	4.291	24.33	0.0154450	0.23266	0.1719	0.00128	1.04316	1.1703
165	0.003339	3515.33	4.301	25.91	0.0131841	0.22939	0.1713	0.00148	1.04015	1.0852
170	0.003139	3737.31	4.304	27.13	0.0116126	0.22794	0.1725	0.00167	1.03772	1.0262
175	0.002971	3950.66	4.303	28.10	0.0104441	0.22766	0.1735	0.00186	1.03567	0.9827
180	0.002826	4157.32	4.299	28.90	0.0095340	0.22817	0.1748	0.00204	1.03392	0.9491
185	0.002700	4358.58	4.293	29.57	0.0088007	0.22923	0.1764	0.00221	1.03239	0.9225
190	0.002588	4555.31	4.287	30.14	0.0081944	0.23071	0.1781	0.00239	1.03103	0.9008
195	0.002487	4748.18	4.279	30.63	0.0076829	0.23250	0.1800	0.00256	1.02981	0.8827
200	0.002396	4937.68	4.272	31.06	0.0072442	0.23454	0.1820	0.00274	1.02871	0.8675
210	0.002237	5308.19	4.256	31.76	0.0065275	0.23882	0.1862	0.00308	1.02678	0.8444
220	0.002102	5669.39	4.240	32.31	0.0059636	0.24369	0.1907	0.00343	1.02515	0.8267
230	0.001985	6023.23	4.225	32.75	0.0055057	0.24894	0.1952	0.00378	1.02374	0.8128
240	0.001882	6371.26	4.211	33.12	0.0051249	0.25447	0.1999	0.00414	1.02250	0.8017
250	0.001791	6714.81	4.197	33.41	0.0048021	0.26019	0.2046	0.00451	1.02141	0.7926
260	0.001709	7054.98	4.183	33.66	0.0045242	0.26603	0.2094	0.00488	1.02042	0.7851
270	0.001636	7392.74	4.169	33.88	0.0042818	0.27196	0.2142	0.00525	1.01954	0.7790
280	0.001569	7728.91	4.155	34.06	0.0040680	0.27795	0.2189	0.00563	1.01874	0.7739
290	0.001508	8064.23	4.141	34.21	0.0038778	0.28381	0.2237	0.00602	1.01800	0.7702
300	0.001452	8399.30	4.126	34.35	0.0037070	0.29001	0.2284	0.00642	1.01733	0.7664
310	0.001400	8734.65	4.111	34.46	0.0035527	0.29620	0.2331	0.00682	1.01671	0.7633
320	0.001352	9070.75	4.095	34.57	0.0034124	0.30238	0.2378	0.00722	1.01613	0.7608
330	0.001308	9407.96	4.079	34.66	0.0032841	0.30854	0.2425	0.00764	1.01560	0.7588
340	0.001266	9746.60	4.062	34.74	0.0031662	0.31469	0.2471	0.00805	1.01510	0.7573

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

40 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p	VELOCITY OF SOUND M/SEC
* 54.815	24.44	289110	38.97	-6182.8	-6083.7	67.23	35.67	53.11	1167
56	24.54	283557	38.30	-6120.2	-6020.8	68.36	35.42	53.10	1160
58	24.70	274335	37.19	-6014.7	-5914.6	70.23	35.00	53.08	1148
60	24.87	265299	36.10	-5909.3	-5808.4	72.03	34.60	53.07	1135
62	25.04	256446	35.03	-5803.8	-5702.3	73.77	34.21	53.06	1122
64	25.21	247773	33.99	-5698.4	-5596.2	75.45	33.83	53.05	1109
66	25.39	239278	32.97	-5593.3	-5490.1	77.08	33.46	53.05	1096
68	25.57	230958	31.98	-5487.6	-5384.0	78.67	33.11	53.06	1083
70	25.75	222808	31.01	-5382.2	-5277.8	80.21	32.77	53.07	1069
72	25.94	214827	30.06	-5276.8	-5171.7	81.70	32.44	53.09	1055
74	26.13	207011	29.14	-5171.4	-5065.5	83.16	32.12	53.11	1041
76	26.32	199357	28.24	-5065.9	-4959.2	84.57	31.81	53.15	1027
78	26.52	191863	27.35	-4960.3	-4852.8	85.95	31.51	53.19	1013
80	26.72	184524	26.49	-4854.7	-4746.4	87.30	31.22	53.24	998
82	26.93	177339	25.65	-4749.0	-4639.8	88.62	30.94	53.30	984
84	27.14	170304	24.83	-4643.2	-4533.2	89.98	30.67	53.37	969
86	27.36	163415	24.03	-4537.2	-4426.3	91.16	30.40	53.45	954
88	27.58	156670	23.25	-4431.1	-4319.3	92.39	30.15	53.55	939
90	27.81	150067	22.48	-4324.8	-4212.1	93.59	29.90	53.66	924
92	28.05	143600	21.74	-4218.3	-4104.6	94.77	29.66	53.79	908
94	28.29	137269	21.01	-4111.5	-3996.9	95.93	29.42	53.94	893
96	28.54	131068	20.30	-4004.5	-3888.8	97.37	29.19	54.10	877
98	28.79	124997	19.61	-3897.1	-3788.4	98.19	28.97	54.29	861
100	29.06	119050	18.93	-3789.4	-3671.6	99.29	28.75	54.50	845
102	29.33	113226	18.26	-3681.3	-3562.4	100.37	28.54	54.73	829
104	29.61	107521	17.61	-3572.7	-3452.6	101.43	28.33	55.00	813
106	29.91	101932	16.98	-3463.6	-3342.4	102.49	28.13	55.30	797
108	30.21	96456	16.36	-3353.9	-3231.4	103.52	27.93	55.64	780
110	30.53	91090	15.75	-3243.5	-3119.8	104.55	27.74	56.01	763
112	30.86	85832	15.15	-3132.4	-3007.3	105.56	27.55	56.44	746
114	31.20	80677	14.56	-3020.4	-2894.8	106.56	27.36	56.92	729
116	31.56	75623	13.99	-2907.5	-2779.6	107.56	27.17	57.46	712
118	31.94	70668	13.42	-2793.5	-2664.1	108.55	26.99	58.07	694
120	32.33	65809	12.86	-2678.3	-2547.2	109.53	26.81	58.76	676
122	32.75	61044	12.31	-2561.6	-2428.9	110.51	26.63	59.55	657
124	33.20	56370	11.76	-2443.4	-2308.8	111.48	26.46	60.45	639
126	33.68	51786	11.22	-2323.3	-2186.8	112.46	26.30	61.49	619
128	34.19	47292	10.68	-2201.0	-2062.4	113.44	26.15	62.71	599
130	34.74	43112	10.23	-2074.3	-1933.5	114.44	26.65	65.21	578
132	35.34	38890	9.70	-1945.3	-1802.1	115.44	26.50	66.90	558
134	35.98	34803	9.10	-1813.6	-1667.8	116.45	26.38	68.19	534
136	36.70	30846	8.58	-1677.2	-1528.5	117.48	26.27	70.83	512
138	37.50	26952	8.02	-1536.0	-1384.1	118.53	26.20	73.64	487
140	38.40	22672	7.44	-1388.7	-1233.1	119.62	26.20	77.24	460
142	39.45	18762	6.79	-1233.1	-1073.2	120.75	26.26	81.38	429
144	40.71	14867	6.16	-1065.6	-900.6	121.96	26.45	88.88	396
146	42.31	11003	5.52	-879.7	-708.3	123.29	26.75	100.20	361
148	44.51	7031	4.73	-663.4	-483.0	124.82	27.34	121.78	315
* 148.989	46.08	4999	4.48	-532.2	-345.5	125.75	27.84	156.79	299
* 148.989	160.65	1830	0.791	1754.1	2405.2	144.21	38.43	163.70	177
150	170.57	2404	0.726	1857.9	2549.3	145.18	29.41	126.29	181
152	185.79	3288	0.642	2012.4	2765.4	146.61	28.05	94.65	187
154	198.18	4003	0.585	2135.0	2938.2	147.74	27.09	79.54	193
156	209.01	4623	0.543	2240.3	3087.5	148.70	26.37	70.38	198
158	218.82	5180	0.509	2334.7	3221.6	149.56	25.79	64.14	202
160	227.91	5689	0.481	2421.4	3345.1	150.33	25.32	59.58	206
165	248.45	6822	0.428	2615.6	3622.6	152.04	24.42	52.09	215
170	266.92	7819	0.389	2788.9	3870.8	153.52	23.80	47.51	222
175	284.02	8723	0.358	2948.9	4100.1	154.85	23.34	44.39	229
180	300.15	9560	0.334	3099.6	4316.1	156.07	22.99	42.13	235
185	315.53	10346	0.313	3243.4	4522.2	157.20	22.72	40.40	241
190	330.32	11092	0.296	3381.9	4720.7	158.26	22.49	39.05	247
195	344.64	11804	0.282	3516.3	4913.1	159.26	22.31	37.95	252
200	358.57	12488	0.267	3647.3	5100.6	160.21	22.16	37.05	257
210	385.48	13789	0.245	3901.4	5463.7	161.98	21.92	35.65	267
220	411.41	15020	0.226	4147.4	5814.8	163.61	21.74	34.62	275
230	436.59	16195	0.211	4387.5	6157.0	165.13	21.60	33.84	283
240	461.18	17327	0.198	4623.0	6492.1	166.56	21.49	33.22	291
250	485.29	18423	0.187	4854.9	6821.8	167.91	21.41	32.73	299
260	509.01	19490	0.177	5084.1	7147.1	169.18	21.35	32.34	306
270	532.40	20532	0.168	5311.0	7468.9	170.40	21.31	32.02	313
280	555.52	21554	0.161	5536.2	7787.8	171.56	21.29	31.77	319
290	578.41	22559	0.154	5760.1	8104.4	172.67	21.27	31.56	325
300	601.10	23549	0.147	5982.9	8419.1	173.73	21.28	31.40	332
310	623.62	24525	0.142	6204.9	8732.4	174.76	21.29	31.26	338
320	645.99	25491	0.136	6426.3	9044.5	175.75	21.31	31.16	344
330	668.23	26446	0.131	6647.4	9355.8	176.71	21.35	31.09	349
340	690.36	27393	0.127	6868.4	9666.4	177.64	21.39	31.04	355

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

40 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	V(DH/DV)$_p$ J/GMOLE	V(DP/DU)$_v$ CC-ATM/J	-V(DP/DV)$_T$ ATM	(DV/DT)/V I/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S X 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 54.815	0.040909	16116.82	26.707	11827.08	0.0032953	1.93536	6.3171	0.00089	1.56991	5.4173
56	0.040749	16018.33	26.538	11554.59	0.0033148	1.92489	6.0640	0.00089	1.56734	5.2275
58	0.040478	15850.78	26.247	11104.55	0.0033487	1.90658	5.6618	0.00089	1.56360	4.9260
60	0.040206	15681.50	25.950	10666.73	0.0033840	1.88754	5.2889	0.00088	1.55865	4.6468
62	0.039934	15510.41	25.646	10240.87	0.0034208	1.86783	4.9432	0.00088	1.55430	4.3882
64	0.039660	15337.43	25.336	9826.71	0.0034591	1.84747	4.6227	0.00088	1.54993	4.1485
66	0.039385	15162.48	25.020	9423.99	0.0034990	1.82653	4.3256	0.00087	1.54555	3.9264
68	0.039109	14985.47	24.698	9032.47	0.0035407	1.80503	4.0501	0.00087	1.54116	3.7206
70	0.038831	14806.32	24.372	8651.90	0.0035843	1.78302	3.7947	0.00087	1.53675	3.5298
72	0.038552	14624.97	24.041	8282.02	0.0036300	1.76053	3.5580	0.00086	1.53233	3.3530
74	0.038271	14441.29	23.706	7922.59	0.0036779	1.73759	3.3385	0.00085	1.52790	3.1891
76	0.037989	14255.24	23.367	7573.38	0.0037282	1.71425	3.1349	0.00085	1.52344	3.0374
78	0.037705	14066.67	23.024	7234.14	0.0037811	1.69053	2.9462	0.00084	1.51897	2.8968
80	0.037419	13875.52	22.679	6904.65	0.0038369	1.66645	2.7712	0.00084	1.51447	2.7667
82	0.037130	13681.69	22.330	6584.67	0.0038956	1.64206	2.6089	0.00083	1.50995	2.6464
84	0.036840	13485.05	21.980	6273.98	0.0039578	1.61736	2.4584	0.00082	1.50540	2.5352
86	0.036547	13285.53	21.627	5972.36	0.0040235	1.59239	2.3188	0.00082	1.50083	2.4326
88	0.036252	13082.98	21.273	5679.58	0.0040932	1.56717	2.1894	0.00081	1.49622	2.3380
90	0.035954	12877.28	20.917	5395.42	0.0041673	1.54172	2.0693	0.00080	1.49158	2.2509
92	0.035652	12668.30	20.560	5119.69	0.0042461	1.51605	1.9578	0.00079	1.48691	2.1709
94	0.035348	12455.92	20.203	4852.16	0.0043302	1.49019	1.8544	0.00078	1.48219	2.0976
96	0.035040	12239.97	19.845	4592.64	0.0044200	1.46414	1.7585	0.00077	1.47743	2.0306
98	0.034728	12020.30	19.486	4340.92	0.0045163	1.43792	1.6694	0.00076	1.47262	1.9697
100	0.034413	11796.75	19.127	4096.82	0.0046198	1.41154	1.5867	0.00075	1.46775	1.9144
102	0.034092	11569.12	18.769	3860.14	0.0047311	1.38500	1.5098	0.00074	1.46283	1.8647
104	0.033767	11337.23	18.410	3630.69	0.0048514	1.35833	1.4385	0.00073	1.45785	1.8202
106	0.033437	11100.88	18.051	3408.29	0.0049816	1.33151	1.3721	0.00072	1.45280	1.7809
108	0.033101	10859.82	17.691	3192.77	0.0051231	1.30455	1.3104	0.00071	1.44767	1.7465
110	0.032758	10613.81	17.331	2983.97	0.0052775	1.27746	1.2529	0.00070	1.44246	1.7169
112	0.032409	10362.58	16.971	2781.72	0.0054464	1.25022	1.1995	0.00068	1.43715	1.6922
114	0.032052	10105.82	16.609	2585.86	0.0056321	1.22283	1.1496	0.00067	1.43174	1.6722
116	0.031687	9843.21	16.246	2396.25	0.0058371	1.19529	1.1031	0.00066	1.42622	1.6571
118	0.031312	9574.41	15.880	2212.76	0.0060647	1.16756	1.0596	0.00064	1.42057	1.6469
120	0.030927	9298.97	15.511	2035.26	0.0063188	1.13965	1.0190	0.00063	1.41478	1.6419
122	0.030530	9016.53	15.136	1863.65	0.0066042	1.11152	0.9809	0.00061	1.40883	1.6423
124	0.030120	8726.59	14.755	1697.84	0.0069272	1.08314	0.9451	0.00059	1.40270	1.6485
126	0.029695	8428.77	14.364	1537.76	0.0072956	1.05447	0.9115	0.00058	1.39637	1.6611
128	0.029252	8122.72	13.959	1383.39	0.0077197	1.02546	0.8797	0.00056	1.38980	1.6810
130	0.028784	7913.25	13.334	1240.94	0.0082409	0.99564	0.8537	0.00053	1.38286	1.7474
132	0.028299	7590.88	12.933	1100.55	0.0088127	0.96577	0.8295	0.00051	1.37571	1.7956
134	0.027792	7249.70	12.408	967.25	0.0094062	0.93562	0.8049	0.00049	1.36825	1.8333
136	0.027249	6900.19	11.989	836.17	0.0102654	0.90455	0.7792	0.00047	1.36030	1.9070
138	0.026669	6526.90	11.476	710.79	0.0112818	0.87269	0.7527	0.00044	1.35183	1.9847
140	0.026041	6131.39	10.900	590.39	0.0125976	0.83973	0.7248	0.00042	1.34270	2.0835
142	0.025348	5694.82	10.192	475.58	0.0142763	0.80516	0.6952	0.00039	1.33268	2.1937
144	0.024563	5225.35	9.476	365.19	0.0166556	0.76821	0.6629	0.00036	1.32140	2.3753
146	0.023636	4717.03	8.737	260.06	0.0212430	0.72731	0.6266	0.00031	1.30816	2.6979
148	0.022469	4069.12	7.697	157.99	0.0299273	0.67227	0.5834	0.00026	1.29160	3.1616
* 148.989	0.021702	3793.05	7.424	108.50	0.0413349	0.71631	0.5565	0.00021	1.28079	3.8064
* 148.989	0.006225	2356.68	4.176	11.39	0.0694617	0.38123	0.2031	0.00037	1.07574	2.7260
150	0.005863	2452.42	4.208	14.09	0.0514945	0.33738	0.1984	0.00046	1.07163	2.3208
152	0.005382	2609.64	4.251	17.69	0.0362698	0.29900	0.1926	0.00059	1.06527	1.9059
154	0.005046	2745.00	4.281	20.20	0.0289755	0.28023	0.1891	0.00070	1.06110	1.6773
156	0.004784	2867.90	4.303	22.12	0.0245419	0.26889	0.1867	0.00080	1.05788	1.5270
158	0.004570	2982.51	4.319	23.67	0.0215069	0.26122	0.1849	0.00089	1.05523	1.4192
160	0.004388	3091.12	4.332	24.96	0.0192738	0.25558	0.1837	0.00098	1.05299	1.3381
165	0.004025	3344.62	4.350	27.46	0.0155743	0.24715	0.1819	0.00118	1.04854	1.1981
170	0.003746	3580.82	4.358	29.29	0.0132668	0.24273	0.1813	0.00136	1.04513	1.1092
175	0.003521	3805.42	4.359	30.71	0.0116648	0.24049	0.1815	0.00154	1.04238	1.0471
180	0.003332	4021.50	4.355	31.85	0.0104750	0.23961	0.1822	0.00171	1.04007	1.0011
185	0.003169	4230.90	4.349	32.79	0.0095495	0.23961	0.1833	0.00187	1.03809	0.9657
190	0.003027	4434.85	4.341	33.58	0.0088048	0.24027	0.1846	0.00203	1.03636	0.9374
195	0.002902	4634.22	4.333	34.25	0.0081898	0.24139	0.1861	0.00219	1.03484	0.9143
200	0.002789	4829.63	4.324	34.83	0.0076716	0.24288	0.1876	0.00235	1.03347	0.8951
210	0.002594	5210.52	4.305	35.77	0.0068424	0.24623	0.1914	0.00266	1.03111	0.8663
220	0.002431	5580.56	4.287	36.51	0.0062040	0.25039	0.1955	0.00298	1.02913	0.8447
230	0.002290	5942.00	4.270	37.09	0.0056943	0.25509	0.1997	0.00329	1.02743	0.8279
240	0.002168	6296.61	4.253	37.57	0.0052759	0.26016	0.2041	0.00361	1.02596	0.8145
250	0.002061	6645.85	4.238	37.96	0.0049252	0.26549	0.2086	0.00394	1.02466	0.8037
260	0.001965	6990.99	4.222	38.29	0.0046259	0.27101	0.2131	0.00427	1.02350	0.7949
270	0.001878	7333.09	4.207	38.57	0.0043669	0.27666	0.2177	0.00460	1.02246	0.7878
280	0.001800	7673.08	4.192	38.80	0.0041400	0.28241	0.2223	0.00494	1.02152	0.7816
290	0.001729	8011.77	4.177	39.00	0.0039392	0.28801	0.2269	0.00528	1.02066	0.7771
300	0.001664	8349.84	4.162	39.18	0.0037600	0.29404	0.2315	0.00563	1.01987	0.7726
310	0.001604	8687.88	4.146	39.33	0.0035987	0.30008	0.2361	0.00599	1.01915	0.7688
320	0.001548	9026.40	4.129	39.46	0.0034525	0.30612	0.2407	0.00635	1.01848	0.7658
330	0.001496	9365.83	4.113	39.58	0.0033194	0.31215	0.2453	0.00671	1.01786	0.7634
340	0.001449	9706.51	4.095	39.68	0.0031974	0.31818	0.2498	0.00708	1.01729	0.7615

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

45 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p	VELOCITY OF SOUND M/SEC
* 54.873	24.44	289726	38.98	-6181.9	-6070.5	67.24	35.68	53.09	1168
56	24.53	284451	38.34	-6122.5	-6010.7	68.32	35.43	53.08	1162
58	24.69	275238	37.23	-6017.1	-5904.5	70.19	35.02	53.06	1149
60	24.86	266212	36.14	-5911.8	-5798.4	71.98	34.61	53.04	1137
62	25.03	257370	35.07	-5806.4	-5692.3	73.72	34.22	53.03	1124
64	25.20	248708	34.03	-5701.2	-5586.3	75.41	33.85	53.03	1111
66	25.38	240223	33.02	-5595.9	-5480.2	77.04	33.48	53.03	1098
68	25.56	231914	32.02	-5490.7	-5374.1	78.62	33.13	53.03	1084
70	25.74	223775	31.06	-5385.4	-5268.1	80.16	32.79	53.04	1071
72	25.92	215806	30.11	-5280.2	-5162.0	81.65	32.46	53.05	1057
74	26.11	208002	29.18	-5174.9	-5055.8	83.11	32.14	53.08	1043
76	26.31	200360	28.28	-5069.6	-4949.6	84.52	31.83	53.11	1029
78	26.50	192878	27.40	-4964.2	-4843.4	85.90	31.53	53.14	1015
80	26.71	185553	26.54	-4858.8	-4737.0	87.25	31.24	53.19	1000
82	26.91	178381	25.70	-4753.3	-4630.6	88.56	30.96	53.25	986
84	27.12	171359	24.88	-4647.6	-4524.0	89.85	30.69	53.32	971
86	27.34	164485	24.08	-4541.9	-4417.2	91.10	30.43	53.40	956
88	27.56	157755	23.30	-4436.0	-4310.3	92.33	30.17	53.49	941
90	27.79	151166	22.54	-4329.9	-4203.2	93.54	29.93	53.59	926
92	28.02	144716	21.80	-4223.7	-4095.9	94.71	29.69	53.71	911
94	28.26	138401	21.07	-4117.2	-3988.3	95.87	29.45	53.85	895
96	28.51	132218	20.36	-4010.5	-3880.5	97.01	29.22	54.01	880
98	28.76	126164	19.67	-3903.4	-3772.3	98.12	29.00	54.19	864
100	29.02	120236	18.99	-3796.1	-3663.7	99.22	28.79	54.39	848
102	29.29	114431	18.33	-3688.2	-3554.7	100.30	28.57	54.61	832
104	29.57	108746	17.68	-3580.0	-3445.2	101.36	28.37	54.87	816
106	29.86	103178	17.05	-3471.3	-3335.2	102.41	28.16	55.15	800
108	30.16	97725	16.43	-3362.1	-3224.5	103.44	27.96	55.47	783
110	30.48	92382	15.83	-3252.2	-3113.3	104.47	27.77	55.83	767
112	30.80	87148	15.23	-3141.6	-3001.2	105.48	27.58	56.24	750
114	31.14	82020	14.65	-3030.3	-2888.3	106.47	27.39	56.69	733
116	31.49	76994	14.08	-2918.0	-2774.4	107.47	27.20	57.20	716
118	31.87	72069	13.51	-2804.7	-2659.4	108.45	27.01	57.77	699
120	32.26	67242	12.96	-2690.3	-2543.2	109.42	26.83	58.42	681
122	32.67	62510	12.41	-2574.5	-2425.5	110.40	26.65	59.16	663
124	33.10	57872	11.87	-2457.3	-2306.3	111.37	26.48	60.01	644
126	33.57	53327	11.33	-2338.3	-2185.2	112.33	26.31	60.97	626
128	34.06	48874	10.80	-2217.3	-2062.0	113.38	26.16	62.09	606
130	34.60	44645	10.34	-2092.2	-1934.4	114.29	26.65	64.40	584
132	35.18	40460	9.82	-1965.0	-1804.6	115.28	26.51	65.96	565
134	35.80	36484	9.23	-1835.4	-1672.1	116.28	26.39	67.02	542
136	36.49	32414	8.75	-1701.6	-1535.2	117.29	26.28	69.63	522
138	37.24	28455	8.20	-1563.7	-1393.9	118.33	26.19	71.99	498
140	38.09	24572	7.64	-1420.6	-1246.9	119.38	26.16	75.01	472
142	39.06	20779	7.07	-1270.6	-1092.5	120.48	26.21	79.05	445
144	40.20	17017	6.49	-1111.3	-928.0	121.63	26.32	84.70	416
146	41.58	13259	5.90	-938.5	-748.9	122.86	26.53	93.60	385
148	43.34	9631	5.18	-746.8	-549.1	124.22	26.90	105.28	345
150	45.87	5928	4.44	-517.6	-308.5	125.84	27.59	133.86	302
* 151.977	50.84	1964	3.51	-182.8	49.0	128.28	29.92	279.52	241
* 151.977	126.48	851	1.06	1514.9	2091.6	141.65	33.33	361.41	171
152	127.11	891	1.22	1523.1	2102.6	141.72	33.22	450.95	196
154	149.86	2225	0.843	1815.7	2499.0	144.31	29.59	141.51	184
156	164.41	3133	0.739	1987.1	2736.8	145.85	28.15	102.58	190
158	176.06	3867	0.671	2119.6	2922.4	147.03	27.17	84.86	196
160	186.16	4504	0.620	2232.1	3080.9	148.03	26.43	74.39	200
165	207.66	5846	0.533	2465.9	3412.8	150.07	25.16	60.19	210
170	226.09	6977	0.475	2662.7	3693.6	151.75	24.33	52.80	219
175	242.72	7960	0.432	2838.6	3945.3	153.21	23.75	48.20	226
180	258.14	8894	0.399	3001.0	4178.0	154.52	23.32	45.04	233
185	272.68	9742	0.372	3153.8	4397.2	155.72	22.99	42.73	239
190	286.55	10543	0.349	3299.7	4606.2	156.84	22.72	40.97	245
195	299.89	11298	0.329	3440.1	4807.5	157.88	22.51	39.57	251
200	312.80	12022	0.313	3576.2	5002.4	158.87	22.33	38.44	256
210	337.59	13390	0.285	3838.4	5377.7	160.70	22.05	36.72	266
220	361.34	14675	0.262	4090.8	5738.4	162.38	21.85	35.47	275
230	384.31	15896	0.244	4335.9	6088.2	163.93	21.69	34.54	283
240	406.65	17067	0.228	4575.6	6429.8	165.39	21.57	33.81	291
250	428.50	18197	0.214	4811.1	6764.9	166.75	21.48	33.23	299
260	449.95	19294	0.203	5043.2	7094.8	168.05	21.41	32.77	306
270	471.07	20364	0.192	5272.7	7420.6	169.28	21.35	32.40	313
280	491.92	21410	0.183	5500.1	7743.0	170.45	21.32	32.10	319
290	512.52	22436	0.175	5725.8	8062.7	171.57	21.30	31.85	325
300	532.93	23446	0.168	5950.3	8380.2	172.65	21.30	31.66	332
310	553.17	24441	0.161	6173.7	8696.0	173.68	21.30	31.50	338
320	573.26	25423	0.155	6396.5	9010.3	174.68	21.32	31.37	344
330	593.21	26395	0.149	6618.7	9323.6	175.65	21.35	31.28	350
340	613.06	27357	0.144	6840.7	9636.0	176.58	21.39	31.21	355

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

45 ATM ISOBAR

TEMPERATURE	DENSITY	$V(\partial H/\partial V)_p$	$V(\partial P/\partial U)_v$	$-V(\partial P/\partial V)_T$	$(\partial V/\partial T)_p/V$	THERMAL CONDUCTIVITY	VISCOSITY	THERMAL DIFFUSIVITY	DIELECTRIC CONSTANT	PRANDTL NUMBER
KELVIN	GMOLE/CC	J/GMOLE	CC-ATM/J	ATM	1/KELVIN	MW/CM-K	G/CM-S X 10^3	SQ CM/SEC		
* 54.873	0.040918	16146.95	28.702	11855.02	0.0032879	1.93611	6.3325	0.00089	1.57006	5.4266
56	0.040766	16053.77	25.541	11596.02	0.0033063	1.92618	6.0914	0.00089	1.56763	5.2457
58	0.040496	15887.16	25.251	11146.13	0.0033398	1.90796	5.8879	0.00089	1.56329	4.9433
60	0.040225	15718.85	25.953	10708.46	0.0033746	1.88901	5.3139	0.00089	1.55895	4.6632
62	0.039953	15548.76	25.650	10282.76	0.0034108	1.86939	4.9671	0.00088	1.55461	4.4037
64	0.039680	15376.82	25.340	9868.77	0.0034485	1.84913	4.6455	0.00088	1.55025	4.1633
66	0.039406	15202.94	25.024	9466.22	0.0034879	1.82828	4.3474	0.00087	1.54588	3.9404
68	0.039130	15027.06	24.703	9074.87	0.0035289	1.80687	4.0710	0.00087	1.54150	3.7338
70	0.038854	14849.07	24.377	8694.46	0.0035719	1.78496	3.8147	0.00087	1.53711	3.5424
72	0.038575	14668.92	24.046	8324.76	0.0036168	1.76257	3.5771	0.00086	1.53270	3.3649
74	0.038295	14486.49	23.711	7965.52	0.0036639	1.73974	3.3567	0.00086	1.52828	3.2004
76	0.038014	14301.74	23.373	7616.49	0.0037133	1.71650	3.1524	0.00085	1.52384	3.0480
78	0.037731	14114.52	23.031	7277.45	0.0037653	1.69288	2.9630	0.00084	1.51938	2.9069
80	0.037446	13924.78	22.686	6948.15	0.0038199	1.66892	2.7873	0.00084	1.51489	2.7762
82	0.037159	13732.41	22.338	6628.37	0.0038776	1.64463	2.6243	0.00083	1.51039	2.6553
84	0.036869	13537.30	21.989	6317.89	0.0039385	1.62005	2.4732	0.00082	1.50586	2.5436
86	0.036578	13339.37	21.637	6016.47	0.0040028	1.59520	2.3330	0.00082	1.50130	2.4404
88	0.036284	13138.47	21.284	5723.91	0.0040710	1.57010	2.2030	0.00081	1.49672	2.3453
90	0.035987	12934.52	20.929	5439.98	0.0041434	1.54477	2.0823	0.00080	1.49210	2.2577
92	0.035687	12727.35	20.574	5164.48	0.0042204	1.51923	1.9704	0.00079	1.48744	2.1771
94	0.035384	12516.88	20.218	4897.20	0.0043025	1.49349	1.8665	0.00078	1.48275	2.1033
96	0.035078	12302.93	19.862	4637.93	0.0043901	1.46758	1.7701	0.00077	1.47801	2.0358
98	0.034768	12085.38	19.505	4386.47	0.0044838	1.44150	1.6805	0.00077	1.47323	1.9743
100	0.034454	11864.05	19.149	4142.64	0.0045844	1.41527	1.5974	0.00076	1.46840	1.9185
102	0.034136	11638.77	18.793	3906.24	0.0046925	1.38890	1.5202	0.00074	1.46351	1.8681
104	0.033813	11409.37	18.436	3677.08	0.0048091	1.36238	1.4484	0.00073	1.45856	1.8230
106	0.033486	11175.66	18.081	3454.99	0.0049352	1.33573	1.3817	0.00072	1.45354	1.7830
108	0.033152	10937.43	17.725	3239.80	0.0050719	1.30896	1.3197	0.00071	1.44845	1.7479
110	0.032813	10694.44	17.369	3031.33	0.0052207	1.28205	1.2620	0.00070	1.44329	1.7175
112	0.032467	10446.46	17.013	2829.43	0.0053832	1.25502	1.2082	0.00069	1.43803	1.6919
114	0.032114	10193.21	16.656	2633.95	0.0055614	1.22785	1.1581	0.00067	1.43267	1.6710
116	0.031752	9934.40	16.299	2444.74	0.0057576	1.20053	1.1114	0.00066	1.42721	1.6548
118	0.031382	9669.75	15.939	2261.67	0.0059747	1.17306	1.0677	0.00065	1.42163	1.6434
120	0.031002	9398.87	15.577	2084.61	0.0062161	1.14542	1.0269	0.00063	1.41591	1.6369
122	0.030611	9121.45	15.211	1913.47	0.0064861	1.11759	0.9887	0.00062	1.41005	1.6357
124	0.030207	8837.11	14.840	1748.15	0.0067902	1.08954	0.9528	0.00060	1.40401	1.6399
126	0.029790	8545.58	14.460	1588.59	0.0071350	1.06124	0.9191	0.00058	1.39779	1.6502
128	0.029356	8246.63	14.068	1434.76	0.0075292	1.03265	0.8872	0.00057	1.39134	1.6671
130	0.028898	8038.28	13.419	1290.14	0.0080111	1.00326	0.8598	0.00054	1.38455	1.7247
132	0.028425	7725.29	13.031	1150.07	0.0085383	0.97392	0.8361	0.00052	1.37756	1.7697
134	0.027932	7400.04	12.622	1019.08	0.0090572	0.94436	0.8120	0.00050	1.37031	1.8011
136	0.027408	7067.61	12.153	888.40	0.0098515	0.91404	0.7871	0.00048	1.36262	1.8737
138	0.026851	6709.99	11.656	764.04	0.0107283	0.88308	0.7613	0.00046	1.35448	1.9395
140	0.026252	6336.21	11.119	645.06	0.0118384	0.85127	0.7346	0.00043	1.34577	2.0228
142	0.025601	5946.16	10.541	531.96	0.0132948	0.81822	0.7064	0.00040	1.33633	2.1328
144	0.024877	5523.75	9.915	423.33	0.0153346	0.78344	0.6762	0.00037	1.32591	2.2849
146	0.024049	5061.68	9.243	318.87	0.0184920	0.74595	0.6432	0.00033	1.31445	2.5221
148	0.023072	4519.21	8.340	222.20	0.0232965	0.70731	0.6061	0.00029	1.30013	2.8192
150	0.021801	3897.72	7.381	129.25	0.0343440	0.69989	0.5607	0.00024	1.28219	3.3554
* 151.977	0.019668	3077.14	5.964	38.64	0.0908392	0.78082	0.4915	0.00014	1.25246	5.4990
* 151.977	0.007906	2284.30	4.040	6.73	0.1582148	0.59913	0.2315	0.00021	1.09685	4.3640
152	0.007867	2583.91	4.679	7.01	0.1745223	0.68577	0.2309	0.00019	1.09636	4.7449
154	0.006673	2492.17	4.270	14.85	0.0567817	0.36992	0.2136	0.00039	1.08134	2.5539
156	0.006082	2645.91	4.315	19.06	0.0387688	0.32432	0.2061	0.00052	1.07396	2.0368
158	0.005680	2779.97	4.345	21.97	0.0305265	0.30190	0.2014	0.00063	1.06896	1.7694
160	0.005372	2902.52	4.367	24.19	0.0256280	0.28799	0.1982	0.00072	1.06513	1.6002
165	0.004816	3179.27	4.399	28.15	0.0189314	0.26930	0.1935	0.00093	1.05826	1.3518
170	0.004423	3430.77	4.413	30.86	0.0153901	0.26002	0.1913	0.00111	1.05343	1.2138
175	0.004120	3666.87	4.416	32.88	0.0131453	0.25493	0.1903	0.00128	1.04971	1.1244
180	0.003874	3892.26	4.413	34.45	0.0115728	0.25216	0.1901	0.00145	1.04669	1.0615
185	0.003667	4109.63	4.407	35.73	0.0103987	0.25080	0.1905	0.00160	1.04416	1.0146
190	0.003490	4320.57	4.398	36.78	0.0094822	0.25044	0.1913	0.00175	1.04200	0.9781
195	0.003335	4526.18	4.388	37.67	0.0087431	0.25076	0.1924	0.00190	1.04010	0.9489
200	0.003197	4727.26	4.378	38.43	0.0081319	0.25158	0.1937	0.00205	1.03843	0.9250
210	0.002962	5118.07	4.356	39.66	0.0071745	0.25388	0.1968	0.00233	1.03557	0.8896
220	0.002767	5496.56	4.335	40.61	0.0064539	0.25725	0.2004	0.00262	1.03321	0.8636
230	0.002602	5865.24	4.315	41.36	0.0058881	0.26134	0.2043	0.00291	1.03120	0.8436
240	0.002459	6226.08	4.296	41.97	0.0054299	0.26593	0.2084	0.00320	1.02947	0.8278
250	0.002334	6580.73	4.279	42.47	0.0050498	0.27085	0.2126	0.00349	1.02795	0.8151
260	0.002222	6930.54	4.262	42.88	0.0047284	0.27603	0.2169	0.00379	1.02661	0.8048
270	0.002123	7276.71	4.246	43.23	0.0044523	0.28139	0.2213	0.00409	1.02541	0.7963
280	0.002033	7620.25	4.230	43.52	0.0042120	0.28688	0.2257	0.00440	1.02432	0.7893
290	0.001951	7962.06	4.214	43.78	0.0040005	0.29223	0.2302	0.00470	1.02334	0.7841
300	0.001876	8302.88	4.197	43.99	0.0038126	0.29808	0.2347	0.00502	1.02243	0.7788
310	0.001808	8643.37	4.181	44.18	0.0036442	0.30396	0.2391	0.00534	1.02161	0.7744
320	0.001744	8984.10	4.164	44.35	0.0034922	0.31005	0.2436	0.00566	1.02085	0.7708
330	0.001686	9325.51	4.147	44.50	0.0033542	0.31575	0.2481	0.00599	1.02014	0.7679
340	0.001631	9668.01	4.129	44.62	0.0032281	0.32166	0.2525	0.00632	1.01948	0.7656

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

50 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p J/G MOLE -K	VELOCITY OF SOUND M/SEC
* 54.931	24.43	290341	38.98	-6181.1	-6057.3	87.26	35.68	53.07	1169
56	24.52	285343	38.38	-6124.7	-6000.5	88.28	35.45	53.06	1163
58	24.68	276140	37.26	-6019.5	-5894.4	70.14	35.03	53.04	1151
60	24.85	267124	36.18	-5914.2	-5788.4	71.94	34.63	53.02	1138
62	25.02	258291	35.11	-5809.1	-5682.3	73.68	34.24	53.01	1125
64	25.19	249640	34.07	-5703.9	-5576.3	75.36	33.87	53.00	1112
66	25.36	241166	33.06	-5598.8	-5470.3	76.99	33.50	53.00	1099
68	25.54	232867	32.07	-5493.7	-5364.3	78.58	33.15	53.00	1086
70	25.72	224740	31.10	-5388.6	-5258.3	80.11	32.81	53.01	1072
72	25.91	216782	30.15	-5283.5	-5152.2	81.61	32.48	53.02	1059
74	26.10	208990	29.23	-5178.4	-5046.2	83.06	32.16	53.04	1045
76	26.29	201360	28.33	-5073.2	-4940.1	84.47	31.86	53.07	1031
78	26.49	193891	27.45	-4968.1	-4833.9	85.85	31.56	53.10	1016
80	26.69	186578	26.59	-4862.8	-4727.6	87.20	31.27	53.15	1002
82	26.89	179419	25.75	-4757.5	-4621.2	88.51	30.99	53.20	988
84	27.10	172411	24.93	-4652.1	-4514.8	89.79	30.72	53.26	973
86	27.32	165551	24.14	-4546.5	-4408.2	91.05	30.46	53.34	958
88	27.54	158835	23.36	-4440.9	-4301.4	92.28	30.20	53.42	943
90	27.76	152262	22.60	-4335.1	-4194.4	93.48	29.96	53.53	928
92	27.99	145827	21.85	-4229.1	-4087.2	94.65	29.72	53.64	913
94	28.23	139527	21.13	-4122.8	-3979.8	95.81	29.48	53.77	898
96	28.48	133361	20.42	-4016.4	-3872.1	96.94	29.25	53.92	882
98	28.73	127324	19.73	-3909.6	-3764.1	98.06	29.03	54.09	867
100	28.99	121414	19.06	-3802.6	-3655.7	99.15	28.82	54.28	851
102	29.26	115628	18.40	-3695.1	-3546.9	100.23	28.60	54.50	835
104	29.53	109963	17.75	-3587.3	-3437.7	101.29	28.40	54.74	819
106	29.82	104416	17.12	-3479.0	-3327.9	102.34	28.19	55.01	803
108	30.12	98984	16.51	-3370.2	-3217.6	103.37	28.00	55.32	787
110	30.43	93664	15.90	-3260.8	-3106.6	104.39	27.80	55.66	771
112	30.75	88454	15.31	-3150.7	-2994.9	105.39	27.61	56.04	754
114	31.08	83351	14.73	-3039.9	-2882.4	106.39	27.41	56.47	737
116	31.43	78352	14.16	-2928.3	-2769.0	107.37	27.23	56.95	720
118	31.80	73455	13.60	-2815.6	-2654.6	108.35	27.04	57.49	703
120	32.18	68657	13.05	-2702.0	-2538.9	109.32	26.86	58.11	686
122	32.58	63958	12.51	-2587.1	-2422.0	110.29	26.67	58.80	668
124	33.01	59354	11.98	-2470.8	-2303.5	111.25	26.50	59.59	650
126	33.46	54845	11.45	-2352.9	-2183.3	112.21	26.32	60.49	632
128	33.95	50431	10.92	-2233.2	-2061.2	113.18	26.16	61.52	613
130	34.47	46110	10.44	-2109.5	-1934.8	114.16	26.66	63.65	591
132	35.03	42089	9.94	-1983.9	-1806.4	115.14	26.52	65.11	571
134	35.63	38116	9.36	-1856.2	-1675.7	116.12	26.39	66.03	550
136	36.29	34092	8.91	-1724.8	-1541.0	117.12	26.26	68.51	530
138	37.01	30198	8.36	-1589.7	-1402.2	118.13	26.19	70.53	507
140	37.81	26394	7.82	-1450.2	-1258.7	119.16	26.14	73.12	484
142	38.71	22690	7.28	-1304.9	-1108.8	120.23	26.15	76.58	459
144	39.75	19029	6.74	-1152.1	-950.7	121.33	26.22	81.22	432
146	40.99	15370	6.18	-989.0	-781.3	122.58	26.37	88.07	403
148	42.49	11932	5.54	-812.3	-597.0	123.75	26.62	96.14	369
150	44.45	8491	4.89	-613.1	-387.9	125.16	27.05	111.77	333
152	47.33	5079	4.15	-371.7	-131.9	126.85	27.87	144.70	289
154	53.42	1576	3.09	-1.7	268.9	129.47	30.59	300.36	221
156	118.87	1316	1.14	1552.4	2154.7	141.65	32.03	252.27	181
158	137.84	2396	0.932	1816.3	2510.6	143.92	29.36	138.45	189
160	149.75	3203	0.828	1987.2	2745.8	145.48	27.97	104.35	195
165	173.78	4833	0.666	2291.8	3172.2	148.03	26.84	72.42	206
170	192.78	6124	0.578	2522.5	3499.2	149.98	24.93	59.84	216
175	209.31	7236	0.517	2719.3	3779.7	151.61	24.19	52.92	224
180	224.31	8232	0.472	2896.1	4032.5	153.03	23.67	48.58	231
185	238.27	9146	0.436	3059.7	4266.9	154.32	23.27	45.41	238
190	251.46	9999	0.407	3214.0	4487.9	155.50	22.96	43.12	244
195	264.05	10802	0.382	3361.2	4698.9	156.59	22.71	41.35	250
200	276.17	11567	0.361	3502.9	4902.0	157.62	22.51	39.95	255
210	299.30	13002	0.327	3774.1	5290.4	159.52	22.19	37.85	265
220	321.33	14341	0.300	4033.2	5661.1	161.24	21.96	36.37	274
230	342.52	15608	0.277	4283.8	6019.8	162.83	21.79	35.26	283
240	363.07	16817	0.259	4527.8	6367.2	164.32	21.65	34.41	291
250	383.12	17981	0.243	4766.9	6707.9	165.71	21.54	33.74	299
260	402.76	19108	0.229	5002.1	7042.5	167.02	21.46	33.21	306
270	422.06	20203	0.217	5234.1	7372.4	168.26	21.40	32.78	313
280	441.08	21273	0.207	5463.8	7698.4	169.45	21.36	32.43	320
290	459.86	22321	0.197	5691.4	8021.2	170.58	21.33	32.15	326
300	478.44	23350	0.189	5917.6	8341.5	171.67	21.32	31.92	333
310	496.85	24363	0.181	6142.5	8659.7	172.71	21.32	31.73	339
320	515.11	25363	0.174	6366.6	8976.3	173.72	21.33	31.59	345
330	533.24	26350	0.167	6590.0	9291.5	174.69	21.35	31.47	351
340	551.26	27327	0.162	6813.0	9605.8	175.62	21.39	31.38	356

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

50 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	V(DH/DV)$_P$ J/GMOLE	V(DP/DU)$_V$ CC-ATM/J	-V(DP/DV)$_T$ ATM	(DV/DT)$_P$/V I/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S X 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 54.931	0.040928	16177.07	26.697	11882.93	0.0032806	1.93684	6.3480	0.00089	1.57022	5.4359
56	0.040784	16089.15	25.544	11637.39	0.0032978	1.92746	6.1188	0.00089	1.56791	5.2639
58	0.040514	15923.47	25.254	11187.66	0.0033309	1.90933	5.7141	0.00089	1.56358	4.9606
60	0.040244	15756.12	25.957	10750.14	0.0033652	1.89047	5.3389	0.00089	1.55925	4.6796
62	0.039973	15587.03	25.653	10324.60	0.0034009	1.87094	4.9910	0.00088	1.55492	4.4193
64	0.039700	15416.12	25.343	9910.76	0.0034381	1.85077	4.6684	0.00088	1.55057	4.1781
66	0.039427	15243.31	25.028	9508.38	0.0034768	1.83001	4.3693	0.00088	1.54621	3.9544
68	0.039152	15068.54	24.707	9117.19	0.0035173	1.80871	4.0919	0.00087	1.54184	3.7471
70	0.038876	14891.70	24.381	8736.96	0.0035595	1.78689	3.8347	0.00087	1.53746	3.5550
72	0.038598	14712.75	24.051	8367.43	0.0036037	1.76460	3.5962	0.00086	1.53307	3.3768
74	0.038319	14531.56	23.717	8008.36	0.0036500	1.74187	3.3751	0.00086	1.52866	3.2117
76	0.038039	14348.09	23.379	7659.51	0.0036986	1.71873	3.1700	0.00085	1.52423	3.0587
78	0.037757	14162.21	23.037	7320.66	0.0037496	1.69522	2.9796	0.00085	1.51978	2.9170
80	0.037473	13973.86	22.693	6991.55	0.0038032	1.67136	2.8034	0.00084	1.51532	2.7858
82	0.037186	13782.94	22.346	6671.97	0.0038598	1.64719	2.6397	0.00083	1.51083	2.6643
84	0.036898	13589.34	21.997	6361.68	0.0039194	1.62272	2.4880	0.00083	1.50632	2.5520
86	0.036608	13392.98	21.647	6060.48	0.0039825	1.59798	2.3472	0.00082	1.50178	2.4483
88	0.036315	13193.72	21.295	5768.12	0.0040492	1.57300	2.2166	0.00081	1.49721	2.3527
90	0.036020	12991.47	20.942	5484.42	0.0041200	1.54779	2.0954	0.00080	1.49261	2.2645
92	0.035721	12786.10	20.588	5209.14	0.0041952	1.52238	1.9829	0.00079	1.48798	2.1834
94	0.035420	12577.50	20.233	4942.09	0.0042753	1.49678	1.8786	0.00079	1.48331	2.1091
96	0.035116	12365.52	19.879	4683.06	0.0043607	1.47100	1.7817	0.00078	1.47859	2.0410
98	0.034808	12150.03	19.524	4431.85	0.0044520	1.44506	1.6917	0.00077	1.47384	1.9790
100	0.034496	11930.88	19.170	4188.28	0.0045498	1.41898	1.6082	0.00076	1.46903	1.9226
102	0.034180	11707.89	18.816	3952.14	0.0046548	1.39275	1.5306	0.00075	1.46418	1.8717
104	0.033859	11480.92	18.463	3723.27	0.0047679	1.36639	1.4585	0.00074	1.45926	1.8259
106	0.033534	11249.78	18.110	3501.47	0.0048900	1.33991	1.3914	0.00073	1.45428	1.7852
108	0.033203	11014.28	17.757	3286.58	0.0050222	1.31331	1.3291	0.00072	1.44923	1.7494
110	0.032867	10774.22	17.405	3078.43	0.0051658	1.28659	1.2710	0.00070	1.44410	1.7183
112	0.032524	10529.37	17.054	2876.87	0.0053223	1.25975	1.2170	0.00069	1.43889	1.6919
114	0.032174	10279.48	16.702	2681.74	0.0054934	1.23279	1.1666	0.00068	1.43359	1.6700
116	0.031817	10024.32	16.350	2492.89	0.0056813	1.20570	1.1197	0.00067	1.42818	1.6528
118	0.031451	9763.62	15.997	2310.21	0.0058886	1.17847	1.0758	0.00065	1.42266	1.6403
120	0.031075	9497.05	15.642	2133.56	0.0061184	1.15110	1.0348	0.00064	1.41702	1.6325
122	0.030690	9224.38	15.284	1962.84	0.0063743	1.12355	0.9964	0.00062	1.41123	1.6297
124	0.030292	8945.29	14.921	1797.96	0.0066612	1.09581	0.9604	0.00061	1.40529	1.6321
126	0.029882	8659.60	14.552	1638.89	0.0069848	1.06786	0.9266	0.00059	1.39916	1.6402
128	0.029457	8367.22	14.173	1485.54	0.0073525	1.03968	0.8947	0.00057	1.39284	1.6545
130	0.029008	8068.62	13.785	1339.02	0.0077680	1.01069	0.8658	0.00055	1.38618	1.7041
132	0.028546	7856.79	13.126	1199.19	0.0082875	0.98183	0.8425	0.00053	1.37935	1.7461
134	0.028066	7544.95	12.648	1069.77	0.0087522	0.95280	0.8189	0.00051	1.37228	1.7737
136	0.027558	7226.96	12.298	939.58	0.0094886	0.92314	0.7946	0.00049	1.36482	1.8428
138	0.027021	6882.53	11.818	815.97	0.0102481	0.89298	0.7696	0.00047	1.35696	1.8996
140	0.026449	6527.17	11.313	698.08	0.0112019	0.86215	0.7437	0.00045	1.34863	1.9712
142	0.025831	6161.78	10.783	586.09	0.0124289	0.83034	0.7167	0.00042	1.33966	2.0659
144	0.025155	5771.84	10.213	478.68	0.0140744	0.79724	0.6882	0.00039	1.32990	2.1912
146	0.024399	5346.24	9.602	375.01	0.0164735	0.76224	0.6575	0.00035	1.31905	2.3743
148	0.023537	4877.30	8.835	280.84	0.0197107	0.72476	0.6241	0.00032	1.30674	2.5872
150	0.022499	4362.29	8.042	191.03	0.0256229	0.70061	0.5868	0.00028	1.29202	2.9215
152	0.021128	3744.11	7.043	107.30	0.0366471	0.69423	0.5388	0.00023	1.27275	3.5098
154	0.019720	2867.55	5.396	29.58	0.1047439	0.74385	0.4645	0.00013	1.23939	5.8619
156	0.008412	2451.26	4.227	11.07	0.1029151	0.49389	0.2426	0.00023	1.10326	3.8722
158	0.007297	2596.31	4.352	17.49	0.0533251	0.38482	0.2262	0.00038	1.08917	2.5485
160	0.006678	2720.86	4.392	21.39	0.0383510	0.34189	0.2180	0.00049	1.08140	2.0795
165	0.005754	3022.78	4.446	27.81	0.0239566	0.29859	0.2075	0.00072	1.06988	1.5729
170	0.005187	3289.55	4.469	31.77	0.0181910	0.28081	0.2026	0.00090	1.06285	1.3490
175	0.004778	3536.70	4.476	34.57	0.0149639	0.27143	0.2000	0.00107	1.05779	1.2185
180	0.004458	3770.93	4.474	36.78	0.0128606	0.26605	0.1987	0.00123	1.05386	1.1320
185	0.004197	3995.74	4.467	38.39	0.0113636	0.26294	0.1983	0.00138	1.05065	1.0701
190	0.003977	4213.20	4.457	39.76	0.0102341	0.26130	0.1984	0.00152	1.04795	1.0233
195	0.003787	4424.65	4.445	40.91	0.0093461	0.26065	0.1990	0.00166	1.04563	0.9867
200	0.003621	4631.02	4.433	41.88	0.0086264	0.26071	0.1999	0.00180	1.04360	0.9573
210	0.003341	5031.15	4.408	43.44	0.0075240	0.26179	0.2023	0.00207	1.04018	0.9144
220	0.003112	5417.57	4.383	44.63	0.0067129	0.26429	0.2054	0.00234	1.03740	0.8834
230	0.002920	5793.06	4.361	45.57	0.0060868	0.26772	0.2089	0.00260	1.03505	0.8599
240	0.002754	6159.78	4.340	46.32	0.0055864	0.27178	0.2127	0.00287	1.03305	0.8415
250	0.002610	6519.47	4.320	46.93	0.0051757	0.27628	0.2166	0.00314	1.03130	0.8269
260	0.002483	6873.65	4.302	47.44	0.0048313	0.28109	0.2207	0.00341	1.02976	0.8149
270	0.002369	7223.60	4.284	47.87	0.0045377	0.28615	0.2249	0.00368	1.02838	0.8052
280	0.002267	7570.43	4.267	48.23	0.0042837	0.29137	0.2292	0.00396	1.02715	0.7971
290	0.002175	7915.09	4.250	48.54	0.0040614	0.29645	0.2335	0.00424	1.02603	0.7912
300	0.002090	8258.42	4.234	48.80	0.0038648	0.30212	0.2378	0.00453	1.02501	0.7850
310	0.002013	8601.12	4.217	49.04	0.0036893	0.30784	0.2421	0.00482	1.02408	0.7800
320	0.001941	8943.81	4.199	49.24	0.0035315	0.31358	0.2465	0.00511	1.02322	0.7759
330	0.001875	9287.00	4.182	49.42	0.0033886	0.31935	0.2508	0.00541	1.02242	0.7725
340	0.001814	9631.11	4.163	49.57	0.0032585	0.32513	0.2552	0.00571	1.02168	0.7698

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

60 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p	VELOCITY OF SOUND M/SEC
* 55.046	24.42	291569	38.99	-6179.3	-6038.8	67.29	35.69	53.03	1171
56	24.50	287122	38.45	-6129.2	-5988.3	68.28	35.46	53.02	1166
58	24.66	277938	37.34	-6024.2	-5884.2	70.86	35.07	53.00	1153
60	24.83	268942	36.26	-5919.2	-5768.3	71.86	34.67	52.98	1141
62	24.99	260129	35.19	-5814.3	-5662.3	73.59	34.28	52.96	1128
64	25.16	251498	34.16	-5789.4	-5556.4	75.28	33.90	52.95	1115
66	25.34	243045	33.14	-5684.5	-5450.5	76.90	33.54	52.95	1102
68	25.51	234767	32.15	-5499.7	-5344.6	78.49	33.19	52.94	1089
70	25.69	226662	31.19	-5394.9	-5238.7	80.02	32.85	52.95	1075
72	25.88	218726	30.24	-5290.1	-5132.8	81.51	32.53	52.95	1062
74	26.06	210957	29.32	-5185.3	-5026.9	82.96	32.21	52.97	1048
76	26.25	203351	28.42	-5080.5	-4928.9	84.38	31.98	52.99	1034
78	26.45	195906	27.54	-4975.7	-4814.9	85.75	31.61	53.02	1020
80	26.65	188618	26.69	-4870.8	-4708.8	87.18	31.32	53.06	1006
82	26.85	181485	25.85	-4765.8	-4602.6	88.41	31.04	53.10	991
84	27.06	174503	25.04	-4660.8	-4496.3	89.69	30.77	53.16	977
86	27.27	167670	24.24	-4555.7	-4389.9	90.94	30.51	53.22	962
88	27.49	160983	23.46	-4450.5	-4283.4	92.16	30.26	53.38	948
90	27.71	154438	22.71	-4345.1	-4176.7	93.36	30.01	53.39	933
92	27.94	148033	21.97	-4239.6	-4069.8	94.54	29.77	53.50	918
94	28.18	141765	21.24	-4133.9	-3962.6	95.69	29.54	53.62	903
96	28.42	135631	20.54	-4028.0	-3855.3	96.82	29.32	53.75	887
98	28.67	129628	19.85	-3921.9	-3747.6	97.93	29.09	53.91	872
100	28.92	123753	19.18	-3815.4	-3639.6	99.02	28.88	54.08	857
102	29.18	118003	18.53	-3708.7	-3531.2	100.09	28.67	54.27	841
104	29.46	112375	17.89	-3601.6	-3422.5	101.15	28.46	54.49	825
106	29.74	106867	17.26	-3494.8	-3313.3	102.19	28.26	54.74	810
108	30.03	101476	16.65	-3386.1	-3203.5	103.22	28.06	55.02	794
110	30.33	96200	16.05	-3277.6	-3093.2	104.23	27.86	55.32	778
112	30.64	91035	15.47	-3168.5	-2982.2	105.23	27.67	55.67	762
114	30.97	85979	14.89	-3058.7	-2870.5	106.22	27.47	56.06	745
116	31.31	81030	14.33	-2948.2	-2757.9	107.20	27.28	56.49	729
118	31.66	76185	13.78	-2836.9	-2644.4	108.17	27.09	56.97	712
120	32.03	71443	13.24	-2724.7	-2529.9	109.13	26.98	57.51	695
122	32.42	66802	12.71	-2611.3	-2414.2	110.08	26.72	58.13	678
124	32.83	62261	12.18	-2496.8	-2297.2	111.04	26.53	58.82	661
126	33.27	57818	11.66	-2380.9	-2178.7	111.98	26.35	59.60	644
128	33.73	53474	11.15	-2263.5	-2058.5	112.93	26.17	60.49	626
130	34.23	49142	10.66	-2142.5	-1934.4	113.89	26.67	62.35	603
132	34.75	45048	10.17	-2019.9	-1808.6	114.85	26.55	63.63	585
134	35.31	41260	9.63	-1895.4	-1680.7	115.81	26.41	64.43	565
136	35.92	37322	9.19	-1768.1	-1549.7	116.76	26.30	66.50	547
138	36.58	33534	8.66	-1637.9	-1415.5	117.76	26.19	68.88	525
140	37.31	29856	8.15	-1504.3	-1277.5	118.76	26.11	70.85	504
142	38.11	26276	7.66	-1366.4	-1134.7	119.77	26.08	72.72	482
144	39.01	22765	7.15	-1223.3	-986.1	120.81	26.10	75.96	458
146	40.04	19279	6.63	-1073.6	-830.2	121.88	26.16	80.18	433
148	41.23	16040	6.08	-915.4	-664.7	123.81	26.28	84.95	405
150	42.65	12850	5.54	-746.0	-486.7	124.28	26.48	92.55	377
152	44.44	9772	4.98	-560.0	-289.8	125.51	26.80	103.90	346
154	46.81	6842	4.36	-348.5	-63.9	126.98	27.31	122.28	311
156	50.34	4129	3.66	-91.1	215.0	128.78	28.38	158.57	270
158	57.17	1776	2.83	278.8	625.6	131.40	30.42	267.11	222
160	76.56	837	1.88	937.7	1403.2	136.28	33.45	436.95	186
165	118.34	2791	1.10	1816.2	2535.6	143.28	28.44	129.88	208
170	140.81	4429	0.863	2183.2	3039.2	146.29	26.38	83.84	211
175	158.19	5788	0.733	2446.8	3408.5	148.43	25.19	66.37	220
180	173.02	6953	0.649	2664.4	3716.3	150.17	24.41	57.51	228
185	186.36	8000	0.588	2856.1	3989.1	151.66	23.85	52.00	235
190	198.67	8961	0.541	3031.3	4239.1	153.00	23.44	48.22	242
195	210.24	9856	0.502	3194.8	4472.9	154.21	23.12	45.45	248
200	221.23	10708	0.470	3349.7	4694.7	155.33	22.86	43.35	253
210	241.95	12266	0.419	3641.1	5112.1	157.37	22.47	40.33	264
220	261.41	13712	0.381	3915.3	5504.5	159.28	22.19	38.28	274
230	279.97	15067	0.350	4177.4	5879.5	160.86	21.97	36.79	283
240	297.85	16351	0.324	4430.6	6241.6	162.48	21.80	35.67	291
250	315.19	17580	0.303	4677.5	6593.7	163.84	21.67	34.80	299
260	332.11	18763	0.285	4919.1	6938.1	165.19	21.56	34.11	307
270	348.67	19910	0.269	5156.6	7276.4	166.47	21.48	33.55	314
280	364.95	21025	0.255	5390.8	7609.6	167.68	21.42	33.11	321
290	380.99	22114	0.243	5622.5	7938.7	168.84	21.38	32.74	327
300	396.83	23181	0.232	5852.1	8264.6	169.94	21.35	32.44	334
310	412.49	24229	0.222	6080.0	8587.8	171.00	21.34	32.20	340
320	428.00	25262	0.213	6306.7	8908.8	172.02	21.34	32.01	346
330	443.39	26280	0.205	6532.5	9228.0	173.00	21.35	31.85	352
340	458.66	27286	0.197	6757.5	9545.9	173.95	21.38	31.73	358

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

60 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	$V(\partial H/\partial V)_p$ J/GMOLE	$V(\partial P/\partial U)_v$ CC-ATM/J	$-V(\partial P/\partial V)_T$ ATM	$(\partial V/\partial T)_P/V$ 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S X 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 55.046	0.040946	16237.31	25.686	11938.70	0.0032662	1.93830	6.3791	0.00089	1.57052	5.4546
56	0.040819	16159.72	25.551	11719.99	0.0032811	1.93000	6.1739	0.00089	1.56847	5.3005
58	0.040551	15995.88	25.260	11270.54	0.0033133	1.91205	5.7667	0.00089	1.56416	4.9953
60	0.040281	15830.44	25.963	10833.33	0.0033467	1.89337	5.3891	0.00089	1.55985	4.7126
62	0.040011	15663.32	25.660	10408.69	0.0033814	1.87402	5.0390	0.00088	1.55553	4.4506
64	0.039740	15494.46	25.351	9994.56	0.0034175	1.85404	4.7143	0.00088	1.55121	4.2077
66	0.039468	15323.77	25.035	9592.49	0.0034551	1.83347	4.4131	0.00088	1.54687	3.9826
68	0.039195	15151.19	24.715	9201.63	0.0034943	1.81235	4.1339	0.00087	1.54252	3.7739
70	0.038920	14976.63	24.390	8821.72	0.0035352	1.79072	3.8749	0.00087	1.53816	3.5803
72	0.038644	14800.04	24.061	8452.53	0.0035780	1.76863	3.6346	0.00086	1.53379	3.4009
74	0.038367	14621.30	23.727	8093.80	0.0036227	1.74610	3.4118	0.00086	1.52941	3.2345
76	0.038088	14440.37	23.390	7745.30	0.0036696	1.72317	3.2052	0.00085	1.52501	3.0803
78	0.037808	14257.13	23.050	7406.80	0.0037188	1.69986	3.0135	0.00085	1.52059	2.9374
80	0.037526	14071.52	22.707	7078.06	0.0037705	1.67622	2.8356	0.00084	1.51615	2.8050
82	0.037242	13883.45	22.362	6758.85	0.0038249	1.65226	2.6707	0.00084	1.51170	2.6824
84	0.036956	13692.80	22.014	6448.95	0.0038822	1.62801	2.5176	0.00083	1.50722	2.5691
86	0.036668	13499.53	21.666	6148.14	0.0039427	1.60350	2.3756	0.00082	1.50271	2.4643
88	0.036378	13303.48	21.316	5856.19	0.0040066	1.57875	2.2439	0.00081	1.49818	2.3675
90	0.036085	13104.58	20.965	5572.89	0.0040743	1.55379	2.1216	0.00081	1.49363	2.2783
92	0.035790	12902.74	20.614	5298.04	0.0041461	1.52862	2.0081	0.00080	1.48903	2.1962
94	0.035491	12697.76	20.263	5031.43	0.0042224	1.50327	1.9028	0.00079	1.48441	2.1208
96	0.035190	12489.60	19.911	4772.85	0.0043037	1.47776	1.8049	0.00078	1.47974	2.0517
98	0.034885	12278.12	19.561	4522.12	0.0043903	1.45209	1.7141	0.00077	1.47504	1.9886
100	0.034577	12063.17	19.211	4279.02	0.0044830	1.42629	1.6297	0.00076	1.47029	1.9311
102	0.034265	11844.61	18.861	4043.39	0.0045822	1.40036	1.5513	0.00075	1.46549	1.8790
104	0.033949	11622.31	18.513	3815.04	0.0046887	1.37431	1.4785	0.00074	1.46064	1.8321
106	0.033628	11396.11	18.166	3593.78	0.0048034	1.34815	1.4108	0.00073	1.45573	1.7901
108	0.033303	11165.85	17.820	3379.45	0.0049271	1.32189	1.3478	0.00072	1.45075	1.7529
110	0.032972	10931.34	17.476	3171.89	0.0050611	1.29552	1.2891	0.00071	1.44571	1.7204
112	0.032635	10692.43	17.132	2970.93	0.0052064	1.26906	1.2345	0.00070	1.44059	1.6924
114	0.032292	10448.89	15.790	2776.43	0.0053647	1.24250	1.1837	0.00069	1.43538	1.6688
116	0.031942	10200.55	16.448	2588.25	0.0055377	1.21583	1.1362	0.00067	1.43008	1.6497
118	0.031584	9947.22	15.106	2406.25	0.0057274	1.18906	1.0919	0.00066	1.42468	1.6350
120	0.031218	9688.65	15.764	2230.33	0.0059363	1.16217	1.0506	0.00065	1.41916	1.6248
122	0.030843	9424.70	15.422	2060.36	0.0061674	1.13516	1.0118	0.00063	1.41352	1.6192
124	0.030457	9155.17	15.076	1896.28	0.0064243	1.10800	0.9756	0.00062	1.40774	1.6183
126	0.030060	8880.04	14.727	1737.99	0.0067113	1.08069	0.9415	0.00060	1.40181	1.6226
128	0.029649	8599.41	14.370	1585.48	0.0070340	1.05319	0.9094	0.00059	1.39570	1.6323
130	0.029218	8398.60	13.677	1435.84	0.0074238	1.02501	0.8787	0.00056	1.38929	1.6704
132	0.028776	8110.73	13.311	1296.30	0.0078446	0.99701	0.8548	0.00054	1.38275	1.7047
134	0.028318	7820.73	12.870	1168.40	0.0082378	0.96896	0.8320	0.00053	1.37599	1.7289
136	0.027838	7521.37	12.550	1038.98	0.0088420	0.94039	0.8087	0.00051	1.36893	1.7874
138	0.027335	7202.77	12.102	916.65	0.0094518	0.91155	0.7850	0.00049	1.36155	1.8321
140	0.026804	6877.34	11.646	800.26	0.0101855	0.88230	0.7606	0.00047	1.35380	1.8872
142	0.026239	6547.05	11.192	689.47	0.0111077	0.85243	0.7355	0.00045	1.34559	1.9608
144	0.025634	6200.12	10.689	583.57	0.0122540	0.82182	0.7093	0.00042	1.33682	2.0494
146	0.024978	5826.03	10.143	481.55	0.0137626	0.79025	0.6820	0.00039	1.32735	2.1626
148	0.024255	5439.27	9.532	389.05	0.0156175	0.75731	0.6530	0.00037	1.31698	2.2892
150	0.023444	5031.93	8.925	301.26	0.0183928	0.72254	0.6219	0.00033	1.30542	2.4896
152	0.022504	4590.57	8.252	219.91	0.0226334	0.68969	0.5876	0.00030	1.29210	2.7269
154	0.021364	4100.07	7.473	146.18	0.0298247	0.68466	0.5484	0.00026	1.27606	3.0608
156	0.019864	3550.45	6.499	82.02	0.0446628	0.67615	0.5005	0.00021	1.25516	3.6683
158	0.017491	2927.25	5.326	31.06	0.0912486	0.68957	0.4330	0.00015	1.22258	5.2410
160	0.013062	2533.46	4.314	10.93	0.1724737	0.65266	0.3301	0.00011	1.16333	6.9069
165	0.008456	2779.18	4.557	23.58	0.0464441	0.40553	0.2496	0.00037	1.16374	2.4829
170	0.007102	3054.86	4.606	31.45	0.0274431	0.34054	0.2316	0.00057	1.08671	1.7821
175	0.006322	3313.49	4.602	36.59	0.0200388	0.31318	0.2231	0.00075	1.07695	1.4776
180	0.005780	3559.51	4.603	40.19	0.0161572	0.29909	0.2184	0.00090	1.07020	1.3121
185	0.005366	3795.35	4.595	42.93	0.0137000	0.29069	0.2156	0.00104	1.06507	1.2050
190	0.005033	4023.02	4.582	45.10	0.0119849	0.28549	0.2140	0.00118	1.06095	1.1295
195	0.004757	4243.95	4.567	46.88	0.0107103	0.28225	0.2133	0.00131	1.05753	1.0733
200	0.004520	4459.15	4.550	48.36	0.0097205	0.28034	0.2131	0.00143	1.05462	1.0296
210	0.004133	4875.20	4.516	50.70	0.0082727	0.27848	0.2139	0.00167	1.04987	0.9683
220	0.003825	5275.47	4.484	52.45	0.0072558	0.27895	0.2158	0.00191	1.04610	0.9256
230	0.003572	5662.99	4.455	53.81	0.0064968	0.28087	0.2184	0.00214	1.04300	0.8942
240	0.003357	6040.11	4.429	54.90	0.0059054	0.28375	0.2215	0.00237	1.04038	0.8701
250	0.003173	6408.78	4.405	55.78	0.0054298	0.28731	0.2248	0.00260	1.03813	0.8511
260	0.003011	6770.68	4.383	56.50	0.0050376	0.29135	0.2284	0.00284	1.03617	0.8358
270	0.002868	7127.26	4.363	57.10	0.0047078	0.29575	0.2322	0.00307	1.03443	0.8233
280	0.002740	7479.78	4.344	57.61	0.0044259	0.30041	0.2361	0.00331	1.03288	0.8130
290	0.002625	7829.36	4.326	58.04	0.0041817	0.30493	0.2400	0.00355	1.03148	0.8055
300	0.002520	8176.94	4.308	58.42	0.0039675	0.31023	0.2441	0.00379	1.03021	0.7977
310	0.002424	8523.34	4.290	58.74	0.0037779	0.31560	0.2482	0.00404	1.02905	0.7912
320	0.002336	8869.29	4.272	59.02	0.0036085	0.32104	0.2523	0.00429	1.02799	0.7859
330	0.002255	9215.36	4.253	59.27	0.0034561	0.32653	0.2564	0.00455	1.02701	0.7816
340	0.002180	9562.08	4.235	59.49	0.0033180	0.33206	0.2606	0.00480	1.02610	0.7780

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

70 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p	VELOCITY OF SOUND M/SEC
* 55.162	24.41	292794	39.00	-6177.6	-6084.4	67.32	35.69	53.00	1173
56	24.48	288895	38.53	-6133.6	-5960.0	68.12	35.51	52.99	1168
58	24.64	279730	37.42	-6028.8	-5854.1	69.98	35.10	52.96	1156
60	24.80	270752	36.33	-5924.1	-5748.2	71.77	34.70	52.94	1144
62	24.97	261959	35.27	-5819.4	-5642.3	73.51	34.32	52.92	1131
64	25.14	253348	34.24	-5714.8	-5536.5	75.19	33.94	52.90	1118
66	25.31	244915	33.23	-5610.2	-5430.7	76.82	33.58	52.89	1105
68	25.49	236658	32.24	-5505.6	-5324.9	78.40	33.23	52.89	1092
70	25.66	228575	31.27	-5401.1	-5219.1	79.93	32.90	52.89	1079
72	25.85	220661	30.33	-5296.6	-5113.3	81.42	32.57	52.89	1065
74	26.03	212914	29.41	-5192.2	-5007.5	82.87	32.26	52.90	1052
76	26.22	205331	28.51	-5087.7	-4901.7	84.28	31.95	52.92	1038
78	26.41	197909	27.64	-4983.2	-4795.8	85.65	31.66	52.94	1024
80	26.61	190646	26.78	-4878.6	-4689.9	86.99	31.37	52.97	1010
82	26.81	183537	25.95	-4774.1	-4583.9	88.30	31.09	53.01	995
84	27.02	176581	25.14	-4669.4	-4477.8	89.58	30.83	53.06	981
86	27.23	169775	24.34	-4564.7	-4371.6	90.83	30.57	53.12	967
88	27.44	163114	23.57	-4460.0	-4265.3	92.05	30.32	53.18	952
90	27.66	156597	22.81	-4355.1	-4158.8	93.25	30.07	53.26	937
92	27.89	150221	22.08	-4250.0	-4052.2	94.42	29.83	53.36	922
94	28.12	143983	21.36	-4144.8	-3945.4	95.57	29.60	53.47	907
96	28.36	137879	20.66	-4039.4	-3838.3	96.70	29.38	53.59	892
98	28.60	131908	19.97	-3933.8	-3731.0	97.80	29.16	53.73	877
100	28.85	126066	19.31	-3828.0	-3623.4	98.89	28.94	53.88	862
102	29.11	120350	18.66	-3721.9	-3515.4	99.96	28.73	54.06	847
104	29.38	114758	18.02	-3615.5	-3407.1	101.01	28.52	54.26	831
106	29.66	109287	17.40	-3508.7	-3298.4	102.05	28.32	54.48	816
108	29.94	103934	16.79	-3401.5	-3189.1	103.07	28.12	54.73	800
110	30.23	98698	16.20	-3293.8	-3079.4	104.07	27.92	55.01	785
112	30.54	93575	15.62	-3185.7	-2969.1	105.07	27.72	55.32	769
114	30.86	88563	15.05	-3076.9	-2858.1	106.05	27.53	55.67	753
116	31.19	83659	14.50	-2967.6	-2746.3	107.02	27.34	56.06	737
118	31.53	78863	13.95	-2857.4	-2633.8	107.98	27.14	56.49	721
120	31.89	74172	13.42	-2746.5	-2520.3	108.94	26.95	56.97	705
122	32.27	69584	12.89	-2634.6	-2405.7	109.89	26.76	57.52	688
124	32.66	65098	12.38	-2521.7	-2290.0	110.83	26.57	58.12	672
126	33.08	60714	11.87	-2407.6	-2173.0	111.76	26.37	58.81	655
128	33.52	56432	11.37	-2292.2	-2054.4	112.69	26.19	59.58	638
130	34.00	52063	10.87	-2173.5	-1932.4	113.64	26.69	61.24	615
132	34.49	48015	10.39	-2053.6	-1808.9	114.58	26.57	62.36	597
134	35.02	44275	9.88	-1931.9	-1683.4	115.53	26.44	63.14	579
136	35.59	40818	9.44	-1808.0	-1555.6	116.47	26.31	64.78	561
138	36.21	36713	8.94	-1681.8	-1425.0	117.43	26.20	66.08	541
140	36.87	33130	8.45	-1552.9	-1291.4	118.39	26.11	67.65	521
142	37.60	29633	7.98	-1420.7	-1154.8	119.36	26.04	69.79	501
144	38.40	26236	7.50	-1284.6	-1012.2	120.35	26.02	72.17	480
146	39.29	22890	7.00	-1144.1	-865.4	121.37	26.04	74.89	457
148	40.30	19748	6.52	-997.3	-711.5	122.41	26.09	78.56	434
150	41.45	16689	6.02	-843.9	-549.9	123.58	26.18	82.99	409
152	42.81	13751	5.53	-681.1	-377.5	124.64	26.34	89.15	384
154	44.44	10977	5.02	-506.1	-190.9	125.86	26.57	97.23	357
156	46.49	8399	4.49	-314.1	15.7	127.19	26.91	108.92	328
158	49.20	6033	3.94	-97.2	251.7	128.70	27.47	127.13	297
160	53.08	4006	3.35	158.7	535.2	130.48	28.86	157.06	263
165	74.80	1600	1.95	1052.6	1503.2	136.92	30.32	227.62	207
170	101.53	3839	1.31	1728.7	2448.9	142.18	27.91	128.29	210
175	120.62	4492	1.04	2115.3	2970.6	145.13	26.25	88.29	219
180	135.92	5791	0.886	2397.4	3361.5	147.33	25.20	70.86	227
185	149.11	6972	0.777	2629.7	3687.3	149.12	24.47	60.56	234
190	160.93	8024	0.701	2832.5	3974.0	150.69	23.93	54.51	241
195	171.85	8999	0.643	3016.6	4235.5	152.01	23.52	50.33	247
200	182.10	9913	0.596	3187.5	4479.1	153.24	23.21	47.27	253
210	201.13	11599	0.524	3502.6	4929.2	155.44	22.74	43.08	264
220	218.79	13142	0.470	3793.7	5345.5	157.37	22.41	40.35	274
230	235.48	14579	0.428	4068.6	5730.8	159.12	22.15	38.42	283
240	251.44	15933	0.395	4332.1	6115.5	160.73	21.96	36.99	292
250	266.85	17223	0.367	4587.0	6479.7	162.21	21.80	35.89	300
260	281.81	18460	0.343	4835.3	6834.2	163.60	21.67	35.03	307
270	296.42	19654	0.323	5078.5	7180.9	164.91	21.56	34.35	315
280	310.73	20812	0.306	5317.5	7521.5	166.15	21.48	33.79	322
290	324.81	21940	0.290	5553.3	7857.1	167.33	21.42	33.34	329
300	338.67	23043	0.277	5786.4	8188.5	168.45	21.38	32.97	335
310	352.37	24125	0.265	6017.4	8516.7	169.53	21.35	32.67	342
320	365.91	25188	0.254	6246.8	8842.1	170.56	21.34	32.42	348
330	379.33	26235	0.244	6474.8	9165.3	171.55	21.35	32.22	354
340	392.63	27269	0.234	6701.9	9486.7	172.51	21.36	32.07	360

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

70 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	$V(\partial H/\partial V)_p$ J/GMOLE	$V(\partial P/\partial U)_V$ CC-ATM/J	$-V(\partial P/\partial V)_T$ ATM	$(\partial V/\partial T)_P/V$ 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S X 10^5	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 55.162	0.040965	16297.51	26.676	11994.39	0.0032518	1.93974	6.4102	0.00089	1.57082	5.4733
56	0.040854	16230.02	26.557	11802.38	0.0032646	1.93252	6.2291	0.00089	1.56903	5.3374
58	0.040586	16068.01	26.267	11353.22	0.0032960	1.91474	5.8195	0.00089	1.56474	5.0302
60	0.040318	15904.45	25.970	10916.29	0.0033285	1.89624	5.4396	0.00089	1.56044	4.7457
62	0.040050	15739.29	25.667	10491.34	0.0033622	1.87706	5.0872	0.00089	1.55614	4.4820
64	0.039780	15572.45	25.357	10078.11	0.0033973	1.85726	4.7604	0.00088	1.55184	4.2376
66	0.039509	15403.86	25.043	9676.35	0.0034336	1.83688	4.4572	0.00088	1.54752	4.0109
68	0.039237	15233.45	24.723	9285.79	0.0034718	1.81595	4.1760	0.00088	1.54320	3.8008
70	0.038964	15061.13	24.398	8906.20	0.0035114	1.79452	3.9152	0.00087	1.53886	3.6058
72	0.038690	14886.87	24.070	8537.32	0.0035528	1.77261	3.6732	0.00087	1.53451	3.4251
74	0.038414	14710.53	23.737	8178.92	0.0035960	1.75028	3.4487	0.00086	1.53015	3.2574
76	0.038137	14532.10	23.401	7830.76	0.0036413	1.72755	3.2405	0.00086	1.52578	3.1020
78	0.037859	14351.45	23.062	7492.59	0.0036888	1.70445	3.0473	0.00085	1.52139	2.9579
80	0.037579	14168.52	22.720	7164.20	0.0037386	1.68101	2.8681	0.00084	1.51698	2.8244
82	0.037297	13983.24	22.376	6845.34	0.0037909	1.65726	2.7018	0.00084	1.51256	2.7007
84	0.037013	13795.48	22.031	6535.82	0.0038460	1.63324	2.5475	0.00083	1.50811	2.5862
86	0.036727	13605.21	21.684	6235.35	0.0039041	1.60895	2.4042	0.00082	1.50364	2.4804
88	0.036439	13412.29	21.336	5943.78	0.0039653	1.58443	2.2713	0.00082	1.49915	2.3826
90	0.036149	13216.65	20.988	5660.87	0.0040301	1.55970	2.1479	0.00081	1.49463	2.2924
92	0.035857	13018.15	20.639	5386.42	0.0040988	1.53477	2.0334	0.00080	1.49008	2.2093
94	0.035561	12816.74	20.291	5120.21	0.0041715	1.50967	1.9271	0.00079	1.48549	2.1328
96	0.035263	12612.27	19.943	4862.05	0.0042489	1.48441	1.8283	0.00079	1.48088	2.0627
98	0.034962	12404.64	19.595	4611.75	0.0043312	1.45901	1.7366	0.00078	1.47622	1.9985
100	0.034657	12193.73	19.249	4369.10	0.0044190	1.43348	1.6514	0.00077	1.47152	1.9399
102	0.034349	11979.40	18.905	4133.92	0.0045129	1.40783	1.5722	0.00076	1.46678	1.8867
104	0.034037	11761.55	18.561	3906.03	0.0046134	1.38208	1.4986	0.00075	1.46199	1.8386
106	0.033721	11540.02	18.220	3685.26	0.0047213	1.35623	1.4301	0.00074	1.45714	1.7955
108	0.033400	11314.69	17.880	3471.43	0.0048374	1.33029	1.3665	0.00073	1.45224	1.7570
110	0.033075	11085.41	17.542	3264.33	0.0049626	1.30426	1.3072	0.00072	1.44727	1.7231
112	0.032744	10852.03	17.206	3063.97	0.0050980	1.27815	1.2521	0.00071	1.44223	1.6936
114	0.032407	10614.38	16.872	2870.02	0.0052449	1.25196	1.2007	0.00069	1.43712	1.6685
116	0.032063	10372.33	16.540	2682.41	0.0054046	1.22570	1.1527	0.00068	1.43192	1.6476
118	0.031713	10125.73	16.210	2501.01	0.0055790	1.19935	1.1080	0.00067	1.42663	1.6309
120	0.031356	9874.40	15.880	2325.70	0.0057699	1.17291	1.0662	0.00066	1.42123	1.6185
122	0.030989	9618.27	15.551	2156.36	0.0059798	1.14638	1.0271	0.00064	1.41573	1.6105
124	0.030614	9357.23	15.221	1992.92	0.0062115	1.11975	0.9905	0.00063	1.41010	1.6068
126	0.030228	9091.37	14.890	1835.29	0.0064683	1.09301	0.9562	0.00061	1.40433	1.6078
128	0.029831	8820.93	14.554	1683.44	0.0067543	1.06614	0.9240	0.00060	1.39841	1.6136
130	0.029416	8628.13	13.845	1531.46	0.0070980	1.03868	0.8931	0.00058	1.39222	1.6457
132	0.028991	8353.36	13.489	1392.01	0.0074649	1.01144	0.8664	0.00056	1.38593	1.6693
134	0.028552	8080.50	13.087	1264.15	0.0078141	0.98410	0.8443	0.00055	1.37944	1.6930
136	0.028096	7794.60	12.767	1135.56	0.0083110	0.95655	0.8219	0.00053	1.37271	1.7396
138	0.027620	7497.48	12.349	1014.82	0.0088136	0.92879	0.7992	0.00051	1.36572	1.7769
140	0.027122	7195.41	11.930	898.55	0.0094019	0.90078	0.7760	0.00049	1.35844	1.8213
142	0.026597	6890.09	11.526	788.17	0.0101298	0.87237	0.7522	0.00047	1.35079	1.8808
144	0.026042	6572.32	11.068	683.10	0.0109804	0.84355	0.7278	0.00045	1.34273	1.9459
146	0.025453	6235.00	10.559	582.61	0.0120108	0.81426	0.7027	0.00043	1.33420	2.0198
148	0.024815	5901.77	10.075	490.04	0.0133105	0.78408	0.6765	0.00040	1.32501	2.1161
150	0.024124	5545.52	9.539	402.61	0.0149645	0.75307	0.6491	0.00038	1.31511	2.2355
152	0.023360	5176.80	8.991	321.23	0.0172213	0.72071	0.6201	0.00035	1.30422	2.3972
154	0.022501	4787.21	8.390	247.00	0.0203094	0.69912	0.5889	0.00032	1.29205	2.5596
156	0.021509	4382.39	7.757	180.65	0.0246539	0.66119	0.5546	0.00029	1.27808	2.7723
158	0.020325	3957.63	7.055	122.62	0.0321217	0.66552	0.5166	0.00026	1.26156	3.0638
160	0.018840	3534.69	6.166	75.47	0.0444301	0.65256	0.4723	0.00022	1.24104	3.5527
165	0.013369	2811.23	4.807	24.06	0.0809694	0.57895	0.3400	0.00019	1.16737	4.1778
170	0.009849	2929.65	4.767	29.93	0.0437917	0.43942	0.2767	0.00035	1.12159	2.5243
175	0.008291	3163.73	4.776	37.24	0.0279071	0.37284	0.2540	0.00051	1.10171	1.8798
180	0.007357	3408.15	4.777	42.60	0.0207924	0.34209	0.2426	0.00066	1.08993	1.5703
185	0.006706	3644.05	4.735	46.76	0.0166178	0.32410	0.2359	0.00080	1.08176	1.3772
190	0.006214	3873.93	4.718	49.86	0.0140700	0.31350	0.2317	0.00093	1.07560	1.2590
195	0.005819	4098.91	4.697	52.37	0.0122788	0.30660	0.2291	0.00105	1.07069	1.1752
200	0.005492	4318.97	4.675	54.44	0.0109448	0.30203	0.2275	0.00116	1.06662	1.1127
210	0.004972	4745.46	4.631	57.67	0.0090786	0.29640	0.2263	0.00138	1.06019	1.0279
220	0.004571	5155.92	4.589	60.07	0.0078250	0.29440	0.2268	0.00160	1.05524	0.9712
230	0.004247	5552.77	4.553	61.91	0.0069185	0.29456	0.2283	0.00181	1.05126	0.9306
240	0.003977	5938.18	4.520	63.37	0.0062289	0.29611	0.2305	0.00201	1.04796	0.9000
250	0.003747	6314.08	4.492	64.54	0.0056846	0.29861	0.2332	0.00222	1.04515	0.8762
260	0.003548	6682.20	4.467	65.50	0.0052427	0.30179	0.2363	0.00243	1.04271	0.8572
270	0.003374	7044.08	4.444	66.30	0.0048757	0.30548	0.2396	0.00264	1.04058	0.8418
280	0.003218	7401.11	4.423	66.98	0.0045655	0.30953	0.2431	0.00285	1.03869	0.8292
290	0.003079	7754.49	4.403	67.55	0.0042992	0.31346	0.2467	0.00305	1.03699	0.8199
300	0.002953	8105.29	4.384	68.04	0.0040676	0.31836	0.2504	0.00327	1.03546	0.8104
310	0.002838	8454.43	4.365	68.46	0.0038640	0.32338	0.2542	0.00349	1.03406	0.8025
320	0.002733	8802.72	4.347	68.84	0.0036833	0.32850	0.2581	0.00371	1.03279	0.7960
330	0.002636	9150.82	4.328	69.16	0.0035215	0.33370	0.2620	0.00393	1.03162	0.7906
340	0.002547	9499.32	4.309	69.45	0.0033756	0.33897	0.2659	0.00415	1.03053	0.7861

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

80 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	Cv J/G MOLE -K	Cp	VELOCITY OF SOUND M/SEC
* 55.277	24.40	294016	39.01	-6175.8	-5978.0	67.35	35.71	52.96	1175
56	24.46	290661	38.61	-6138.0	-5939.7	68.04	35.55	52.95	1171
58	24.62	281514	37.50	-6033.4	-5833.9	69.90	35.13	52.92	1159
60	24.78	272555	36.41	-5928.9	-5728.0	71.69	34.74	52.90	1146
62	24.95	263781	35.35	-5824.5	-5622.3	73.42	34.35	52.87	1134
64	25.11	255190	34.32	-5720.1	-5516.5	75.10	33.98	52.86	1121
66	25.28	246777	33.31	-5615.8	-5410.8	76.73	33.62	52.84	1108
68	25.46	238541	32.32	-5511.5	-5305.1	78.31	33.27	52.83	1095
70	25.64	230478	31.36	-5407.3	-5199.5	79.84	32.94	52.83	1082
72	25.82	222585	30.42	-5303.1	-5093.8	81.33	32.61	52.83	1068
74	26.00	214860	29.50	-5198.9	-4988.1	82.77	32.30	52.83	1055
76	26.19	207300	28.61	-5094.7	-4882.5	84.18	32.00	52.84	1041
78	26.38	199901	27.73	-4990.6	-4776.7	85.56	31.70	52.86	1027
80	26.57	192661	26.88	-4886.4	-4671.0	86.89	31.42	52.89	1013
82	26.77	185576	26.05	-4782.2	-4565.2	88.20	31.15	52.92	999
84	26.98	178645	25.24	-4677.9	-4459.3	89.48	30.88	52.96	985
86	27.18	171864	24.44	-4573.6	-4353.3	90.72	30.62	53.01	971
88	27.40	165229	23.67	-4469.3	-4247.2	91.94	30.37	53.07	956
90	27.61	158739	22.92	-4364.8	-4140.9	93.14	30.13	53.14	942
92	27.84	152391	22.19	-4260.2	-4034.6	94.30	29.89	53.23	927
94	28.07	146181	21.47	-4155.5	-3928.0	95.45	29.66	53.32	912
96	28.30	140107	20.77	-4050.6	-3821.2	96.57	29.44	53.43	897
98	28.54	134166	20.09	-3945.6	-3714.2	97.68	29.22	53.56	882
100	28.79	128355	19.43	-3840.3	-3607.0	98.76	29.00	53.70	867
102	29.04	122671	18.78	-3734.8	-3499.4	99.83	28.79	53.86	852
104	29.31	117113	18.15	-3629.1	-3391.5	100.87	28.58	54.04	837
106	29.58	111677	17.53	-3523.0	-3283.2	101.91	28.38	54.24	822
108	29.85	106360	16.93	-3416.5	-3174.5	102.92	28.18	54.47	807
110	30.14	101161	16.34	-3309.7	-3065.4	103.92	27.98	54.72	791
112	30.44	96077	15.77	-3202.4	-2955.6	104.91	27.78	55.00	776
114	30.75	91106	15.21	-3094.6	-2845.3	105.89	27.59	55.31	761
116	31.07	86245	14.66	-2986.2	-2734.3	106.85	27.39	55.66	745
118	31.41	81493	14.12	-2877.2	-2622.6	107.81	27.19	56.05	729
120	31.76	76848	13.59	-2767.5	-2510.1	108.76	27.00	56.48	713
122	32.12	72308	13.08	-2657.0	-2396.6	109.69	26.80	56.96	698
124	32.51	67872	12.57	-2545.5	-2282.0	110.62	26.60	57.50	682
126	32.91	63541	12.07	-2433.1	-2166.3	111.55	26.40	58.10	665
128	33.33	59313	11.58	-2319.5	-2049.3	112.47	26.21	58.77	649
130	33.78	54926	11.08	-2202.9	-1929.1	113.40	26.71	60.29	627
132	34.25	50916	10.60	-2085.3	-1807.7	114.33	26.59	61.26	609
134	34.76	47191	10.12	-1966.0	-1684.3	115.26	26.46	62.06	592
136	35.29	43706	9.67	-1845.1	-1559.1	116.18	26.33	63.30	575
138	35.87	39770	9.19	-1722.3	-1431.6	117.11	26.22	64.41	556
140	36.48	36260	8.72	-1597.2	-1301.5	118.05	26.12	65.71	537
142	37.15	32824	8.28	-1469.5	-1168.4	118.99	26.04	67.46	519
144	37.88	29502	7.81	-1338.9	-1031.9	119.95	25.98	69.26	499
146	38.67	26283	7.32	-1205.1	-891.6	120.92	25.97	71.12	477
148	39.56	23196	6.90	-1066.5	-745.8	121.91	25.97	74.20	458
150	40.54	20222	6.43	-923.4	-594.8	122.92	26.01	77.01	435
152	41.66	17367	5.97	-774.3	-436.6	123.97	26.08	80.97	413
154	42.95	14674	5.51	-617.7	-269.6	125.06	26.20	85.78	390
156	44.46	12127	5.06	-451.8	-91.4	126.21	26.36	92.22	367
158	46.28	9799	4.58	-274.4	100.8	127.44	26.58	99.90	341
160	48.53	7687	4.11	-81.2	312.2	128.76	27.51	111.36	314
165	57.61	3827	2.91	501.5	968.5	132.60	28.35	150.82	254
170	74.39	2831	1.97	1188.5	1791.5	137.71	28.41	159.52	224
175	92.82	3716	1.46	1722.5	2474.9	141.68	27.07	114.93	223
180	108.24	4928	1.19	2093.1	2970.5	144.47	25.91	87.12	229
185	121.29	6112	1.02	2378.5	3361.6	146.62	25.06	71.62	235
190	132.81	7222	0.898	2617.1	3693.7	148.39	24.42	62.34	242
195	143.28	8257	0.810	2826.7	3988.1	149.92	23.93	56.19	248
200	152.97	9241	0.740	3016.8	4256.7	151.28	23.55	51.67	253
210	170.74	11020	0.640	3359.0	4743.0	153.66	23.00	46.07	264
220	187.03	12645	0.568	3668.9	5184.9	155.71	22.62	42.55	274
230	202.30	14153	0.514	3957.7	5597.6	157.55	22.33	40.12	284
240	216.82	15570	0.470	4232.0	5989.5	159.22	22.10	38.36	292
250	230.76	16914	0.435	4495.6	6366.1	160.75	21.92	37.02	301
260	244.25	18200	0.406	4751.0	6730.9	162.18	21.77	35.98	309
270	257.38	19437	0.381	5000.3	7086.3	163.53	21.64	35.15	316
280	270.21	20635	0.359	5244.0	7434.4	164.79	21.54	34.48	323
290	282.80	21799	0.340	5484.0	7776.4	165.99	21.46	33.94	330
300	295.18	22936	0.324	5720.7	8113.5	167.13	21.41	33.49	337
310	307.39	24049	0.309	5954.8	8446.5	168.23	21.36	33.13	344
320	319.46	25142	0.296	6186.8	8776.3	169.27	21.34	32.84	350
330	331.39	26217	0.284	6417.2	9103.5	170.28	21.33	32.59	356
340	343.22	27278	0.273	6646.3	9428.4	171.25	21.34	32.40	362

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

80 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	V(DH/DV)$_P$ J/GMOLE	V(DP/DU)$_V$ CC-ATM/J	-V(DP/DV)$_T$ ATM	(DV/DT)$_P$/V 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S x 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 55.277	0.040984	16357.63	25.666	12049.99	0.0032376	1.94118	6.4415	0.00089	1.57112	5.4921
56	0.040888	16300.08	25.562	11884.56	0.0032484	1.93500	6.2846	0.00089	1.56958	5.3743
58	0.040622	16139.87	25.272	11435.64	0.0032789	1.91740	5.8725	0.00089	1.56531	5.0653
60	0.040355	15978.15	25.976	10999.03	0.0033105	1.89907	5.4902	0.00089	1.56103	4.7790
62	0.040088	15814.95	25.673	10574.35	0.0033433	1.88008	5.1356	0.00089	1.55675	4.5137
64	0.039819	15650.11	25.364	10161.42	0.0033774	1.86046	4.8066	0.00088	1.55246	4.2676
66	0.039550	15483.59	25.050	9759.95	0.0034128	1.84026	4.5014	0.00088	1.54817	4.0394
68	0.039279	15315.31	24.731	9369.68	0.0034496	1.81951	4.2183	0.00088	1.54387	3.8278
70	0.039008	15145.21	24.407	8990.39	0.0034880	1.79827	3.9557	0.00087	1.53955	3.6315
72	0.038735	14973.23	24.078	8621.82	0.0035281	1.77656	3.7119	0.00087	1.53523	3.4494
74	0.038461	14799.27	23.747	8263.73	0.0035699	1.75442	3.4858	0.00086	1.53089	3.2805
76	0.038186	14623.29	23.411	7915.88	0.0036137	1.73188	3.2764	0.00086	1.52654	3.1238
78	0.037909	14445.18	23.073	7578.03	0.0036594	1.70898	3.0813	0.00085	1.52218	2.9786
80	0.037631	14264.88	22.733	7249.96	0.0037074	1.68575	2.9007	0.00085	1.51780	2.8439
82	0.037351	14082.32	22.390	6931.44	0.0037578	1.66221	2.7330	0.00084	1.51341	2.7191
84	0.037069	13897.40	22.047	6622.24	0.0038108	1.63840	2.5774	0.00083	1.50899	2.6036
86	0.036786	13710.06	21.701	6322.14	0.0038665	1.61433	2.4329	0.00083	1.50456	2.4967
88	0.036500	13520.19	21.355	6030.92	0.0039253	1.59003	2.2989	0.00082	1.50010	2.3979
90	0.036213	13327.70	21.009	5748.37	0.0039874	1.56553	2.1744	0.00081	1.49561	2.3066
92	0.035923	13132.54	20.663	5474.29	0.0040530	1.54083	2.0588	0.00081	1.49110	2.2225
94	0.035630	12934.51	20.317	5208.46	0.0041224	1.51598	1.9514	0.00080	1.48656	2.1450
96	0.035335	12733.60	19.973	4950.68	0.0041961	1.49097	1.8518	0.00079	1.48199	2.0739
98	0.035037	12529.68	19.629	4700.77	0.0042744	1.46582	1.7591	0.00078	1.47738	2.0086
100	0.034736	12322.64	19.286	4458.52	0.0043577	1.44055	1.6731	0.00077	1.47273	1.9490
102	0.034431	12112.36	18.946	4223.76	0.0044466	1.41518	1.5931	0.00076	1.46805	1.8948
104	0.034123	11898.74	18.607	3996.29	0.0045416	1.38971	1.5187	0.00075	1.46331	1.8456
106	0.033811	11681.66	18.271	3775.96	0.0046433	1.36416	1.4496	0.00074	1.45853	1.8012
108	0.033495	11461.00	17.937	3562.58	0.0047524	1.33852	1.3852	0.00073	1.45369	1.7616
110	0.033175	11236.62	17.606	3355.93	0.0048697	1.31282	1.3254	0.00072	1.44880	1.7264
112	0.032849	11008.42	17.277	3156.64	0.0049962	1.28704	1.2696	0.00071	1.44384	1.6955
114	0.032518	10776.25	16.951	2962.53	0.0051328	1.26121	1.2176	0.00070	1.43881	1.6689
116	0.032181	10540.00	16.628	2775.47	0.0052809	1.23532	1.1692	0.00069	1.43370	1.6464
118	0.031838	10299.58	16.307	2594.57	0.0054419	1.20936	1.1240	0.00068	1.42851	1.6279
120	0.031488	10054.84	15.989	2419.78	0.0056171	1.18335	1.0818	0.00067	1.42323	1.6136
122	0.031130	9805.76	15.673	2250.97	0.0058087	1.15727	1.0423	0.00065	1.41784	1.6033
124	0.030764	9552.32	15.357	2088.06	0.0060190	1.13112	1.0054	0.00064	1.41235	1.5971
126	0.030389	9294.66	15.042	1930.96	0.0062504	1.10489	0.9708	0.00063	1.40673	1.5952
128	0.030004	9033.12	14.724	1779.63	0.0065062	1.07858	0.9383	0.00061	1.40098	1.5978
130	0.029603	8849.94	14.407	1625.95	0.0068124	1.05178	0.9073	0.00059	1.39500	1.6253
132	0.029193	8586.07	13.659	1486.42	0.0071343	1.02521	0.8785	0.00057	1.38892	1.6403
134	0.028771	8326.28	13.290	1357.71	0.0074533	0.99855	0.8560	0.00056	1.38267	1.6625
136	0.028334	8051.87	12.960	1229.89	0.0078618	0.97181	0.8343	0.00054	1.37623	1.6984
138	0.027881	7772.38	12.570	1108.84	0.0082874	0.94495	0.8124	0.00053	1.36956	1.7307
140	0.027410	7489.58	12.181	993.90	0.0087737	0.91795	0.7902	0.00051	1.36266	1.7677
142	0.026918	7203.07	11.808	883.55	0.0093659	0.89071	0.7676	0.00049	1.35546	1.8168
144	0.026402	6907.40	11.385	778.90	0.0100268	0.86325	0.7445	0.00047	1.34794	1.8666
146	0.025860	6599.57	10.908	679.68	0.0107762	0.83560	0.7210	0.00045	1.34008	1.9177
148	0.025281	6301.66	10.515	586.42	0.0117741	0.80734	0.6967	0.00043	1.33172	2.0008
150	0.024667	5978.41	10.015	498.81	0.0128816	0.77872	0.6717	0.00041	1.32288	2.0759
152	0.024005	5652.22	9.539	416.88	0.0143255	0.74943	0.6457	0.00039	1.31341	2.1803
154	0.023284	5317.55	9.036	341.67	0.0161316	0.71928	0.6186	0.00036	1.30315	2.3056
156	0.022491	4975.15	8.527	272.74	0.0185355	0.68911	0.5900	0.00034	1.29191	2.4321
158	0.021607	4621.19	7.969	211.73	0.0216183	0.65830	0.5597	0.00032	1.27947	2.5685
160	0.020604	4293.01	7.249	158.38	0.0259403	0.62641	0.5271	0.00029	1.26544	2.7694
165	0.017359	3447.42	5.906	66.44	0.0437480	0.61543	0.4344	0.00024	1.22080	3.3269
170	0.013443	3076.44	5.167	38.06	0.0518518	0.54532	0.3451	0.00025	1.16835	3.1547
175	0.010774	3144.91	5.009	39.97	0.0365448	0.44946	0.2965	0.00036	1.13349	2.3636
180	0.009239	3338.31	4.964	45.53	0.0260972	0.39506	0.2732	0.00049	1.11378	1.8825
185	0.008245	3552.86	4.917	50.40	0.0201584	0.36462	0.2601	0.00062	1.10113	1.5968
190	0.007530	3775.02	4.884	54.33	0.0165149	0.34622	0.2521	0.00074	1.09210	1.4196
195	0.006980	3995.65	4.852	57.63	0.0140624	0.33421	0.2468	0.00085	1.08518	1.2968
200	0.006537	4216.23	4.809	60.41	0.0122543	0.32588	0.2433	0.00096	1.07964	1.2055
210	0.005857	4644.93	4.752	64.54	0.0099188	0.31562	0.2395	0.00117	1.07116	1.0926
220	0.005347	5060.57	4.699	67.61	0.0084073	0.31068	0.2383	0.00137	1.06483	1.0198
230	0.004943	5463.32	4.654	69.96	0.0073437	0.30880	0.2386	0.00156	1.05984	0.9687
240	0.004612	5854.48	4.615	71.81	0.0065515	0.30884	0.2399	0.00175	1.05576	0.9310
250	0.004334	6235.59	4.581	73.30	0.0059365	0.31018	0.2418	0.00193	1.05233	0.9019
260	0.004094	6606.27	4.552	74.51	0.0054439	0.31243	0.2443	0.00212	1.04939	0.8790
270	0.003885	6974.02	4.526	75.52	0.0050397	0.31534	0.2471	0.00231	1.04683	0.8606
280	0.003701	7334.29	4.503	76.37	0.0047012	0.31875	0.2501	0.00251	1.04457	0.8455
290	0.003536	7690.33	4.482	77.08	0.0044130	0.32205	0.2534	0.00268	1.04256	0.8343
300	0.003388	8043.31	4.462	77.70	0.0041643	0.32654	0.2567	0.00288	1.04075	0.8230
310	0.003253	8394.23	4.443	78.23	0.0039470	0.33119	0.2603	0.00307	1.03911	0.8137
320	0.003130	8743.95	4.424	78.70	0.0037552	0.33597	0.2639	0.00327	1.03762	0.8059
330	0.003018	9093.24	4.405	79.11	0.0035844	0.34087	0.2675	0.00347	1.03625	0.7995
340	0.002914	9442.73	4.386	79.48	0.0034311	0.34586	0.2713	0.00366	1.03498	0.7941

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

90 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p J/G MOLE -K	VELOCITY OF SOUND M/SEC
* 55.391	24.39	295236	39.02	-6174.1	-5951.7	67.38	35.71	52.92	1177
56	24.44	292421	38.68	-6142.3	-5919.5	67.96	35.58	52.91	1174
58	24.60	283292	37.57	-6037.9	-5813.7	69.81	35.17	52.88	1161
60	24.76	274351	36.49	-5933.7	-5707.9	71.61	34.77	52.86	1149
62	24.92	265596	35.43	-5829.5	-5602.2	73.34	34.39	52.83	1137
64	25.09	257024	34.40	-5725.4	-5496.6	75.02	34.02	52.81	1124
66	25.26	248631	33.39	-5621.3	-5391.0	76.64	33.66	52.79	1111
68	25.43	240414	32.41	-5517.3	-5285.4	78.22	33.31	52.78	1098
70	25.61	232372	31.44	-5413.4	-5179.8	79.75	32.98	52.77	1085
72	25.79	224500	30.51	-5309.4	-5074.3	81.23	32.66	52.77	1072
74	25.97	216796	29.59	-5205.6	-4968.7	82.68	32.35	52.77	1058
76	26.15	209257	28.70	-5101.7	-4863.2	84.09	32.04	52.77	1045
78	26.34	201881	27.82	-4997.9	-4757.6	85.46	31.75	52.79	1031
80	26.54	194663	26.97	-4894.0	-4652.0	86.79	31.47	52.80	1017
82	26.73	187602	26.14	-4790.2	-4546.4	88.10	31.20	52.83	1003
84	26.94	180695	25.33	-4686.3	-4440.6	89.37	30.93	52.87	989
86	27.14	173938	24.55	-4582.4	-4334.9	90.62	30.67	52.91	975
88	27.35	167329	23.78	-4478.4	-4229.0	91.83	30.43	52.96	960
90	27.57	160865	23.03	-4374.4	-4123.0	93.03	30.18	53.02	946
92	27.79	154543	22.29	-4270.2	-4016.8	94.19	29.95	53.10	931
94	28.01	148360	21.58	-4166.0	-3910.5	95.33	29.72	53.18	917
96	28.24	142314	20.89	-4061.6	-3804.1	96.46	29.49	53.28	902
98	28.48	136402	20.21	-3957.1	-3697.4	97.56	29.28	53.39	888
100	28.72	130621	19.55	-3852.4	-3590.4	98.64	29.06	53.52	873
102	28.98	124968	18.90	-3747.5	-3483.3	99.70	28.85	53.67	858
104	29.23	119442	18.28	-3642.3	-3375.8	100.74	28.65	53.83	843
106	29.50	114036	17.66	-3536.9	-3267.9	101.77	28.44	54.01	828
108	29.77	108756	17.07	-3431.2	-3159.7	102.78	28.24	54.22	813
110	30.06	103592	16.48	-3325.1	-3051.0	103.78	28.04	54.44	798
112	30.35	98544	15.91	-3218.7	-2941.9	104.76	27.84	54.70	783
114	30.65	93611	15.36	-3111.7	-2832.2	105.73	27.64	54.98	768
116	30.96	88789	14.81	-3004.3	-2722.0	106.69	27.45	55.29	753
118	31.29	84077	14.28	-2896.4	-2611.0	107.64	27.25	55.64	737
120	31.63	79474	13.76	-2787.8	-2499.3	108.58	27.04	56.02	722
122	31.98	74979	13.25	-2678.5	-2386.8	109.51	26.84	56.45	707
124	32.35	70589	12.75	-2568.4	-2273.3	110.43	26.64	56.92	691
126	32.74	66304	12.26	-2457.4	-2158.9	111.34	26.43	57.45	676
128	33.15	62124	11.78	-2345.5	-2043.2	112.25	26.23	58.05	660
130	33.58	57735	11.28	-2230.6	-1924.6	113.17	26.74	59.45	638
132	34.03	53758	10.81	-2115.3	-1805.0	114.09	26.62	60.29	621
134	34.51	50026	10.35	-1998.2	-1683.5	115.00	26.49	61.10	604
136	35.02	46308	9.89	-1879.9	-1560.5	115.91	26.36	62.03	587
138	35.56	42727	9.43	-1759.9	-1435.6	116.82	26.24	63.00	570
140	36.13	39275	8.97	-1638.1	-1308.6	117.74	26.13	64.10	552
142	36.75	35886	8.54	-1514.1	-1179.0	118.66	26.04	65.55	535
144	37.42	32627	8.09	-1387.9	-1046.6	119.58	25.97	66.96	516
146	38.14	29509	7.62	-1259.2	-911.4	120.51	25.92	68.31	495
148	38.93	26457	7.24	-1126.8	-771.8	121.46	25.91	70.94	479
150	39.80	23543	6.77	-991.2	-628.2	122.43	25.90	72.84	458
152	40.77	20743	6.35	-851.4	-479.6	123.41	25.93	75.61	438
154	41.85	18101	5.92	-706.4	-324.8	124.42	25.97	78.94	417
156	43.07	15561	5.50	-555.6	-162.8	125.47	26.05	82.99	396
158	44.48	13265	5.07	-397.7	8.0	126.56	26.16	87.52	375
160	46.13	11121	4.65	-231.3	189.4	127.70	26.91	94.05	351
165	51.80	6777	3.59	235.3	707.7	130.89	27.20	112.73	298
170	61.10	4339	2.67	777.6	1334.7	134.63	27.56	132.94	257
175	74.24	3900	1.98	1323.2	2000.2	138.49	27.20	125.82	239
180	87.99	4593	1.56	1766.4	2568.8	141.69	26.33	101.62	237
185	100.38	5612	1.30	2109.1	3024.5	144.19	25.51	82.58	240
190	111.43	6675	1.13	2388.0	3404.1	146.22	24.85	70.47	245
195	121.42	7710	1.00	2626.6	3733.9	147.93	24.31	62.33	250
200	130.64	8698	0.908	2838.6	4029.9	149.43	23.89	56.67	255
210	147.39	10541	0.773	3211.3	4555.4	152.00	23.26	49.46	265
220	162.57	12232	0.676	3541.4	5023.9	154.18	22.83	44.83	276
230	176.71	13797	0.606	3845.2	5456.6	156.10	22.51	41.88	285
240	190.08	15265	0.551	4130.9	5864.2	157.84	22.25	39.75	294
250	202.86	16657	0.508	4403.5	6253.4	159.43	22.04	38.16	302
260	215.19	17985	0.471	4666.3	6628.6	160.90	21.86	36.93	310
270	227.16	19262	0.441	4921.4	6992.9	162.27	21.72	35.95	318
280	238.83	20496	0.415	5170.4	7348.4	163.56	21.60	35.17	325
290	250.25	21693	0.392	5414.7	7696.8	164.79	21.50	34.54	332
300	261.47	22861	0.372	5655.0	8039.5	165.95	21.42	34.02	339
310	272.52	24003	0.355	5892.2	8377.4	167.06	21.37	33.59	346
320	283.43	25123	0.339	6126.9	8711.6	168.12	21.33	33.24	352
330	294.21	26225	0.325	6359.6	9042.5	169.14	21.31	32.96	358
340	304.88	27311	0.312	6590.6	9370.9	170.12	21.30	32.72	364

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

90 ATM ISOBAR

TEMPERATURE	DENSITY	$V(\partial H/\partial V)_p$	$V(\partial P/\partial U)_v$	$-V(\partial P/\partial V)_T$	$(\partial V/\partial T)_p/V$	THERMAL CONDUCTIVITY	VISCOSITY	THERMAL DIFFUSIVITY	DIELECTRIC CONSTANT	PRANDTL NUMBER
KELVIN	GMOLE/CC	J/GMOLE	CC-ATM/J	ATM	1/KELVIN	MW/CM-K	G/CM-S x 10^3	SQ CM/SEC		
* 55.391	0.041003	16417.82	25.655	12105.51	0.0032236	1.94262	6.4727	0.00090	1.57143	5.5139
56	0.040922	16369.88	25.568	11966.55	0.0032324	1.93746	6.3403	0.00089	1.57013	5.4115
58	0.040657	16211.46	25.278	11517.93	0.0032621	1.92003	5.9257	0.00089	1.56588	5.1006
60	0.040392	16051.63	25.982	11081.55	0.0032929	1.90188	5.5411	0.00089	1.56162	4.8125
62	0.040125	15890.31	25.679	10657.15	0.0033248	1.88306	5.1842	0.00089	1.55736	4.5454
64	0.039858	15727.44	25.371	10244.49	0.0033578	1.86362	4.8531	0.00089	1.55309	4.2978
66	0.039590	15562.96	25.057	9843.29	0.0033922	1.84360	4.5459	0.00088	1.54881	4.0681
68	0.039321	15396.79	24.738	9453.31	0.0034279	1.82304	4.2606	0.00088	1.54453	3.8550
70	0.039051	15228.87	24.414	9074.31	0.0034651	1.80195	3.9963	0.00087	1.54024	3.6573
72	0.038780	15059.15	24.087	8706.02	0.0035039	1.78046	3.7509	0.00087	1.53594	3.4739
74	0.038507	14887.52	23.756	8348.23	0.0035443	1.75851	3.5231	0.00087	1.53163	3.3037
76	0.038234	14713.95	23.421	8000.68	0.0035866	1.73617	3.3117	0.00086	1.52730	3.1458
78	0.037959	14538.33	23.084	7663.14	0.0036309	1.71346	3.1155	0.00086	1.52297	2.9994
80	0.037682	14360.62	22.745	7335.38	0.0036771	1.69043	2.9334	0.00085	1.51861	2.8636
82	0.037404	14180.74	22.404	7017.17	0.0037256	1.66710	2.7644	0.00084	1.51425	2.7378
84	0.037125	13998.58	22.062	6708.28	0.0037765	1.64350	2.6075	0.00084	1.50986	2.6212
86	0.036844	13814.10	21.718	6408.50	0.0038301	1.61964	2.4618	0.00083	1.50546	2.5132
88	0.036560	13627.20	21.374	6117.62	0.0038865	1.59556	2.3255	0.00082	1.50104	2.4134
90	0.036275	13437.79	21.030	5835.43	0.0039459	1.57128	2.2009	0.00082	1.49659	2.3211
92	0.035988	13245.78	20.686	5561.66	0.0040087	1.54682	2.0843	0.00081	1.49212	2.2359
94	0.035698	13051.10	20.343	5296.18	0.0040750	1.52219	1.9759	0.00080	1.48761	2.1575
96	0.035406	12853.64	20.001	5038.75	0.0041453	1.49742	1.8753	0.00079	1.48309	2.0853
98	0.035111	12653.30	19.661	4789.20	0.0042198	1.47253	1.7818	0.00079	1.47852	2.0191
100	0.034813	12449.98	19.322	4547.32	0.0042990	1.44752	1.6949	0.00078	1.47392	1.9584
102	0.034512	12243.58	18.985	4312.93	0.0043833	1.42241	1.6141	0.00077	1.46929	1.9031
104	0.034208	12034.01	18.651	4085.85	0.0044731	1.39721	1.5389	0.00076	1.46461	1.8529
106	0.033900	11821.15	18.320	3865.91	0.0045691	1.37194	1.4691	0.00075	1.45989	1.8074
108	0.033588	11604.93	17.991	3652.92	0.0046718	1.34660	1.4043	0.00074	1.45511	1.7666
110	0.033272	11385.19	17.666	3446.74	0.0047820	1.32120	1.3435	0.00073	1.45029	1.7302
112	0.032952	11161.81	17.344	3247.21	0.0049003	1.29575	1.2872	0.00072	1.44540	1.6980
114	0.032626	10934.75	17.026	3054.17	0.0050278	1.27025	1.2346	0.00071	1.44045	1.6700
116	0.032295	10703.88	16.711	2867.48	0.0051655	1.24471	1.1857	0.00070	1.43543	1.6460
118	0.031959	10469.15	16.400	2687.02	0.0053144	1.21912	1.1400	0.00069	1.43033	1.6259
120	0.031616	10230.43	16.092	2512.66	0.0054760	1.19350	1.0974	0.00067	1.42516	1.6097
122	0.031266	9987.76	15.787	2344.29	0.0056518	1.16783	1.0575	0.00066	1.41989	1.5974
124	0.030909	9741.13	15.485	2181.81	0.0058436	1.14212	1.0202	0.00065	1.41452	1.5890
126	0.030543	9490.77	15.185	2025.15	0.0060535	1.11637	0.9853	0.00064	1.40904	1.5846
128	0.030169	9237.08	14.884	1874.23	0.0062840	1.09057	0.9525	0.00062	1.40344	1.5843
130	0.029780	9064.34	14.164	1719.36	0.0065592	1.06437	0.9213	0.00060	1.39764	1.5083
132	0.029384	8810.18	13.820	1579.65	0.0068432	1.03840	0.8923	0.00059	1.39176	1.6190
134	0.028977	8560.00	13.479	1449.58	0.0071382	1.01235	0.8671	0.00057	1.38571	1.6356
136	0.028557	8296.74	13.134	1322.42	0.0074763	0.98632	0.8461	0.00056	1.37951	1.6629
138	0.028124	8031.52	12.773	1201.65	0.0078440	0.96022	0.8249	0.00054	1.37313	1.6913
140	0.027675	7765.06	12.407	1086.96	0.0082554	0.93406	0.8034	0.00053	1.36654	1.7232
142	0.027209	7493.39	12.055	976.43	0.0087470	0.90778	0.7817	0.00051	1.35971	1.7639
144	0.026724	7215.96	11.658	871.90	0.0092794	0.88141	0.7597	0.00049	1.35263	1.8036
146	0.026218	6932.38	11.217	773.67	0.0098539	0.85499	0.7374	0.00048	1.34528	1.8413
148	0.025684	6658.44	10.881	679.52	0.0106540	0.82817	0.7145	0.00045	1.33754	1.9127
150	0.025124	6359.88	10.408	591.49	0.0114524	0.80125	0.6913	0.00044	1.32946	1.9637
152	0.024530	6063.02	9.978	508.83	0.0124711	0.77401	0.6674	0.00042	1.32093	2.0375
154	0.023896	5764.63	9.544	432.56	0.0136940	0.74633	0.6428	0.00040	1.31186	2.1248
156	0.023216	5454.67	9.089	361.27	0.0152148	0.71816	0.6174	0.00037	1.30218	2.2297
158	0.022479	5140.70	8.620	298.18	0.0169989	0.69898	0.5910	0.00036	1.29175	2.3127
160	0.021677	4873.66	7.974	241.06	0.0192972	0.66069	0.5636	0.00033	1.28045	2.4334
165	0.019303	4102.97	5.845	130.82	0.0274754	0.63349	0.4837	0.00029	1.24742	2.7233
170	0.016367	3540.58	5.907	71.02	0.0375463	0.58452	0.4122	0.00027	1.20737	2.9300
175	0.013471	3331.83	5.416	52.54	0.0377622	0.51721	0.3492	0.00031	1.16872	2.6544
180	0.011365	3389.50	5.230	52.20	0.0299805	0.45280	0.3189	0.00039	1.14115	2.1803
185	0.009962	3545.51	5.124	55.91	0.0232915	0.40959	0.2890	0.00050	1.12304	1.8207
190	0.008974	3740.13	5.062	59.91	0.0188413	0.38244	0.2755	0.00060	1.11040	1.5865
195	0.008236	3945.73	5.009	63.50	0.0157968	0.36446	0.2657	0.00071	1.10141	1.4255
200	0.007655	4155.37	4.967	66.58	0.0136382	0.35215	0.2607	0.00081	1.09367	1.3112
210	0.006785	4575.81	4.899	71.51	0.0108085	0.33631	0.2537	0.00100	1.08274	1.1657
220	0.006151	4990.84	4.813	75.24	0.0089834	0.32776	0.2504	0.00119	1.07482	1.0704
230	0.005659	5395.37	4.758	78.08	0.0077618	0.32358	0.2492	0.00137	1.06870	1.0081
240	0.005261	5789.33	4.711	80.31	0.0068667	0.32195	0.2495	0.00154	1.06376	0.9627
250	0.004929	6173.42	4.672	82.11	0.0061814	0.32201	0.2506	0.00171	1.05967	0.9282
260	0.004647	6548.84	4.639	83.58	0.0056368	0.32325	0.2524	0.00188	1.05618	0.9011
270	0.004402	6916.96	4.610	84.80	0.0051978	0.32534	0.2546	0.00206	1.05317	0.8794
280	0.004187	7279.15	4.585	85.82	0.0048317	0.32806	0.2572	0.00223	1.05053	0.8618
290	0.003996	7636.70	4.563	86.69	0.0045224	0.33072	0.2601	0.00240	1.04819	0.8488
300	0.003824	7990.80	4.542	87.43	0.0042570	0.33475	0.2631	0.00257	1.04609	0.8356
310	0.003669	8342.53	4.523	88.08	0.0040266	0.33901	0.2663	0.00275	1.04419	0.8247
320	0.003528	8692.81	4.504	88.64	0.0038242	0.34345	0.2697	0.00293	1.04247	0.8157
330	0.003399	9042.46	4.486	89.14	0.0036447	0.34804	0.2731	0.00311	1.04089	0.8082
340	0.003280	9392.18	4.467	89.58	0.0034842	0.35274	0.2766	0.00329	1.03944	0.8020

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

100 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p J/G MOLE -K	VELOCITY OF SOUND M/SEC
* 55.506	24.38	296453	39.03	-6172.3	-5925.3	67.41	35.71	52.89	1179
56	24.42	294174	38.76	-6146.6	-5899.2	67.88	35.61	52.88	1175
58	24.57	285063	37.65	-6042.4	-5793.4	69.73	35.20	52.85	1164
60	24.74	276141	36.57	-5938.4	-5687.8	71.52	34.81	52.82	1152
62	24.98	267404	35.51	-5834.5	-5582.2	73.26	34.42	52.79	1140
64	25.05	258850	34.48	-5730.6	-5476.6	74.93	34.05	52.76	1127
66	25.23	250476	33.47	-5626.8	-5371.1	76.55	33.70	52.74	1114
68	25.40	242279	32.49	-5523.0	-5265.6	78.13	33.35	52.73	1101
70	25.58	234256	31.53	-5419.4	-5160.2	79.66	33.02	52.71	1088
72	25.76	226405	30.59	-5315.7	-5054.7	81.14	32.70	52.71	1075
74	25.94	218722	29.68	-5212.1	-4949.3	82.59	32.39	52.70	1062
76	26.12	211204	28.78	-5108.6	-4843.9	83.99	32.09	52.70	1048
78	26.31	203849	27.91	-5005.1	-4738.5	85.36	31.80	52.71	1034
80	26.50	196654	27.07	-4901.5	-4633.0	86.70	31.52	52.73	1021
82	26.70	189616	26.24	-4798.0	-4527.5	88.00	31.25	52.75	1007
84	26.90	182731	25.43	-4694.5	-4422.0	89.27	30.98	52.78	993
86	27.10	175998	24.64	-4591.0	-4316.4	90.51	30.73	52.81	979
88	27.31	169413	23.88	-4487.4	-4210.7	91.73	30.48	52.86	965
90	27.52	162974	23.13	-4383.8	-4104.9	92.92	30.24	52.91	950
92	27.74	156678	22.40	-4280.1	-3999.0	94.08	30.00	52.97	936
94	27.96	150521	21.69	-4176.3	-3893.0	95.22	29.78	53.05	922
96	28.19	144502	21.00	-4072.4	-3786.8	96.34	29.55	53.14	907
98	28.42	138617	20.32	-3968.4	-3680.4	97.43	29.34	53.24	893
100	28.66	132865	19.67	-3864.2	-3573.8	98.51	29.12	53.35	878
102	28.91	127241	19.03	-3759.9	-3466.9	99.57	28.91	53.48	863
104	29.16	121745	18.48	-3655.3	-3359.8	100.61	28.71	53.63	849
106	29.42	116373	17.79	-3550.5	-3252.4	101.63	28.50	53.79	834
108	29.69	111122	17.20	-3445.5	-3144.6	102.64	28.30	53.98	819
110	29.97	105991	16.62	-3340.1	-3036.5	103.63	28.10	54.18	804
112	30.26	100978	16.05	-3234.5	-2927.9	104.61	27.90	54.41	790
114	30.55	96079	15.50	-3128.4	-2818.8	105.58	27.70	54.66	775
116	30.86	91294	14.96	-3021.9	-2709.2	106.53	27.50	54.94	760
118	31.18	86620	14.44	-2914.9	-2599.0	107.47	27.30	55.26	745
120	31.51	82056	13.92	-2807.3	-2488.1	108.40	27.09	55.60	730
122	31.85	77600	13.42	-2699.2	-2376.5	109.33	26.89	55.98	715
124	32.21	73251	12.92	-2590.4	-2264.0	110.24	26.68	56.40	700
126	32.58	69009	12.44	-2480.8	-2150.6	111.15	26.46	56.87	685
128	32.97	64873	11.97	-2370.3	-2036.2	112.05	26.25	57.39	670
130	33.39	60844	11.47	-2257.4	-1919.1	112.96	26.76	58.72	648
132	33.82	56944	11.01	-2143.8	-1801.1	113.86	26.65	59.43	632
134	34.28	52795	10.56	-2028.7	-1681.4	114.76	26.52	60.24	616
136	34.76	49136	10.09	-1912.6	-1560.3	115.65	26.39	60.93	599
138	35.27	45601	9.65	-1795.1	-1437.7	116.55	26.27	61.79	583
140	35.82	42196	9.21	-1676.8	-1313.1	117.44	26.15	62.74	566
142	36.39	38845	8.79	-1555.3	-1186.5	118.34	26.05	63.93	549
144	37.01	35634	8.35	-1432.7	-1057.6	119.24	25.97	65.09	532
146	37.68	32598	7.90	-1306.1	-926.3	120.15	25.91	66.15	513
148	38.40	29572	7.54	-1180.7	-791.6	121.07	25.87	68.37	497
150	39.18	26703	7.09	-1050.8	-653.8	121.99	25.84	69.71	478
152	40.03	23944	6.67	-917.8	-512.1	122.93	25.83	71.77	459
154	40.98	21338	6.28	-781.0	-365.8	123.89	25.84	74.29	441
156	42.02	18803	5.86	-640.4	-214.7	124.86	25.86	76.90	421
158	43.19	16525	5.48	-494.6	-56.9	125.87	25.91	80.28	403
160	44.51	14362	5.09	-343.5	107.5	126.90	26.58	84.56	380
165	48.72	9788	4.12	65.1	558.8	129.68	26.63	95.51	333
170	54.87	6659	3.25	519.9	1075.9	132.76	26.86	109.01	293
175	63.57	5153	2.52	1002.3	1646.4	136.07	26.84	115.02	264
180	74.18	4995	1.99	1455.5	2207.1	139.23	26.38	106.09	252
185	85.02	5590	1.64	1837.5	2698.9	141.93	25.75	90.58	250
190	95.20	6459	1.39	2153.0	3117.6	144.16	25.15	77.70	251
195	104.58	7411	1.22	2420.8	3488.4	146.05	24.62	68.25	255
200	113.26	8365	1.09	2655.4	3803.0	147.68	24.18	61.43	259
210	129.03	10202	0.917	3060.5	4367.8	150.44	23.50	52.71	269
220	143.27	11919	0.795	3412.2	4863.8	152.75	23.02	47.28	278
230	156.45	13518	0.705	3731.5	5316.7	154.76	22.68	43.65	287
240	168.87	15026	0.638	4029.0	5740.2	156.56	22.39	41.16	296
250	180.71	16455	0.584	4311.0	6142.1	158.20	22.16	39.31	304
260	192.10	17820	0.540	4581.3	6527.7	159.72	21.96	37.88	312
270	203.12	19130	0.504	4842.7	6900.7	161.13	21.79	36.76	320
280	213.84	20395	0.473	5096.9	7263.7	162.45	21.65	35.86	327
290	224.33	21622	0.446	5345.5	7618.5	163.69	21.53	35.13	334
300	234.61	22818	0.423	5589.5	7966.7	164.87	21.44	34.53	341
310	244.72	23987	0.402	5829.8	8309.5	165.99	21.37	34.04	348
320	254.70	25133	0.384	6067.2	8647.9	167.07	21.31	33.64	354
330	264.55	26259	0.367	6302.1	8982.6	168.10	21.28	33.31	361
340	274.29	27369	0.353	6535.1	9314.3	169.09	21.26	33.04	367

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

100 ATM ISOBAR

TEMPERATURE	DENSITY	V(DH/DV)$_P$	V(DP/DU)$_V$	-V(DP/DV)$_T$	(DV/DT)$_P$/V	THERMAL CONDUCTIVITY	VISCOSITY	THERMAL DIFFUSIVITY	DIELECTRIC CONSTANT	PRANDTL NUMBER
KELVIN	GMOLE/CC	J/GMOLE	CC-ATM/J	ATM	1/KELVIN	MW/CM-K	G/CM-S X 10^3	SQ CM/SEC		
* 95.506	0.041021	16477.92	25.644	12160.95	0.0032097	1.94404	6.5041	0.00090	1.57173	5.5298
96	0.040956	16439.45	25.574	12048.34	0.0032167	1.93989	6.3962	0.00090	1.57068	5.4489
98	0.040693	16282.80	25.284	11593.97	0.0032456	1.92263	5.9791	0.00089	1.56644	5.1301
100	0.040428	16124.79	25.987	11163.85	0.0032755	1.90466	5.5921	0.00089	1.56220	4.8462
102	0.040163	15965.36	25.685	10739.72	0.0033065	1.88601	5.2330	0.00089	1.55796	4.5774
104	0.039897	15804.45	25.377	10327.31	0.0033386	1.86675	4.8999	0.00089	1.55371	4.3281
106	0.039630	15641.98	25.063	9926.39	0.0033720	1.84690	4.5905	0.00088	1.54945	4.0969
108	0.039362	15477.90	24.745	9536.68	0.0034066	1.82653	4.3035	0.00088	1.54519	3.8824
110	0.039094	15312.13	24.422	9157.95	0.0034427	1.80565	4.0371	0.00088	1.54092	3.6833
112	0.038824	15144.63	24.095	8789.94	0.0034802	1.78431	3.7899	0.00087	1.53664	3.4986
114	0.038553	14975.29	23.765	8432.43	0.0035193	1.76255	3.5606	0.00087	1.53235	3.3271
116	0.038281	14804.10	23.431	8085.16	0.0035601	1.74040	3.3479	0.00086	1.52805	3.1680
118	0.038008	14630.93	23.095	7747.91	0.0036028	1.71790	3.1498	0.00086	1.52374	3.0204
120	0.037733	14455.76	22.757	7420.44	0.0036474	1.69506	2.9663	0.00085	1.51942	2.8835
122	0.037457	14278.49	22.417	7102.52	0.0036942	1.67193	2.7959	0.00085	1.51508	2.7565
124	0.037180	14099.04	22.076	6793.94	0.0037432	1.64853	2.6377	0.00084	1.51073	2.6389
126	0.036901	13917.37	21.734	6494.46	0.0037946	1.62489	2.4908	0.00083	1.50635	2.5299
128	0.036620	13733.36	21.392	6203.88	0.0038487	1.60102	2.3543	0.00083	1.50196	2.4290
130	0.036337	13546.95	21.050	5921.99	0.0039057	1.57696	2.2276	0.00082	1.49755	2.3357
132	0.036052	13358.04	20.708	5648.55	0.0039658	1.55272	2.1099	0.00081	1.49311	2.2496
134	0.035765	13166.58	20.368	5383.39	0.0040292	1.52833	2.0005	0.00081	1.48865	2.1701
136	0.035476	12972.44	20.029	5126.29	0.0040962	1.50379	1.8989	0.00080	1.48417	2.0970
138	0.035184	12775.56	19.691	4877.07	0.0041672	1.47914	1.8045	0.00079	1.47965	2.0298
140	0.034889	12575.83	19.356	4635.53	0.0042425	1.45437	1.7167	0.00078	1.47510	1.9681
142	0.034592	12373.15	19.023	4401.48	0.0043225	1.42952	1.6351	0.00077	1.47051	1.9118
144	0.034291	12167.44	18.693	4174.74	0.0044077	1.40459	1.5592	0.00076	1.46588	1.8605
146	0.033987	11958.61	18.366	3955.14	0.0044984	1.37959	1.4886	0.00075	1.46122	1.8140
148	0.033679	11746.56	18.043	3742.51	0.0045952	1.35453	1.4229	0.00075	1.45650	1.7720
150	0.033368	11531.18	17.724	3536.69	0.0046988	1.32942	1.3617	0.00074	1.45174	1.7344
152	0.033052	11312.41	17.408	3337.51	0.0048099	1.30428	1.3047	0.00073	1.44693	1.7010
154	0.032732	11090.12	17.097	3144.84	0.0049291	1.27909	1.2517	0.00071	1.44205	1.6717
156	0.032407	10864.26	16.790	2958.52	0.0050574	1.25388	1.2022	0.00070	1.43711	1.6463
158	0.032076	10634.78	16.487	2778.42	0.0051957	1.22865	1.1559	0.00069	1.43211	1.6247
160	0.031740	10401.59	16.189	2604.43	0.0053452	1.20339	1.1129	0.00068	1.42702	1.6068
162	0.031397	10164.74	15.895	2436.42	0.0055072	1.17811	1.0726	0.00067	1.42186	1.5927
164	0.031048	9924.27	15.606	2274.30	0.0056831	1.15281	1.0349	0.00066	1.41660	1.5823
166	0.030691	9680.44	15.319	2117.97	0.0058745	1.12749	0.9996	0.00065	1.41125	1.5756
168	0.030326	9433.70	15.033	1967.37	0.0060834	1.10214	0.9666	0.00063	1.40579	1.5728
170	0.029949	9271.94	14.316	1811.76	0.0063328	1.07651	0.9352	0.00061	1.40016	1.5941
172	0.029566	9026.53	13.972	1671.78	0.0065842	1.05108	0.9060	0.00060	1.39445	1.6009
174	0.029171	8783.61	13.651	1540.11	0.0068582	1.02558	0.8784	0.00058	1.38860	1.6124
176	0.028767	8531.24	13.296	1413.49	0.0071416	1.00017	0.8513	0.00057	1.38261	1.6320
178	0.028350	8278.18	12.958	1292.80	0.0074638	0.97473	0.8367	0.00056	1.37646	1.6574
180	0.027921	8025.18	12.614	1178.16	0.0078185	0.94929	0.8159	0.00054	1.37014	1.6884
182	0.027477	7765.94	12.274	1067.34	0.0082323	0.92382	0.7950	0.00053	1.36363	1.7193
184	0.027017	7503.73	11.902	962.71	0.0086739	0.89833	0.7738	0.00051	1.35690	1.7521
186	0.026541	7241.16	11.495	865.17	0.0091351	0.87289	0.7525	0.00050	1.34996	1.7821
188	0.026041	6983.45	11.193	770.09	0.0097896	0.84720	0.7307	0.00048	1.34271	1.8428
190	0.025522	6705.11	10.744	681.53	0.0103971	0.82157	0.7088	0.00046	1.33521	1.8795
192	0.024978	6430.14	10.345	598.07	0.0111609	0.79582	0.6864	0.00044	1.32736	1.9345
194	0.024404	6158.43	9.963	520.73	0.0120638	0.76984	0.6636	0.00042	1.31912	2.0013
196	0.023799	5868.27	9.528	447.49	0.0131045	0.74377	0.6403	0.00041	1.31048	2.0691
198	0.023153	5599.75	9.144	382.61	0.0143358	0.71750	0.6164	0.00039	1.30128	2.1553
200	0.022466	5358.52	8.827	322.65	0.0157800	0.69951	0.5919	0.00037	1.29155	2.2362
205	0.020524	4655.27	7.540	200.89	0.0205155	0.65356	0.5286	0.00033	1.26433	2.4115
210	0.018226	4073.08	6.636	121.36	0.0267629	0.60757	0.4617	0.00031	1.23261	2.5889
215	0.015731	3702.59	5.966	81.07	0.0310661	0.55710	0.4001	0.00031	1.19880	2.5815
220	0.013481	3586.65	5.601	67.34	0.0295796	0.50224	0.3528	0.00035	1.16885	2.3292
225	0.011762	3641.78	5.399	65.75	0.0248722	0.45458	0.3218	0.00043	1.14631	2.0037
230	0.010505	3779.72	5.280	67.85	0.0205566	0.42039	0.3019	0.00052	1.13002	1.7439
235	0.009562	3954.01	5.195	70.87	0.0172602	0.39656	0.2888	0.00061	1.11791	1.5532
240	0.008829	4143.93	5.129	73.86	0.0148245	0.37979	0.2798	0.00070	1.10856	1.4141
245	0.008250	4343.71	5.086	79.66	0.0115998	0.35790	0.2686	0.00088	1.09468	1.2370
250	0.007780	4548.45	4.946	83.20	0.0095539	0.34567	0.2631	0.00105	1.08519	1.1245
260	0.006980	4949.36	4.865	86.40	0.0081602	0.33885	0.2603	0.00121	1.07782	1.0481
270	0.006392	5349.36	4.810	88.97	0.0071676	0.33541	0.2594	0.00138	1.07196	0.9948
280	0.005922	5742.86	4.770	91.06	0.0064150	0.33409	0.2596	0.00154	1.06714	0.9546
290	0.005534	6127.43	4.765	91.06	0.0064150	0.33425	0.2607	0.00169	1.06308	0.9233
300	0.005206	6503.75	4.727	92.70	0.0058245	0.33425	0.2623	0.00185	1.05959	0.8983
270	0.004923	6872.66	4.696	94.18	0.0053484	0.33546	0.2623	0.00185	1.05959	0.8983
280	0.004676	7235.44	4.669	95.37	0.0049558	0.33745	0.2644	0.00201	1.05655	0.8781
290	0.004458	7593.33	4.646	96.39	0.0046262	0.33945	0.2669	0.00217	1.05386	0.8631
300	0.004262	7947.51	4.625	97.26	0.0043451	0.34302	0.2695	0.00233	1.05145	0.8480
310	0.004086	8299.10	4.605	98.02	0.0041022	0.34687	0.2724	0.00249	1.04929	0.8356
320	0.003926	8649.07	4.587	98.68	0.0038897	0.35094	0.2755	0.00266	1.04733	0.8253
330	0.003780	8998.28	4.569	99.26	0.0037021	0.35521	0.2787	0.00282	1.04554	0.8168
340	0.003646	9347.49	4.550	99.78	0.0035349	0.35962	0.2820	0.00299	1.04390	0.8096

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

120 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p	VELOCITY OF SOUND M/SEC
* 55.736	24.36	298877	39.05	-6168.7	-5872.6	67.47	35.73	52.82	1163
56	24.38	297663	38.90	-6155.8	-5858.6	67.72	35.67	52.81	1161
58	24.53	288586	37.80	-6051.3	-5753.0	69.57	35.27	52.76	1169
60	24.69	279699	36.72	-5947.7	-5647.5	71.36	34.87	52.74	1157
62	24.85	270997	35.67	-5844.2	-5542.0	73.09	34.49	52.71	1145
64	25.02	262480	34.64	-5740.8	-5436.6	74.76	34.13	52.66	1133
66	25.18	254143	33.63	-5637.5	-5331.3	76.38	33.78	52.65	1120
68	25.35	245984	32.65	-5534.3	-5226.0	77.96	33.43	52.63	1107
70	25.52	237999	31.69	-5431.1	-5120.8	79.48	33.11	52.61	1094
72	25.70	230187	30.76	-5328.1	-5015.6	80.96	32.79	52.59	1081
74	25.88	222544	29.85	-5225.0	-4910.4	82.40	32.48	52.58	1068
76	26.06	215067	28.96	-5122.1	-4805.2	83.81	32.18	52.57	1055
78	26.24	207753	28.09	-5019.2	-4700.1	85.17	31.89	52.57	1041
80	26.43	200600	27.25	-4916.3	-4594.9	86.58	31.62	52.58	1028
82	26.62	193605	26.42	-4813.4	-4489.7	87.88	31.35	52.59	1014
84	26.82	186765	25.62	-4710.6	-4384.5	89.07	31.09	52.60	1000
86	27.02	180077	24.84	-4607.8	-4279.3	90.31	30.83	52.63	987
88	27.22	173538	24.08	-4505.0	-4174.0	91.52	30.59	52.66	973
90	27.43	167146	23.33	-4402.1	-4068.6	92.70	30.35	52.70	959
92	27.64	160898	22.61	-4299.3	-3963.2	93.86	30.12	52.74	945
94	27.86	154791	21.90	-4196.3	-3857.6	94.99	29.89	52.80	930
96	28.08	148822	21.22	-4093.4	-3751.9	96.11	29.67	52.87	916
98	28.31	142989	20.55	-3990.3	-3646.1	97.20	29.45	52.95	902
100	28.54	137289	19.90	-3887.1	-3540.1	98.27	29.24	53.04	888
102	28.78	131720	19.26	-3783.9	-3433.9	99.32	29.03	53.14	874
104	29.03	126280	18.64	-3680.4	-3327.5	100.35	28.83	53.26	860
106	29.28	120964	18.04	-3576.9	-3220.9	101.37	28.62	53.39	845
108	29.54	115773	17.45	-3473.1	-3113.9	102.37	28.42	53.54	831
110	29.80	110702	16.88	-3369.1	-3006.7	103.35	28.22	53.70	817
112	30.08	105750	16.32	-3264.8	-2899.1	104.32	28.02	53.89	803
114	30.36	100915	15.78	-3160.3	-2791.1	105.28	27.81	54.09	788
116	30.66	96195	15.25	-3055.5	-2682.7	106.22	27.61	54.32	774
118	30.96	91589	14.73	-2950.2	-2573.8	107.15	27.40	54.57	760
120	31.27	87093	14.23	-2844.6	-2464.4	108.07	27.19	54.84	746
122	31.60	82708	13.74	-2738.5	-2354.3	108.98	26.97	55.14	732
124	31.94	78431	13.26	-2632.0	-2243.6	109.88	26.75	55.47	718
126	32.29	74263	12.79	-2524.8	-2132.2	110.77	26.53	55.84	704
128	32.66	70202	12.33	-2417.0	-2020.0	111.65	26.30	56.25	689
130	33.04	65872	11.85	-2307.1	-1905.3	112.54	26.01	57.46	669
132	33.44	61968	11.38	-2196.7	-1790.1	113.42	26.71	57.97	653
134	33.86	58180	10.96	-2085.2	-1673.5	114.30	26.99	58.71	638
136	34.30	54614	10.49	-1972.8	-1555.8	115.17	26.46	59.12	622
138	34.77	51147	10.07	-1859.4	-1436.7	116.04	26.33	59.82	607
140	35.25	47811	9.65	-1745.0	-1316.3	116.91	26.21	60.56	591
142	35.77	44521	9.23	-1629.4	-1194.5	117.77	26.10	61.36	576
144	36.32	41372	8.82	-1512.5	-1070.9	118.64	26.00	62.20	560
146	36.89	38454	8.42	-1394.2	-945.6	119.50	25.91	63.03	544
148	37.51	35463	8.06	-1274.2	-818.1	120.37	25.84	64.50	529
150	38.17	32664	7.63	-1152.7	-688.5	121.24	25.79	65.30	512
152	38.88	29960	7.25	-1029.3	-556.6	122.11	25.74	66.52	495
154	39.64	27400	6.90	-903.5	-421.5	122.99	25.70	68.25	480
156	40.45	24894	6.47	-776.2	-284.3	123.88	25.67	69.16	461
158	41.35	22618	6.19	-645.1	-142.2	124.78	25.65	71.98	448
160	42.33	20432	5.80	-511.8	2.9	125.70	26.24	74.07	427
165	45.20	15617	4.93	-162.8	386.8	128.06	26.08	79.24	388
170	48.89	11841	4.14	207.0	801.4	130.53	26.13	85.68	351
175	53.67	9220	3.43	595.1	1247.6	133.12	26.14	91.22	319
180	59.65	7711	2.83	988.7	1714.0	135.75	26.01	93.49	296
185	66.64	7138	2.36	1367.5	2177.8	138.29	25.74	90.63	282
190	74.14	7238	2.00	1712.7	2614.2	140.62	25.37	83.58	275
195	81.68	7728	1.73	2019.7	3012.9	142.69	24.96	75.91	273
200	88.99	8419	1.52	2291.8	3373.8	144.52	24.57	68.84	273
210	102.67	10814	1.24	2757.2	4005.5	147.68	23.89	58.52	279
220	115.18	11666	1.06	3152.4	4552.9	150.15	23.36	51.76	286
230	126.76	13266	0.927	3503.4	5044.7	152.34	22.95	47.21	294
240	137.64	14803	0.828	3825.2	5498.7	154.27	22.64	43.99	302
250	147.97	16255	0.752	4126.4	5925.6	156.01	22.37	41.68	310
260	157.86	17644	0.688	4411.9	6331.3	157.61	22.13	39.75	317
270	167.41	18999	0.638	4685.8	6721.4	159.08	21.92	38.33	324
280	176.69	20313	0.596	4950.5	7098.9	160.45	21.74	37.20	332
290	185.74	21588	0.560	5207.8	7466.2	161.74	21.58	36.28	339
300	194.59	22839	0.529	5459.1	7825.1	162.96	21.45	35.53	346
310	203.28	24045	0.502	5705.7	8177.3	164.11	21.34	34.92	353
320	211.83	25235	0.478	5948.2	8523.9	165.21	21.25	34.41	360
330	220.27	26406	0.456	6187.6	8865.9	166.27	21.20	34.00	366
340	228.61	27559	0.437	6424.4	9204.1	167.28	21.15	33.65	373

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

120 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	$V(\partial H/\partial V)_p$ J/GMOLE	$V(\partial P/\partial U)_v$ CC-ATM/J	$-V(\partial P/\partial V)_T$ ATM	$(\partial V/\partial T)_p/V$ 1/ KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S X 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 55.736	0.041059	16598.02	26.622	12271.47	0.0031822	1.94686	6.5670	0.00090	1.57232	5.5678
56	0.041024	16577.86	25.584	12211.33	0.0031858	1.94468	6.5088	0.00090	1.57177	5.5241
58	0.040762	16424.70	25.294	11763.45	0.0032132	1.92775	6.0867	0.00090	1.56756	5.2075
60	0.040500	16270.30	25.998	11327.82	0.0032415	1.91012	5.6949	0.00089	1.56335	4.9140
62	0.040237	16114.59	25.696	10904.18	0.0032708	1.89182	5.3312	0.00089	1.55915	4.6418
64	0.039974	15957.52	25.388	10492.28	0.0033011	1.87290	4.9937	0.00089	1.55493	4.3893
66	0.039709	15799.01	25.075	10091.85	0.0033325	1.85341	4.6803	0.00089	1.55071	4.1550
68	0.039444	15639.02	24.758	9702.65	0.0033651	1.83339	4.3894	0.00088	1.54649	3.9376
70	0.039178	15477.47	24.436	9324.43	0.0033990	1.81288	4.1194	0.00088	1.54226	3.7357
72	0.038912	15314.32	24.110	8956.94	0.0034342	1.79190	3.8686	0.00088	1.53803	3.5483
74	0.038644	15149.48	23.781	8599.95	0.0034708	1.77052	3.6358	0.00087	1.53379	3.3743
76	0.038375	14982.92	23.449	8253.20	0.0035089	1.74874	3.4196	0.00087	1.52954	3.2128
78	0.038105	14814.53	23.115	7916.48	0.0035487	1.72662	3.2189	0.00086	1.52528	3.0629
80	0.037834	14644.29	22.779	7589.55	0.0035902	1.70417	3.0325	0.00086	1.52100	2.9237
82	0.037562	14472.11	22.441	7272.17	0.0036336	1.68143	2.8593	0.00085	1.51672	2.7946
84	0.037288	14297.91	22.103	6964.13	0.0036790	1.65843	2.6985	0.00085	1.51242	2.6748
86	0.037013	14121.65	21.764	6665.20	0.0037265	1.63519	2.5491	0.00084	1.50811	2.5637
88	0.036736	13943.24	21.425	6375.17	0.0037764	1.61174	2.4103	0.00083	1.50378	2.4608
90	0.036458	13762.66	21.087	6093.83	0.0038289	1.58810	2.2813	0.00083	1.49944	2.3656
92	0.036178	13579.85	20.750	5820.96	0.0038840	1.56430	2.1614	0.00082	1.49507	2.2775
94	0.035896	13394.34	20.414	5556.37	0.0039420	1.54034	2.0501	0.00081	1.49069	2.1961
96	0.035612	13206.56	20.080	5299.84	0.0040032	1.51626	1.9465	0.00081	1.48628	2.1210
98	0.035326	13016.24	19.748	5051.19	0.0040678	1.49207	1.8502	0.00080	1.48184	2.0519
100	0.035037	12823.30	19.419	4810.23	0.0041361	1.46778	1.7607	0.00079	1.47738	1.9883
102	0.034746	12627.64	19.094	4576.76	0.0042083	1.44341	1.6774	0.00078	1.47289	1.9300
104	0.034452	12429.20	18.772	4350.61	0.0042850	1.41898	1.6000	0.00077	1.46836	1.8767
106	0.034155	12227.88	18.453	4131.59	0.0043663	1.39450	1.5279	0.00076	1.46380	1.8281
108	0.033856	12023.61	18.140	3919.55	0.0044528	1.36997	1.4606	0.00076	1.45920	1.7840
110	0.033552	11816.30	17.831	3714.31	0.0045450	1.34541	1.3983	0.00075	1.45456	1.7442
112	0.033246	11605.90	17.527	3515.72	0.0046432	1.32084	1.3400	0.00074	1.44988	1.7086
114	0.032935	11392.30	17.228	3323.63	0.0047481	1.29625	1.2858	0.00073	1.44514	1.6768
116	0.032620	11175.47	16.936	3137.89	0.0048604	1.27165	1.2352	0.00072	1.44035	1.6488
118	0.032300	10955.39	16.649	2958.36	0.0049808	1.24705	1.1880	0.00071	1.43551	1.6244
120	0.031976	10731.98	16.369	2784.91	0.0051100	1.22246	1.1439	0.00070	1.43060	1.6036
122	0.031647	10505.34	16.095	2617.43	0.0052489	1.19788	1.1027	0.00069	1.42562	1.5863
124	0.031312	10275.52	15.827	2455.81	0.0053986	1.17331	1.0642	0.00068	1.42057	1.5724
126	0.030970	10042.65	15.564	2299.95	0.0055601	1.14876	1.0282	0.00066	1.41544	1.5619
128	0.030623	9807.85	15.306	2149.77	0.0057347	1.12423	0.9944	0.00065	1.41023	1.5548
130	0.030266	9568.67	14.599	1993.70	0.0059429	1.09958	0.9626	0.00063	1.40489	1.5720
132	0.029903	9438.71	14.251	1853.06	0.0061416	1.07510	0.9329	0.00062	1.39948	1.5719
134	0.029532	9206.87	13.953	1718.15	0.0063767	1.05058	0.9049	0.00061	1.39395	1.5802
136	0.029153	8974.86	13.595	1592.15	0.0065874	1.02620	0.8786	0.00060	1.38832	1.5818
138	0.028764	8741.82	13.291	1471.20	0.0068424	1.00187	0.8586	0.00058	1.38257	1.6020
140	0.028366	8509.40	12.984	1356.18	0.0071173	0.97759	0.8390	0.00057	1.37669	1.6243
142	0.027957	8270.23	12.655	1246.67	0.0074189	0.95342	0.8193	0.00056	1.37067	1.6476
144	0.027537	8031.91	12.323	1139.26	0.0077438	0.92933	0.7994	0.00054	1.36451	1.6721
146	0.027104	7803.05	11.988	1042.26	0.0080779	0.90532	0.7795	0.00053	1.35818	1.6962
148	0.026658	7565.70	11.700	945.51	0.0085248	0.88135	0.7595	0.00051	1.35166	1.7369
150	0.026198	7319.45	11.301	855.73	0.0089213	0.85755	0.7394	0.00050	1.34498	1.7595
152	0.025723	7075.80	10.943	778.64	0.0094013	0.83386	0.7192	0.00049	1.33810	1.7929
154	0.025228	6841.56	10.636	691.24	0.0099764	0.81014	0.6987	0.00047	1.33095	1.8396
156	0.024719	6578.42	10.195	615.35	0.0105130	0.78675	0.6782	0.00046	1.32364	1.8632
158	0.024181	6363.23	9.976	546.92	0.0113124	0.76303	0.6573	0.00044	1.31593	1.9377
160	0.023625	6164.21	9.356	482.70	0.0120159	0.73960	0.6363	0.00042	1.30799	1.9913
165	0.022124	5553.05	8.546	345.51	0.0142694	0.69192	0.5830	0.00039	1.28673	2.0866
170	0.020453	5014.38	7.743	242.18	0.0170869	0.64939	0.5292	0.00037	1.26334	2.1822
175	0.018634	4572.10	7.037	171.80	0.0199522	0.60731	0.4769	0.00036	1.23820	2.2385
180	0.016765	4268.07	6.492	129.27	0.0219036	0.56591	0.4293	0.00036	1.21274	2.2162
185	0.015005	4115.49	6.107	107.11	0.0220212	0.52584	0.3898	0.00039	1.18969	2.0996
190	0.013488	4089.03	5.832	97.62	0.0204407	0.48943	0.3598	0.00043	1.16895	1.9201
195	0.012243	4155.58	5.656	94.62	0.0182663	0.45956	0.3378	0.00049	1.15259	1.7438
200	0.011237	4273.30	5.520	94.60	0.0161083	0.43598	0.3219	0.00056	1.13949	1.5885
210	0.009740	4590.08	5.345	97.54	0.0127499	0.40273	0.3017	0.00071	1.12019	1.3701
220	0.008682	4952.52	5.220	101.28	0.0104515	0.38277	0.2903	0.00085	1.10668	1.2267
230	0.007889	5329.96	5.119	104.65	0.0086573	0.37060	0.2837	0.00100	1.09663	1.1294
240	0.007266	5711.88	5.035	107.55	0.0077007	0.36321	0.2800	0.00114	1.08877	1.0597
250	0.006758	6086.92	4.974	109.85	0.0058469	0.35898	0.2782	0.00127	1.08240	1.0093
260	0.006335	6455.36	4.908	111.75	0.0061576	0.35670	0.2777	0.00142	1.07711	0.9670
270	0.005973	6821.06	4.871	113.48	0.0056197	0.35603	0.2780	0.00155	1.07260	0.9355
280	0.005660	7180.99	4.841	114.96	0.0051803	0.35648	0.2791	0.00169	1.06871	0.9100
290	0.005384	7536.06	4.817	116.23	0.0048146	0.35710	0.2806	0.00183	1.06529	0.8909
300	0.005139	7887.34	4.795	117.33	0.0045053	0.35968	0.2825	0.00197	1.06226	0.8722
310	0.004919	8235.90	4.777	118.28	0.0042400	0.36267	0.2847	0.00211	1.05954	0.8567
320	0.004721	8582.74	4.760	119.13	0.0040096	0.36598	0.2872	0.00225	1.05709	0.8439
330	0.004540	8928.78	4.743	119.88	0.0038074	0.36956	0.2898	0.00239	1.05486	0.8332
340	0.004374	9274.84	4.727	120.55	0.0036283	0.37337	0.2926	0.00254	1.05283	0.8243

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

140 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p J/G MOLE -K	VELOCITY OF SOUND M/SEC
* 55.963	24.33	301295	39.07	-6165.1	-5819.9	67.53	35.74	52.75	1187
56	24.34	301127	39.05	-6163.2	-5818.0	67.56	35.73	52.75	1186
58	24.49	292084	37.95	-6060.0	-5712.5	69.41	35.33	52.71	1179
60	24.65	283230	36.87	-5956.8	-5607.2	71.20	34.94	52.67	1163
62	24.81	274563	35.82	-5853.8	-5501.9	72.93	34.57	52.63	1151
64	24.97	266080	34.79	-5750.8	-5396.6	74.60	34.20	52.59	1138
66	25.13	257779	33.79	-5648.0	-5291.5	76.21	33.85	52.56	1125
68	25.30	249655	32.81	-5545.3	-5186.4	77.78	33.51	52.53	1113
70	25.47	241708	31.86	-5442.6	-5081.3	79.31	33.19	52.51	1100
72	25.64	233933	30.93	-5340.1	-4976.3	80.78	32.87	52.48	1084
74	25.82	226327	30.02	-5237.6	-4871.4	82.22	32.57	52.46	1074
76	26.00	218889	29.13	-5135.2	-4766.5	83.62	32.27	52.45	1061
78	26.18	211615	28.27	-5032.9	-4661.6	84.98	31.99	52.44	1048
80	26.36	204502	27.43	-4930.6	-4556.7	86.31	31.71	52.43	1035
82	26.55	197547	26.61	-4828.4	-4451.8	87.61	31.45	52.43	1021
84	26.74	190749	25.81	-4726.2	-4346.9	88.87	31.19	52.44	1006
86	26.94	184103	25.03	-4624.1	-4242.0	90.10	30.94	52.45	994
88	27.14	177607	24.27	-4522.0	-4137.0	91.31	30.69	52.47	980
90	27.34	171259	23.53	-4419.9	-4032.1	92.49	30.46	52.49	967
92	27.55	165055	22.81	-4317.8	-3927.0	93.64	30.23	52.53	953
94	27.76	158994	22.11	-4215.7	-3821.9	94.77	30.00	52.57	939
96	27.98	153071	21.43	-4113.6	-3716.7	95.88	29.78	52.62	925
98	28.20	147286	20.76	-4011.4	-3611.4	96.97	29.57	52.68	912
100	28.42	141635	20.12	-3909.2	-3506.0	98.03	29.36	52.75	898
102	28.66	136115	19.49	-3806.9	-3400.4	99.08	29.15	52.83	884
104	28.90	130725	18.87	-3704.5	-3294.6	100.10	28.94	52.92	870
106	29.14	125461	18.28	-3602.0	-3188.7	101.11	28.74	53.03	855
108	29.39	120322	17.70	-3499.4	-3082.5	102.11	28.54	53.14	842
110	29.65	115305	17.13	-3396.7	-2976.1	103.08	28.33	53.27	829
112	29.91	110408	16.58	-3293.7	-2869.4	104.04	28.13	53.42	815
114	30.19	105629	16.05	-3190.6	-2762.4	104.99	27.92	53.58	801
116	30.47	100966	15.53	-3087.2	-2655.1	105.93	27.71	53.76	788
118	30.76	96417	15.02	-2983.6	-2547.3	106.85	27.50	53.96	774
120	31.06	91980	14.52	-2879.7	-2439.1	107.76	27.28	54.18	760
122	31.37	87655	14.04	-2775.4	-2330.5	108.65	27.06	54.41	747
124	31.69	83439	13.57	-2670.8	-2221.3	109.54	26.83	54.67	734
126	32.02	79332	13.11	-2565.8	-2111.6	110.42	26.60	54.96	720
128	32.36	75333	12.66	-2460.3	-2001.2	111.29	26.36	55.28	707
130	32.72	71083	12.20	-2352.9	-1888.7	112.16	26.87	56.42	687
132	33.10	67216	11.73	-2245.2	-1775.7	113.02	26.77	56.76	672
134	33.49	63406	11.31	-2136.7	-1661.6	113.88	26.66	57.38	657
136	33.90	59902	10.86	-2027.4	-1546.6	114.73	26.54	57.72	642
138	34.32	56479	10.45	-1917.4	-1430.5	115.58	26.41	58.28	628
140	34.77	53184	10.06	-1806.5	-1313.3	116.42	26.28	58.89	614
142	35.24	49945	9.64	-1694.9	-1195.1	117.26	26.16	59.38	599
144	35.73	46826	9.25	-1582.4	-1075.6	118.10	26.05	60.05	585
146	36.24	43972	8.89	-1468.7	-954.6	118.93	25.95	60.88	572
148	36.79	41027	8.51	-1354.2	-832.3	119.76	25.86	61.69	557
150	37.37	38266	8.11	-1238.5	-708.5	120.59	25.79	62.28	541
152	37.97	35597	7.74	-1121.8	-583.1	121.42	25.72	63.05	526
154	38.62	33064	7.42	-1003.3	-455.4	122.26	25.66	64.42	513
156	39.31	30618	6.98	-884.3	-326.7	123.09	25.60	64.45	494
158	40.05	28300	6.77	-762.3	-194.1	123.93	25.55	67.16	485
160	40.84	26107	6.38	-639.3	-60.0	124.78	26.10	68.23	465
165	43.07	21158	5.56	-322.2	288.8	126.92	25.83	71.20	430
170	45.76	17064	4.82	6.3	655.4	129.11	25.81	74.92	396
175	49.04	13882	4.14	345.4	1041.0	131.35	25.80	78.50	366
180	52.98	11620	3.54	690.5	1442.0	133.61	25.71	81.00	341
185	57.60	10197	3.03	1033.3	1850.4	135.84	25.53	81.53	321
190	62.80	9484	2.60	1364.2	2255.0	138.00	25.30	79.61	307
195	68.38	9311	2.27	1675.4	2645.4	140.03	25.02	76.05	299
200	74.12	9518	2.00	1962.5	3014.0	141.90	24.72	71.38	295
210	85.49	10556	1.61	2467.4	3680.1	145.15	24.13	62.38	294
220	96.30	11934	1.35	2898.9	4265.1	147.87	23.61	55.32	298
230	106.48	13422	1.17	3279.3	4789.7	150.21	23.18	50.19	303
240	116.09	14924	1.04	3624.2	5271.1	152.26	22.83	46.50	310
250	125.21	16345	0.932	3943.7	5719.7	154.09	22.54	43.64	317
260	133.96	17749	0.851	4244.6	6144.9	155.76	22.28	41.55	324
270	142.40	19119	0.784	4531.3	6551.2	157.29	22.04	39.86	331
280	150.54	20391	0.727	4806.1	6941.5	158.71	21.81	38.47	337
290	158.51	21697	0.681	5071.9	7320.5	160.04	21.61	37.37	345
300	166.31	22972	0.641	5330.4	7689.6	161.29	21.44	36.48	352
310	173.96	24221	0.607	5582.9	8050.7	162.48	21.30	35.74	359
320	181.48	25447	0.577	5830.6	8405.0	163.60	21.18	35.14	366
330	188.90	26655	0.550	6074.2	8753.8	164.67	21.09	34.63	372
340	196.22	27845	0.527	6314.5	9098.0	165.70	21.01	34.22	379

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

140 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	$V(\partial H/\partial V)_p$ J/GMOLE	$V(\partial P/\partial U)_V$ CC-ATM/J	$-V(\partial P/\partial V)_T$ ATM	$(\partial V/\partial T)_P/V$ 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S X 10^5	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 55.963	0.041096	16718.08	25.599	12381.90	0.0031553	1.94966	6.6303	0.00090	1.57242	5.6062
56	0.041091	16715.35	25.594	12373.57	0.0031557	1.94936	6.6222	0.00090	1.57204	5.6001
58	0.040831	16565.62	26.304	11926.14	0.0031817	1.93277	6.1951	0.00090	1.56449	5.2796
60	0.040571	16414.75	26.308	11490.96	0.0032085	1.91547	5.7955	0.00090	1.56449	4.9825
62	0.040311	16262.69	25.706	11067.78	0.0032362	1.89751	5.4303	0.00089	1.56032	4.7069
64	0.040049	16109.37	25.399	10656.33	0.0032648	1.87893	5.0884	0.00089	1.55614	4.4511
66	0.039788	15954.74	25.087	10256.37	0.0032944	1.85979	4.7709	0.00089	1.55196	4.2138
68	0.039525	15798.74	24.770	9867.63	0.0033251	1.84011	4.4761	0.00089	1.54778	3.9934
70	0.039262	15641.30	24.449	9489.88	0.0033569	1.81995	4.2023	0.00088	1.54359	3.7888
72	0.038998	15482.39	24.124	9122.86	0.0033899	1.79934	3.9484	0.00088	1.53940	3.5987
74	0.038733	15321.90	23.796	8766.33	0.0034241	1.77831	3.7118	0.00088	1.53520	3.4222
76	0.038467	15159.84	23.466	8420.06	0.0034598	1.75690	3.4924	0.00087	1.53099	3.2582
78	0.038201	14996.08	23.133	8083.81	0.0034968	1.73515	3.2886	0.00087	1.52678	3.1060
80	0.037933	14830.60	22.799	7757.35	0.0035355	1.71308	3.0992	0.00086	1.52256	2.9645
82	0.037664	14663.32	22.463	7440.45	0.0035758	1.69072	2.9233	0.00086	1.51833	2.8332
84	0.037394	14494.17	22.128	7132.89	0.0036179	1.66810	2.7598	0.00085	1.51409	2.7113
86	0.037123	14323.11	21.791	6834.44	0.0036620	1.64525	2.6079	0.00084	1.50983	2.5982
88	0.036850	14150.04	21.456	6544.89	0.0037080	1.62221	2.4667	0.00084	1.50557	2.4934
90	0.036576	13974.90	21.121	6264.02	0.0037563	1.59897	2.3355	0.00083	1.50128	2.3962
92	0.036301	13797.61	20.788	5991.63	0.0038070	1.57558	2.2135	0.00083	1.49699	2.3061
94	0.036024	13618.12	20.456	5727.51	0.0038602	1.55205	2.1000	0.00082	1.49267	2.2229
96	0.035744	13436.33	20.127	5471.46	0.0039162	1.52839	1.9945	0.00081	1.48833	2.1459
98	0.035464	13252.17	19.801	5223.24	0.0039751	1.50464	1.8964	0.00081	1.48398	2.0749
100	0.035181	13065.56	19.477	4982.73	0.0040372	1.48080	1.8051	0.00080	1.47960	2.0094
102	0.034895	12876.41	19.158	4749.79	0.0041028	1.45689	1.7201	0.00079	1.47519	1.9492
104	0.034608	12684.66	18.843	4524.10	0.0041720	1.43293	1.6410	0.00078	1.47076	1.8940
106	0.034318	12490.23	18.533	4305.54	0.0042453	1.40893	1.5674	0.00077	1.46630	1.8435
108	0.034025	12293.05	18.228	4093.95	0.0043230	1.38490	1.4989	0.00077	1.46180	1.7975
110	0.033729	12093.02	17.928	3889.15	0.0044054	1.36085	1.4350	0.00076	1.45727	1.7556
112	0.033431	11890.12	17.635	3690.99	0.0044929	1.33679	1.3755	0.00075	1.45270	1.7178
114	0.033128	11684.22	17.348	3499.32	0.0045859	1.31274	1.3203	0.00074	1.44809	1.6838
116	0.032823	11475.32	17.068	3313.97	0.0046850	1.28870	1.2683	0.00073	1.44344	1.6535
118	0.032513	11263.40	16.795	3134.82	0.0047907	1.26468	1.2200	0.00072	1.43873	1.6267
120	0.032200	11048.36	16.530	2961.73	0.0049036	1.24068	1.1749	0.00071	1.43398	1.6033
122	0.031882	10830.37	16.274	2794.58	0.0050242	1.21672	1.1328	0.00070	1.42917	1.5832
124	0.031559	10609.44	16.025	2633.24	0.0051534	1.19280	1.0934	0.00069	1.42429	1.5663
126	0.031231	10385.93	15.784	2477.62	0.0052919	1.16892	1.0566	0.00068	1.41936	1.5525
128	0.030898	10160.39	15.549	2327.62	0.0054405	1.14508	1.0221	0.00067	1.41435	1.5419
130	0.030558	10043.66	14.858	2172.17	0.0056171	1.12128	0.9897	0.00065	1.40926	1.5562
132	0.030213	9827.38	14.501	2030.80	0.0057754	1.09760	0.9594	0.00064	1.40410	1.5504
134	0.029861	9605.35	14.207	1893.36	0.0059734	1.07394	0.9309	0.00063	1.39885	1.5542
136	0.029502	9391.23	13.872	1767.24	0.0061457	1.05039	0.9041	0.00062	1.39351	1.5525
138	0.029136	9174.21	13.584	1645.56	0.0063522	1.02694	0.8789	0.00060	1.38807	1.5587
140	0.028762	8957.12	13.305	1529.68	0.0065742	1.00359	0.8600	0.00059	1.38254	1.5769
142	0.028381	8733.49	12.982	1417.48	0.0067997	0.98044	0.8412	0.00058	1.37691	1.5924
144	0.027991	8512.57	12.679	1310.68	0.0070541	0.95740	0.8225	0.00057	1.37117	1.6121
146	0.027590	8308.10	12.417	1213.23	0.0073276	0.93443	0.8036	0.00056	1.36529	1.6361
148	0.027181	8084.12	12.105	1115.17	0.0076309	0.91169	0.7848	0.00054	1.35930	1.6594
150	0.026762	7862.42	11.755	1024.09	0.0079214	0.88917	0.7668	0.00053	1.35319	1.6766
152	0.026334	7641.06	11.420	937.41	0.0082516	0.86687	0.7472	0.00052	1.34695	1.6983
154	0.025891	7432.22	11.168	856.06	0.0086670	0.84461	0.7282	0.00051	1.34053	1.7356
156	0.025441	7193.53	10.715	778.96	0.0089597	0.82288	0.7095	0.00050	1.33404	1.7367
158	0.024969	7007.68	10.617	706.62	0.0095839	0.80083	0.6903	0.00048	1.32723	1.8093
160	0.024487	6839.00	9.977	639.26	0.0099762	0.77924	0.6714	0.00047	1.32031	1.8370
165	0.023219	6287.12	9.275	491.26	0.0113249	0.72640	0.6239	0.00044	1.30221	1.9112
170	0.021851	5796.34	8.544	372.87	0.0129250	0.68611	0.5768	0.00042	1.28289	1.9682
175	0.020392	5364.94	7.874	283.08	0.0146329	0.64733	0.5308	0.00040	1.26250	2.0116
180	0.018875	5014.73	7.302	219.33	0.0161533	0.61005	0.4874	0.00040	1.24152	2.0224
185	0.017361	4763.15	6.836	177.02	0.0171161	0.57465	0.4483	0.00041	1.22062	1.9877
190	0.015925	4615.74	6.466	151.03	0.0172472	0.54177	0.4150	0.00043	1.20140	1.9058
195	0.014625	4566.22	6.199	136.18	0.0166547	0.51246	0.3874	0.00046	1.18601	1.7988
200	0.013492	4589.49	5.988	128.41	0.0155538	0.48699	0.3665	0.00051	1.16849	1.6789
210	0.011697	4778.77	5.704	123.47	0.0130376	0.44665	0.3371	0.00061	1.14547	1.4696
220	0.010384	5066.64	5.520	123.92	0.0109195	0.42018	0.3194	0.00073	1.12846	1.3142
230	0.009392	5401.10	5.381	126.05	0.0092928	0.40281	0.3084	0.00085	1.11573	1.2011
240	0.008614	5758.06	5.278	128.55	0.0080752	0.39148	0.3016	0.00098	1.10581	1.1196
250	0.007987	6113.33	5.177	130.55	0.0071386	0.38409	0.2975	0.00110	1.09767	1.0564
260	0.007465	6472.56	5.113	132.50	0.0064190	0.37955	0.2952	0.00122	1.09128	1.0098
270	0.007023	6828.66	5.064	134.27	0.0058369	0.37692	0.2941	0.00135	1.08572	0.9719
280	0.006643	7187.60	5.019	135.45	0.0053668	0.37574	0.2940	0.00147	1.08096	0.9405
290	0.006309	7515.44	4.993	136.88	0.0049730	0.37498	0.2945	0.00159	1.07678	0.9173
300	0.006013	7859.93	4.973	138.13	0.0046413	0.37656	0.2956	0.00172	1.07310	0.8950
310	0.005748	8201.99	4.957	139.23	0.0043581	0.37857	0.2971	0.00184	1.06981	0.8766
320	0.005510	8542.58	4.942	140.22	0.0041132	0.38107	0.2989	0.00197	1.06685	0.8613
330	0.005294	8882.62	4.929	141.11	0.0038992	0.38394	0.3010	0.00209	1.06417	0.8485
340	0.005096	9222.94	4.916	141.91	0.0037102	0.38710	0.3033	0.00222	1.06173	0.8379

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

160 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p J/G MOLE -K	VELOCITY OF SOUND M/SEC
* 56.191	24.31	333699	39.08	-6161.5	-5767.3	87.59	35.76	52.68	1193
58	24.45	295556	38.09	-6068.5	-5672.1	89.26	35.39	52.64	1180
60	24.61	266735	37.02	-5965.7	-5566.8	91.04	35.01	52.60	1168
62	24.76	278101	35.97	-5863.1	-5461.7	92.76	34.63	52.55	1156
64	24.92	269652	34.94	-5760.6	-5356.6	94.43	34.27	52.51	1144
66	25.08	261384	33.94	-5658.3	-5251.6	96.05	33.93	52.48	1131
68	25.25	253296	32.97	-5556.0	-5146.7	97.61	33.59	52.44	1119
70	25.42	245383	32.02	-5453.9	-5041.8	99.13	33.27	52.41	1105
72	25.59	237644	31.09	-5351.8	-4937.0	80.61	32.96	52.38	1094
74	25.76	230074	30.18	-5249.9	-4832.3	82.04	32.65	52.35	1081
76	25.94	222673	29.30	-5148.0	-4727.6	83.44	32.36	52.33	1068
78	26.11	215436	28.44	-5046.3	-4622.9	84.80	32.08	52.31	1055
80	26.30	208361	27.60	-4944.6	-4518.3	86.12	31.81	52.30	1042
82	26.48	201444	26.78	-4843.0	-4413.7	87.42	31.54	52.29	1029
84	26.67	194685	25.99	-4741.4	-4309.1	88.68	31.29	52.29	1015
86	26.86	188078	25.21	-4639.9	-4204.5	89.91	31.04	52.29	1002
88	27.06	181623	24.46	-4538.5	-4099.9	91.11	30.80	52.29	988
90	27.25	175316	23.72	-4437.1	-3995.3	92.28	30.57	52.31	975
92	27.46	169154	23.01	-4335.8	-3890.6	93.43	30.34	52.33	961
94	27.66	163134	22.31	-4234.4	-3785.9	94.56	30.11	52.35	948
96	27.88	157255	21.63	-4133.1	-3681.2	95.66	29.90	52.39	934
98	28.09	151513	20.97	-4031.8	-3576.3	96.74	29.68	52.43	921
100	28.31	145906	20.33	-3930.4	-3471.4	97.80	29.47	52.48	907
102	28.54	140432	19.71	-3829.1	-3366.4	98.84	29.26	52.54	894
104	28.77	135087	19.10	-3727.7	-3261.2	99.86	29.06	52.61	880
106	29.01	129870	18.51	-3626.2	-3155.9	100.87	28.86	52.69	867
108	29.25	124778	17.93	-3524.7	-3050.5	101.85	28.65	52.78	853
110	29.50	119806	17.37	-3423.0	-2944.8	102.82	28.45	52.88	840
112	29.75	114960	16.83	-3321.3	-2838.9	103.78	28.24	53.00	827
114	30.02	110230	16.30	-3219.4	-2732.8	104.72	28.03	53.13	813
116	30.29	105617	15.79	-3117.4	-2626.4	105.64	27.82	53.27	800
118	30.57	101119	15.29	-3015.2	-2519.7	106.55	27.60	53.42	787
120	30.85	96733	14.80	-2912.8	-2412.6	107.45	27.38	53.59	774
122	31.15	92460	14.33	-2810.2	-2305.2	108.34	27.15	53.78	761
124	31.45	88296	13.86	-2707.3	-2197.4	109.22	26.91	53.98	749
126	31.77	84241	13.42	-2604.1	-2089.1	110.08	26.67	54.20	736
128	32.10	80294	12.98	-2500.6	-1980.3	110.94	26.42	54.44	724
130	32.44	76454	12.53	-2395.4	-1869.6	111.80	26.94	55.52	705
132	32.79	72709	12.05	-2290.1	-1758.5	112.65	26.84	55.73	690
134	33.15	68513	11.63	-2184.1	-1646.6	113.49	26.73	56.21	675
136	33.53	65340	11.22	-2077.4	-1533.8	114.32	26.62	56.59	662
138	33.93	61640	10.81	-1970.2	-1420.1	115.15	26.49	57.03	648
140	34.34	58369	10.43	-1862.2	-1305.5	115.98	26.36	57.55	635
142	34.77	55175	10.01	-1753.9	-1190.2	116.80	26.23	57.84	621
144	35.22	52058	9.63	-1644.3	-1074.0	117.61	26.12	58.36	607
146	35.69	49018	9.32	-1534.8	-956.2	118.42	26.01	59.28	596
148	36.18	46328	8.91	-1424.4	-837.9	119.23	25.91	59.55	581
150	36.70	43597	8.54	-1313.3	-718.4	120.03	25.82	60.06	567
152	37.23	40953	8.17	-1201.4	-597.8	120.83	25.74	60.55	552
154	37.81	38437	7.88	-1088.2	-475.3	121.63	25.67	61.71	541
156	38.40	36068	7.44	-975.0	-352.5	122.42	25.59	61.36	523
158	39.04	33681	7.27	-859.4	-226.5	123.22	25.52	63.81	516
160	39.71	31488	6.88	-743.3	-99.6	124.02	26.05	64.45	497
165	41.56	26455	6.10	-446.6	227.2	126.03	25.74	66.30	465
170	43.71	22165	5.38	-143.2	565.5	128.05	25.66	68.71	434
175	46.23	18638	4.73	166.8	916.3	130.08	25.63	71.13	405
180	49.16	15906	4.14	480.3	1277.9	132.12	25.54	73.01	379
185	52.53	13938	3.62	795.1	1646.7	134.14	25.38	73.95	359
190	56.32	12626	3.17	1104.2	2017.3	136.12	25.19	73.73	342
195	60.48	11865	2.79	1403.1	2383.6	138.02	24.97	72.42	330
200	64.90	11542	2.47	1687.7	2739.8	139.83	24.73	69.96	322
210	74.10	11824	2.00	2206.7	3407.9	143.09	24.25	63.61	313
220	83.26	12763	1.67	2661.2	4011.1	145.98	23.77	57.42	312
230	92.13	14465	1.43	3064.8	4558.4	148.33	23.35	52.43	316
240	100.64	15380	1.26	3430.2	5061.8	150.47	22.99	48.61	321
250	108.72	16743	1.12	3766.2	5528.8	152.38	22.69	45.29	325
260	116.52	18105	1.02	4081.2	5970.3	154.11	22.41	43.07	332
270	124.06	19452	0.939	4379.8	6391.0	155.70	22.16	41.23	339
280	131.36	20773	0.868	4665.1	6794.8	157.17	21.92	39.68	345
290	138.46	22064	0.808	4939.4	7184.2	158.54	21.67	38.34	352
300	145.42	23333	0.760	5204.6	7562.2	159.82	21.43	37.33	359
310	152.22	24513	0.717	5462.2	7930.0	161.02	21.22	36.51	365
320	158.94	25765	0.681	5714.6	8291.4	162.17	21.07	35.80	372
330	165.57	27001	0.648	5962.2	8646.5	163.26	20.95	35.22	379
340	172.12	28223	0.620	6205.9	8996.2	164.31	20.85	34.74	386

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

160 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	$V(\partial H/\partial V)_p$ J/GMOLE	$V(\partial P/\partial U)_V$ CC-ATM/J	$-V(\partial P/\partial V)_T$ ATM	$(\partial V/\partial T)_P/V$ 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S X 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 56.191	0.041132	16838.01	26.575	12491.64	0.0031288	1.95242	6.6939	0.00090	1.57351	5.6447
58	0.040899	16705.58	25.313	12066.06	0.0031511	1.93768	6.3043	0.00090	1.56976	5.3524
60	0.040641	16558.18	25.017	11653.30	0.0031765	1.92071	5.9029	0.00090	1.56562	5.0516
62	0.040383	16409.69	25.716	11230.54	0.0032026	1.90308	5.5301	0.00090	1.56148	4.7726
64	0.040124	16260.06	25.409	10819.52	0.0032296	1.88484	5.1839	0.00089	1.55733	4.5136
66	0.039865	16109.21	25.097	10419.98	0.0032575	1.86603	4.8623	0.00089	1.55319	4.2732
68	0.039605	15957.11	24.780	10031.66	0.0032864	1.84670	4.5635	0.00089	1.54904	4.0499
70	0.039344	15803.68	24.460	9654.33	0.0033163	1.82688	4.2859	0.00089	1.54489	3.8424
72	0.039083	15648.90	24.136	9287.73	0.0033472	1.80662	4.0281	0.00088	1.54074	3.6497
74	0.038821	15492.66	23.810	8931.63	0.0033793	1.78594	3.7885	0.00088	1.53659	3.4707
76	0.038558	15334.96	23.481	8585.78	0.0034126	1.76489	3.5658	0.00087	1.53243	3.3043
78	0.038294	15175.69	23.150	8249.95	0.0034472	1.74349	3.3589	0.00087	1.52826	3.1497
80	0.038030	15014.81	22.817	7923.91	0.0034832	1.72179	3.1666	0.00087	1.52409	3.0060
82	0.037764	14852.27	22.484	7607.43	0.0035207	1.69980	2.9879	0.00086	1.51991	2.8725
84	0.037498	14687.98	22.150	7300.28	0.0035598	1.67756	2.8218	0.00086	1.51572	2.7485
86	0.037230	14521.91	21.817	7002.24	0.0036006	1.65510	2.6673	0.00085	1.51152	2.6334
88	0.036962	14353.96	21.484	6713.10	0.0036432	1.63243	2.5237	0.00084	1.50731	2.5265
90	0.036692	14184.08	21.152	6432.64	0.0036878	1.60959	2.3902	0.00084	1.50309	2.4274
92	0.036420	14012.17	20.822	6160.65	0.0037344	1.58659	2.2661	0.00083	1.49885	2.3355
94	0.036148	13838.20	20.495	5896.93	0.0037833	1.56346	2.1504	0.00083	1.49460	2.2504
96	0.035873	13662.07	20.170	5641.27	0.0038346	1.54022	2.0429	0.00082	1.49034	2.1715
98	0.035597	13483.70	19.848	5393.46	0.0038885	1.51688	1.9429	0.00081	1.486.5	2.0987
100	0.035320	13303.03	19.531	5153.36	0.0039451	1.49346	1.8498	0.00081	1.48175	2.0314
102	0.035040	13119.95	19.217	4920.72	0.0040047	1.46999	1.7631	0.00080	1.47743	1.9694
104	0.034758	12934.41	18.909	4695.39	0.0040676	1.44647	1.6824	0.00079	1.47308	1.9124
106	0.034474	12746.33	18.606	4477.18	0.0041339	1.42292	1.6073	0.00078	1.46871	1.8600
108	0.034188	12555.63	18.308	4265.92	0.0042039	1.39935	1.5373	0.00078	1.46431	1.8121
110	0.033899	12362.23	18.017	4061.45	0.0042779	1.37577	1.4720	0.00077	1.45988	1.7683
112	0.033608	12166.09	17.733	3863.59	0.0043563	1.35220	1.4112	0.00076	1.45542	1.7285
114	0.033314	11967.08	17.457	3672.19	0.0044394	1.32865	1.3545	0.00075	1.45092	1.6925
116	0.033016	11765.21	17.188	3487.10	0.0045275	1.30512	1.3015	0.00074	1.44638	1.6601
118	0.032716	11560.43	16.928	3308.18	0.0046211	1.28162	1.2521	0.00073	1.44181	1.6311
120	0.032412	11352.67	16.677	3135.29	0.0047205	1.25816	1.2060	0.00072	1.43719	1.6053
122	0.032104	11142.05	16.435	2968.30	0.0048264	1.23475	1.1629	0.00072	1.43253	1.5828
124	0.031792	10928.62	16.203	2807.08	0.0049391	1.21140	1.1226	0.00071	1.42781	1.5632
126	0.031476	10712.72	15.981	2651.53	0.0050594	1.18811	1.0849	0.00070	1.42304	1.5466
128	0.031155	10494.90	15.767	2501.54	0.0051877	1.16489	1.0496	0.00069	1.41821	1.5330
130	0.030830	10400.15	15.091	2347.51	0.0053387	1.14182	1.0166	0.00067	1.41333	1.5449
132	0.030500	10196.23	14.727	2205.42	0.0054658	1.11882	0.9857	0.00066	1.40839	1.5343
134	0.030164	9985.16	14.428	2066.64	0.0056294	1.09590	0.9566	0.00065	1.40337	1.5333
136	0.029822	9765.57	14.131	1939.65	0.0057828	1.07306	0.9292	0.00064	1.39827	1.5314
138	0.029475	9581.34	13.849	1816.82	0.0059525	1.05036	0.9035	0.00062	1.39310	1.5332
140	0.029121	9377.45	13.587	1699.73	0.0061374	1.02777	0.8794	0.00061	1.38785	1.5390
142	0.028761	9166.66	13.270	1586.91	0.0063895	1.00543	0.8614	0.00060	1.38253	1.5486
144	0.028395	8957.38	12.987	1478.22	0.0065152	0.98325	0.8435	0.00059	1.37713	1.5645
146	0.028020	8770.34	12.792	1379.36	0.0067586	0.96108	0.8254	0.00058	1.37159	1.5909
148	0.027639	8557.64	12.444	1280.47	0.0069590	0.93929	0.8075	0.00057	1.36601	1.6000
150	0.027251	8354.98	12.139	1188.08	0.0071889	0.91772	0.7897	0.00056	1.36033	1.6152
152	0.026857	8150.31	11.828	1099.86	0.0074287	0.89643	0.7719	0.00055	1.35457	1.6293
154	0.026451	7960.41	11.618	1016.68	0.0077526	0.87521	0.7541	0.00054	1.34866	1.6617
156	0.026042	7747.09	11.162	939.29	0.0079209	0.85458	0.7366	0.00053	1.34273	1.6529
158	0.025616	7572.33	11.120	862.75	0.0084264	0.83372	0.7187	0.00051	1.33655	1.7189
160	0.025183	7432.19	10.478	792.97	0.0086721	0.81335	0.7010	0.00050	1.33031	1.7361
165	0.024062	6923.07	9.845	636.54	0.0095773	0.76383	0.6574	0.00048	1.31422	1.7833
170	0.022876	6470.49	9.172	507.04	0.0106183	0.71857	0.6143	0.00046	1.29736	1.8357
175	0.021631	6061.88	8.533	403.15	0.0117332	0.68169	0.5725	0.00044	1.27980	1.8661
180	0.020342	5707.13	7.968	323.55	0.0127921	0.64674	0.5326	0.00044	1.26180	1.8788
185	0.019037	5424.13	7.486	265.34	0.0136340	0.61353	0.4956	0.00044	1.24374	1.8667
190	0.017755	5217.28	7.085	224.17	0.0141327	0.58283	0.4624	0.00045	1.22618	1.8280
195	0.016535	5098.24	6.760	196.17	0.0142272	0.55492	0.4335	0.00046	1.20962	1.7681
200	0.015409	5030.97	6.489	177.85	0.0139057	0.52980	0.4093	0.00049	1.19449	1.6890
210	0.013496	5085.41	6.100	159.57	0.0125089	0.48682	0.3731	0.00057	1.16905	1.5237
220	0.012010	5279.90	5.840	153.29	0.0108754	0.45597	0.3496	0.00066	1.14955	1.3757
230	0.010854	5554.73	5.661	152.01	0.0094386	0.43448	0.3341	0.00076	1.13453	1.2601
240	0.009936	5873.72	5.535	152.82	0.0082762	0.41964	0.3240	0.00087	1.12271	1.1729
250	0.009198	6203.96	5.387	154.00	0.0072997	0.40915	0.3174	0.00098	1.11325	1.0979
260	0.008582	6544.73	5.316	155.38	0.0065813	0.40238	0.3131	0.00109	1.10541	1.0475
270	0.008061	6887.51	5.254	156.80	0.0059856	0.39786	0.3105	0.00120	1.09880	1.0055
280	0.007612	7227.31	5.204	158.13	0.0054900	0.39504	0.3091	0.00131	1.09314	0.9702
290	0.007222	7562.20	5.160	159.35	0.0050693	0.39295	0.3086	0.00142	1.08822	0.9408
300	0.006877	7885.34	5.154	160.45	0.0047341	0.39339	0.3088	0.00153	1.08389	0.9157
310	0.006570	8194.34	5.145	161.04	0.0044549	0.39453	0.3095	0.00165	1.08004	0.8950
320	0.006292	8525.88	5.135	162.10	0.0041995	0.39620	0.3107	0.00176	1.07657	0.8774
330	0.006040	8857.38	5.126	163.08	0.0039766	0.39831	0.3122	0.00187	1.07343	0.8627
340	0.005810	9189.67	5.118	163.98	0.0037803	0.40081	0.3140	0.00199	1.07057	0.8504

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

180 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p J/G MOLE -K	VELOCITY OF SOUND M/SEC
* 56.417	24.29	306095	39.10	-6157.8	-5714.8	67.65	35.77	52.62	1194
58	24.41	299005	38.23	-6076.8	-5631.6	69.10	35.45	52.58	1185
60	24.56	290215	37.16	-5974.5	-5526.5	70.88	35.07	52.53	1173
62	24.72	281613	36.12	-5872.3	-5421.4	72.60	34.70	52.48	1161
64	24.88	273196	35.09	-5770.2	-5316.5	74.27	34.35	52.44	1149
66	25.04	264961	34.10	-5668.3	-5211.7	75.88	34.00	52.40	1137
68	25.20	256906	33.12	-5566.5	-5106.9	77.45	33.67	52.35	1125
70	25.36	249026	32.17	-5464.8	-5002.2	78.96	33.35	52.32	1112
72	25.53	241321	31.25	-5363.3	-4897.6	80.44	33.04	52.28	1100
74	25.70	233786	30.34	-5261.9	-4793.1	81.87	32.74	52.25	1087
76	25.88	226419	29.46	-5160.5	-4688.6	83.26	32.45	52.22	1074
78	26.05	219218	28.61	-5059.3	-4584.2	84.62	32.17	52.20	1061
80	26.23	212178	27.77	-4958.2	-4479.8	85.94	31.90	52.17	1048
82	26.41	205298	26.96	-4857.1	-4375.4	87.23	31.64	52.16	1035
84	26.60	198575	26.16	-4756.2	-4271.1	88.49	31.39	52.14	1022
86	26.78	192006	25.39	-4655.3	-4166.8	89.71	31.14	52.13	1009
88	26.98	185589	24.64	-4554.5	-4062.6	90.91	30.90	52.13	996
90	27.17	179319	23.91	-4453.8	-3958.3	92.08	30.67	52.13	982
92	27.37	173196	23.20	-4353.2	-3854.0	93.23	30.44	52.14	969
94	27.57	167216	22.50	-4252.5	-3749.7	94.35	30.22	52.15	955
96	27.78	161376	21.83	-4152.0	-3645.3	95.45	30.01	52.17	943
98	27.99	155675	21.18	-4051.4	-3540.9	96.52	29.79	52.20	929
100	28.20	150108	20.54	-3950.9	-3436.5	97.58	29.59	52.24	915
102	28.42	144675	19.92	-3850.4	-3332.0	98.61	29.38	52.28	903
104	28.65	139372	19.32	-3749.9	-3227.4	99.63	29.17	52.33	890
106	28.88	134197	18.73	-3649.4	-3122.7	100.63	28.97	52.39	877
108	29.12	129147	18.16	-3548.8	-3017.8	101.61	28.77	52.45	864
110	29.36	124221	17.61	-3448.3	-2912.8	102.57	28.56	52.53	851
112	29.60	119416	17.07	-3347.6	-2807.7	103.52	28.35	52.62	838
114	29.86	114730	16.55	-3246.9	-2702.4	104.45	28.14	52.71	825
116	30.12	110161	16.04	-3146.1	-2596.8	105.37	27.93	52.82	812
118	30.39	105707	15.54	-3045.2	-2491.0	106.27	27.71	52.94	800
120	30.66	101366	15.06	-2944.2	-2385.0	107.16	27.48	53.07	787
122	30.95	97137	14.60	-2843.1	-2278.7	108.04	27.24	53.21	775
124	31.24	93013	14.14	-2741.7	-2172.0	108.91	27.00	53.36	763
126	31.54	89007	13.78	-2640.2	-2065.0	109.77	26.74	53.53	751
128	31.85	85104	13.27	-2538.5	-1957.6	110.61	26.48	53.72	739
130	32.17	81070	12.84	-2435.1	-1848.4	111.46	27.00	54.74	721
132	32.50	77266	12.36	-2331.8	-1739.0	112.29	26.91	54.85	706
134	32.85	73526	11.94	-2226.0	-1629.0	113.12	26.81	55.20	692
136	33.20	70055	11.56	-2123.5	-1518.0	113.94	26.70	55.66	680
138	33.57	66661	11.16	-2018.7	-1406.4	114.76	26.58	56.00	667
140	33.96	63398	10.78	-1913.3	-1293.9	115.57	26.46	56.45	655
142	34.35	60247	10.36	-1807.6	-1181.0	116.37	26.33	56.80	643
144	34.77	57112	9.98	-1701.6	-1067.4	117.16	26.19	56.98	627
146	35.20	54271	9.72	-1594.4	-952.3	117.96	26.08	58.00	613
148	35.65	51421	9.28	-1487.3	-837.1	118.74	25.97	57.88	602
150	36.12	48713	8.93	-1379.7	-720.9	119.52	25.87	58.35	590
152	36.61	46086	8.57	-1271.6	-604.0	120.29	25.78	58.84	575
154	37.12	43580	8.30	-1162.5	-485.5	121.07	25.70	59.66	566
156	37.65	41290	7.87	-1353.5	-366.8	121.83	25.62	59.25	553
158	38.21	38826	7.70	-942.9	-245.9	122.60	25.54	61.22	543
160	38.80	36631	7.32	-831.9	-124.2	123.37	26.07	61.79	524
165	40.40	31546	6.56	-549.5	187.3	125.29	25.71	62.97	495
170	42.21	27118	5.87	-263.2	506.7	127.19	25.61	64.65	469
175	44.27	23362	5.23	27.2	834.6	129.09	25.55	66.31	439
180	46.62	20309	4.65	320.5	1170.7	130.99	25.45	67.70	414
185	49.26	17949	4.14	614.2	1512.7	132.86	25.30	68.66	393
190	52.21	16200	3.67	904.9	1857.2	134.70	25.12	69.87	375
195	55.45	14985	3.28	1189.5	2200.8	136.48	24.91	68.40	361
200	58.92	14217	2.93	1464.9	2539.4	138.20	24.70	67.06	350
210	66.36	13724	2.38	1981.1	3191.3	141.38	24.28	63.06	335
220	74.06	14146	1.99	2446.1	3796.9	144.20	23.86	58.15	330
230	81.73	15028	1.71	2864.8	4355.4	146.68	23.47	53.77	330
240	89.23	16168	1.50	3246.1	4873.5	148.89	23.12	50.16	333
250	96.43	17438	1.33	3596.4	5355.2	150.86	22.81	46.65	336
260	103.42	18722	1.20	3923.9	5810.1	152.64	22.53	44.35	342
270	110.19	20015	1.10	4233.4	6243.1	154.27	22.27	42.40	347
280	116.77	21296	1.02	4528.2	6657.9	155.78	22.02	40.74	353
290	123.17	22575	0.942	4810.9	7057.3	157.19	21.78	39.33	359
300	129.44	23814	0.883	5083.4	7444.2	158.50	21.53	38.20	366
310	135.56	25009	0.826	5347.0	7819.4	159.73	21.29	37.05	371
320	141.59	26176	0.782	5603.0	8185.4	160.89	21.05	36.25	378
330	147.55	27320	0.744	5852.3	8543.3	161.99	20.80	35.54	384
340	153.54	28688	0.717	6098.7	8899.0	163.05	20.65	35.21	394

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

160 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	V(DH/DV)$_p$ J/GMOLE	V(DP/DU)$_v$ CC-ATM/J	-V(DP/DV)$_T$ ATM	(DV/DT)$_p$/V 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S X 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 56.417	0.041169	16957.88	25.551	12601.59	0.0031029	1.95515	6.7578	0.00090	1.57410	5.6836
58	0.040967	16844.62	25.321	12249.23	0.0031214	1.94248	6.4145	0.00090	1.57084	5.4260
60	0.040711	16700.63	25.026	11814.86	0.0031454	1.92583	6.0082	0.00090	1.56673	5.1215
62	0.040454	16555.65	25.724	11392.49	0.0031701	1.90853	5.6308	0.00090	1.56262	4.8390
64	0.040198	16409.62	25.416	10981.85	0.0031956	1.89062	5.2802	0.00090	1.55851	4.5767
66	0.039941	16262.48	25.106	10582.70	0.0032218	1.87215	4.9544	0.00089	1.55440	4.3332
68	0.039683	16114.19	24.798	10194.77	0.0032490	1.85315	4.6517	0.00089	1.55029	4.1069
70	0.039425	15964.68	24.471	9817.82	0.0032770	1.83367	4.3703	0.00089	1.54618	3.8967
72	0.039166	15813.93	24.148	9451.61	0.0033061	1.81375	4.1088	0.00089	1.54207	3.7013
74	0.038907	15661.82	23.822	9095.88	0.0033361	1.79342	3.8658	0.00088	1.53795	3.5197
76	0.038647	15508.37	23.494	8750.41	0.0033673	1.77271	3.6399	0.00088	1.53384	3.3509
78	0.038386	15353.45	23.164	8414.95	0.0033996	1.75167	3.4299	0.00087	1.52971	3.1939
80	0.038125	15197.04	22.834	8089.28	0.0034331	1.73032	3.2347	0.00087	1.52559	3.0480
82	0.037863	15039.07	22.502	7773.16	0.0034680	1.70869	3.0531	0.00087	1.52145	2.9124
84	0.037600	14879.47	22.171	7466.37	0.0035043	1.68681	2.8843	0.00086	1.51731	2.7863
86	0.037336	14718.21	21.839	7168.68	0.0035421	1.66471	2.7273	0.00086	1.51317	2.6692
88	0.037071	14555.18	21.509	6879.89	0.0035816	1.64242	2.5812	0.00085	1.50901	2.5604
90	0.036805	14390.32	21.181	6599.77	0.0036227	1.61995	2.4454	0.00084	1.50485	2.4593
92	0.036537	14223.56	20.854	6328.12	0.0036657	1.59733	2.3189	0.00084	1.50067	2.3655
94	0.036269	14054.85	20.530	6064.72	0.0037107	1.57459	2.2013	0.00083	1.49649	2.2786
96	0.035999	13884.08	20.209	5809.37	0.0037578	1.55174	2.0918	0.00083	1.49229	2.1980
98	0.035728	13711.16	19.892	5561.89	0.0038072	1.52880	1.9898	0.00082	1.48807	2.1233
100	0.035455	13536.09	19.579	5322.06	0.0038590	1.50579	1.8949	0.00081	1.48384	2.0543
102	0.035180	13358.69	19.271	5089.71	0.0039134	1.48273	1.8065	0.00081	1.47959	1.9905
104	0.034904	13178.94	18.969	4864.65	0.0039706	1.45963	1.7242	0.00080	1.47533	1.9317
106	0.034626	12996.75	18.672	4646.69	0.0040307	1.43650	1.6475	0.00079	1.47104	1.8776
108	0.034346	12812.02	18.382	4435.66	0.0040941	1.41337	1.5760	0.00078	1.46673	1.8278
110	0.034063	12624.68	18.098	4231.48	0.0041610	1.39023	1.5093	0.00078	1.46239	1.7823
112	0.033779	12434.67	17.823	4033.73	0.0042315	1.36711	1.4471	0.00077	1.45803	1.7406
114	0.033492	12241.87	17.556	3842.50	0.0043061	1.34402	1.3891	0.00076	1.45363	1.7027
116	0.033202	12046.26	17.297	3657.55	0.0043849	1.32096	1.3350	0.00075	1.44921	1.6683
118	0.032909	11847.80	17.048	3478.74	0.0044683	1.29794	1.2844	0.00075	1.44475	1.6372
120	0.032614	11646.39	16.810	3305.92	0.0045566	1.27497	1.2372	0.00074	1.44026	1.6094
122	0.032315	11442.14	16.581	3138.96	0.0046503	1.25207	1.1931	0.00073	1.43572	1.5845
124	0.032012	11235.10	16.365	2977.73	0.0047497	1.22923	1.1518	0.00072	1.43114	1.5627
126	0.031706	11025.56	16.159	2822.11	0.0048552	1.20647	1.1132	0.00071	1.42652	1.5436
128	0.031397	10814.15	15.963	2671.99	0.0049673	1.18379	1.0771	0.00070	1.42185	1.5274
130	0.031084	10740.77	15.301	2520.01	0.0050966	1.16135	1.0434	0.00068	1.41715	1.5370
132	0.030767	10548.30	14.931	2377.27	0.0051998	1.13896	1.0118	0.00067	1.41239	1.5227
134	0.030446	10350.31	14.629	2238.58	0.0053332	1.11669	0.9821	0.00066	1.40758	1.5171
136	0.030119	10161.48	14.373	2109.94	0.0054773	1.09445	0.9541	0.00065	1.40269	1.5163
138	0.029787	9967.61	14.090	1985.61	0.0056181	1.07239	0.9278	0.00064	1.39774	1.5141
140	0.029449	9774.62	13.841	1867.02	0.0057756	1.05045	0.9031	0.00063	1.39272	1.5168
142	0.029108	9577.45	13.526	1753.68	0.0059101	1.02878	0.8802	0.00062	1.38766	1.5135
144	0.028762	9374.57	13.251	1642.66	0.0060777	1.00733	0.8630	0.00061	1.38254	1.5254
146	0.028406	9198.34	13.121	1541.63	0.0063052	0.98581	0.8455	0.00060	1.37729	1.5546
148	0.028049	8998.10	12.736	1442.30	0.0064330	0.96477	0.8284	0.00059	1.37202	1.5532
150	0.027685	8809.79	12.472	1346.61	0.0066236	0.94394	0.8113	0.00058	1.36668	1.5673
152	0.027317	8618.32	12.163	1256.92	0.0068039	0.92344	0.7943	0.00058	1.36128	1.5763
154	0.026939	8442.26	11.998	1174.01	0.0070696	0.90302	0.7773	0.00056	1.35577	1.6056
156	0.026560	8253.77	11.570	1096.67	0.0071782	0.88316	0.7607	0.00056	1.35024	1.5947
158	0.026168	8080.12	11.517	1015.98	0.0075760	0.86323	0.7438	0.00054	1.34455	1.6483
160	0.025771	7966.95	10.908	944.04	0.0077564	0.84372	0.7271	0.00053	1.33880	1.6643
165	0.024753	7491.88	10.313	780.84	0.0084054	0.79651	0.6861	0.00051	1.32412	1.6951
170	0.023690	7071.32	9.682	642.43	0.0091421	0.75147	0.6459	0.00049	1.30892	1.7365
175	0.022587	6684.50	9.072	527.67	0.0099199	0.71261	0.6070	0.00048	1.29327	1.7651
180	0.021452	6339.04	8.523	435.67	0.0106804	0.67891	0.5697	0.00047	1.27729	1.7755
185	0.020299	6048.28	8.053	364.33	0.0113526	0.64712	0.5346	0.00046	1.26120	1.7727
190	0.019152	5814.69	7.639	310.27	0.0118441	0.61761	0.5024	0.00047	1.24533	1.7507
195	0.018035	5643.35	7.292	270.25	0.0121200	0.59059	0.4734	0.00048	1.23000	1.7135
200	0.016973	5530.78	6.978	241.31	0.0121249	0.56597	0.4481	0.00050	1.21555	1.6593
210	0.015070	5472.17	6.514	206.82	0.0115245	0.52235	0.4079	0.00055	1.18995	1.5390
220	0.013503	5576.70	6.181	191.02	0.0104267	0.48906	0.3797	0.00062	1.16914	1.4108
230	0.012236	5781.07	5.955	183.88	0.0093005	0.46468	0.3602	0.00071	1.15250	1.3027
240	0.011207	6048.71	5.798	181.19	0.0082924	0.44701	0.3468	0.00080	1.13910	1.2161
250	0.010370	6350.29	5.616	180.83	0.0073465	0.43383	0.3377	0.00090	1.12828	1.1348
260	0.009670	6667.98	5.527	181.04	0.0066512	0.42492	0.3314	0.00099	1.11929	1.0809
270	0.009075	6992.93	5.449	181.64	0.0060636	0.41859	0.3272	0.00109	1.11169	1.0357
280	0.008564	7319.54	5.383	182.39	0.0055653	0.41422	0.3244	0.00119	1.10518	0.9970
290	0.008119	7646.24	5.329	183.28	0.0051400	0.41091	0.3228	0.00129	1.09954	0.9650
300	0.007726	7961.17	5.307	183.98	0.0047984	0.41027	0.3221	0.00139	1.09457	0.9372
310	0.007377	8272.01	5.261	184.49	0.0044784	0.41048	0.3221	0.00150	1.09017	0.9083
320	0.007063	8565.06	5.263	184.87	0.0042322	0.41134	0.3225	0.00161	1.08622	0.8883
330	0.006778	8848.97	5.274	185.16	0.0040162	0.41273	0.3235	0.00171	1.08265	0.8704
340	0.006513	9172.74	5.333	186.84	0.0038385	0.41448	0.3246	0.00181	1.07934	0.8618

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

200 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p	VELOCITY OF SOUND M/SEC
* 56.644	24.27	308480	39.12	-6154.1	-5662.3	67.78	35.79	52.55	1198
58	24.37	302431	38.38	-6084.9	-5591.0	68.95	35.52	52.52	1190
60	24.52	293671	37.31	-5983.0	-5486.1	70.73	35.14	52.46	1178
62	24.68	285100	36.26	-5881.2	-5381.2	72.45	34.77	52.41	1167
64	24.83	276713	35.24	-5779.6	-5276.4	74.11	34.42	52.36	1155
66	24.99	268510	34.25	-5678.1	-5171.7	75.72	34.08	52.32	1143
68	25.15	260486	33.27	-5576.8	-5067.1	77.28	33.75	52.27	1130
70	25.31	252639	32.33	-5475.6	-4962.6	78.80	33.43	52.23	1118
72	25.48	244966	31.48	-5374.5	-4858.2	80.27	33.12	52.19	1106
74	25.65	237464	30.50	-5273.5	-4753.8	81.70	32.82	52.15	1093
76	25.82	230130	29.63	-5172.7	-4649.5	83.09	32.54	52.11	1080
78	25.99	222962	28.77	-5072.0	-4545.3	84.44	32.26	52.08	1068
80	26.17	215956	27.94	-4971.4	-4441.2	85.76	31.99	52.05	1055
82	26.34	209111	27.13	-4870.9	-4337.1	87.04	31.74	52.03	1042
84	26.53	202423	26.34	-4770.6	-4233.0	88.30	31.48	52.01	1029
86	26.71	195889	25.57	-4670.3	-4129.8	89.52	31.24	51.99	1016
88	26.90	189506	24.82	-4570.1	-4025.8	90.72	31.01	51.98	1003
90	27.09	183273	24.09	-4470.0	-3921.1	91.88	30.78	51.97	990
92	27.28	177185	23.38	-4370.0	-3817.1	93.03	30.55	51.97	977
94	27.48	171242	22.69	-4270.1	-3713.2	94.14	30.33	51.97	964
96	27.68	165439	22.02	-4170.2	-3609.2	95.24	30.12	51.97	951
98	27.89	159774	21.37	-4070.4	-3505.2	96.31	29.91	51.99	938
100	28.10	154246	20.74	-3970.7	-3401.2	97.36	29.70	52.01	925
102	28.32	148850	20.12	-3871.0	-3297.2	98.39	29.49	52.03	912
104	28.53	143585	19.52	-3771.3	-3193.1	99.40	29.29	52.07	899
106	28.76	138448	18.94	-3671.7	-3088.9	100.40	29.08	52.11	886
108	28.99	133437	18.38	-3572.1	-2984.7	101.37	28.88	52.15	874
110	29.22	128550	17.83	-3472.5	-2880.3	102.33	28.67	52.21	861
112	29.46	123784	17.30	-3372.8	-2775.8	103.27	28.46	52.27	848
114	29.71	119137	16.78	-3273.2	-2671.2	104.20	28.25	52.34	836
116	29.96	114607	16.28	-3173.5	-2566.4	105.11	28.03	52.42	824
118	30.22	110192	15.79	-3073.8	-2461.5	106.00	27.81	52.50	812
120	30.48	105890	15.32	-2974.1	-2356.4	106.89	27.57	52.60	800
122	30.75	101700	14.86	-2874.2	-2251.0	107.76	27.33	52.70	788
124	31.03	97619	14.41	-2774.3	-2145.4	108.62	27.08	52.82	776
126	31.32	93647	13.97	-2674.3	-2039.5	109.46	26.82	52.94	765
128	31.62	89781	13.55	-2574.1	-1933.3	110.30	26.55	53.08	754
130	31.92	86024	13.13	-2472.4	-1825.5	111.13	27.07	54.84	737
132	32.24	82101	12.65	-2378.9	-1717.6	111.96	26.98	54.08	722
134	32.56	78464	12.23	-2269.0	-1609.1	112.77	26.88	54.34	709
136	32.98	74965	11.88	-2166.4	-1499.7	113.58	26.78	54.87	697
138	33.25	71564	11.48	-2063.6	-1389.8	114.39	26.66	55.12	684
140	33.61	68296	11.11	-1960.3	-1279.2	115.18	26.55	55.52	673
142	33.98	65168	10.78	-1857.0	-1168.3	115.97	26.42	55.60	659
144	34.37	62017	10.31	-1753.4	-1057.0	116.75	26.29	55.81	646
146	34.77	59135	10.09	-1648.7	-944.1	117.53	26.16	56.93	638
148	35.19	56343	9.62	-1544.4	-831.4	118.29	26.05	56.56	622
150	35.62	53651	9.30	-1439.6	-717.8	119.05	25.94	56.99	611
152	36.06	51037	8.93	-1334.7	-603.8	119.81	25.84	57.13	598
154	36.53	48537	8.66	-1228.8	-488.5	120.56	25.74	58.09	589
156	37.01	46305	8.28	-1123.0	-372.9	121.31	25.66	57.76	575
158	37.52	43779	8.07	-1016.4	-256.8	122.05	25.57	59.06	566
160	38.05	41571	7.73	-909.3	-138.2	122.79	26.10	59.81	549
165	39.46	36457	6.98	-637.8	161.8	124.64	25.73	60.54	521
170	41.04	31927	6.31	-364.8	467.6	126.47	25.60	61.76	494
175	42.79	28013	5.68	-87.7	779.5	128.28	25.53	62.94	468
180	44.76	24730	5.11	198.4	1097.4	130.07	25.43	63.99	444
185	46.94	22057	4.60	469.1	1420.4	131.84	25.26	64.85	423
190	49.35	19973	4.13	745.4	1745.5	133.57	25.08	65.12	405
195	51.98	18401	3.72	1017.5	2070.8	135.26	24.88	64.97	390
200	54.80	17288	3.35	1282.9	2393.4	136.89	24.67	64.13	377
210	60.91	16110	2.76	1789.0	3023.4	139.97	24.29	61.62	360
220	67.41	15995	2.32	2255.6	3621.7	142.75	23.91	57.98	350
230	74.02	16473	1.99	2682.2	4182.3	145.25	23.55	54.28	347
240	80.62	17297	1.75	3074.0	4707.7	147.48	23.22	51.05	347
250	87.05	18410	1.54	3435.9	5200.1	149.49	22.91	47.75	349
260	93.33	19582	1.39	3774.0	5665.2	151.32	22.63	45.37	353
270	99.44	20793	1.27	4093.0	6108.1	152.99	22.37	43.37	357
280	105.39	22018	1.17	4396.3	6532.1	154.53	22.12	41.63	362
290	111.21	23257	1.08	4686.7	6940.3	155.96	21.87	40.16	368
300	116.90	24456	1.01	4966.0	7334.9	157.30	21.63	38.92	373
310	122.44	25648	0.942	5235.6	7717.0	158.56	21.38	37.67	378
320	127.91	26813	0.890	5497.1	8089.2	159.74	21.14	36.80	384
330	133.31	27955	0.844	5751.4	8452.8	160.86	20.90	36.03	391
340	138.64	29076	0.803	5999.1	8808.7	161.92	20.65	35.34	397

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

200 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	$V(\partial H/\partial V)_P$ J/GMOLE	$V(\partial P/\partial U)_V$ CC-ATM/J	$-V(\partial P/\partial V)_T$ ATM	$(\partial V/\partial T)_P/V$ 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S X 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 56.644	0.041205	17077.67	25.526	12710.98	0.0030774	1.95786	6.8220	0.00090	1.57468	5.7227
58	0.041033	16982.77	25.329	12489.67	0.0030924	1.94718	6.5255	0.00090	1.57191	5.5002
60	0.040779	16842.13	25.033	11975.66	0.0031151	1.93086	6.1144	0.00090	1.56763	5.1921
62	0.040525	16700.59	25.732	11553.65	0.0031385	1.91388	5.7324	0.00090	1.56375	4.9061
64	0.040270	16558.09	25.426	11143.37	0.0031625	1.89629	5.3773	0.00090	1.55968	4.6405
66	0.040016	16414.60	25.114	10744.57	0.0031872	1.87814	5.0473	0.00090	1.55560	4.3938
68	0.039760	16270.04	24.799	10356.99	0.0032128	1.85947	4.7406	0.00089	1.55153	4.1646
70	0.039505	16124.36	24.480	9980.38	0.0032391	1.84032	4.4554	0.00089	1.54745	3.9516
72	0.039248	15977.54	24.158	9614.51	0.0032664	1.82073	4.1903	0.00089	1.54338	3.7536
74	0.038992	15829.46	23.833	9259.12	0.0032945	1.80074	3.9439	0.00089	1.53930	3.5694
76	0.038735	15680.14	23.506	8913.98	0.0033236	1.78037	3.7147	0.00088	1.53522	3.3981
78	0.038477	15529.45	23.176	8578.85	0.0033538	1.75967	3.5015	0.00088	1.53114	3.2388
80	0.038218	15377.36	22.844	8253.50	0.0033851	1.73867	3.3033	0.00087	1.52706	3.0907
82	0.037959	15223.85	22.519	7937.70	0.0034176	1.71739	3.1189	0.00087	1.52297	2.9529
84	0.037699	15068.78	22.189	7631.21	0.0034513	1.69585	2.9474	0.00086	1.51888	2.8247
86	0.037439	14912.15	21.860	7333.83	0.0034864	1.67412	2.7878	0.00086	1.51479	2.7056
88	0.037177	14753.85	21.532	7045.33	0.0035229	1.65218	2.6393	0.00086	1.51068	2.5948
90	0.036915	14593.83	21.206	6765.49	0.0035610	1.63008	2.5011	0.00085	1.50657	2.4919
92	0.036651	14431.99	20.883	6494.11	0.0036007	1.60783	2.3724	0.00084	1.50246	2.3962
94	0.036387	14268.29	20.562	6230.97	0.0036421	1.58546	2.2526	0.00084	1.49833	2.3074
96	0.036121	14102.62	20.245	5975.87	0.0036855	1.56299	2.1411	0.00083	1.49419	2.2251
98	0.035854	13934.92	19.932	5728.62	0.0037308	1.54043	2.0372	0.00083	1.49004	2.1487
100	0.035586	13765.89	19.624	5489.02	0.0037782	1.51781	1.9405	0.00082	1.48588	2.0779
102	0.035317	13593.04	19.321	5256.87	0.0038280	1.49513	1.8503	0.00081	1.48170	2.0124
104	0.035045	13418.70	19.023	5032.00	0.0038801	1.47243	1.7663	0.00081	1.47751	1.9519
106	0.034773	13241.97	18.733	4814.21	0.0039349	1.44971	1.6880	0.00080	1.47330	1.8961
108	0.034498	13062.78	18.449	4603.33	0.0039925	1.42698	1.6150	0.00079	1.46907	1.8446
110	0.034222	12881.01	18.173	4399.19	0.0040531	1.40426	1.5469	0.00079	1.46482	1.7973
112	0.033943	12696.60	17.905	4201.62	0.0041169	1.38156	1.4833	0.00078	1.46055	1.7538
114	0.033663	12509.43	17.646	4010.46	0.0041841	1.35890	1.4240	0.00077	1.45625	1.7141
116	0.033380	12319.44	17.397	3825.55	0.0042549	1.33627	1.3687	0.00076	1.45193	1.6779
118	0.033094	12126.60	17.158	3646.75	0.0043297	1.31370	1.3170	0.00076	1.44757	1.6449
120	0.032807	11930.79	16.930	3473.90	0.0044087	1.29119	1.2686	0.00075	1.44319	1.6151
122	0.032516	11732.08	16.714	3306.86	0.0044922	1.26874	1.2234	0.00074	1.43877	1.5882
124	0.032222	11530.52	16.511	3145.51	0.0045805	1.24637	1.1812	0.00073	1.43432	1.5642
126	0.031925	11326.39	16.320	2989.72	0.0046740	1.22409	1.1416	0.00072	1.42983	1.5430
128	0.031625	11120.27	16.140	2839.36	0.0047729	1.20190	1.1046	0.00072	1.42530	1.5244
130	0.031324	11067.60	15.489	2669.93	0.0048829	1.18000	1.0702	0.00070	1.42076	1.5317
132	0.031018	10886.01	15.118	2546.64	0.0049680	1.15815	1.0378	0.00069	1.41618	1.5145
134	0.030709	10703.45	14.828	2409.57	0.0050770	1.13644	1.0074	0.00068	1.41152	1.5055
136	0.030394	10521.66	14.600	2278.53	0.0052146	1.11475	0.9788	0.00067	1.40681	1.5055
138	0.030076	10336.39	14.312	2152.38	0.0053325	1.09324	0.9519	0.00066	1.40205	1.4999
140	0.029753	10152.25	14.071	2032.03	0.0054690	1.07187	0.9266	0.00065	1.39724	1.5000
142	0.029427	9960.38	13.762	1918.29	0.0055776	1.05077	0.9029	0.00064	1.39239	1.4931
144	0.029098	9771.40	13.473	1804.55	0.0057119	1.02995	0.8812	0.00063	1.38751	1.4922
146	0.028759	9599.09	13.406	1700.67	0.0059304	1.00899	0.8643	0.00062	1.38249	1.5238
148	0.028420	9411.86	12.998	1601.28	0.0060891	0.98855	0.8477	0.00062	1.37749	1.5156
150	0.028076	9235.69	12.762	1506.30	0.0061709	0.96834	0.8312	0.00061	1.37242	1.5289
152	0.027729	9054.62	12.463	1415.19	0.0063097	0.94847	0.8149	0.00060	1.36732	1.5341
154	0.027373	8888.97	12.322	1328.64	0.0065355	0.92867	0.7986	0.00058	1.36211	1.5612
156	0.027017	8721.46	11.952	1251.81	0.0066225	0.90938	0.7826	0.00058	1.35690	1.5533
158	0.026653	8544.37	11.832	1166.82	0.0069120	0.89021	0.7665	0.00057	1.35159	1.5891
160	0.026283	8456.95	11.263	1092.61	0.0070716	0.87137	0.7506	0.00055	1.34622	1.6099
165	0.025342	8010.63	10.718	923.86	0.0075578	0.82588	0.7115	0.00054	1.33259	1.6300
170	0.024369	7616.83	10.111	778.03	0.0081083	0.78259	0.6735	0.00052	1.31861	1.6610
175	0.023366	7252.99	9.520	654.61	0.0086774	0.74172	0.6367	0.00050	1.30433	1.6884
180	0.022343	6920.40	8.994	552.55	0.0092466	0.70790	0.6014	0.00050	1.28982	1.6990
185	0.021302	6627.27	8.545	469.86	0.0097859	0.67710	0.5684	0.00049	1.27520	1.7041
190	0.020262	6381.57	8.127	404.70	0.0102051	0.64834	0.5368	0.00049	1.26069	1.6851
195	0.019238	6187.13	7.766	354.01	0.0105004	0.62190	0.5083	0.00050	1.24652	1.6595
200	0.018248	6042.51	7.439	315.49	0.0106138	0.59760	0.4826	0.00051	1.23292	1.6191
210	0.016417	5904.64	6.921	264.47	0.0104351	0.55382	0.4404	0.00055	1.20803	1.5313
220	0.014835	5931.25	6.539	237.28	0.0097745	0.51926	0.4089	0.00060	1.18681	1.4267
230	0.013509	6066.65	6.259	222.54	0.0089466	0.49287	0.3861	0.00067	1.16922	1.3288
240	0.012404	6275.66	6.060	214.56	0.0081340	0.47306	0.3697	0.00075	1.15470	1.2468
250	0.011487	6542.96	5.863	211.48	0.0072976	0.45782	0.3581	0.00083	1.14274	1.1872
260	0.010715	6834.00	5.744	209.83	0.0066386	0.44692	0.3498	0.00092	1.13274	1.1098
270	0.010057	7137.75	5.648	209.10	0.0060757	0.43892	0.3440	0.00101	1.12465	1.0620
280	0.009488	7448.53	5.564	208.91	0.0055888	0.43310	0.3399	0.00110	1.11646	1.0209
290	0.008992	7763.13	5.501	209.13	0.0051733	0.42875	0.3372	0.00119	1.11063	0.9870
300	0.008555	8069.35	5.455	209.21	0.0048237	0.42704	0.3355	0.00128	1.10506	0.9596
310	0.008167	8378.16	5.393	209.47	0.0044960	0.42634	0.3346	0.00139	1.10015	0.9240
320	0.007818	8670.63	5.384	209.63	0.0042443	0.42640	0.3344	0.00148	1.09573	0.9021
330	0.007502	8953.97	5.384	209.70	0.0040243	0.42707	0.3347	0.00158	1.09174	0.8826
340	0.007213	9228.92	5.392	209.72	0.0038296	0.42827	0.3355	0.00168	1.08811	0.8652

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

220 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p J/G MOLE -K	VELOCITY OF SOUND M/SEC
* 56.869	24.25	319855	39.13	-6150.4	-5609.9	67.76	35.80	52.49	1201
58	24.33	305833	38.52	-6092.9	-5550.5	68.80	35.58	52.46	1195
60	24.48	297103	37.45	-5991.4	-5445.6	70.57	35.21	52.40	1183
62	24.63	288561	36.40	-5890.0	-5340.9	72.29	34.84	52.35	1172
64	24.79	280205	35.39	-5788.8	-5236.2	73.95	34.49	52.29	1160
66	24.94	272031	34.39	-5687.7	-5131.7	75.56	34.15	52.24	1148
68	25.10	264036	33.42	-5586.8	-5027.2	77.12	33.82	52.19	1136
70	25.26	256221	32.48	-5486.1	-4922.9	78.63	33.51	52.15	1124
72	25.43	248579	31.56	-5385.4	-4818.6	80.10	33.20	52.10	1111
74	25.59	241108	30.66	-5285.0	-4714.5	81.53	32.91	52.06	1099
76	25.76	233806	29.79	-5184.6	-4610.4	82.91	32.63	52.01	1086
78	25.93	226670	28.93	-5084.4	-4506.4	84.27	32.35	51.98	1074
80	26.10	219697	28.10	-4984.3	-4402.5	85.58	32.09	51.94	1061
82	26.28	212884	27.29	-4884.4	-4298.6	86.86	31.83	51.91	1048
84	26.46	206228	26.51	-4784.6	-4194.8	88.11	31.58	51.88	1036
86	26.64	199727	25.74	-4684.8	-4091.0	89.33	31.34	51.85	1023
88	26.82	193378	25.00	-4585.3	-3987.3	90.53	31.11	51.83	1010
90	27.01	187178	24.27	-4485.9	-3883.7	91.69	30.88	51.81	997
92	27.20	181124	23.56	-4386.4	-3780.0	92.83	30.66	51.80	984
94	27.40	175215	22.88	-4287.1	-3676.4	93.94	30.44	51.79	972
96	27.59	169446	22.21	-4187.9	-3572.8	95.03	30.22	51.79	959
98	27.79	163816	21.56	-4088.8	-3469.2	96.10	30.01	51.79	946
100	28.00	158322	20.93	-3989.8	-3365.6	97.15	29.81	51.80	933
102	28.21	152961	20.32	-3890.9	-3262.0	98.18	29.60	51.81	921
104	28.42	147730	19.73	-3792.0	-3158.4	99.18	29.40	51.82	908
106	28.64	142629	19.15	-3693.2	-3054.7	100.17	29.19	51.85	896
108	28.86	137653	18.59	-3594.4	-2951.0	101.14	28.99	51.88	883
110	29.09	132800	18.05	-3495.7	-2847.2	102.09	28.78	51.91	871
112	29.32	128069	17.52	-3397.0	-2743.4	103.03	28.57	51.95	859
114	29.56	123457	17.00	-3298.4	-2639.4	103.95	28.36	52.00	847
116	29.81	118962	16.51	-3199.8	-2535.3	104.85	28.13	52.05	835
118	30.05	114582	16.02	-3101.1	-2431.2	105.74	27.91	52.11	823
120	30.31	110315	15.56	-3002.5	-2326.8	106.62	27.67	52.18	812
122	30.57	106158	15.10	-2903.9	-2222.4	107.48	27.42	52.25	800
124	30.84	102111	14.66	-2805.2	-2117.7	108.33	27.17	52.32	789
126	31.12	98172	14.23	-2706.5	-2012.8	109.17	26.90	52.41	778
128	31.40	94338	13.82	-2607.8	-1907.8	110.00	26.62	52.50	768
130	31.69	90567	13.41	-2507.6	-1801.1	110.83	27.14	53.41	751
132	31.99	86826	12.93	-2407.6	-1694.4	111.64	27.05	53.41	737
134	32.30	83339	12.53	-2307.3	-1587.2	112.45	26.96	53.63	725
136	32.62	79787	12.19	-2206.5	-1479.3	113.25	26.86	54.17	714
138	32.95	76366	11.78	-2105.5	-1370.9	114.04	26.75	54.35	701
140	33.29	73083	11.42	-2004.1	-1261.9	114.82	26.64	54.72	689
142	33.64	70016	11.02	-1902.6	-1152.7	115.60	26.52	54.77	677
144	34.00	66793	10.60	-1801.3	-1043.3	116.36	26.39	54.88	663
146	34.38	63847	10.42	-1698.8	-932.3	117.13	26.26	56.00	657
148	34.77	61120	9.95	-1596.7	-821.7	117.88	26.13	55.49	641
150	35.17	58439	9.63	-1494.3	-710.3	118.63	26.02	55.88	630
152	35.58	55834	9.27	-1391.9	-598.7	119.37	25.91	55.91	618
154	36.01	53338	9.04	-1288.8	-485.9	120.10	25.81	56.81	613
156	36.46	51121	8.68	-1185.6	-372.9	120.83	25.71	56.65	597
158	36.92	48576	8.39	-1082.3	-259.3	121.56	25.62	57.23	586
160	37.40	46326	8.09	-978.3	-144.6	122.28	26.14	58.22	572
165	38.67	41204	7.36	-715.4	146.7	124.07	25.77	58.69	545
170	40.08	36601	6.78	-451.3	442.1	125.83	25.63	59.59	519
175	41.62	32578	6.08	-185.6	742.1	127.57	25.56	60.44	494
180	43.31	29120	5.52	81.1	1046.6	129.29	25.45	61.27	471
185	45.18	26191	5.01	347.9	1355.0	130.98	25.28	61.99	451
190	47.22	23836	4.54	612.9	1665.5	132.63	25.06	62.20	433
195	49.43	21973	4.12	874.6	1976.3	134.25	24.87	62.16	417
200	51.79	20563	3.74	1131.3	2285.8	135.82	24.66	61.65	404
210	56.93	18833	3.12	1625.1	2894.1	138.79	24.27	59.90	384
220	62.47	18186	2.64	2088.4	3480.9	141.52	23.94	57.33	371
230	68.20	18279	2.27	2517.6	4037.8	143.99	23.60	54.21	365
240	73.99	18770	1.99	2915.4	4564.7	146.23	23.28	51.34	362
250	79.74	19637	1.76	3285.7	5063.3	148.27	22.99	48.53	362
260	85.40	20665	1.59	3632.3	5535.9	150.12	22.72	46.13	365
270	90.93	21769	1.44	3959.3	5986.3	151.82	22.46	44.12	368
280	96.35	22920	1.32	4270.1	6417.8	153.39	22.21	42.36	372
290	101.65	24097	1.23	4567.3	6833.3	154.85	21.96	40.89	377
300	106.84	25256	1.14	4852.8	7234.4	156.21	21.71	39.52	382
310	111.91	26434	1.06	5128.1	7622.8	157.49	21.47	38.27	386
320	116.91	27591	1.00	5394.7	8000.8	158.69	21.23	37.33	392
330	121.84	28726	0.948	5653.7	8369.6	159.82	20.98	36.51	398
340	126.71	29840	0.901	5905.7	8730.2	160.90	20.74	35.78	404

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

220 ATM ISOBAR

TEMPERATURE	DENSITY	$V(\partial H/\partial V)_p$	$V(\partial P/\partial V)_T$	$-V(\partial P/\partial V)_T$	$(\partial V/\partial T)_P/V$	THERMAL CONDUCTIVITY	VISCOSITY	THERMAL DIFFUSIVITY	DIELECTRIC CONSTANT	PRANDTL NUMBER
KELVIN	GMOLE/CC	J/GMOLE	CC-ATM/J	ATM	1/KELVIN	MW/CM-K	G/CM-S x 10^3	SQ CM/SEC		
* 56.869	0.041241	17197.39	25.501	12820.67	0.0030523	1.96353	6.8865	0.00091	1.57526	5.7621
58	0.041099	17120.05	25.336	12569.40	0.0030642	1.95178	6.8374	0.00091	1.57297	5.5752
60	0.040847	16982.70	25.040	12135.73	0.0030857	1.93577	6.2214	0.00090	1.56892	5.2633
62	0.040595	16844.55	25.739	11714.04	0.0031077	1.91911	5.8348	0.00090	1.56487	4.9738
64	0.040342	16705.53	25.433	11304.09	0.0031304	1.90184	5.4753	0.00090	1.56083	4.7049
66	0.040090	16565.60	25.122	10905.61	0.0031537	1.88402	5.1410	0.00090	1.55678	4.4551
68	0.039837	16424.70	24.807	10518.34	0.0031777	1.86567	4.8303	0.00090	1.55274	4.2230
70	0.039583	16282.77	24.489	10142.05	0.0032025	1.84684	4.5413	0.00089	1.54870	4.0071
72	0.039329	16139.79	24.167	9776.48	0.0032280	1.82758	4.2726	0.00089	1.54466	3.8064
74	0.039075	15995.65	23.843	9421.39	0.0032544	1.80791	4.0226	0.00089	1.54063	3.6196
76	0.038821	15850.35	23.517	9076.54	0.0032816	1.78788	3.7901	0.00089	1.53659	3.4459
78	0.038566	15703.79	23.190	8741.70	0.0033098	1.76751	3.5738	0.00088	1.53255	3.2843
80	0.038310	15555.92	22.862	8416.62	0.0033390	1.74684	3.3726	0.00088	1.52851	3.1339
82	0.038054	15406.70	22.534	8101.09	0.0033692	1.72590	3.1853	0.00087	1.52447	2.9939
84	0.037797	15256.02	22.206	7794.87	0.0034006	1.70472	3.0111	0.00087	1.52042	2.8637
86	0.037540	15103.87	21.879	7497.73	0.0034332	1.68332	2.8489	0.00086	1.51638	2.7426
88	0.037282	14950.13	21.553	7209.47	0.0034670	1.66174	2.6979	0.00086	1.51232	2.6298
90	0.037023	14794.75	21.230	6929.86	0.0035022	1.63998	2.5573	0.00085	1.50826	2.5250
92	0.036763	14637.63	20.909	6658.70	0.0035389	1.61809	2.4264	0.00085	1.50420	2.4276
94	0.036502	14478.73	20.592	6395.76	0.0035772	1.59608	2.3045	0.00084	1.50013	2.3370
96	0.036241	14317.93	20.278	6140.86	0.0036170	1.57397	2.1909	0.00084	1.49605	2.2528
98	0.035978	14155.16	19.969	5893.78	0.0036587	1.55178	2.0851	0.00083	1.49196	2.1747
100	0.035714	13990.32	19.664	5654.33	0.0037023	1.52952	1.9865	0.00083	1.48786	2.1023
102	0.035449	13823.31	19.366	5422.32	0.0037478	1.50723	1.8946	0.00082	1.48375	2.0351
104	0.035183	13654.06	19.073	5197.56	0.0037955	1.48490	1.8089	0.00081	1.47963	1.9729
106	0.034915	13482.45	18.788	4979.87	0.0038456	1.46256	1.7289	0.00081	1.47550	1.9154
108	0.034646	13308.39	18.510	4769.07	0.0038980	1.44022	1.6544	0.00080	1.47134	1.8623
110	0.034375	13131.77	18.240	4564.98	0.0039531	1.41789	1.5848	0.00079	1.46717	1.8133
112	0.034102	12952.50	17.980	4367.43	0.0040110	1.39559	1.5199	0.00079	1.46298	1.7681
114	0.033828	12770.46	17.728	4176.26	0.0040719	1.37333	1.4592	0.00078	1.45877	1.7267
116	0.033551	12585.56	17.488	3991.31	0.0041358	1.35111	1.4026	0.00077	1.45454	1.6887
118	0.033272	12397.76	17.258	3812.42	0.0042033	1.32895	1.3497	0.00077	1.45029	1.6540
120	0.032992	12206.90	17.040	3639.46	0.0042743	1.30686	1.3002	0.00076	1.44601	1.6223
122	0.032708	12013.05	16.835	3472.26	0.0043492	1.28484	1.2540	0.00075	1.44170	1.5936
124	0.032423	11816.22	16.644	3310.70	0.0044282	1.26290	1.2107	0.00074	1.43736	1.5676
126	0.032134	11616.69	16.466	3154.65	0.0045116	1.24106	1.1702	0.00074	1.43298	1.5443
128	0.031843	11415.01	16.301	3003.98	0.0045996	1.21931	1.1322	0.00073	1.42858	1.5236
130	0.031551	11382.44	16.655	2857.47	0.0046920	1.19768	1.0970	0.00071	1.42417	1.5284
132	0.031255	11211.15	16.289	2715.76	0.0047840	1.17652	1.0638	0.00070	1.41972	1.5092
134	0.030956	11046.26	15.010	2579.87	0.0048553	1.15528	1.0327	0.00070	1.41523	1.4983
136	0.030653	10868.32	14.808	2445.69	0.0049845	1.13409	1.0034	0.00068	1.41068	1.4979
138	0.030347	10690.23	14.515	2317.45	0.0050844	1.11308	0.9759	0.00067	1.40609	1.4892
140	0.030036	10513.33	14.280	2195.12	0.0052045	1.09221	0.9500	0.00066	1.40146	1.4873
142	0.029723	10341.93	13.984	2081.09	0.0052960	1.07160	0.9257	0.00066	1.39679	1.4786
144	0.029409	10149.83	13.663	1964.30	0.0053986	1.05134	0.9030	0.00065	1.39212	1.4708
146	0.029084	9979.65	13.643	1856.94	0.0056110	1.03088	0.8819	0.00063	1.38731	1.4970
148	0.028761	9804.29	13.239	1757.85	0.0056601	1.01095	0.8658	0.00063	1.38252	1.4852
150	0.028433	9637.14	13.023	1661.59	0.0057980	0.99124	0.8499	0.00062	1.37768	1.4971
152	0.028103	9466.28	12.727	1569.12	0.0059065	0.97190	0.8341	0.00062	1.37282	1.4996
154	0.027766	9308.11	12.615	1481.00	0.0061034	0.95262	0.8183	0.00060	1.36787	1.5251
156	0.027428	9155.26	12.303	1402.13	0.0061880	0.93376	0.8027	0.00060	1.36291	1.5220
158	0.027086	8976.79	12.088	1315.74	0.0063755	0.91524	0.7873	0.00059	1.35791	1.5386
160	0.026739	8908.69	11.579	1238.69	0.0065348	0.89693	0.7720	0.00058	1.35285	1.5660
165	0.025857	8489.48	11.054	1065.42	0.0069127	0.85277	0.7345	0.00056	1.34004	1.5797
170	0.024953	8119.70	10.479	913.32	0.0073386	0.81082	0.6982	0.00055	1.32760	1.6034
175	0.024029	7777.95	9.906	782.83	0.0077710	0.77122	0.6633	0.00053	1.31376	1.6239
180	0.023087	7460.73	9.397	672.30	0.0082128	0.73449	0.6293	0.00052	1.30035	1.6407
185	0.022133	7168.82	8.959	579.70	0.0086470	0.70442	0.5972	0.00051	1.28687	1.6424
190	0.021178	6913.74	8.557	504.79	0.0089967	0.67618	0.5671	0.00051	1.27346	1.6303
195	0.020232	6706.85	8.189	444.57	0.0092674	0.65113	0.5392	0.00052	1.26027	1.6110
200	0.019308	6546.85	7.858	397.42	0.0094162	0.62612	0.5137	0.00053	1.24748	1.5807
210	0.017565	6352.44	7.317	330.81	0.0094292	0.58212	0.4704	0.00055	1.22360	1.5126
220	0.016008	6316.83	6.894	291.12	0.0090751	0.54687	0.4367	0.00060	1.20252	1.4305
230	0.014663	6395.04	6.566	268.02	0.0084770	0.51901	0.4113	0.00065	1.18452	1.3425
240	0.013516	6547.85	6.322	253.69	0.0078406	0.49756	0.3924	0.00072	1.16931	1.2655
250	0.012540	6772.89	6.120	246.25	0.0071651	0.48085	0.3785	0.00079	1.15648	1.1938
260	0.011710	7034.41	5.965	241.99	0.0065576	0.46820	0.3683	0.00087	1.14564	1.1340
270	0.010997	7315.45	5.846	239.39	0.0060315	0.45870	0.3606	0.00095	1.13639	1.0846
280	0.010379	7608.71	5.747	237.89	0.0055674	0.45155	0.3554	0.00103	1.12840	1.0419
290	0.009837	7907.78	5.675	237.05	0.0051708	0.44634	0.3515	0.00111	1.12144	1.0064
300	0.009360	8205.98	5.602	236.39	0.0048165	0.44363	0.3489	0.00120	1.11532	0.9714
310	0.008935	8508.37	5.537	236.20	0.0044974	0.44203	0.3472	0.00129	1.10991	0.9394
320	0.008554	8798.69	5.515	236.00	0.0042429	0.44129	0.3463	0.00138	1.10505	0.9156
330	0.008208	9080.75	5.504	235.77	0.0040206	0.44127	0.3460	0.00147	1.10066	0.8947
340	0.007892	9354.71	5.502	235.53	0.0038243	0.44184	0.3462	0.00156	1.09667	0.8760

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

240 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p	VELOCITY OF SOUND M/SEC
* 57.094	24.23	313221	39.14	-6146.6	-5557.5	67.82	35.82	52.43	1205
58	24.29	309214	38.65	-6100.7	-5510.0	68.65	35.65	52.40	1200
60	24.44	300512	37.59	-5999.6	-5405.2	70.42	35.27	52.34	1188
62	24.59	291998	36.55	-5898.6	-5300.6	72.14	34.91	52.28	1177
64	24.74	283670	35.53	-5797.8	-5196.1	73.80	34.56	52.23	1165
66	24.90	275526	34.54	-5697.1	-5091.6	75.40	34.22	52.17	1153
68	25.06	267562	33.57	-5596.6	-4987.4	76.96	33.90	52.12	1141
70	25.21	259775	32.63	-5496.3	-4883.2	78.47	33.59	52.07	1129
72	25.37	252162	31.71	-5396.1	-4779.1	79.94	33.28	52.01	1117
74	25.54	244721	30.81	-5296.1	-4675.1	81.36	32.99	51.97	1105
76	25.70	237449	29.94	-5196.2	-4571.2	82.74	32.71	51.92	1092
78	25.87	230344	29.09	-5096.5	-4467.4	84.09	32.44	51.88	1080
80	26.04	223401	28.26	-4996.9	-4363.6	85.41	32.18	51.83	1067
82	26.21	216618	27.46	-4897.5	-4260.0	86.69	31.92	51.79	1055
84	26.39	209994	26.67	-4798.2	-4156.4	87.93	31.68	51.76	1042
86	26.57	203524	25.91	-4699.0	-4052.9	89.15	31.44	51.73	1030
88	26.75	197206	25.17	-4600.0	-3949.5	90.34	31.21	51.70	1017
90	26.93	191037	24.44	-4501.1	-3846.1	91.50	30.98	51.67	1004
92	27.12	185016	23.74	-4402.3	-3742.8	92.64	30.76	51.65	992
94	27.31	179137	23.06	-4303.6	-3639.5	93.75	30.54	51.63	979
96	27.50	173401	22.39	-4205.1	-3536.2	94.83	30.33	51.61	967
98	27.70	167802	21.75	-4106.6	-3433.0	95.90	30.12	51.60	954
100	27.90	162340	21.12	-4008.3	-3329.8	96.94	29.92	51.60	942
102	28.11	157011	20.51	-3910.1	-3226.6	97.96	29.71	51.60	929
104	28.32	151813	19.92	-3811.9	-3123.4	98.97	29.51	51.60	917
106	28.53	146743	19.35	-3713.9	-3028.2	99.95	29.30	51.61	905
108	28.74	141799	18.79	-3615.9	-2916.9	100.91	29.10	51.62	893
110	28.97	136978	18.25	-3518.1	-2813.7	101.86	28.89	51.64	881
112	29.19	132279	17.73	-3420.3	-2710.4	102.79	28.68	51.66	869
114	29.42	127698	17.22	-3322.5	-2607.0	103.71	28.46	51.69	857
116	29.66	123234	16.73	-3224.9	-2503.6	104.61	28.24	51.72	845
118	29.90	118885	16.25	-3127.3	-2400.1	105.49	28.01	51.75	834
120	30.15	114648	15.79	-3029.7	-2296.5	106.36	27.77	51.79	823
122	30.40	110521	15.34	-2932.2	-2192.9	107.22	27.52	51.83	812
124	30.66	106504	14.90	-2834.7	-2089.1	108.06	27.25	51.88	801
126	30.93	102593	14.48	-2737.2	-1985.1	108.89	26.98	51.93	791
128	31.20	98787	14.07	-2639.8	-1881.0	109.71	26.69	51.99	781
130	31.48	95159	13.66	-2540.9	-1775.4	110.53	27.22	52.82	765
132	31.77	91450	13.19	-2442.3	-1669.8	111.34	27.13	52.82	751
134	32.06	88159	12.82	-2343.4	-1563.7	112.14	27.04	53.07	740
136	32.37	84530	12.48	-2244.2	-1457.1	112.93	26.94	53.55	729
138	32.68	81079	12.07	-2144.7	-1350.1	113.71	26.83	53.66	717
140	33.00	77771	11.72	-2045.0	-1242.5	114.48	26.72	54.00	705
142	33.33	74746	11.33	-1945.2	-1134.6	115.25	26.61	54.08	694
144	33.67	71459	10.88	-1845.8	-1026.9	116.00	26.49	53.88	678
146	34.03	68426	10.72	-1745.2	-917.7	116.75	26.36	55.15	673
148	34.39	65770	10.27	-1645.0	-808.7	117.49	26.23	54.65	659
150	34.77	63097	9.95	-1544.7	-699.2	118.23	26.10	54.95	649
152	35.15	60499	9.59	-1444.5	-589.7	118.95	25.99	54.90	636
154	35.55	58004	9.37	-1343.6	-479.0	119.68	25.89	55.76	629
156	35.97	55740	9.04	-1242.6	-367.9	120.39	25.78	55.77	618
158	36.39	53246	8.68	-1142.0	-257.1	121.10	25.68	55.69	605
160	36.83	50908	8.43	-1040.8	-145.1	121.80	26.20	56.87	592
165	38.00	45796	7.72	-784.7	139.3	123.55	25.82	57.22	567
170	39.26	41150	7.06	-528.4	426.5	125.27	25.68	57.88	542
175	40.64	37051	6.45	-271.1	717.2	126.95	25.60	58.53	518
180	42.15	33447	5.90	-13.3	1011.6	128.61	25.50	59.20	496
185	43.78	30320	5.39	244.1	1308.6	130.24	25.33	59.73	476
190	45.55	27739	4.92	499.9	1607.5	131.84	25.11	59.92	458
195	47.45	25634	4.49	752.8	1906.7	133.39	24.86	59.84	442
200	49.49	24001	4.11	1002.0	2205.4	134.90	24.67	59.58	428
210	53.90	21775	3.46	1484.0	2794.8	137.78	24.27	58.27	407
220	58.68	20618	2.95	1941.0	3368.1	140.45	23.94	56.39	392
230	63.69	20357	2.55	2370.0	3918.9	142.89	23.64	53.84	383
240	68.80	20555	2.23	2770.4	4443.5	145.13	23.34	51.25	378
250	73.95	21111	1.99	3146.0	4944.2	147.17	23.05	48.94	377
260	79.05	21954	1.78	3499.0	5421.4	149.04	22.79	46.65	377
270	84.08	22927	1.62	3832.6	5877.4	150.77	22.53	44.68	379
280	89.03	23990	1.48	4149.8	6314.8	152.36	22.29	42.95	383
290	93.89	25086	1.37	4453.1	6736.2	153.84	22.04	41.48	387
300	98.64	26211	1.27	4744.0	7142.8	155.21	21.80	40.04	390
310	103.31	27358	1.19	5024.5	7536.9	156.51	21.55	38.82	395
320	107.91	28498	1.12	5296.0	7920.1	157.72	21.31	37.84	400
330	112.44	29621	1.06	5559.3	8293.7	158.87	21.07	36.97	406
340	116.92	30727	1.00	5815.3	8658.7	159.96	20.82	36.19	411

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

240 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	V(DH/DV)$_p$ J/GMOLE	V(DP/DU)$_v$ CC-ATM/J	-V(DP/DV)$_T$ ATM	(DV/DT)$_p$/V 1/ KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S X 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 57.094	0.041277	17317.05	26.475	12928.87	0.0030277	1.96318	6.9514	0.00091	1.57564	5.8018
58	0.041164	17256.50	25.343	12728.45	0.0030367	1.95629	6.7503	0.00091	1.57402	5.6508
60	0.040914	17122.40	26.047	12295.08	0.0030570	1.94059	6.3294	0.00091	1.56999	5.3353
62	0.040664	16987.57	25.746	11873.69	0.0030778	1.92424	5.9380	0.00091	1.56598	5.0422
64	0.040413	16851.96	25.439	11464.03	0.0030992	1.90728	5.5740	0.00090	1.56196	4.7700
66	0.040163	16715.53	25.129	11065.83	0.0031212	1.88977	5.2356	0.00090	1.55795	4.5171
68	0.039912	16578.22	24.814	10678.85	0.0031439	1.87174	4.9208	0.00090	1.55394	4.2819
70	0.039661	16439.96	24.496	10302.84	0.0031670	1.85323	4.6279	0.00090	1.54994	4.0632
72	0.039409	16300.74	24.175	9937.54	0.0031909	1.83429	4.3555	0.00089	1.54594	3.8598
74	0.039158	16160.45	23.852	9582.72	0.0032156	1.81495	4.1021	0.00089	1.54193	3.6705
76	0.038906	16019.08	23.527	9238.13	0.0032411	1.79524	3.8662	0.00089	1.53793	3.4943
78	0.038653	15876.53	23.201	8903.53	0.0032674	1.77520	3.6468	0.00089	1.53394	3.3304
80	0.038400	15732.77	22.874	8578.69	0.0032946	1.75486	3.4425	0.00088	1.52994	3.1777
82	0.038147	15587.72	22.547	8263.38	0.0033228	1.73425	3.2524	0.00088	1.52594	3.0356
84	0.037893	15441.36	22.221	7957.38	0.0033520	1.71340	3.0754	0.00087	1.52194	2.9033
86	0.037639	15293.68	21.896	7660.45	0.0033822	1.69233	2.9106	0.00087	1.51793	2.7801
88	0.037384	15144.65	21.572	7372.38	0.0034136	1.67109	2.7571	0.00086	1.51393	2.6655
90	0.037129	14993.25	21.251	7092.96	0.0034462	1.64968	2.6141	0.00086	1.50992	2.5588
92	0.036872	14840.47	20.933	6821.96	0.0034802	1.62813	2.4809	0.00085	1.50591	2.4595
94	0.036615	14686.30	20.618	6559.17	0.0035155	1.60646	2.3568	0.00085	1.50189	2.3671
96	0.036357	14530.23	20.308	6304.40	0.0035522	1.58470	2.2412	0.00084	1.49787	2.2813
98	0.036099	14372.16	20.002	6057.44	0.0035906	1.56286	2.1334	0.00084	1.49384	2.2015
100	0.035839	14212.07	19.701	5818.09	0.0036306	1.54096	2.0329	0.00083	1.48980	2.1273
102	0.035578	14049.82	19.407	5586.16	0.0036725	1.51902	1.9392	0.00083	1.48575	2.0585
104	0.035316	13885.36	19.119	5361.46	0.0037162	1.49706	1.8518	0.00082	1.48170	1.9947
106	0.035053	13718.55	18.839	5143.80	0.0037619	1.47508	1.7702	0.00082	1.47763	1.9355
108	0.034789	13549.29	18.566	4933.00	0.0038099	1.45311	1.6941	0.00081	1.47355	1.8808
110	0.034523	13377.45	18.302	4728.90	0.0038601	1.43115	1.6231	0.00080	1.46945	1.8302
112	0.034256	13202.93	18.048	4531.30	0.0039128	1.40923	1.5567	0.00080	1.46534	1.7834
114	0.033987	13025.58	17.804	4340.05	0.0039681	1.38734	1.4948	0.00079	1.46122	1.7403
116	0.033716	12845.31	17.571	4154.99	0.0040261	1.36551	1.4368	0.00078	1.45707	1.7007
118	0.033444	12662.04	17.349	3975.96	0.0040872	1.34374	1.3827	0.00078	1.45290	1.6642
120	0.033169	12475.60	17.141	3802.80	0.0041514	1.32203	1.3321	0.00077	1.44872	1.6308
122	0.032893	12286.04	16.946	3635.37	0.0042189	1.30041	1.2847	0.00076	1.44450	1.6003
124	0.032614	12093.32	16.765	3473.54	0.0042900	1.27887	1.2404	0.00076	1.44027	1.5725
126	0.032333	11897.72	16.599	3317.15	0.0043649	1.25743	1.1989	0.00075	1.43600	1.5474
128	0.032050	11699.77	16.447	3166.18	0.0044438	1.23609	1.1600	0.00074	1.43171	1.5247
130	0.031766	11686.97	16.302	3022.63	0.0045196	1.21506	1.1238	0.00072	1.42742	1.5268
132	0.031480	11525.17	16.448	2878.83	0.0045827	1.19414	1.0899	0.00072	1.42310	1.5065
134	0.031190	11379.58	16.206	2749.66	0.0046634	1.17330	1.0580	0.00071	1.41874	1.4954
136	0.030896	11203.41	14.998	2611.66	0.0047796	1.15257	1.0279	0.00070	1.41433	1.4925
138	0.030601	11031.20	14.702	2481.06	0.0048658	1.13203	0.9998	0.00069	1.40990	1.4815
140	0.030301	10860.24	14.471	2356.56	0.0049727	1.11161	0.9733	0.00068	1.40542	1.4776
142	0.029999	10700.37	14.197	2242.33	0.0050541	1.09143	0.9484	0.00067	1.40091	1.4685
144	0.029698	10512.33	13.826	2122.19	0.0051254	1.07168	0.9252	0.00067	1.39642	1.4537
146	0.029387	10341.65	13.841	2010.63	0.0053325	1.05169	0.9029	0.00065	1.39180	1.4796
148	0.029076	10181.16	13.459	1912.33	0.0053679	1.03217	0.8829	0.00065	1.38719	1.4609
150	0.028762	10018.95	13.257	1814.82	0.0054842	1.01290	0.8674	0.00064	1.38254	1.4704
152	0.028447	9856.30	12.964	1721.04	0.0055696	0.99400	0.8521	0.00064	1.37789	1.4706
154	0.028126	9705.52	12.873	1631.41	0.0057449	0.97516	0.8367	0.00062	1.37315	1.4951
156	0.027802	9558.84	12.615	1549.70	0.0058340	0.95666	0.8216	0.00062	1.36840	1.4966
158	0.027479	9385.91	12.302	1463.15	0.0059330	0.93868	0.8067	0.00061	1.36366	1.4956
160	0.027150	9328.83	11.846	1382.17	0.0060963	0.92084	0.7919	0.00060	1.35885	1.5285
165	0.026317	8935.39	11.356	1205.21	0.0064034	0.87774	0.7557	0.00058	1.34671	1.5394
170	0.025468	8587.85	10.799	1048.01	0.0067399	0.83684	0.7206	0.00057	1.33442	1.5577
175	0.024604	8267.43	10.245	911.61	0.0070794	0.79822	0.6868	0.00055	1.32199	1.5738
180	0.023728	7964.72	9.758	793.61	0.0074328	0.76195	0.6543	0.00054	1.30945	1.5888
185	0.022843	7678.01	9.311	692.59	0.0077798	0.72965	0.6234	0.00053	1.29688	1.5950
190	0.021955	7421.60	8.919	609.02	0.0080736	0.70187	0.5942	0.00053	1.28436	1.5853
195	0.021074	7200.24	8.570	540.22	0.0083106	0.67606	0.5669	0.00054	1.27201	1.5682
200	0.020207	7032.13	8.244	485.00	0.0084725	0.65230	0.5417	0.00054	1.25993	1.5463
210	0.018553	6802.04	7.686	403.99	0.0085659	0.60805	0.4980	0.00056	1.23710	1.4913
220	0.017041	6711.52	7.234	351.36	0.0084016	0.57224	0.4629	0.00060	1.21648	1.4253
230	0.015700	6748.63	6.869	319.62	0.0079776	0.54333	0.4355	0.00064	1.19839	1.3485
240	0.014535	6858.45	6.582	298.77	0.0074726	0.52054	0.4146	0.00070	1.18282	1.2757
250	0.013523	7033.26	6.373	285.48	0.0069579	0.50271	0.3987	0.00076	1.16941	1.2128
260	0.012650	7262.61	6.188	277.71	0.0064227	0.48864	0.3867	0.00083	1.15792	1.1535
270	0.011893	7519.50	6.046	272.67	0.0059423	0.47782	0.3776	0.00090	1.14802	1.1036
280	0.011232	7794.87	5.931	269.46	0.0055098	0.46950	0.3709	0.00097	1.13943	1.0603
290	0.010651	8077.29	5.845	267.19	0.0051352	0.46363	0.3659	0.00105	1.13191	1.0231
300	0.010138	8367.26	5.755	265.71	0.0047856	0.45995	0.3623	0.00113	1.12529	0.9858
310	0.009679	8659.98	5.691	264.81	0.0044829	0.45748	0.3598	0.00122	1.11941	0.9543
320	0.009267	8946.53	5.656	264.09	0.0042293	0.45598	0.3582	0.00130	1.11414	0.9289
330	0.008893	9226.33	5.634	263.43	0.0040066	0.45527	0.3573	0.00138	1.10937	0.9065
340	0.008553	9498.65	5.622	262.80	0.0038098	0.45524	0.3569	0.00147	1.10504	0.8866

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

260 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p	VELOCITY OF SOUND M/SEC
* 57.315	24.21	315576	39.16	-6142.8	-5505.1	67.86	35.84	52.37	1268
58	24.26	312573	38.79	-6108.4	-5469.4	68.50	35.71	52.35	1265
60	24.40	303898	37.72	-6007.6	-5364.7	70.27	35.33	52.29	1193
62	24.55	295412	36.68	-5907.0	-5260.2	71.98	34.97	52.22	1182
64	24.70	287112	35.67	-5806.6	-5155.8	73.64	34.63	52.16	1171
66	24.85	278995	34.68	-5706.3	-5051.6	75.25	34.29	52.10	1159
68	25.01	271059	33.72	-5606.3	-4947.4	76.80	33.97	52.05	1147
70	25.17	263300	32.78	-5506.3	-4843.4	78.31	33.66	51.99	1135
72	25.32	255716	31.86	-5406.6	-4739.4	79.77	33.36	51.93	1123
74	25.48	248304	30.97	-5307.0	-4635.6	81.19	33.07	51.88	1111
76	25.65	241060	30.09	-5207.6	-4531.9	82.58	32.80	51.83	1098
78	25.81	233983	29.25	-5108.3	-4428.3	83.92	32.53	51.78	1086
80	25.98	227070	28.42	-5009.2	-4324.7	85.23	32.27	51.73	1074
82	26.15	220317	27.62	-4910.2	-4221.3	86.51	32.02	51.69	1061
84	26.32	213721	26.84	-4811.4	-4118.0	87.76	31.77	51.64	1049
86	26.50	207281	26.07	-4712.8	-4014.7	88.97	31.53	51.61	1036
88	26.68	200992	25.33	-4614.3	-3911.5	90.16	31.30	51.57	1024
90	26.86	194853	24.61	-4515.9	-3808.4	91.32	31.08	51.53	1011
92	27.04	188861	23.91	-4417.7	-3705.3	92.45	30.86	51.50	999
94	27.23	183012	23.23	-4319.6	-3602.3	93.55	30.65	51.48	987
96	27.42	177305	22.57	-4221.7	-3499.4	94.64	30.44	51.45	974
98	27.61	171736	21.93	-4123.9	-3396.5	95.70	30.23	51.43	962
100	27.81	166303	21.31	-4026.2	-3293.6	96.74	30.02	51.42	950
102	28.01	161004	20.70	-3928.7	-3190.8	97.76	29.82	51.40	937
104	28.21	155835	20.11	-3831.2	-3088.0	98.75	29.62	51.39	925
106	28.42	150794	19.54	-3733.9	-2985.2	99.73	29.41	51.39	913
108	28.63	145880	18.99	-3636.7	-2882.5	100.69	29.21	51.38	901
110	28.85	141088	18.46	-3539.6	-2779.7	101.64	29.00	51.39	890
112	29.07	136417	17.93	-3442.6	-2676.9	102.56	28.78	51.39	878
114	29.29	131865	17.43	-3345.8	-2574.1	103.47	28.57	51.40	867
116	29.52	127429	16.94	-3249.0	-2471.3	104.37	28.34	51.41	856
118	29.75	123107	16.47	-3152.3	-2368.4	105.25	28.11	51.42	845
120	29.99	118897	16.01	-3055.7	-2265.5	106.11	27.86	51.44	834
122	30.24	114797	15.56	-2959.2	-2162.6	106.96	27.61	51.46	823
124	30.49	110805	15.13	-2862.8	-2059.6	107.80	27.34	51.48	813
126	30.75	106919	14.71	-2766.5	-1956.5	108.62	27.06	51.50	803
128	31.01	103137	14.31	-2670.2	-1853.3	109.44	26.76	51.53	793
130	31.28	99457	13.90	-2572.6	-1748.6	110.25	27.29	52.28	777
132	31.55	95984	13.45	-2475.2	-1644.0	111.05	27.21	52.29	764
134	31.84	92932	13.13	-2377.5	-1538.8	111.84	27.11	52.64	756
136	32.13	89203	12.76	-2279.7	-1433.3	112.62	27.02	52.97	744
138	32.42	85712	12.35	-2181.7	-1327.5	113.39	26.92	53.06	731
140	32.73	82372	12.00	-2083.5	-1221.2	114.16	26.81	53.37	721
142	33.05	79389	11.64	-1985.1	-1114.5	114.91	26.70	53.50	710
144	33.37	76027	11.13	-1887.4	-1008.3	115.66	26.59	53.04	693
146	33.70	72889	11.00	-1788.5	-900.6	116.40	26.45	54.35	688
148	34.05	70309	10.57	-1689.9	-793.0	117.13	26.34	53.98	675
150	34.40	67642	10.25	-1591.4	-685.1	117.86	26.21	54.17	665
152	34.76	65049	9.89	-1493.1	-577.3	118.57	26.08	54.04	653
154	35.14	62553	9.69	-1394.1	-468.4	119.28	25.97	54.87	647
156	35.53	60152	9.37	-1295.1	-359.2	119.99	25.86	54.99	636
158	35.92	57815	8.96	-1196.7	-250.4	120.68	25.75	54.43	622
160	36.33	55525	8.72	-1097.9	-140.9	121.37	26.26	55.65	609
165	37.41	50236	8.04	-847.7	137.7	123.08	25.88	56.01	587
170	38.57	45583	7.40	-597.6	416.4	124.76	25.74	56.50	563
175	39.82	41430	6.80	-347.1	701.9	126.40	25.66	57.02	540
180	41.17	37691	6.25	-96.6	987.9	128.01	25.55	57.55	518
185	42.62	34430	5.73	153.2	1276.1	129.59	25.40	57.90	499
190	44.19	31661	5.26	401.5	1565.7	131.14	25.19	58.08	481
195	45.87	29352	4.83	647.1	1855.4	132.64	24.92	57.98	465
200	47.65	27488	4.45	889.4	2144.8	134.11	24.66	57.83	452
210	51.51	24649	3.78	1361.1	2718.2	136.90	24.29	56.81	429
220	55.70	23246	3.25	1810.4	3277.7	139.51	23.93	55.27	412
230	60.12	22628	2.82	2237.4	3821.4	141.93	23.67	53.31	402
240	64.67	22588	2.48	2638.8	4342.5	144.14	23.39	50.99	395
250	69.28	22833	2.20	3016.9	4841.9	146.18	23.11	49.00	392
260	73.90	23444	1.98	3374.2	5321.0	148.06	22.84	46.94	391
270	78.48	24259	1.80	3713.0	5780.6	149.80	22.60	45.06	391
280	83.02	25214	1.65	4035.5	6222.5	151.40	22.36	43.40	394
290	87.48	26225	1.52	4344.0	6648.6	152.90	22.12	41.93	397
300	91.87	27315	1.41	4640.3	7060.2	154.30	21.87	40.62	400
310	96.18	28411	1.32	4925.1	7459.0	155.60	21.63	39.32	404
320	100.43	29527	1.24	5200.9	7846.8	156.84	21.39	38.31	409
330	104.63	30626	1.17	5468.3	8224.7	158.00	21.14	37.40	414
340	108.77	31719	1.10	5728.2	8593.7	159.10	20.90	36.58	419

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

266 ATM ISOBAR

TEMPERATURE	DENSITY	V(DH/DV)p	V(DP/DV)H	-V(DP/DV)T	(DV/DT)pV	THERMAL CONDUCTIVITY	VISCOSITY	THERMAL DIFFUSIVITY	DIELECTRIC CONSTANT	PRANDTL NUMBER
KELVIN	GMOLE/CC	J/GMOLE	CC-ATM/J	ATM	1/KELVIN	MW/CM-K	G/CM-S X 10^3	SQ CM/SEC		
* 57.316	0.041313	17436.67	25.448	13237.38	0.0030035	1.96579	7.0160	0.00091	1.57642	5.8418
58	0.041228	17392.14	25.348	12886.82	0.0030099	1.96070	6.8640	0.00091	1.57505	5.7272
60	0.040980	17261.23	25.053	12453.73	0.0030291	1.94530	6.4382	0.00091	1.57126	5.4079
62	0.040732	17129.68	24.751	12032.61	0.0030488	1.92926	6.0421	0.00091	1.56727	5.1113
64	0.040483	16997.43	24.445	11623.22	0.0030689	1.91261	5.6736	0.00091	1.56309	4.8358
66	0.040235	16864.43	24.135	11225.28	0.0030896	1.89541	5.3309	0.00090	1.55911	4.5797
68	0.039986	16730.64	23.820	10838.56	0.0031108	1.87769	5.0124	0.00090	1.55513	4.3415
70	0.039737	16595.98	24.503	10462.79	0.0031326	1.85950	4.7153	0.00090	1.55116	4.1200
72	0.039488	16460.44	24.182	10097.73	0.0031551	1.84087	4.4392	0.00090	1.54719	3.9138
74	0.039239	16323.91	23.860	9743.14	0.0031782	1.82184	4.1822	0.00089	1.54322	3.7219
76	0.038989	16186.39	23.536	9398.77	0.0032020	1.80245	3.9431	0.00089	1.53926	3.5433
78	0.038739	16047.75	23.210	9064.38	0.0032266	1.78273	3.7204	0.00089	1.53530	3.3770
80	0.038489	15907.98	22.885	8739.74	0.0032520	1.76271	3.5131	0.00089	1.53134	3.2221
82	0.038239	15767.00	22.559	8424.63	0.0032782	1.74242	3.3201	0.00088	1.52738	3.0778
84	0.037988	15624.72	22.234	8118.80	0.0033053	1.72190	3.1403	0.00088	1.52342	2.9434
86	0.037736	15481.11	21.911	7822.04	0.0033334	1.70116	2.9728	0.00087	1.51947	2.8183
88	0.037485	15336.04	21.589	7534.12	0.0033626	1.68024	2.8168	0.00087	1.51551	2.7017
90	0.037232	15189.46	21.270	7254.83	0.0033928	1.65916	2.6715	0.00086	1.51155	2.5931
92	0.036979	15041.26	20.954	6983.95	0.0034242	1.63794	2.5360	0.00086	1.50758	2.4920
94	0.036726	14891.39	20.642	6721.27	0.0034568	1.61661	2.4097	0.00086	1.50362	2.3979
96	0.036472	14739.71	20.335	6466.58	0.0034907	1.59519	2.2920	0.00085	1.49965	2.3103
98	0.036216	14586.13	20.032	6219.69	0.0035261	1.57369	2.1822	0.00084	1.49567	2.2288
100	0.035961	14430.55	19.735	5980.39	0.0035629	1.55213	2.0798	0.00084	1.49169	2.1530
102	0.035704	14272.84	19.445	5748.48	0.0036014	1.53053	1.9843	0.00083	1.48771	2.0826
104	0.035446	14112.91	19.161	5523.78	0.0036415	1.50892	1.8952	0.00083	1.48371	2.0172
106	0.035188	13950.62	18.885	5306.10	0.0036835	1.48729	1.8119	0.00082	1.47971	1.9564
108	0.034928	13785.86	18.617	5095.26	0.0037273	1.46567	1.7343	0.00082	1.47569	1.9001
110	0.034667	13618.48	18.359	4891.07	0.0037732	1.44407	1.6617	0.00081	1.47167	1.8479
112	0.034405	13448.36	18.110	4693.37	0.0038213	1.42250	1.5939	0.00080	1.46763	1.7996
114	0.034141	13275.33	17.873	4501.98	0.0038717	1.40097	1.5306	0.00080	1.46358	1.7549
116	0.033876	13099.29	17.646	4316.75	0.0039246	1.37950	1.4714	0.00079	1.45951	1.7136
118	0.033609	12920.13	17.433	4137.50	0.0039801	1.35809	1.4160	0.00079	1.45543	1.6756
120	0.033341	12737.65	17.232	3964.10	0.0040384	1.33675	1.3642	0.00078	1.45133	1.6405
122	0.033070	12551.88	17.047	3796.38	0.0040996	1.31550	1.3157	0.00077	1.44721	1.6084
124	0.032798	12362.75	16.876	3634.21	0.0041639	1.29433	1.2703	0.00077	1.44307	1.5789
126	0.032524	12170.53	16.721	3477.44	0.0042315	1.27326	1.2278	0.00076	1.43890	1.5519
128	0.032248	11975.72	16.581	3325.94	0.0043026	1.25229	1.1879	0.00075	1.43471	1.5275
130	0.031971	11982.56	16.930	3186.17	0.0043626	1.23163	1.1508	0.00074	1.43053	1.5265
132	0.031693	11829.33	16.596	3042.02	0.0044205	1.21111	1.1161	0.00073	1.42632	1.5059
134	0.031411	11703.75	16.417	2919.07	0.0044981	1.19059	1.0832	0.00072	1.42216	1.4969
136	0.031127	11528.52	16.168	2776.60	0.0045945	1.17030	1.0525	0.00071	1.41779	1.4887
138	0.030841	11361.11	14.872	2643.40	0.0046707	1.15018	1.0237	0.00070	1.41349	1.4759
140	0.030551	11194.86	14.645	2516.56	0.0047670	1.13018	0.9965	0.00069	1.40915	1.4705
142	0.030259	11045.44	14.442	2402.22	0.0048439	1.11037	0.9709	0.00069	1.40479	1.4621
144	0.029969	10861.47	13.964	2278.46	0.0048832	1.09110	0.9473	0.00069	1.40046	1.4391
146	0.029670	10687.44	14.005	2162.60	0.0050850	1.07155	0.9245	0.00066	1.39610	1.4652
148	0.029370	10542.46	13.668	2064.99	0.0051201	1.05237	0.9031	0.00066	1.39155	1.4476
150	0.029068	10386.73	13.461	1966.24	0.0052153	1.03348	0.8839	0.00066	1.38767	1.4479
152	0.028766	10229.00	13.178	1871.19	0.0052830	1.01498	0.8690	0.00065	1.38260	1.4459
154	0.028458	10083.19	13.108	1780.11	0.0054413	0.99651	0.8540	0.00064	1.37804	1.4695
156	0.028147	9934.73	12.875	1693.11	0.0055350	0.97836	0.8393	0.00063	1.37347	1.4742
158	0.027839	9778.48	12.497	1609.52	0.0055665	0.96079	0.8249	0.00063	1.36894	1.4604
160	0.027527	9722.04	12.059	1522.93	0.0057240	0.94339	0.8105	0.00062	1.36436	1.4942
165	0.026734	9351.13	11.628	1343.03	0.0059899	0.90116	0.7753	0.00060	1.35278	1.5061
170	0.025930	9027.54	11.082	1181.94	0.0062590	0.86111	0.7414	0.00059	1.34109	1.5202
175	0.025114	8727.43	10.548	1040.48	0.0065334	0.82327	0.7086	0.00057	1.32932	1.5338
180	0.024290	8436.00	10.061	915.54	0.0068223	0.78771	0.6772	0.00056	1.31749	1.5462
185	0.023461	8159.51	9.618	807.76	0.0070965	0.75451	0.6472	0.00056	1.30566	1.5523
190	0.022630	7906.05	9.235	716.44	0.0073462	0.72583	0.6188	0.00055	1.29387	1.5474
195	0.021803	7673.78	8.892	639.96	0.0075502	0.70024	0.5921	0.00055	1.28222	1.5323
200	0.020986	7494.46	8.601	576.84	0.0077170	0.67663	0.5672	0.00056	1.27077	1.5152
210	0.019412	7243.52	8.025	482.38	0.0078433	0.63214	0.5234	0.00057	1.24892	1.4702
220	0.017955	7137.51	7.554	417.39	0.0077768	0.59575	0.4875	0.00060	1.22891	1.4135
230	0.016632	7110.78	7.167	376.36	0.0074972	0.56610	0.4586	0.00064	1.21094	1.3496
240	0.015463	7193.88	6.944	349.29	0.0070885	0.54219	0.4360	0.00069	1.19521	1.2815
250	0.014435	7323.52	6.809	329.54	0.0066909	0.52337	0.4184	0.00074	1.18148	1.2243
260	0.013532	7514.73	6.711	317.24	0.0062460	0.50821	0.4046	0.00080	1.16952	1.1684
270	0.012741	7745.54	6.245	309.09	0.0058180	0.49626	0.3943	0.00086	1.15912	1.1191
280	0.012046	8001.97	6.117	303.72	0.0054242	0.48690	0.3853	0.00093	1.15002	1.0763
290	0.011431	8268.92	6.013	299.78	0.0050712	0.48054	0.3803	0.00100	1.14201	1.0370
300	0.010885	8550.46	5.918	297.33	0.0047388	0.47594	0.3757	0.00108	1.13494	0.9996
310	0.010397	8831.26	5.848	295.38	0.0044528	0.47264	0.3724	0.00116	1.12863	0.9683
320	0.009957	9111.01	5.803	293.92	0.0042044	0.47140	0.3700	0.00123	1.12297	0.9417
330	0.009558	9387.17	5.770	292.71	0.0039839	0.46904	0.3685	0.00131	1.11765	0.9181
340	0.009193	9657.56	5.748	291.61	0.0037881	0.46841	0.3675	0.00139	1.11320	0.8971

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

280 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p J/G MOLE -K	VELOCITY OF SOUND M/SEC
* 57.541	24.18	317923	39.17	-6139.8	-5452.8	67.93	35.86	52.31	1212
58	24.22	315910	38.92	-6115.9	-5428.8	68.35	35.77	52.30	1209
60	24.36	307262	37.86	-6015.5	-5324.3	70.12	35.48	52.23	1198
62	24.51	298802	36.82	-5915.3	-5219.9	71.83	35.24	52.17	1187
64	24.66	290529	35.81	-5815.2	-5115.6	73.49	34.70	52.10	1175
66	24.81	282439	34.82	-5715.3	-5011.5	75.09	34.37	52.04	1164
68	24.96	274530	33.86	-5615.7	-4907.4	76.64	34.05	51.98	1152
70	25.12	266798	32.92	-5516.1	-4803.5	78.15	33.74	51.92	1140
72	25.27	259241	32.01	-5416.8	-4699.7	79.61	33.44	51.86	1128
74	25.43	251856	31.11	-5317.6	-4596.1	81.03	33.16	51.80	1116
76	25.59	244641	30.25	-5218.7	-4492.5	82.41	32.88	51.74	1104
78	25.76	237591	29.40	-5119.8	-4389.1	83.76	32.61	51.69	1092
80	25.92	230705	28.58	-5021.2	-4285.7	85.06	32.36	51.64	1080
82	26.09	223979	27.77	-4922.7	-4182.5	86.34	32.11	51.59	1067
84	26.26	217412	26.99	-4824.4	-4079.4	87.58	31.86	51.54	1055
86	26.43	210999	26.24	-4726.2	-3976.3	88.79	31.63	51.49	1043
88	26.61	204738	25.50	-4628.2	-3873.4	89.98	31.40	51.45	1031
90	26.79	198627	24.78	-4530.4	-3770.5	91.13	31.18	51.41	1018
92	26.97	192662	24.08	-4432.7	-3667.7	92.26	30.96	51.37	1006
94	27.15	186842	23.41	-4335.2	-3565.0	93.37	30.75	51.33	994
96	27.34	181162	22.75	-4237.9	-3462.3	94.45	30.54	51.30	982
98	27.52	175621	22.11	-4140.6	-3359.8	95.50	30.33	51.27	969
100	27.72	170215	21.49	-4043.6	-3257.2	96.54	30.13	51.24	957
102	27.91	164943	20.88	-3946.7	-3154.8	97.55	29.93	51.22	945
104	28.11	159801	20.30	-3849.9	-3052.3	98.55	29.72	51.20	934
106	28.31	154787	19.73	-3753.2	-2950.0	99.52	29.52	51.18	922
108	28.52	149899	19.18	-3656.8	-2847.6	100.48	29.31	51.16	910
110	28.73	145134	18.65	-3560.4	-2745.3	101.42	29.10	51.15	899
112	28.94	140489	18.13	-3464.2	-2643.0	102.34	28.89	51.14	887
114	29.16	135962	17.63	-3368.1	-2540.7	103.25	28.67	51.13	876
116	29.39	131551	17.15	-3272.2	-2438.5	104.14	28.44	51.13	865
118	29.61	127254	16.68	-3176.3	-2336.2	105.01	28.21	51.12	855
120	29.85	123066	16.22	-3080.7	-2233.9	105.87	27.96	51.12	844
122	30.08	118991	15.78	-2985.1	-2131.6	106.72	27.78	51.11	834
124	30.33	115021	15.35	-2889.7	-2029.3	107.55	27.43	51.11	824
126	30.57	111157	14.94	-2794.4	-1927.8	108.37	27.14	51.10	814
128	30.83	107396	14.54	-2699.2	-1824.6	109.17	26.84	51.10	805
130	31.09	104068	14.12	-2602.9	-1720.9	109.98	27.37	51.76	789
132	31.35	100433	13.69	-2506.6	-1617.1	110.77	27.28	51.82	777
134	31.62	97664	13.45	-2409.7	-1512.5	111.55	27.19	52.36	772
136	31.90	93814	13.81	-2313.2	-1408.1	112.33	27.10	52.42	758
138	32.19	90274	12.61	-2216.6	-1303.4	113.09	27.00	52.51	746
140	32.48	86895	12.26	-2119.7	-1198.2	113.85	26.90	52.79	735
142	32.78	83954	11.93	-2022.6	-1092.6	114.60	26.79	53.02	725
144	33.09	80506	11.35	-1926.5	-987.8	115.33	26.68	52.25	707
146	33.40	77247	11.24	-1829.2	-881.5	116.06	26.56	53.57	702
148	33.73	74758	10.88	-1732.8	-775.8	116.79	26.44	53.44	692
150	34.07	72086	10.54	-1634.9	-668.4	117.50	26.31	53.58	681
152	34.41	69496	10.17	-1538.2	-562.1	118.21	26.18	53.32	669
154	34.76	66998	9.98	-1441.8	-454.8	118.91	26.05	54.11	664
156	35.13	64345	9.65	-1343.9	-347.3	119.60	25.94	54.19	652
158	35.50	62304	9.24	-1247.2	-240.2	120.29	25.84	53.50	639
160	35.87	59588	8.96	-1150.6	-132.8	120.96	26.34	54.46	625
165	36.88	54526	8.35	-905.4	148.9	122.64	25.94	55.81	605
170	37.95	49988	7.71	-658.5	416.3	124.29	25.81	55.37	582
175	39.10	45715	7.12	-415.6	693.7	125.90	25.73	55.80	560
180	40.33	41837	6.57	-171.2	973.1	127.47	25.63	56.20	539
185	41.65	38513	6.85	72.4	1254.0	129.01	25.48	56.48	520
190	43.06	35591	5.59	316.5	1536.1	130.52	25.27	56.57	502
195	44.55	33114	5.15	554.8	1818.1	131.98	25.02	56.46	487
200	46.15	31012	4.77	798.5	2099.7	133.41	24.73	56.39	473
210	49.58	27997	4.09	1252.1	2658.7	136.13	24.38	55.53	458
220	53.26	26072	3.53	1694.5	3206.2	138.68	23.96	54.13	432
230	57.23	25037	3.09	2117.3	3741.1	141.06	23.67	52.78	420
240	61.32	24774	2.72	2518.9	4258.5	143.26	23.43	50.78	412
250	65.46	24801	2.42	2898.2	4755.4	145.29	23.18	48.61	407
260	69.66	25139	2.18	3258.0	5234.2	147.17	22.91	47.05	404
270	73.85	25761	1.98	3600.2	5695.3	148.91	22.65	45.28	404
280	78.01	26584	1.81	3927.2	6140.4	150.53	22.42	43.74	405
290	82.13	27524	1.67	4240.1	6570.1	152.04	22.18	42.28	408
300	86.28	28558	1.55	4540.6	6986.0	153.45	21.95	40.97	411
310	90.19	29576	1.45	4829.9	7388.9	154.77	21.71	39.75	414
320	94.15	30642	1.36	5109.7	7788.7	156.01	21.46	38.73	418
330	98.05	31722	1.28	5380.6	8162.4	157.19	21.22	37.80	423
340	101.90	32801	1.21	5644.1	8535.0	158.30	20.98	36.96	428

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

280 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	$V(\partial H/\partial V)_p$ J/GMOLE	$V(\partial P/\partial U)_v$ CC-ATM/J	$-V(\partial P/\partial V)_T$ ATM	$(\partial V/\partial T)_p/V$ 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S x 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 57.541	0.041348	17556.25	25.421	13145.61	0.0029797	1.96838	7.0821	0.00091	1.57699	5.8820
58	0.041292	17527.00	25.354	13044.53	0.0029838	1.96581	6.9787	0.00091	1.57608	5.8044
60	0.041045	17399.23	25.058	12611.69	0.0030019	1.94992	6.5479	0.00091	1.57211	5.4812
62	0.040799	17270.90	25.756	12190.83	0.0030205	1.93418	6.1470	0.00091	1.56815	5.1811
64	0.040553	17141.95	25.450	11781.68	0.0030394	1.91784	5.7741	0.00091	1.56420	4.9022
66	0.040306	17012.34	25.140	11383.98	0.0030589	1.90094	5.4270	0.00091	1.56025	4.6429
68	0.040059	16882.00	24.826	10997.48	0.0030788	1.88353	5.1041	0.00090	1.55630	4.4017
70	0.039813	16750.88	24.508	10621.93	0.0030993	1.86564	4.8035	0.00090	1.55236	4.1773
72	0.039566	16618.95	24.188	10257.07	0.0031203	1.84732	4.5236	0.00090	1.54843	3.9684
74	0.039319	16486.10	23.867	9902.68	0.0031420	1.82860	4.2631	0.00090	1.54449	3.7740
76	0.039072	16352.33	23.543	9558.50	0.0031643	1.80952	4.0206	0.00090	1.54057	3.5929
78	0.038824	16217.53	23.219	9224.29	0.0031872	1.79011	3.7947	0.00089	1.53664	3.4242
80	0.038577	16081.65	22.894	8899.82	0.0032109	1.77041	3.5843	0.00089	1.53272	3.2670
82	0.038329	15944.63	22.570	8584.85	0.0032353	1.75043	3.3884	0.00089	1.52880	3.1206
84	0.038081	15806.38	22.246	8279.17	0.0032605	1.73023	3.2058	0.00088	1.52489	2.9842
86	0.037832	15666.84	21.924	7982.53	0.0032866	1.70981	3.0357	0.00088	1.52097	2.8570
88	0.037583	15525.92	21.605	7694.72	0.0033137	1.68921	2.8772	0.00087	1.51706	2.7385
90	0.037334	15383.52	21.287	7415.53	0.0033417	1.66845	2.7294	0.00087	1.51314	2.6281
92	0.037084	15239.55	20.974	7144.72	0.0033707	1.64756	2.5916	0.00086	1.50923	2.5251
94	0.036834	15093.93	20.664	6882.11	0.0034009	1.62655	2.4631	0.00086	1.50531	2.4293
96	0.036583	14946.54	20.359	6627.46	0.0034322	1.60545	2.3433	0.00086	1.50139	2.3400
98	0.036332	14797.27	20.059	6380.59	0.0034648	1.58428	2.2315	0.00085	1.49747	2.2568
100	0.036080	14646.01	19.766	6141.29	0.0034988	1.56305	2.1272	0.00085	1.49354	2.1794
102	0.035827	14492.61	19.479	5909.36	0.0035342	1.54178	2.0298	0.00084	1.48961	2.1074
104	0.035573	14336.98	19.199	5684.62	0.0035711	1.52050	1.9389	0.00083	1.48568	2.0403
106	0.035319	14178.97	18.927	5466.87	0.0036096	1.49921	1.8541	0.00083	1.48173	1.9780
108	0.035063	14018.43	18.664	5255.92	0.0036498	1.47792	1.7748	0.00082	1.47778	1.9202
110	0.034807	13855.22	18.411	5051.61	0.0036919	1.45666	1.7007	0.00082	1.47382	1.8664
112	0.034549	13689.20	18.168	4853.75	0.0037359	1.43543	1.6315	0.00081	1.46985	1.8166
114	0.034290	13520.18	17.936	4662.17	0.0037820	1.41424	1.5668	0.00081	1.46587	1.7703
116	0.034030	13348.01	17.716	4476.71	0.0038303	1.39311	1.5063	0.00080	1.46188	1.7275
118	0.033769	13172.59	17.509	4297.21	0.0038809	1.37205	1.4496	0.00079	1.45788	1.6879
120	0.033506	12993.68	17.316	4123.50	0.0039339	1.35105	1.3966	0.00079	1.45386	1.6513
122	0.033242	12811.28	17.139	3955.45	0.0039896	1.33014	1.3470	0.00078	1.44982	1.6175
124	0.032976	12625.31	16.977	3792.89	0.0040481	1.30933	1.3005	0.00078	1.44576	1.5864
126	0.032708	12436.00	16.831	3635.68	0.0041094	1.28860	1.2569	0.00077	1.44169	1.5578
128	0.032436	12243.84	16.702	3483.70	0.0041739	1.26799	1.2160	0.00076	1.43759	1.5316
130	0.032160	12278.35	16.041	3347.64	0.0042186	1.24763	1.1780	0.00075	1.43350	1.5273
132	0.031897	12124.72	15.734	3203.49	0.0042743	1.22748	1.1424	0.00074	1.42940	1.5073
134	0.031621	12016.99	15.645	3088.18	0.0043562	1.20721	1.1085	0.00073	1.42523	1.5025
136	0.031345	11845.01	15.319	2940.62	0.0044254	1.18734	1.0771	0.00072	1.42108	1.4861
138	0.031068	11681.39	15.027	2804.61	0.0044949	1.16762	1.0476	0.00072	1.41698	1.4722
140	0.030787	11516.87	14.803	2675.28	0.0045826	1.14802	1.0198	0.00071	1.41270	1.4653
142	0.030504	11378.51	14.600	2560.92	0.0046595	1.12852	0.9935	0.00070	1.40845	1.4586
144	0.030225	11199.43	14.078	2433.29	0.0046658	1.10971	0.9694	0.00070	1.40427	1.4265
146	0.029936	11019.71	14.136	2312.50	0.0048612	1.09059	0.9460	0.00068	1.39997	1.4522
148	0.029646	10889.07	13.874	2216.03	0.0049076	1.07170	0.9240	0.00068	1.39565	1.4399
150	0.029355	10748.24	13.647	2116.06	0.0049817	1.05315	0.9034	0.00067	1.39132	1.4344
152	0.029063	10589.49	13.364	2019.78	0.0050353	1.03498	0.8851	0.00067	1.38700	1.4250
154	0.028766	10445.15	13.320	1927.30	0.0051800	1.01684	0.8705	0.00065	1.38260	1.4475
156	0.028469	10282.57	13.072	1831.80	0.0052703	0.99905	0.8561	0.00065	1.37821	1.4512
158	0.028172	10158.76	12.700	1755.26	0.0052664	0.98177	0.8420	0.00065	1.37384	1.4339
160	0.027875	10092.98	12.206	1660.79	0.0053957	0.96483	0.8281	0.00064	1.36947	1.4608
165	0.027116	9741.39	11.870	1478.51	0.0056470	0.92331	0.7938	0.00062	1.35835	1.4780
170	0.026349	9442.99	11.337	1315.00	0.0058635	0.88394	0.7607	0.00061	1.34717	1.4891
175	0.025574	9161.56	10.822	1169.10	0.0060909	0.84673	0.7288	0.00059	1.33594	1.5010
180	0.024794	8878.60	10.334	1037.31	0.0063297	0.81178	0.6983	0.00058	1.32471	1.5107
185	0.024010	8617.65	9.894	924.71	0.0065458	0.77907	0.6691	0.00058	1.31348	1.5139
190	0.023225	8369.93	9.519	826.60	0.0067586	0.74859	0.6414	0.00057	1.30231	1.5147
195	0.022444	8144.31	9.178	743.23	0.0069331	0.72298	0.6153	0.00057	1.29125	1.5018
200	0.021670	7945.18	8.900	672.05	0.0070979	0.69951	0.5908	0.00057	1.28035	1.4884
210	0.020170	7669.93	8.340	564.71	0.0072401	0.65475	0.5471	0.00058	1.25941	1.4500
220	0.018767	7512.26	7.842	489.29	0.0072853	0.61774	0.5106	0.00061	1.24044	1.3982
230	0.017473	7471.38	7.460	437.46	0.0070530	0.58754	0.4806	0.00064	1.22234	1.3471
240	0.016309	7536.27	7.112	404.05	0.0067272	0.56272	0.4566	0.00068	1.20658	1.2856
250	0.015276	7641.04	6.835	378.85	0.0063873	0.54288	0.4376	0.00073	1.19278	1.2296
260	0.014356	7792.89	6.625	360.90	0.0060374	0.52691	0.4226	0.00078	1.18044	1.1794
270	0.013542	7991.20	6.444	348.85	0.0056666	0.51398	0.4109	0.00084	1.16965	1.1312
280	0.012819	8226.70	6.304	340.77	0.0053169	0.50418	0.4017	0.00090	1.16013	1.0890
290	0.012176	8481.92	6.185	335.14	0.0049852	0.49702	0.3945	0.00097	1.15172	1.0489
300	0.011602	8751.90	6.091	331.32	0.0046810	0.49155	0.3890	0.00103	1.14423	1.0133
310	0.011087	9019.27	6.006	327.92	0.0044076	0.48748	0.3849	0.00111	1.13755	0.9839
320	0.010622	9290.22	5.952	325.47	0.0041691	0.48454	0.3816	0.00118	1.13153	0.9538
330	0.010199	9560.81	5.911	323.55	0.0039537	0.48255	0.3796	0.00125	1.12609	0.9293
340	0.009814	9827.86	5.888	321.90	0.0037605	0.48135	0.3781	0.00133	1.12113	0.9073

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

300 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p J/G MOLE -K	VELOCITY OF SOUND M/SEC
* 57.764	24.16	320260	39.18	-6135.1	-5400.6	67.99	35.87	52.26	1215
58	24.18	319228	39.05	-6123.3	-5388.2	68.20	35.83	52.25	1214
60	24.32	310604	37.99	-6023.2	-5283.8	69.97	35.46	52.18	1203
62	24.47	302170	36.96	-5923.3	-5179.5	71.68	35.11	52.11	1192
64	24.62	293923	35.95	-5823.7	-5075.3	73.34	34.77	52.04	1180
66	24.77	285859	34.96	-5724.2	-4971.3	74.94	34.44	51.98	1169
68	24.92	277975	34.00	-5624.9	-4867.4	76.49	34.12	51.91	1157
70	25.07	270270	33.06	-5525.7	-4763.7	77.99	33.81	51.85	1145
72	25.23	262739	32.15	-5426.8	-4660.0	79.45	33.52	51.78	1134
74	25.38	255380	31.26	-5328.1	-4556.5	80.87	33.24	51.72	1122
76	25.54	248191	30.39	-5229.5	-4453.1	82.25	32.96	51.66	1110
78	25.70	241167	29.55	-5131.1	-4349.8	83.59	32.70	51.60	1098
80	25.86	234307	28.73	-5032.9	-4246.7	84.90	32.44	51.54	1086
82	26.03	227608	27.93	-4934.9	-4143.6	86.17	32.20	51.49	1074
84	26.20	221067	27.15	-4837.8	-4040.7	87.41	31.96	51.43	1061
86	26.37	214680	26.39	-4739.3	-3937.8	88.62	31.72	51.38	1049
88	26.54	208446	25.66	-4641.8	-3835.1	89.80	31.50	51.33	1037
90	26.71	202361	24.94	-4544.5	-3732.5	90.95	31.28	51.29	1025
92	26.89	196422	24.25	-4447.3	-3629.9	92.08	31.06	51.24	1013
94	27.07	190627	23.57	-4350.4	-3527.5	93.18	30.85	51.20	1001
96	27.25	184973	22.92	-4253.5	-3425.1	94.26	30.64	51.16	989
98	27.44	179458	22.28	-4156.9	-3322.8	95.31	30.44	51.12	977
100	27.63	174078	21.66	-4060.4	-3220.6	96.35	30.24	51.08	965
102	27.82	168831	21.06	-3964.1	-3118.5	97.36	30.03	51.05	953
104	28.01	163714	20.48	-3867.9	-3016.4	98.35	29.83	51.02	942
106	28.21	158725	19.92	-3772.0	-2914.4	99.32	29.63	50.99	930
108	28.41	153861	19.37	-3676.1	-2812.4	100.27	29.42	50.96	919
110	28.62	149119	18.84	-3580.5	-2710.5	101.21	29.21	50.94	907
112	28.83	144498	18.33	-3485.0	-2608.7	102.13	28.99	50.91	896
114	29.04	139994	17.83	-3389.6	-2506.9	103.03	28.77	50.89	885
116	29.26	135606	17.35	-3294.5	-2405.1	103.91	28.54	50.86	875
118	29.48	131331	16.88	-3199.5	-2303.4	104.78	28.30	50.84	864
120	29.70	127166	16.43	-3104.6	-2201.7	105.64	28.05	50.82	854
122	29.93	123110	15.99	-3009.9	-2100.0	106.48	27.79	50.79	844
124	30.17	119160	15.57	-2915.4	-1998.4	107.30	27.51	50.77	834
126	30.41	115315	15.16	-2821.1	-1896.7	108.12	27.22	50.74	825
128	30.66	111572	14.76	-2727.0	-1795.1	108.91	26.91	50.72	816
130	30.91	108399	14.33	-2631.7	-1692.3	109.71	27.45	51.28	801
132	31.16	104805	13.93	-2536.5	-1589.3	110.50	27.36	51.41	790
134	31.43	102357	13.79	-2440.3	-1485.1	111.28	27.27	52.20	788
136	31.69	98368	13.25	-2345.1	-1381.7	112.05	27.18	51.89	771
138	31.97	94771	12.85	-2249.7	-1278.0	112.81	27.09	51.99	759
140	32.25	91347	12.51	-2154.1	-1173.9	113.55	26.99	52.25	748
142	32.54	88446	12.22	-2058.1	-1069.1	114.30	26.88	52.61	740
144	32.82	84907	11.56	-1963.4	-965.6	115.02	26.78	51.51	719
146	33.13	81512	11.46	-1867.6	-860.7	115.75	26.66	52.81	715
148	33.44	79102	11.18	-1771.5	-755.0	116.46	26.54	53.01	707
150	33.76	76448	10.82	-1675.8	-649.7	117.17	26.42	52.92	696
152	34.08	73851	10.44	-1580.5	-544.5	117.87	26.29	52.70	685
154	34.42	71350	10.27	-1484.7	-438.6	118.56	26.16	53.46	680
156	34.76	68297	9.87	-1389.5	-333.0	119.24	26.03	53.30	665
158	35.11	66738	9.55	-1294.1	-226.9	119.92	25.92	52.98	657
160	35.46	63672	9.15	-1199.6	-121.7	120.58	26.42	53.22	637
165	36.40	58664	8.63	-958.7	147.9	122.24	26.01	54.16	622
170	37.41	54132	8.01	-718.3	418.8	123.85	25.88	54.42	600
175	38.47	49908	7.43	-478.1	691.4	125.44	25.80	54.80	579
180	39.60	45873	6.86	-238.9	965.0	126.98	25.70	55.04	558
185	40.81	42570	6.36	-0.4	1240.2	128.48	25.56	55.18	539
190	42.09	39525	5.89	236.5	1516.0	129.96	25.36	55.31	522
195	43.45	36916	5.46	471.0	1791.7	131.39	25.11	55.21	507
200	44.88	34560	5.07	702.3	2066.6	132.78	24.84	55.14	493
210	47.97	31181	4.38	1154.3	2612.4	135.44	24.31	54.38	470
220	51.38	29125	3.80	1590.8	3158.2	137.95	23.98	53.03	452
230	54.84	27558	3.34	2008.6	3675.7	140.28	23.68	52.03	438
240	58.54	27013	2.96	2408.9	4188.4	142.46	23.45	50.48	429
250	62.31	27029	2.64	2789.1	4683.2	144.48	23.23	48.58	423
260	66.12	27046	2.37	3150.3	5168.3	146.36	22.98	46.99	419
270	69.96	27437	2.15	3494.8	5621.3	148.18	22.72	45.38	417
280	73.80	28095	1.98	3824.6	6067.8	149.72	22.47	43.96	417
290	77.61	29007	1.83	4141.4	6500.6	151.24	22.24	42.59	419
300	81.39	29932	1.70	4445.8	6920.0	152.66	22.01	41.38	422
310	85.11	30846	1.58	4738.8	7325.9	153.99	21.78	40.09	424
320	88.79	31850	1.48	5022.1	7721.2	155.25	21.54	39.10	428
330	92.43	32895	1.39	5296.7	8106.4	156.43	21.29	38.17	432
340	96.03	33954	1.32	5563.2	8482.4	157.56	21.05	37.31	437

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

300 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	$V(\partial H/\partial V)_P$ J/GMOLE	$V(\partial P/\partial U)_V$ CC-ATM/J	$-V(\partial P/\partial V)_T$ ATM	$(\partial V/\partial T)_P/V$ 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S X 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 57.764	0.041384	17675.81	25.393	13253.55	0.0029563	1.97094	7.1479	0.00091	1.57756	5.9225
58	0.041355	17661.10	25.358	13201.61	0.0029583	1.96924	7.0943	0.00091	1.57709	5.8822
60	0.041110	17536.43	25.062	12769.00	0.0029754	1.95444	6.6584	0.00091	1.57315	5.5553
62	0.040866	17411.28	25.761	12348.36	0.0029929	1.93900	6.2528	0.00091	1.56922	5.2516
64	0.040621	17285.58	25.455	11939.42	0.0030108	1.92296	5.8754	0.00091	1.56529	4.9693
66	0.040376	17159.29	25.144	11541.93	0.0030291	1.90636	5.5240	0.00091	1.56137	4.7068
68	0.040132	17032.35	24.830	11155.63	0.0030478	1.88925	5.1969	0.00091	1.55746	4.4625
70	0.039887	16904.69	24.513	10780.27	0.0030670	1.87166	4.8924	0.00091	1.55355	4.2353
72	0.039642	16776.30	24.194	10415.60	0.0030867	1.85365	4.6088	0.00090	1.54965	4.0237
74	0.039398	16647.07	23.872	10061.37	0.0031069	1.83523	4.3448	0.00090	1.54575	3.8266
76	0.039153	16516.98	23.549	9717.35	0.0031277	1.81646	4.0988	0.00090	1.54186	3.6430
78	0.038908	16385.91	23.226	9383.28	0.0031492	1.79735	3.8697	0.00090	1.53797	3.4720
80	0.038663	16253.85	22.902	9058.95	0.0031712	1.77795	3.6563	0.00089	1.53408	3.3126
82	0.038417	16120.69	22.579	8744.10	0.0031940	1.75829	3.4574	0.00089	1.53020	3.1640
84	0.038172	15986.36	22.257	8438.52	0.0032174	1.73839	3.2720	0.00089	1.52633	3.0254
86	0.037926	15850.79	21.936	8141.98	0.0032417	1.71829	3.0992	0.00088	1.52245	2.8963
88	0.037680	15713.88	21.618	7854.25	0.0032668	1.69800	2.9381	0.00088	1.51858	2.7758
90	0.037434	15575.54	21.303	7575.11	0.0032927	1.67755	2.7879	0.00087	1.51471	2.6635
92	0.037187	15435.65	20.991	7304.35	0.0033196	1.65697	2.6477	0.00087	1.51084	2.5588
94	0.036940	15294.15	20.684	7041.75	0.0033475	1.63628	2.5170	0.00087	1.50697	2.4612
96	0.036692	15150.88	20.381	6787.11	0.0033765	1.61549	2.3951	0.00086	1.50310	2.3702
98	0.036444	15005.75	20.084	6540.22	0.0034066	1.59464	2.2813	0.00086	1.49922	2.2854
100	0.036196	14858.63	19.793	6300.87	0.0034379	1.57373	2.1750	0.00085	1.49535	2.2064
102	0.035947	14709.35	19.510	6068.88	0.0034705	1.55278	2.0758	0.00085	1.49147	2.1327
104	0.035697	14557.81	19.233	5844.05	0.0035045	1.53182	1.9832	0.00084	1.48759	2.0642
106	0.035446	14403.85	18.966	5626.18	0.0035399	1.51085	1.8966	0.00084	1.48371	2.0003
108	0.035195	14247.31	18.707	5415.10	0.0035769	1.48988	1.8158	0.00083	1.47982	1.9409
110	0.034943	14088.02	18.458	5210.61	0.0036155	1.46894	1.7401	0.00083	1.47592	1.8857
112	0.034689	13925.83	18.220	5012.55	0.0036559	1.44804	1.6695	0.00082	1.47202	1.8343
114	0.034435	13760.52	17.993	4820.74	0.0036981	1.42718	1.6033	0.00081	1.46810	1.7866
116	0.034180	13591.94	17.779	4635.01	0.0037423	1.40637	1.5415	0.00081	1.46418	1.7423
118	0.033924	13419.93	17.579	4455.20	0.0037886	1.38563	1.4835	0.00080	1.46025	1.7012
120	0.033666	13244.25	17.393	4281.15	0.0038371	1.36497	1.4293	0.00080	1.45630	1.6630
122	0.033407	13064.87	17.223	4112.71	0.0038879	1.34438	1.3785	0.00079	1.45234	1.6277
124	0.033146	12881.67	17.069	3949.72	0.0039412	1.32389	1.3309	0.00079	1.44836	1.5950
126	0.032884	12694.87	16.933	3792.04	0.0039972	1.30350	1.2863	0.00078	1.44437	1.5648
128	0.032621	12504.95	15.813	3639.54	0.0040559	1.28321	1.2444	0.00078	1.44036	1.5371
130	0.032356	12551.28	15.136	3507.36	0.0040855	1.26313	1.2053	0.00076	1.43635	1.5291
132	0.032092	12412.12	15.865	3363.36	0.0041419	1.24330	1.1688	0.00075	1.43234	1.5103
134	0.031821	12325.53	15.895	3257.66	0.0042351	1.22323	1.1339	0.00074	1.42824	1.5121
136	0.031553	12154.15	15.449	3103.84	0.0042691	1.20376	1.1018	0.00074	1.42421	1.4842
138	0.031284	11993.20	15.167	2964.82	0.0043350	1.18442	1.0716	0.00073	1.42016	1.4700
140	0.031012	11833.66	14.946	2832.65	0.0044156	1.16518	1.0431	0.00072	1.41606	1.4618
142	0.030736	11700.79	14.794	2718.54	0.0044963	1.14598	1.0161	0.00071	1.41192	1.4578
144	0.030467	11528.05	14.169	2586.83	0.0044685	1.12760	0.9914	0.00072	1.40789	1.4154
146	0.030188	11340.85	14.236	2460.72	0.0046565	1.10890	0.9676	0.00070	1.40373	1.4401
148	0.029906	11222.41	14.078	2365.63	0.0047239	1.09024	0.9449	0.00069	1.39952	1.4359
150	0.029624	11080.39	13.819	2264.45	0.0047762	1.07200	0.9238	0.00068	1.39532	1.4252
152	0.029342	10937.19	13.534	2166.96	0.0048185	1.05413	0.9040	0.00068	1.39114	1.4124
154	0.029056	10796.13	13.507	2073.13	0.0049522	1.03629	0.8861	0.00067	1.38688	1.4287
156	0.028770	10605.18	13.185	1964.91	0.0050256	1.01891	0.8721	0.00066	1.38266	1.4257
158	0.028482	10526.84	12.941	1900.86	0.0050257	1.00177	0.8582	0.00066	1.37841	1.4164
160	0.028200	10445.59	12.277	1795.53	0.0050950	0.98532	0.8448	0.00066	1.37424	1.4261
165	0.027469	10109.06	12.084	1611.45	0.0053576	0.94440	0.8112	0.00063	1.36352	1.4539
170	0.026733	9836.03	11.573	1447.13	0.0055324	0.90559	0.7788	0.00062	1.35277	1.4626
175	0.025992	9573.70	11.071	1297.20	0.0057243	0.86889	0.7477	0.00061	1.34200	1.4737
180	0.025250	9294.99	10.568	1158.29	0.0059218	0.83449	0.7180	0.00060	1.33127	1.4799
185	0.024504	9056.22	10.149	1043.12	0.0060926	0.80214	0.6895	0.00059	1.32055	1.4821
190	0.023758	8816.03	9.779	939.04	0.0062743	0.77197	0.6624	0.00059	1.30989	1.4832
195	0.023016	8595.12	9.442	849.67	0.0064237	0.74449	0.6367	0.00059	1.29934	1.4757
200	0.022281	8382.55	9.154	770.02	0.0065784	0.72114	0.6126	0.00059	1.28894	1.4640
210	0.020847	8077.49	8.636	650.04	0.0067325	0.67612	0.5691	0.00060	1.26883	1.4306
220	0.019493	7928.29	8.124	567.75	0.0066893	0.63844	0.5323	0.00062	1.25004	1.3819
230	0.018234	7831.16	7.732	502.49	0.0066437	0.60786	0.5016	0.00064	1.23273	1.3417
240	0.017082	7869.26	7.376	461.43	0.0064045	0.58230	0.4764	0.00068	1.21703	1.2886
250	0.016049	7982.78	7.071	433.78	0.0060760	0.56138	0.4562	0.00072	1.20307	1.2318
260	0.015123	8094.67	6.833	409.03	0.0058057	0.54473	0.4400	0.00077	1.19066	1.1864
270	0.014294	8259.84	6.634	392.20	0.0054944	0.53128	0.4271	0.00082	1.17982	1.1402
280	0.013551	8467.01	6.491	380.71	0.0051923	0.52110	0.4168	0.00087	1.16977	1.0989
290	0.012884	8717.43	6.370	373.73	0.0048850	0.51304	0.4086	0.00094	1.16099	1.0600
300	0.012286	8968.83	6.273	367.74	0.0046133	0.50675	0.4022	0.00100	1.15315	1.0263
310	0.011749	9220.80	6.159	362.42	0.0043480	0.50199	0.3973	0.00107	1.14615	0.9917
320	0.011262	9480.70	6.099	358.70	0.0041242	0.49839	0.3935	0.00113	1.13962	0.9648
330	0.010819	9744.52	6.051	355.88	0.0039170	0.49579	0.3907	0.00120	1.13407	0.9400
340	0.010413	10007.44	6.014	353.56	0.0037283	0.49404	0.3887	0.00127	1.12884	0.9173

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

320 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p J/G MOLE -K	VELOCITY OF SOUND M/SEC
* 57.986	24.14	322587	39.19	-6131.2	-5348.4	68.05	35.89	52.20	1219
58	24.14	322525	39.19	-6130.5	-5347.6	68.06	35.89	52.20	1219
60	24.29	313926	38.13	-6030.8	-5243.3	69.83	35.52	52.13	1208
62	24.43	305517	37.09	-5931.3	-5139.1	71.54	35.17	52.06	1197
64	24.58	297294	36.08	-5831.9	-5035.1	73.19	34.83	51.99	1185
66	24.72	289255	35.10	-5732.8	-4931.1	74.79	34.51	51.92	1174
68	24.87	281396	34.14	-5633.9	-4827.4	76.34	34.19	51.85	1162
70	25.02	273716	33.20	-5535.1	-4723.7	77.84	33.89	51.78	1151
72	25.18	266210	32.29	-5436.6	-4620.2	79.30	33.60	51.71	1139
74	25.33	258876	31.40	-5338.2	-4516.9	80.71	33.32	51.65	1127
76	25.49	251712	30.54	-5240.1	-4413.6	82.09	33.05	51.58	1115
78	25.65	244713	29.78	-5142.1	-4310.5	83.43	32.78	51.52	1103
80	25.81	237879	28.88	-5044.3	-4207.5	84.73	32.53	51.46	1092
82	25.97	231204	28.08	-4946.7	-4104.6	86.00	32.29	51.40	1080
84	26.14	224688	27.30	-4849.3	-4001.9	87.24	32.05	51.34	1068
86	26.30	218326	26.55	-4752.1	-3899.2	88.45	31.82	51.28	1056
88	26.47	212116	25.81	-4655.1	-3796.7	89.62	31.59	51.23	1044
90	26.64	206056	25.10	-4558.2	-3694.3	90.78	31.38	51.17	1032
92	26.82	200142	24.41	-4461.6	-3592.0	91.90	31.16	51.12	1020
94	27.00	194371	23.74	-4365.1	-3489.8	93.00	30.95	51.07	1008
96	27.17	188742	23.08	-4268.8	-3387.7	94.07	30.75	51.02	996
98	27.36	183250	22.45	-4172.7	-3285.7	95.13	30.54	50.98	984
100	27.54	177894	21.83	-4076.7	-3183.8	96.15	30.34	50.93	972
102	27.73	172670	21.23	-3981.0	-3081.9	97.16	30.14	50.89	961
104	27.92	167576	20.66	-3885.4	-2980.2	98.15	29.94	50.85	949
106	28.11	162610	20.09	-3790.1	-2878.5	99.12	29.73	50.81	938
108	28.31	157768	19.55	-3694.9	-2777.0	100.07	29.52	50.77	927
110	28.51	153048	19.02	-3599.9	-2675.4	101.00	29.31	50.73	916
112	28.71	148448	18.51	-3505.0	-2574.0	101.91	29.10	50.70	905
114	28.92	143966	18.02	-3410.4	-2472.7	102.81	28.87	50.66	894
116	29.13	139598	17.54	-3316.0	-2371.4	103.69	28.64	50.62	884
118	29.35	135342	17.07	-3221.7	-2270.1	104.56	28.40	50.58	874
120	29.57	131196	16.63	-3127.7	-2169.0	105.41	28.15	50.54	864
122	29.79	127159	16.19	-3033.8	-2067.9	106.24	27.88	50.50	854
124	30.02	123226	15.77	-2940.2	-1966.8	107.07	27.60	50.46	845
126	30.25	119398	15.37	-2846.7	-1865.8	107.87	27.30	50.41	835
128	30.49	115671	14.97	-2753.5	-1764.9	108.67	26.99	50.36	827
130	30.73	112045	14.52	-2659.3	-1662.8	109.46	27.52	50.82	812
132	30.98	109184	14.16	-2565.0	-1560.5	110.24	27.44	51.04	802
134	31.24	107016	14.16	-2469.5	-1456.6	111.02	27.35	52.17	804
136	31.49	102869	13.47	-2375.4	-1354.2	111.78	27.26	51.37	783
138	31.76	99209	13.08	-2281.1	-1251.4	112.53	27.17	51.51	772
140	32.02	95735	12.74	-2186.6	-1148.3	113.27	27.07	51.76	761
142	32.30	92878	12.51	-2091.7	-1044.3	114.01	26.97	52.27	755
144	32.58	89235	11.74	-1998.3	-942.0	114.72	26.87	50.81	731
146	32.86	85692	11.65	-1903.9	-838.3	115.44	26.76	52.05	727
148	33.17	83374	11.47	-1808.8	-733.4	116.15	26.64	52.68	723
150	33.47	80711	11.08	-1714.3	-629.1	116.85	26.52	52.41	711
152	33.78	78123	10.70	-1620.2	-525.0	117.54	26.40	52.16	699
154	34.10	75619	10.54	-1525.7	-420.2	118.23	26.27	52.91	694
156	34.42	71987	10.01	-1432.4	-316.5	118.90	26.14	52.21	675
158	34.76	71136	9.91	-1337.9	-211.0	119.57	26.01	52.73	676
160	35.08	67601	9.27	-1245.6	-108.1	120.22	26.51	51.86	647
165	35.97	62645	8.90	-1008.3	158.1	121.85	26.09	53.43	637
170	36.92	58263	8.29	-771.7	425.2	123.45	25.94	53.62	618
175	37.91	54009	7.71	-535.5	693.7	125.01	25.88	53.96	597
180	38.96	49786	7.13	-301.0	962.2	126.52	25.78	54.01	575
185	40.08	46598	6.65	-66.5	1232.9	128.00	25.64	54.20	558
190	41.25	43462	6.18	165.8	1503.4	129.45	25.45	54.27	542
195	42.50	40757	5.75	396.0	1773.9	130.85	25.21	54.18	527
200	43.80	38122	5.34	622.8	2043.0	132.21	24.95	54.00	511
210	46.60	34376	4.65	1066.4	2577.5	134.82	24.37	53.40	488
220	49.64	32451	4.07	1497.4	3107.0	137.28	24.01	52.10	472
230	52.83	30193	3.58	1910.0	3623.0	139.58	23.71	51.29	455
240	56.20	29203	3.18	2307.0	4129.2	141.73	23.46	50.06	444
250	59.68	29517	2.86	2688.7	4623.7	143.75	23.26	48.29	440
260	63.15	29175	2.57	3050.4	5097.9	145.61	23.04	46.79	433
270	66.67	29295	2.33	3396.5	5558.1	147.35	22.80	45.37	430
280	70.21	29747	2.14	3728.3	6004.8	148.97	22.55	44.10	429
290	73.78	30701	1.99	4047.9	6440.0	150.50	22.30	42.91	433
300	77.29	31425	1.84	4355.4	6861.5	151.93	22.07	41.78	434
310	80.75	32205	1.70	4651.5	7269.7	153.27	21.84	40.33	434
320	84.19	33129	1.60	4938.0	7667.8	154.53	21.60	39.40	437
330	87.60	34128	1.51	5215.8	8056.1	155.73	21.36	38.49	441
340	90.98	35161	1.43	5485.3	8435.2	156.86	21.12	37.64	445

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

320 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	$V(\partial H/\partial V)_p$ J/GMOLE	$V(\partial P/\partial U)_v$ CC-ATM/J	$-V(\partial P/\partial V)_T$ ATM	$(\partial V/\partial T)_P/V$ 1/KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S X 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 57.986	0.041419	17795.35	25.364	13361.22	0.0029334	1.97348	7.2141	0.00091	1.57813	5.9633
58	0.041417	17794.47	26.362	13358.06	0.0029335	1.97338	7.2108	0.00091	1.57810	5.9630
60	0.041174	17672.86	26.066	12925.66	0.0029496	1.95887	6.7699	0.00091	1.57418	5.6301
62	0.040931	17550.83	25.764	12505.22	0.0029661	1.94373	6.3595	0.00091	1.57028	5.3227
64	0.040689	17428.33	25.458	12096.47	0.0029829	1.92798	5.9775	0.00091	1.56638	5.0370
66	0.040446	17305.31	25.148	11699.17	0.0030000	1.91167	5.6218	0.00091	1.56249	4.7713
68	0.040203	17181.71	24.834	11313.04	0.0030176	1.89486	5.2906	0.00091	1.55860	4.5240
70	0.039961	17057.47	24.517	10937.84	0.0030356	1.87757	4.9821	0.00091	1.55472	4.2938
72	0.039718	16932.56	24.198	10573.33	0.0030541	1.85985	4.6948	0.00091	1.55085	4.0795
74	0.039475	16806.86	23.877	10219.24	0.0030730	1.84174	4.4271	0.00090	1.54699	3.8798
76	0.039233	16680.38	23.555	9875.35	0.0030924	1.82326	4.1778	0.00090	1.54313	3.6938
78	0.038990	16552.98	23.232	9541.40	0.0031124	1.80446	3.9454	0.00090	1.53927	3.5203
80	0.038747	16424.63	22.909	9217.17	0.0031329	1.78536	3.7288	0.00090	1.53543	3.3586
82	0.038505	16295.25	22.587	8902.41	0.0031541	1.76600	3.5270	0.00089	1.53158	3.2079
84	0.038262	16164.74	22.266	8596.91	0.0031759	1.74640	3.3388	0.00089	1.52774	3.0673
86	0.038018	16033.04	21.947	8300.42	0.0031985	1.72659	3.1633	0.00089	1.52391	2.9361
88	0.037775	15900.03	21.630	8012.73	0.0032217	1.70661	2.9996	0.00088	1.52007	2.8137
90	0.037532	15765.63	21.316	7733.61	0.0032458	1.68647	2.8469	0.00088	1.51625	2.6996
92	0.037288	15629.70	21.007	7462.86	0.0032707	1.66619	2.7045	0.00087	1.51242	2.5931
94	0.037044	15492.18	20.701	7200.25	0.0032965	1.64581	2.5715	0.00087	1.50859	2.4937
96	0.036799	15352.90	20.401	6945.57	0.0033233	1.62533	2.4474	0.00087	1.50477	2.4010
98	0.036555	15211.75	20.107	6698.63	0.0033511	1.60478	2.3316	0.00086	1.50094	2.3146
100	0.036309	15068.59	19.819	6459.20	0.0033800	1.58418	2.2234	0.00086	1.49712	2.2339
102	0.036064	14923.26	19.538	6227.11	0.0034101	1.56354	2.1223	0.00085	1.49329	2.1587
104	0.035817	14775.63	19.265	6002.15	0.0034414	1.54288	2.0279	0.00085	1.48947	2.0886
106	0.035571	14625.52	19.000	5784.13	0.0034740	1.52222	1.9396	0.00084	1.48564	2.0232
108	0.035323	14472.77	18.745	5572.86	0.0035080	1.50157	1.8571	0.00084	1.48180	1.9623
110	0.035075	14317.17	18.501	5368.16	0.0035435	1.48094	1.7800	0.00083	1.47797	1.9056
112	0.034826	14158.57	18.267	5169.86	0.0035806	1.46034	1.7078	0.00083	1.47412	1.8528
114	0.034576	13996.72	18.046	4977.78	0.0036194	1.43979	1.6403	0.00082	1.47027	1.8036
116	0.034325	13831.45	17.837	4791.74	0.0036599	1.41930	1.5770	0.00082	1.46641	1.7578
118	0.034074	13662.58	17.642	4611.59	0.0037024	1.39887	1.5178	0.00081	1.46255	1.7152
120	0.033821	13489.84	17.463	4437.15	0.0037468	1.37851	1.4624	0.00081	1.45867	1.6756
122	0.033567	13313.17	17.300	4268.29	0.0037934	1.35824	1.4104	0.00080	1.45478	1.6388
124	0.033311	13132.43	17.154	4104.84	0.0038422	1.33806	1.3616	0.00080	1.45088	1.6046
126	0.033055	12947.80	17.025	3946.66	0.0038934	1.31798	1.3159	0.00079	1.44697	1.5730
128	0.032797	12759.75	16.915	3793.60	0.0039470	1.29800	1.2730	0.00079	1.44304	1.5437
130	0.032537	12826.27	16.216	3665.45	0.0039619	1.27815	1.2328	0.00077	1.43910	1.5317
132	0.032279	12692.18	15.989	3521.74	0.0040215	1.25863	1.1954	0.00076	1.43518	1.5150
134	0.032012	12623.50	16.169	3425.75	0.0041326	1.23868	1.1593	0.00074	1.43113	1.5258
136	0.031752	12457.22	15.958	3266.34	0.0041233	1.21962	1.1266	0.00075	1.42721	1.4828
138	0.031490	12297.57	15.293	3124.12	0.0041883	1.20064	1.0957	0.00074	1.42326	1.4689
140	0.031226	12140.30	15.074	2989.39	0.0042631	1.18175	1.0665	0.00073	1.41928	1.4597
142	0.030957	12013.29	14.983	2875.19	0.0043510	1.16280	1.0387	0.00072	1.41523	1.4592
144	0.030696	11849.03	14.248	2739.21	0.0042877	1.14484	1.0136	0.00073	1.41133	1.4057
146	0.030428	11652.99	14.305	2687.42	0.0044670	1.12656	0.9893	0.00071	1.40731	1.4285
148	0.030152	11543.67	14.282	2513.90	0.0045639	1.10810	0.9659	0.00070	1.40319	1.4351
150	0.029879	11408.67	13.979	2411.53	0.0045937	1.09012	0.9441	0.00070	1.39911	1.4185
152	0.029606	11272.58	13.692	2312.88	0.0046268	1.07254	0.9238	0.00069	1.39505	1.4039
154	0.029328	11135.32	13.676	2217.74	0.0047511	1.05496	0.9044	0.00068	1.39092	1.4173
156	0.029055	10907.55	13.182	2091.59	0.0047868	1.03809	0.8876	0.00068	1.38688	1.3951
158	0.028773	10865.80	13.249	2046.78	0.0048440	1.02090	0.8737	0.00067	1.38270	1.4103
160	0.028504	10782.72	12.264	1926.92	0.0046093	1.00501	0.8608	0.00068	1.37873	1.3881
165	0.027799	10456.68	12.272	1741.48	0.0051098	0.96460	0.8278	0.00065	1.36835	1.4330
170	0.027089	10210.81	11.794	1578.31	0.0052517	0.92621	0.7960	0.00064	1.35796	1.4402
175	0.026377	9965.32	11.308	1424.59	0.0054150	0.88995	0.7655	0.00063	1.34759	1.4505
180	0.025668	9686.95	10.767	1277.93	0.0055759	0.85606	0.7365	0.00062	1.33731	1.4522
185	0.024953	9478.49	10.392	1162.75	0.0057180	0.82394	0.7085	0.00061	1.32699	1.4564
190	0.024240	9246.38	10.024	1053.54	0.0058688	0.79402	0.6819	0.00060	1.31678	1.4564
195	0.023531	9033.67	9.695	959.07	0.0059976	0.76617	0.6567	0.00060	1.30666	1.4513
200	0.022832	8805.28	9.372	870.38	0.0061324	0.74165	0.6331	0.00060	1.29673	1.4404
210	0.021458	8475.78	8.888	737.63	0.0063008	0.69654	0.5899	0.00061	1.27737	1.4132
220	0.020144	8360.35	8.423	653.69	0.0062315	0.65806	0.5526	0.00063	1.25905	1.3673
230	0.018927	8192.87	7.972	571.48	0.0062608	0.62717	0.5216	0.00065	1.24224	1.3332
240	0.017794	8179.51	7.618	519.62	0.0061202	0.60109	0.4955	0.00067	1.22671	1.2897
250	0.016757	8346.59	7.341	494.61	0.0057656	0.57909	0.4740	0.00072	1.21263	1.2353
260	0.015836	8417.06	7.039	462.00	0.0055589	0.56285	0.4570	0.00076	1.20021	1.1888
270	0.015080	8549.06	6.819	439.43	0.0053066	0.54852	0.4430	0.00081	1.18901	1.1451
280	0.014243	8726.30	6.668	423.67	0.0050536	0.53751	0.4317	0.00086	1.17893	1.1069
290	0.013555	8977.45	6.588	416.14	0.0047797	0.52856	0.4225	0.00091	1.16982	1.0720
300	0.012938	9199.20	6.454	406.57	0.0045334	0.52155	0.4153	0.00097	1.16170	1.0377
310	0.012384	9433.28	6.304	398.83	0.0042749	0.51614	0.4096	0.00103	1.15444	1.0002
320	0.011878	9679.64	6.242	393.50	0.0040703	0.51193	0.4052	0.00109	1.14783	0.9745
330	0.011416	9935.18	6.189	389.58	0.0038744	0.50875	0.4017	0.00116	1.14181	0.9499
340	0.010992	10193.19	6.146	386.48	0.0036922	0.50647	0.3991	0.00122	1.13632	0.9268

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

340 ATM ISOBAR

TEMPERATURE KELVIN	VOLUME CC/GMOLE	ISOTHERM DERIVATIVE CC ATM/GMOLE	ISOCHORE DERIVATIVE ATM/K	INTERNAL ENERGY J/GMOLE	ENTHALPY J/GMOLE	ENTROPY J/GMOLE-K	C_v J/G MOLE -K	C_p J/G MOLE -K	VELOCITY OF SOUND M/SEC
* 58.207	24.12	324906	39.20	-6127.3	-5296.2	68.10	35.91	52.15	1222
60	24.25	317227	38.26	-6038.2	-5202.8	69.68	35.59	52.08	1212
62	24.39	308842	37.22	-5939.0	-5098.7	71.39	35.24	52.01	1201
64	24.54	300643	36.22	-5840.0	-4994.7	73.04	34.90	51.93	1190
66	24.68	292628	35.23	-5741.3	-4890.9	74.64	34.58	51.86	1179
68	24.83	284793	34.27	-5642.7	-4787.3	76.18	34.26	51.79	1167
70	24.98	277136	33.34	-5544.3	-4683.8	77.68	33.96	51.72	1156
72	25.13	269655	32.43	-5446.2	-4580.4	79.14	33.68	51.65	1144
74	25.28	262345	31.54	-5348.2	-4477.2	80.55	33.40	51.58	1133
76	25.44	255205	30.68	-5250.4	-4374.1	81.93	33.13	51.51	1121
78	25.59	248230	29.84	-5152.8	-4271.1	83.27	32.87	51.44	1109
80	25.75	241419	29.02	-5055.5	-4168.3	84.57	32.62	51.37	1097
82	25.91	234769	28.23	-4958.3	-4065.6	85.84	32.37	51.31	1085
84	26.08	228276	27.45	-4861.3	-3963.0	87.07	32.14	51.25	1074
86	26.24	221938	26.70	-4764.5	-3860.6	88.28	31.91	51.18	1062
88	26.41	215751	25.97	-4668.0	-3758.2	89.45	31.69	51.12	1051
90	26.58	209714	25.26	-4571.6	-3656.0	90.60	31.47	51.06	1038
92	26.75	203823	24.57	-4475.4	-3553.9	91.72	31.26	51.01	1026
94	26.92	198075	23.90	-4379.4	-3452.8	92.82	31.05	50.95	1014
96	27.10	192468	23.24	-4283.6	-3350.1	93.89	30.85	50.90	1003
98	27.28	186999	22.61	-4188.0	-3248.4	94.94	30.64	50.84	991
100	27.46	181665	22.00	-4092.6	-3146.7	95.97	30.44	50.79	980
102	27.64	176463	21.40	-3997.4	-3045.2	96.97	30.24	50.74	968
104	27.83	171390	20.83	-3902.4	-2943.7	97.96	30.04	50.69	957
106	28.02	166445	20.27	-3807.6	-2842.4	98.92	29.84	50.64	946
108	28.21	161623	19.72	-3713.0	-2741.2	99.87	29.63	50.59	935
110	28.41	156924	19.20	-3618.6	-2640.0	100.80	29.42	50.54	924
112	28.60	152343	18.69	-3524.5	-2539.0	101.71	29.20	50.50	913
114	28.81	147880	18.20	-3430.5	-2438.1	102.60	28.98	50.45	903
116	29.01	143530	17.72	-3336.7	-2337.2	103.48	28.74	50.40	893
118	29.22	139292	17.26	-3243.2	-2236.4	104.34	28.50	50.34	883
120	29.44	135163	16.82	-3149.9	-2135.8	105.19	28.24	50.29	873
122	29.65	131142	16.39	-3056.8	-2035.2	106.02	27.97	50.23	864
124	29.88	127225	15.97	-2963.9	-1934.7	106.84	27.69	50.17	854
126	30.10	123411	15.57	-2871.3	-1834.3	107.64	27.39	50.10	846
128	30.33	119698	15.18	-2779.0	-1734.0	108.43	27.07	50.04	837
130	30.57	116080	14.70	-2686.8	-1632.6	109.21	27.60	50.37	822
132	30.81	113337	14.39	-2592.3	-1531.0	109.99	27.52	50.71	813
134	31.06	111642	14.55	-2497.4	-1427.3	110.77	27.43	52.26	821
136	31.31	107323	13.67	-2404.3	-1325.8	111.52	27.35	50.85	795
138	31.56	103593	13.30	-2311.0	-1223.8	112.26	27.25	51.05	784
140	31.82	100063	12.97	-2217.6	-1121.5	113.00	27.16	51.29	774
142	32.09	97249	12.79	-2123.6	-1018.2	113.73	27.06	51.99	769
144	32.35	93498	11.91	-2031.5	-917.1	114.44	26.96	50.12	742
146	32.62	89795	11.81	-1938.4	-814.6	115.15	26.85	51.30	737
148	32.91	87572	11.77	-1844.1	-710.4	115.86	26.74	52.44	737
150	33.20	84908	11.33	-1750.7	-606.9	116.55	26.62	51.95	724
152	33.50	82320	10.95	-1657.7	-503.8	117.23	26.50	51.67	713
154	33.80	79811	10.80	-1564.4	-399.9	117.91	26.38	52.41	709
156	34.10	75381	10.04	-1473.0	-298.3	118.57	26.25	50.85	680
158	34.43	75520	10.35	-1378.7	-192.6	119.24	26.11	53.04	697
160	34.73	71363	9.30	-1288.7	-92.2	119.87	26.60	50.32	654
165	35.58	66465	9.15	-1054.7	170.9	121.49	26.17	52.80	652
170	36.47	62307	8.56	-821.5	434.9	123.07	26.02	52.97	634
175	37.41	58019	7.99	-588.9	699.7	124.60	25.95	53.24	614
180	38.38	53568	7.36	-358.3	963.9	126.09	25.87	53.07	590
185	39.43	50600	6.94	-127.2	1231.0	127.56	25.72	53.45	577
190	40.52	47402	6.46	101.3	1497.2	128.98	25.54	53.39	560
195	41.67	44637	6.04	327.8	1763.3	130.36	25.31	53.34	546
200	42.86	41695	5.59	550.4	2026.9	131.69	25.05	52.91	528
210	45.43	37566	4.90	987.1	2552.1	134.26	24.49	52.56	505
220	48.24	36090	4.37	1413.0	3074.9	136.69	24.02	51.41	495
230	51.12	32962	3.80	1819.7	3580.8	138.94	23.75	50.44	471
240	54.19	31249	3.38	2213.0	4079.7	141.06	23.49	49.62	457
250	57.45	32258	3.11	2596.2	4575.5	143.09	23.28	48.35	461
260	60.62	31531	2.76	2957.5	5046.0	144.93	23.09	46.46	448
270	63.86	31343	2.51	3304.5	5504.4	146.66	22.86	45.23	443
280	67.13	31540	2.30	3638.0	5950.8	148.28	22.62	44.13	441
290	70.49	32636	2.17	3960.6	6388.9	149.82	22.37	43.36	440
300	73.75	33024	1.99	4269.4	6810.2	151.25	22.13	41.89	445
310	76.97	33644	1.83	4567.9	7219.6	152.59	21.90	40.45	444
320	80.19	34466	1.72	4857.2	7619.9	153.86	21.67	39.62	447
330	83.40	35405	1.62	5137.8	8010.9	155.07	21.43	38.76	450
340	86.57	36406	1.54	5410.3	8392.8	156.21	21.19	37.93	454

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

340 ATM ISOBAR

TEMPERATURE KELVIN	DENSITY GMOLE/CC	$V(\partial H/\partial V)_p$ J/GMOLE	$V(\partial P/\partial U)_v$ CC-ATM/J	$-V(\partial P/\partial V)_T$ ATM	$(\partial V/\partial T)_p/V$ 1/ KELVIN	THERMAL CONDUCTIVITY MW/CM-K	VISCOSITY G/CM-S X 10^3	THERMAL DIFFUSIVITY SQ CM/SEC	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 58.207	0.041454	17914.87	25.335	13468.62	0.0029107	1.97598	7.2806	0.00091	1.57869	6.3044
60	0.041238	17838.53	25.069	13081.69	0.0029244	1.96321	6.8823	0.00091	1.57520	5.7055
62	0.040996	17689.59	25.768	12661.43	0.0029399	1.94835	6.4671	0.00091	1.57132	5.3946
64	0.040756	17570.24	25.461	12252.85	0.0029557	1.93290	6.0805	0.00091	1.56745	5.1054
66	0.040515	17450.44	25.151	11855.71	0.0029718	1.91688	5.7204	0.00091	1.56359	4.8364
68	0.040274	17330.13	24.837	11469.73	0.0029883	1.90036	5.3850	0.00091	1.55973	4.5861
70	0.040033	17209.24	24.521	11094.67	0.0030052	1.88337	5.0726	0.00091	1.55588	4.3530
72	0.039793	17087.75	24.202	10730.28	0.0030224	1.86594	4.7815	0.00091	1.55204	4.1359
74	0.039552	16965.53	23.881	10376.31	0.0030401	1.84812	4.5102	0.00091	1.54821	3.9336
76	0.039312	16842.58	23.559	10032.52	0.0030582	1.82993	4.2574	0.00090	1.54438	3.7451
78	0.039071	16718.77	23.237	9698.66	0.0030768	1.81142	4.0218	0.00090	1.54056	3.5692
80	0.038831	16594.07	22.915	9374.51	0.0030960	1.79262	3.8021	0.00090	1.53675	3.4053
82	0.038590	16468.38	22.594	9059.81	0.0031157	1.77355	3.5973	0.00090	1.53294	3.2523
84	0.038350	16341.59	22.274	8754.35	0.0031360	1.75425	3.4062	0.00089	1.52914	3.1096
86	0.038109	16213.67	21.956	8457.89	0.0031569	1.73474	3.2280	0.00089	1.52534	2.9765
88	0.037869	16084.46	21.640	8170.21	0.0031784	1.71506	3.0617	0.00089	1.52155	2.8522
90	0.037628	15953.88	21.328	7891.09	0.0032007	1.69521	2.9066	0.00088	1.51776	2.7362
92	0.037387	15821.80	21.020	7620.31	0.0032238	1.67523	2.7618	0.00088	1.51397	2.6279
94	0.037146	15688.13	20.717	7357.65	0.0032477	1.65514	2.6266	0.00087	1.51019	2.5268
96	0.036904	15552.71	20.419	7102.91	0.0032725	1.63496	2.5003	0.00087	1.50641	2.4324
98	0.036663	15415.40	20.126	6855.87	0.0032981	1.61471	2.3824	0.00087	1.50263	2.3443
100	0.036421	15276.07	19.841	6616.34	0.0033248	1.59441	2.2722	0.00086	1.49885	2.2620
102	0.036178	15134.52	19.563	6384.11	0.0033526	1.57407	2.1693	0.00086	1.49508	2.1853
104	0.035935	14990.63	19.293	6158.98	0.0033814	1.55371	2.0731	0.00085	1.49130	2.1136
106	0.035692	14844.20	19.032	5940.77	0.0034115	1.53335	1.9831	0.00085	1.48752	2.0468
108	0.035448	14695.04	18.781	5729.29	0.0034428	1.51300	1.8989	0.00084	1.48374	1.9844
110	0.035204	14542.94	18.540	5524.35	0.0034755	1.49266	1.8202	0.00084	1.47996	1.9262
112	0.034959	14387.72	18.310	5325.77	0.0035097	1.47237	1.7465	0.00083	1.47617	1.8719
114	0.034713	14229.11	18.093	5133.37	0.0035453	1.45211	1.6776	0.00083	1.47238	1.8213
116	0.034467	14066.92	17.890	4946.99	0.0035826	1.43192	1.6130	0.00082	1.46859	1.7741
118	0.034219	13900.95	17.700	4766.46	0.0036216	1.41178	1.5525	0.00082	1.46478	1.7301
120	0.033971	13730.89	17.527	4591.62	0.0036625	1.39172	1.4957	0.00081	1.46097	1.6891
122	0.033722	13556.65	17.370	4422.30	0.0037053	1.37175	1.4426	0.00081	1.45715	1.6508
124	0.033471	13378.08	17.231	4258.36	0.0037501	1.35186	1.3927	0.00081	1.45332	1.6152
126	0.033219	13195.33	17.110	4099.64	0.0037970	1.33207	1.3459	0.00080	1.44948	1.5820
128	0.032966	13008.87	17.008	3946.01	0.0038463	1.31238	1.3019	0.00080	1.44562	1.5512
130	0.032711	12896.05	15.282	3822.01	0.0038465	1.29273	1.2605	0.00078	1.44174	1.5350
132	0.032459	12965.42	15.108	3678.74	0.0039115	1.27350	1.2222	0.00077	1.43790	1.5210
134	0.032195	12913.04	16.470	3594.28	0.0040471	1.25361	1.1848	0.00075	1.43390	1.5435
136	0.031943	12755.42	15.645	3428.18	0.0039862	1.23496	1.1514	0.00076	1.43009	1.4815
138	0.031688	12595.46	15.405	3282.60	0.0040530	1.21632	1.1199	0.00075	1.42624	1.4688
140	0.031430	12439.77	15.190	3144.99	0.0041230	1.19776	1.0900	0.00074	1.42235	1.4586
142	0.031167	12316.77	15.169	3030.96	0.0042207	1.17905	1.0614	0.00073	1.41840	1.4625
144	0.030915	12163.94	14.291	2890.52	0.0041206	1.16150	1.0358	0.00075	1.41461	1.3969
146	0.030656	11958.11	14.347	2752.73	0.0042903	1.14362	1.0111	0.00073	1.41072	1.4174
148	0.030386	11853.80	14.488	2660.99	0.0044237	1.12532	0.9869	0.00071	1.40669	1.4371
150	0.030120	11726.37	14.129	2557.44	0.0044301	1.10760	0.9646	0.00071	1.40271	1.4138
152	0.029855	11596.98	13.840	2457.65	0.0044556	1.09027	0.9437	0.00071	1.39876	1.3977
154	0.029585	11462.97	13.835	2361.24	0.0045721	1.07293	0.9237	0.00069	1.39474	1.4100
156	0.029327	11191.62	13.046	2210.68	0.0045434	1.05670	0.9057	0.00071	1.39090	1.3620
158	0.029045	11239.32	13.647	2193.51	0.0047190	1.03924	0.8885	0.00067	1.38673	1.4170
160	0.028792	11113.63	12.147	2054.69	0.0045280	1.02401	0.8762	0.00071	1.38299	1.3456
165	0.028109	10786.25	12.431	1868.25	0.0048952	0.98404	0.8437	0.00066	1.37291	1.4147
170	0.027421	10569.87	12.003	1708.53	0.0050116	0.94596	0.8123	0.00065	1.36281	1.4216
175	0.026734	10337.32	11.514	1551.18	0.0051500	0.91007	0.7824	0.00064	1.35278	1.4303
180	0.026055	10057.43	10.927	1395.73	0.0052763	0.87669	0.7540	0.00063	1.34292	1.4264
185	0.025364	9885.96	10.635	1283.44	0.0054063	0.84466	0.7264	0.00062	1.33292	1.4364
190	0.024681	9663.75	10.256	1169.93	0.0055251	0.81495	0.7003	0.00062	1.32309	1.4338
195	0.024000	9461.38	9.943	1071.30	0.0056374	0.78720	0.6755	0.00061	1.31334	1.4302
200	0.023333	9214.62	9.556	972.88	0.0057418	0.76175	0.6523	0.00062	1.30384	1.4158
210	0.022014	8868.80	9.092	826.97	0.0059262	0.71615	0.6095	0.00062	1.28518	1.3979
220	0.020729	8810.53	8.769	748.10	0.0058355	0.67675	0.5716	0.00064	1.26718	1.3572
230	0.019561	8556.79	8.182	644.78	0.0058947	0.64551	0.5407	0.00065	1.25098	1.3204
240	0.018455	8461.84	7.801	576.70	0.0058639	0.61921	0.5141	0.00068	1.23575	1.2874
250	0.017405	8729.16	7.675	561.46	0.0055390	0.59650	0.4910	0.00071	1.22142	1.2439
260	0.016495	8758.46	7.245	520.12	0.0053049	0.57934	0.4733	0.00076	1.20909	1.1863
270	0.015660	8856.06	7.002	490.84	0.0051077	0.56514	0.4586	0.00080	1.19785	1.1471
280	0.014896	9001.59	6.835	469.62	0.0049029	0.55342	0.4464	0.00084	1.18762	1.1125
290	0.014187	9268.55	6.824	463.01	0.0046780	0.54354	0.4361	0.00088	1.17819	1.0873
300	0.013559	9441.38	6.621	447.78	0.0044366	0.53594	0.4282	0.00094	1.16988	1.0458
310	0.012992	9654.70	6.436	437.09	0.0041894	0.52996	0.4219	0.00101	1.16241	1.0062
320	0.012470	9884.84	6.376	429.79	0.0040082	0.52517	0.4167	0.00106	1.15556	0.9825
330	0.011991	10130.27	6.322	424.54	0.0038266	0.52145	0.4127	0.00112	1.14930	0.9587
340	0.011551	10382.34	6.276	420.52	0.0036530	0.51866	0.4095	0.00118	1.14357	0.9358

* TWO-PHASE BOUNDARY

Table C-5a

Thermodynamic Properties of Coexisting Gaseous and Liquid Oxygen
(English Units)

C-5a

THERMODYNAMIC PROPERTIES OF COEXISTING GASEOUS AND LIQUID OXYGEN

TEMP	PRESS	VOLUME	ISOTHERM DERIVATIVE	ISOCHORE DERIVATIVE	INTERNAL ENERGY	ENTHALPY	ENTROPY	C_V	C_P	VELOCITY OF SOUND	SURFACE TENSION
DEG. R	PSIA	CU FT/LB	CU FT-PSIA/LB	PSIA/R	BTU/LB	BTU/LB	BTU/LB-R	BTU / LB -R		FT/SEC	LB/IN X 10
97.831	0.022	0.01226	2090.48	317.8	-83.216	-83.216	0.50122	0.266	0.398	3804	1.2933
97.831	0.022	1489.18164	32.80	0.00	15.057	21.132	1.56510	0.155	0.218	461	
98	0.023	0.01226	2087.19	317.4	-83.149	-83.149	0.50191	0.266	0.398	3802	1.2918
98	0.023	1449.59365	32.85	0.00	15.084	21.169	1.56369	0.155	0.218	462	
100	0.032	0.01231	2048.40	312.2	-82.354	-82.353	0.50995	0.264	0.398	3779	1.2743
100	0.032	1060.61898	33.52	0.00	15.394	21.602	1.54742	0.155	0.218	466	
102	0.044	0.01236	2010.04	307.1	-81.558	-81.558	0.51782	0.263	0.398	3756	1.2568
102	0.044	785.65664	34.18	0.00	15.703	22.036	1.53186	0.155	0.218	471	
104	0.059	0.01240	1972.10	302.0	-80.762	-80.762	0.52555	0.261	0.398	3733	1.2394
104	0.059	588.86371	34.85	0.00	16.013	22.469	1.51697	0.155	0.218	475	
106	0.080	0.01245	1934.58	297.0	-79.967	-79.967	0.53313	0.259	0.398	3710	1.2221
106	0.080	446.33940	35.51	0.00	16.322	22.901	1.50271	0.155	0.218	480	
108	0.106	0.01250	1897.47	292.0	-79.171	-79.171	0.54056	0.257	0.398	3686	1.2047
108	0.106	341.94396	36.17	0.00	16.631	23.333	1.48906	0.155	0.218	484	
110	0.139	0.01255	1860.78	287.2	-78.376	-78.375	0.54786	0.256	0.398	3662	1.1875
110	0.139	264.64600	36.82	0.00	16.939	23.764	1.47599	0.155	0.218	489	
112	0.181	0.01260	1824.50	282.3	-77.580	-77.580	0.55503	0.254	0.398	3638	1.1702
112	0.181	206.81780	37.48	0.00	17.247	24.194	1.46347	0.155	0.218	493	
114	0.234	0.01264	1788.62	277.6	-76.785	-76.784	0.56207	0.252	0.398	3614	1.1530
114	0.234	163.12627	38.13	0.00	17.554	24.624	1.45147	0.156	0.218	498	
116	0.299	0.01269	1753.14	272.9	-75.989	-75.988	0.56899	0.251	0.398	3589	1.1359
116	0.299	129.80274	38.77	0.00	17.860	25.052	1.43996	0.156	0.218	502	
118	0.379	0.01274	1718.06	268.2	-75.193	-75.192	0.57579	0.249	0.398	3564	1.1188
118	0.379	104.15669	39.41	0.00	18.166	25.479	1.42893	0.156	0.218	506	
120	0.477	0.01280	1683.37	263.6	-74.397	-74.396	0.58248	0.248	0.398	3539	1.1018
120	0.477	84.24843	40.05	0.00	18.470	25.904	1.41835	0.156	0.218	510	
122	0.594	0.01285	1649.07	259.1	-73.601	-73.599	0.58906	0.246	0.398	3514	1.0848
122	0.594	68.66634	40.67	0.00	18.774	26.328	1.40819	0.156	0.218	514	
124	0.735	0.01290	1615.16	254.7	-72.804	-72.802	0.59553	0.245	0.398	3489	1.0678
124	0.735	56.37380	41.30	0.01	19.076	26.750	1.39843	0.156	0.219	518	
126	0.903	0.01295	1581.63	250.2	-72.008	-72.005	0.60191	0.243	0.398	3463	1.0509
126	0.903	46.68295	41.91	0.01	19.377	27.170	1.38907	0.156	0.219	522	
128	1.102	0.01301	1548.48	245.9	-71.211	-71.208	0.60818	0.242	0.399	3437	1.0341
128	1.102	38.78027	42.52	0.01	19.676	27.587	1.38007	0.156	0.219	526	
130	1.335	0.01306	1515.71	241.6	-70.413	-70.410	0.61436	0.241	0.399	3411	1.0173
130	1.335	32.47392	43.11	0.01	19.974	28.002	1.37141	0.156	0.219	530	
132	1.608	0.01311	1483.30	237.3	-69.616	-69.612	0.62045	0.239	0.399	3385	1.0005
132	1.608	27.35628	43.70	0.01	20.270	28.415	1.36309	0.156	0.220	534	
134	1.925	0.01317	1451.27	233.2	-68.818	-68.813	0.62645	0.238	0.399	3358	0.9838
134	1.925	23.17693	44.27	0.01	20.565	28.825	1.35507	0.156	0.220	538	
136	2.291	0.01323	1419.60	229.0	-68.019	-68.014	0.63236	0.237	0.399	3332	0.9672
136	2.291	19.74310	44.84	0.02	20.857	29.231	1.34736	0.156	0.220	541	
138	2.711	0.01328	1388.29	224.9	-67.221	-67.214	0.63820	0.235	0.400	3305	0.9506
138	2.711	16.90538	45.39	0.02	21.147	29.635	1.33993	0.156	0.221	545	
140	3.192	0.01334	1357.34	220.9	-66.421	-66.413	0.64395	0.234	0.400	3278	0.9340
140	3.192	14.54721	45.93	0.02	21.434	30.034	1.33276	0.156	0.221	548	
142	3.740	0.01340	1326.75	216.9	-65.621	-65.612	0.64962	0.233	0.400	3251	0.9176
142	3.740	12.57709	46.45	0.03	21.720	30.430	1.32585	0.157	0.222	552	
144	4.360	0.01346	1296.51	213.0	-64.821	-64.810	0.65522	0.232	0.401	3223	0.9011
144	4.360	10.92273	46.96	0.03	22.002	30.822	1.31918	0.157	0.222	555	
146	5.061	0.01352	1266.61	209.1	-64.020	-64.007	0.66074	0.230	0.401	3196	0.8847
146	5.061	9.52670	47.45	0.04	22.282	31.209	1.31274	0.157	0.223	559	
148	5.847	0.01358	1237.06	205.3	-63.218	-63.203	0.66620	0.229	0.401	3168	0.8684
148	5.847	8.34312	47.93	0.04	22.558	31.592	1.30652	0.157	0.223	562	
150	6.728	0.01364	1207.86	201.5	-62.415	-62.398	0.67158	0.228	0.402	3140	0.8521
150	6.728	7.33512	48.39	0.05	22.832	31.969	1.30050	0.157	0.224	565	
152	7.709	0.01370	1178.99	197.8	-61.612	-61.592	0.67690	0.227	0.402	3112	0.8359
152	7.709	6.47294	48.82	0.05	23.102	32.342	1.29468	0.158	0.225	568	
154	8.800	0.01377	1150.45	194.1	-60.808	-60.785	0.68216	0.226	0.403	3083	0.8198
154	8.800	5.73241	49.24	0.06	23.368	32.710	1.28905	0.158	0.226	571	

THERMODYNAMIC PROPERTIES OF COEXISTING GASEOUS AND LIQUID OXYGEN

TEMPERATURE	DENSITY	$V(\partial H/\partial V)_P$	$V(\partial P/\partial U)_V$	$-V(\partial P/\partial V)_T$	$(\partial V/\partial T)_P/V$	THERMAL CONDUCTIVITY	VISCOSITY	THERMAL DIFFUSIVITY	DIELECTRIC CONSTANT	PRANDTL NUMBER
DEG. R	LB/CU FT	BTU/LB	PSIA-CU FT/BTU	PSIA	1/DEG. R	BTU/FT-HR-R	LB/FT-SEC x 10^5	SQ FT/HR		
97.831	81.56716	213.44	14.634	170514.62	0.0018640	0.11156	41.621	0.00344	1.56868	5.3437
97.831	0.00067	21.27	2.158	0.02	0.0102276	0.00279	0.263	19.10993	1.00000	0.7392
98	81.54150	213.33	14.627	170192.51	0.0018649	0.11151	41.484	0.00344	1.56848	5.3284
98	0.00069	21.31	2.158	0.02	0.0102101	0.00280	0.264	18.63534	1.00000	0.7391
100	81.23702	212.03	14.541	166405.78	0.0018761	0.11092	39.903	0.00343	1.56603	5.1519
100	0.00094	21.74	2.158	0.03	0.0100078	0.00286	0.269	13.92506	1.00001	0.7387
102	80.93185	210.73	14.453	162675.86	0.0018876	0.11032	38.388	0.00343	1.56358	4.9829
102	0.00127	22.17	2.158	0.04	0.0098139	0.00292	0.275	10.53043	1.00001	0.7384
104	80.62596	209.42	14.365	159002.07	0.0018993	0.10971	36.935	0.00342	1.56113	4.8210
104	0.00170	22.60	2.159	0.06	0.0096280	0.00298	0.280	8.05448	1.00001	0.7381
106	80.31932	208.10	14.275	155383.76	0.0019113	0.10908	35.543	0.00341	1.55867	4.6659
106	0.00224	23.04	2.159	0.08	0.0094498	0.00304	0.286	6.22782	1.00001	0.7378
108	80.01191	206.78	14.183	151820.27	0.0019236	0.10844	34.209	0.00341	1.55621	4.5173
108	0.00292	23.46	2.159	0.11	0.0092789	0.00310	0.292	4.86538	1.00002	0.7376
110	79.70369	205.44	14.091	148310.94	0.0019362	0.10778	32.930	0.00340	1.55374	4.3750
110	0.00378	23.89	2.159	0.14	0.0091150	0.00316	0.297	3.83852	1.00002	0.7375
112	79.39465	204.10	13.998	144855.15	0.0019491	0.10712	31.704	0.00339	1.55128	4.2386
112	0.00484	24.32	2.159	0.18	0.0089579	0.00322	0.303	3.05685	1.00003	0.7373
114	79.08474	202.74	13.903	141452.23	0.0019623	0.10644	30.529	0.00338	1.54880	4.1079
114	0.00613	24.74	2.159	0.23	0.0088074	0.00328	0.308	2.45612	1.00004	0.7373
116	78.77394	201.38	13.807	138101.58	0.0019759	0.10576	29.403	0.00337	1.54633	3.9826
116	0.00770	25.17	2.160	0.30	0.0086632	0.00334	0.314	1.99024	1.00005	0.7373
118	78.46222	200.01	13.711	134802.55	0.0019898	0.10506	28.324	0.00336	1.54384	3.8627
118	0.00960	25.59	2.160	0.38	0.0085251	0.00340	0.320	1.62579	1.00006	0.7374
120	78.14954	198.62	13.613	131554.52	0.0020041	0.10435	27.290	0.00335	1.54136	3.7477
120	0.01187	26.01	2.160	0.46	0.0083930	0.00347	0.325	1.33830	1.00007	0.7376
122	77.83586	197.23	13.514	128356.90	0.0020188	0.10363	26.299	0.00334	1.53886	3.6375
122	0.01456	26.42	2.160	0.59	0.0082667	0.00353	0.331	1.10973	1.00009	0.7378
124	77.52115	195.83	13.415	125209.07	0.0020338	0.10291	25.349	0.00333	1.53637	3.5319
124	0.01774	26.84	2.161	0.73	0.0081462	0.00359	0.337	0.92660	1.00011	0.7382
126	77.20538	194.42	13.314	122110.43	0.0020493	0.10217	24.438	0.00332	1.53386	3.4308
126	0.02146	27.25	2.161	0.90	0.0080311	0.00366	0.343	0.77883	1.00013	0.7386
128	76.88850	192.99	13.213	119060.40	0.0020652	0.10142	23.566	0.00331	1.53135	3.3339
128	0.02579	27.65	2.161	1.10	0.0079215	0.00372	0.349	0.65875	1.00015	0.7391
130	76.57048	191.56	13.111	116058.39	0.0020816	0.10067	22.729	0.00330	1.52884	3.2411
130	0.03079	28.05	2.162	1.33	0.0078172	0.00379	0.355	0.56052	1.00018	0.7397
132	76.25126	190.12	13.008	113103.82	0.0020985	0.09991	21.928	0.00328	1.52631	3.1522
132	0.03655	28.45	2.162	1.60	0.0077182	0.00385	0.361	0.47966	1.00022	0.7405
134	75.93082	188.66	12.904	110196.13	0.0021158	0.09914	21.160	0.00327	1.52378	3.0670
134	0.04315	28.85	2.163	1.91	0.0076243	0.00392	0.367	0.41269	1.00026	0.7414
136	75.60910	187.19	12.799	107334.76	0.0021337	0.09836	20.423	0.00326	1.52125	2.9855
136	0.05065	29.23	2.164	2.27	0.0075355	0.00398	0.373	0.35691	1.00030	0.7424
138	75.28606	185.71	12.694	104519.14	0.0021521	0.09758	19.718	0.00324	1.51870	2.9074
138	0.05915	29.62	2.164	2.68	0.0074517	0.00405	0.379	0.31017	1.00035	0.7435
140	74.96164	184.22	12.588	101748.75	0.0021711	0.09679	19.042	0.00323	1.51615	2.8327
140	0.06874	29.99	2.165	3.16	0.0073729	0.00412	0.385	0.27082	1.00041	0.7448
142	74.63580	182.72	12.482	99023.03	0.0021907	0.09599	18.394	0.00321	1.51359	2.7612
142	0.07951	30.36	2.166	3.69	0.0072989	0.00419	0.391	0.23750	1.00047	0.7462
144	74.30849	181.20	12.375	96341.47	0.0022109	0.09519	17.773	0.00320	1.51102	2.6929
144	0.09155	30.73	2.166	4.30	0.0072298	0.00425	0.398	0.20916	1.00054	0.7478
146	73.97964	179.68	12.267	93703.53	0.0022318	0.09438	17.177	0.00318	1.50844	2.6274
146	0.10497	31.09	2.167	4.98	0.0071655	0.00432	0.404	0.18494	1.00062	0.7496
148	73.64921	178.14	12.159	91106.71	0.0022534	0.09356	16.607	0.00316	1.50585	2.5649
148	0.11986	31.44	2.168	5.74	0.0071058	0.00440	0.411	0.16415	1.00071	0.7515
150	73.31714	176.58	12.050	88556.49	0.0022757	0.09274	16.060	0.00315	1.50325	2.5052
150	0.13633	31.78	2.169	6.60	0.0070510	0.00447	0.417	0.14622	1.00081	0.7536
152	72.98335	175.02	11.941	86046.39	0.0022987	0.09192	15.537	0.00313	1.50064	2.4481
152	0.15449	32.12	2.170	7.54	0.0070007	0.00454	0.424	0.13070	1.00092	0.7560
154	72.64780	173.44	11.831	83577.91	0.0023226	0.09109	15.034	0.00311	1.49802	2.3937
154	0.17445	32.45	2.171	8.59	0.0069552	0.00461	0.431	0.11721	1.00104	0.7585

THERMODYNAMIC PROPERTIES OF COEXISTING GASEOUS AND LIQUID OXYGEN

TEMP DEG. R	PRESS PSIA	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC	SURFACE TENSION $^{\frac{1}{2}}$ LB/IN X 10^4
156	10.009	0.01383	1122.25	190.5	-60.003	-59.977	0.68735	0.225	0.403	3055	0.8037
156	10.009	5.09383	49.64	0.07	23.631	33.071	1.28358	0.158	0.227	574	
158	11.343	0.01389	1094.38	186.9	-59.197	-59.167	0.69249	0.224	0.404	3026	0.7876
158	11.343	4.54105	50.02	0.08	23.890	33.427	1.27829	0.158	0.228	577	
160	12.810	0.01396	1066.84	183.4	-58.389	-58.356	0.69757	0.223	0.405	2997	0.7716
160	12.810	4.06078	50.37	0.08	24.144	33.777	1.27315	0.159	0.229	580	
162	14.421	0.01403	1039.62	179.9	-57.581	-57.544	0.70259	0.222	0.405	2968	0.7557
162	14.421	3.64202	50.71	0.09	24.395	34.121	1.26817	0.159	0.230	583	
162.324	14.696	0.01404	1035.24	179.3	-57.450	-57.412	0.70339	0.221	0.405	2963	0.753
162.324	14.696	3.57933	50.76	0.10	24.435	34.176	1.26737	0.159	0.230	583	
164	16.183	0.01410	1012.72	176.4	-56.772	-56.730	0.70755	0.221	0.406	2939	0.7399
164	16.183	3.27566	51.01	0.11	24.641	34.457	1.26332	0.159	0.231	585	
166	18.107	0.01417	986.14	173.8	-55.961	-55.914	0.71247	0.220	0.407	2909	0.7241
166	18.107	2.95409	51.30	0.12	24.883	34.787	1.25861	0.160	0.232	588	
168	20.200	0.01424	959.87	169.7	-55.149	-55.096	0.71733	0.219	0.408	2880	0.7083
168	20.200	2.67094	51.55	0.13	25.120	35.110	1.25403	0.160	0.233	590	
170	22.473	0.01431	933.92	166.3	-54.336	-54.276	0.72215	0.218	0.409	2850	0.6926
170	22.473	2.42087	51.79	0.14	25.352	35.426	1.24956	0.160	0.235	593	
172	24.935	0.01438	908.27	163.1	-53.521	-53.455	0.72691	0.217	0.409	2820	0.6770
172	24.935	2.19936	51.99	0.16	25.578	35.734	1.24521	0.161	0.236	595	
174	27.597	0.01446	882.94	159.8	-52.704	-52.631	0.73163	0.216	0.410	2790	0.6615
174	27.597	2.00260	52.17	0.18	25.808	36.034	1.24097	0.161	0.238	597	
176	30.467	0.01453	857.91	156.6	-51.886	-51.804	0.73631	0.215	0.412	2760	0.6460
176	30.467	1.82735	52.31	0.19	26.016	36.326	1.23683	0.162	0.240	599	
178	33.557	0.01461	833.18	153.5	-51.066	-50.976	0.74095	0.214	0.413	2729	0.6306
178	33.557	1.67086	52.43	0.21	26.227	36.609	1.23279	0.162	0.242	601	
180	36.876	0.01469	808.75	150.4	-50.245	-50.144	0.74554	0.213	0.414	2699	0.6153
180	36.876	1.53075	52.52	0.23	26.432	36.884	1.22884	0.163	0.244	603	
182	40.434	0.01477	784.62	147.3	-49.421	-49.310	0.75010	0.212	0.415	2668	0.6000
182	40.434	1.40502	52.58	0.25	26.631	37.151	1.22497	0.163	0.246	605	
184	44.243	0.01485	760.78	144.2	-48.595	-48.473	0.75461	0.211	0.417	2637	0.5848
184	44.243	1.29192	52.60	0.28	26.824	37.408	1.22118	0.164	0.248	607	
186	48.313	0.01493	737.24	141.2	-47.767	-47.633	0.75989	0.210	0.418	2605	0.5696
186	48.313	1.18995	52.60	0.30	27.010	37.656	1.21747	0.165	0.250	608	
188	52.654	0.01502	713.99	138.3	-46.936	-46.790	0.76354	0.210	0.420	2574	0.5546
188	52.654	1.09781	52.56	0.33	27.190	37.894	1.21384	0.165	0.253	610	
190	57.277	0.01510	691.03	135.3	-46.103	-45.943	0.76795	0.209	0.421	2542	0.5396
190	57.277	1.01438	52.49	0.36	27.363	38.122	1.21026	0.166	0.255	611	
192	62.194	0.01519	668.35	132.4	-45.268	-45.093	0.77233	0.208	0.423	2511	0.5247
192	62.194	0.93869	52.39	0.39	27.529	38.340	1.20676	0.167	0.258	613	
194	67.415	0.01528	645.96	129.5	-44.429	-44.238	0.77669	0.207	0.425	2478	0.5098
194	67.415	0.86988	52.25	0.42	27.689	38.548	1.20331	0.167	0.261	614	
196	72.951	0.01538	623.86	126.7	-43.588	-43.380	0.78101	0.206	0.427	2446	0.4951
196	72.951	0.80720	52.07	0.46	27.841	38.745	1.19991	0.168	0.264	615	
198	78.813	0.01547	602.04	123.9	-42.743	-42.517	0.78530	0.206	0.429	2414	0.4804
198	78.813	0.75000	51.86	0.50	27.985	38.930	1.19657	0.169	0.267	616	
200	85.013	0.01557	580.50	121.1	-41.895	-41.650	0.78957	0.205	0.432	2381	0.4658
200	85.013	0.69771	51.61	0.54	28.122	39.105	1.19327	0.170	0.271	617	
202	91.563	0.01567	559.24	118.4	-41.044	-40.778	0.79382	0.204	0.434	2348	0.4513
202	91.563	0.64942	51.33	0.58	28.250	39.268	1.19002	0.171	0.274	618	
204	98.473	0.01577	538.26	115.6	-40.188	-39.901	0.79804	0.203	0.437	2314	0.4369
204	98.473	0.60589	51.00	0.63	28.371	39.419	1.18681	0.172	0.278	619	
206	105.755	0.01587	517.56	113.0	-39.329	-39.018	0.80224	0.203	0.440	2281	0.4225
206	105.755	0.56553	50.64	0.67	28.482	39.557	1.18363	0.173	0.282	619	
208	113.421	0.01598	497.14	110.3	-38.465	-38.130	0.80643	0.202	0.443	2247	0.4083
208	113.421	0.52839	50.24	0.73	28.585	39.683	1.18049	0.173	0.286	620	
210	121.483	0.01609	476.99	107.6	-37.597	-37.235	0.81059	0.201	0.446	2213	0.3941
210	121.483	0.49415	49.80	0.78	28.679	39.795	1.17736	0.174	0.291	620	
212	129.952	0.01621	457.13	105.0	-36.724	-36.334	0.81474	0.201	0.449	2178	0.3800
212	129.952	0.46254	49.32	0.84	28.764	39.894	1.17429	0.175	0.296	621	
214	138.841	0.01633	437.55	102.4	-35.846	-35.426	0.81888	0.200	0.453	2144	0.3661
214	138.841	0.43333	48.80	0.90	28.838	39.979	1.17123	0.177	0.301	621	

THERMODYNAMIC PROPERTIES OF COEXISTING GASEOUS AND LIQUID OXYGEN

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
156	72.31040	171.85	11.720	81150.56	0.0023473	0.09025	14.553	0.00309	1.49539	2.3417
156	0.19632	32.77	2.172	9.75	0.0069143	0.00469	0.438	0.10544	1.00117	0.7612
158	71.97109	170.24	11.610	78763.88	0.0023729	0.08941	14.092	0.00308	1.49275	2.2921
158	0.22021	33.08	2.173	11.01	0.0068780	0.00477	0.445	0.09513	1.00131	0.7642
160	71.62980	168.62	11.499	76417.40	0.0023995	0.08857	13.650	0.00306	1.49049	2.2449
160	0.24626	33.38	2.175	12.41	0.0068463	0.00484	0.452	0.08606	1.00146	0.7674
162	71.28645	166.99	11.387	74118.66	0.0024270	0.08772	13.227	0.00304	1.48742	2.2000
162	0.27457	33.68	2.176	13.92	0.0068193	0.00492	0.459	0.07807	1.00163	0.7709
162.324	71.23063	166.72	11.369	73740.67	0.0024316	0.08758	13.160	0.00303	1.48699	2.1929
162.324	0.27938	33.72	2.176	14.18	0.0068153	0.00494	0.460	0.07687	1.00166	0.7714
164	70.94896	165.34	11.275	71843.20	0.0024556	0.08687	12.821	0.00302	1.48474	2.1572
164	0.30528	33.96	2.177	15.57	0.0067969	0.00500	0.466	0.07100	1.00181	0.7746
166	70.59324	163.67	11.163	69614.60	0.0024853	0.08601	12.431	0.00300	1.48204	2.1166
166	0.33851	34.23	2.179	17.36	0.0067791	0.00508	0.474	0.06473	1.00201	0.7786
168	70.24321	162.00	11.051	67424.41	0.0025162	0.08515	12.059	0.00297	1.47933	2.0781
168	0.37440	34.50	2.180	19.30	0.0067660	0.00517	0.481	0.05914	1.00223	0.7828
170	69.89077	160.30	10.938	65272.21	0.0025483	0.08429	11.701	0.00295	1.47661	2.0416
170	0.41308	34.75	2.181	21.39	0.0067576	0.00525	0.489	0.05415	1.00246	0.7874
172	69.53583	158.59	10.825	63157.58	0.0025818	0.08342	11.358	0.00293	1.47387	2.0070
172	0.45468	35.00	2.183	23.64	0.0067540	0.00534	0.497	0.04968	1.00270	0.7922
174	69.17828	156.87	10.711	61080.12	0.0026166	0.08255	11.030	0.00291	1.47111	1.9743
174	0.49935	35.23	2.184	26.05	0.0067552	0.00543	0.505	0.04567	1.00297	0.7974
176	68.81801	155.13	10.597	59039.43	0.0026529	0.08168	10.715	0.00288	1.46833	1.9435
176	0.54724	35.46	2.186	28.63	0.0067612	0.00552	0.513	0.04206	1.00325	0.8029
178	68.45491	153.37	10.483	57035.12	0.0026908	0.08081	10.413	0.00286	1.46554	1.9146
178	0.59850	35.67	2.188	31.38	0.0067722	0.00561	0.522	0.03881	1.00356	0.8088
180	68.08887	151.60	10.369	55066.81	0.0027303	0.07993	10.124	0.00284	1.46272	1.8874
180	0.65327	35.87	2.189	34.31	0.0067883	0.00570	0.530	0.03586	1.00389	0.8150
182	67.71974	149.81	10.254	53134.13	0.0027717	0.07905	9.846	0.00281	1.45989	1.8620
182	0.71173	36.07	2.191	37.42	0.0068095	0.00580	0.539	0.03319	1.00423	0.8217
184	67.34741	148.00	10.139	51236.72	0.0028158	0.07817	9.580	0.00279	1.45703	1.8382
184	0.77484	36.25	2.192	40.72	0.0068359	0.00590	0.548	0.03076	1.00461	0.8287
186	66.97173	146.17	10.024	49374.24	0.0028602	0.07728	9.325	0.00276	1.45416	1.8162
186	0.84037	36.41	2.194	44.20	0.0068678	0.00600	0.557	0.02855	1.00500	0.8362
188	66.59254	144.33	9.908	47546.33	0.0029077	0.07639	9.080	0.00273	1.45126	1.7958
188	0.91090	36.57	2.196	47.88	0.0069052	0.00610	0.567	0.02653	1.00542	0.8440
190	66.20970	142.47	9.793	45752.69	0.0029575	0.07550	8.846	0.00271	1.44833	1.7771
190	0.98582	36.72	2.197	51.75	0.0069484	0.00621	0.576	0.02468	1.00587	0.8524
192	65.82382	140.59	9.676	43992.99	0.0030098	0.07461	8.620	0.00268	1.44538	1.7600
192	1.06531	36.85	2.199	55.81	0.0069975	0.00632	0.586	0.02299	1.00634	0.8613
194	65.43233	138.69	9.560	42266.94	0.0030648	0.07372	8.404	0.00265	1.44241	1.7445
194	1.14959	36.98	2.201	60.06	0.0070526	0.00643	0.596	0.02143	1.00684	0.8707
196	65.03744	136.77	9.443	40574.24	0.0031227	0.07282	8.197	0.00262	1.43940	1.7307
196	1.23886	37.09	2.203	64.51	0.0071146	0.00654	0.606	0.02000	1.00738	0.8806
198	64.63615	134.83	9.325	38914.63	0.0031838	0.07193	7.998	0.00259	1.43637	1.7184
198	1.33334	37.18	2.204	69.15	0.0071831	0.00665	0.617	0.01868	1.00794	0.8911
200	64.23423	132.88	9.208	37287.84	0.0032482	0.07103	7.807	0.00256	1.43331	1.7078
200	1.43327	37.27	2.206	73.97	0.0072587	0.00677	0.627	0.01747	1.00854	0.9022
202	63.82545	130.90	9.089	35693.64	0.0033162	0.07013	7.623	0.00253	1.43021	1.6988
202	1.53889	37.34	2.208	78.99	0.0073418	0.00689	0.638	0.01634	1.00917	0.9140
204	63.41157	128.90	8.970	34131.81	0.0033882	0.06922	7.447	0.00250	1.42708	1.6914
204	1.65046	37.41	2.209	84.16	0.0074327	0.00702	0.650	0.01530	1.00984	0.9265
206	62.99231	126.87	8.851	32602.15	0.0034645	0.06832	7.278	0.00247	1.42392	1.6857
206	1.76825	37.45	2.211	89.55	0.0075320	0.00715	0.661	0.01433	1.01054	0.9398
208	62.56739	124.83	8.731	31104.48	0.0035456	0.06741	7.115	0.00243	1.42071	1.6817
208	1.89256	37.49	2.213	95.08	0.0076402	0.00728	0.673	0.01343	1.01129	0.9538
210	62.13649	122.76	8.610	29638.64	0.0036317	0.06650	6.958	0.00240	1.41747	1.6794
210	2.02368	37.51	2.215	100.78	0.0077579	0.00742	0.686	0.01259	1.01207	0.9688
212	61.69928	120.67	8.488	28204.51	0.0037234	0.06559	6.808	0.00237	1.41418	1.6789
212	2.16196	37.52	2.216	106.62	0.0078858	0.00755	0.698	0.01181	1.01290	0.9846
214	61.25540	118.56	8.365	26802.09	0.0038213	0.06468	6.663	0.00233	1.41065	1.6802
214	2.30773	37.52	2.218	112.61	0.0080246	0.00770	0.711	0.01108	1.01377	1.0015

THERMODYNAMIC PROPERTIES OF COEXISTING GASEOUS AND LIQUID OXYGEN

TEMP	PRESS	VOLUME	ISOTHERM DERIVATIVE	ISOCHORE DERIVATIVE	INTERNAL ENERGY	ENTHALPY	ENTROPY	C_V	C_p	VELOCITY OF SOUND	SURFACE TENSION
DEG. R	PSIA	CU FT/LB	CU FT-PSIA/LB	PSIA/R	BTU/LB	BTU/LB	BTU/LB-R	BTU / LB -R		FT/SEC	LB/IN X 10
216	148.162	0.01645	418.24	99.8	-34.962	-34.511	0.82301	0.199	0.457	2108	0.3522
216	148.162	0.40628	48.23	0.97	28.903	40.049	1.16819	0.178	0.307	621	
218	157.926	0.01657	399.22	97.3	-34.073	-33.588	0.82712	0.199	0.461	2073	0.3384
218	157.926	0.38120	47.62	1.0	28.956	40.104	1.16517	0.179	0.312	621	
220	168.146	0.01670	380.49	94.7	-33.177	-32.657	0.83123	0.198	0.466	2037	0.3247
220	168.146	0.35792	46.97	1.1	28.999	40.144	1.16215	0.180	0.319	621	
222	178.834	0.01683	362.65	92.2	-32.275	-31.717	0.83533	0.197	0.471	2001	0.3111
222	178.834	0.33628	46.27	1.2	29.031	40.167	1.15915	0.181	0.325	621	
224	190.002	0.01697	343.90	89.7	-31.365	-30.768	0.83943	0.197	0.476	1964	0.2977
224	190.002	0.31614	45.52	1.3	29.050	40.173	1.15616	0.182	0.333	620	
226	201.664	0.01712	326.05	87.2	-30.446	-29.809	0.84353	0.196	0.482	1926	0.2843
226	201.664	0.29736	44.73	1.4	29.057	40.161	1.15316	0.184	0.340	620	
228	213.832	0.01726	308.51	84.7	-29.523	-28.839	0.84762	0.196	0.489	1889	0.2711
228	213.832	0.27984	43.89	1.5	29.051	40.131	1.15017	0.185	0.349	619	
230	226.518	0.01742	291.29	82.3	-28.589	-27.858	0.85173	0.195	0.496	1850	0.2579
230	226.518	0.26347	43.01	1.6	29.031	40.082	1.14716	0.186	0.358	618	
232	239.735	0.01758	280.48	80.6	-27.647	-26.867	0.85583	0.199	0.507	1818	0.2449
232	239.735	0.24815	42.01	1.7	28.996	40.012	1.14417	0.188	0.367	617	
234	253.498	0.01774	262.92	77.7	-26.685	-25.852	0.86000	0.199	0.512	1771	0.2320
234	253.498	0.23380	41.01	1.8	28.946	39.921	1.14115	0.189	0.378	616	
236	267.818	0.01792	246.20	75.4	-25.712	-24.824	0.86417	0.198	0.520	1736	0.2193
236	267.818	0.22034	39.97	1.9	28.879	39.806	1.13810	0.191	0.389	615	
238	282.709	0.01810	230.92	73.5	-24.727	-23.779	0.86837	0.198	0.536	1702	0.2067
238	282.709	0.20771	38.87	2.1	28.795	39.668	1.13503	0.192	0.402	614	
240	298.186	0.01829	214.14	71.1	-23.729	-22.718	0.87259	0.197	0.548	1660	0.1942
240	298.186	0.19582	37.71	2.2	28.692	39.505	1.13193	0.194	0.416	613	
242	314.262	0.01850	200.20	68.6	-22.717	-21.640	0.87684	0.197	0.557	1621	0.1818
242	314.262	0.18463	36.49	2.4	28.569	39.313	1.12879	0.195	0.431	611	
244	330.951	0.01871	186.70	66.2	-21.690	-20.544	0.88112	0.196	0.571	1577	0.1696
244	330.951	0.17407	35.21	2.5	28.425	39.093	1.12560	0.197	0.448	609	
246	348.270	0.01894	170.49	63.8	-20.648	-19.427	0.88543	0.196	0.586	1535	0.1576
246	348.270	0.16411	33.87	2.7	28.257	38.840	1.12236	0.199	0.468	608	
248	366.233	0.01917	155.74	61.2	-19.589	-18.289	0.88978	0.196	0.603	1488	0.1457
248	366.233	0.15468	32.47	2.9	28.063	38.553	1.11905	0.201	0.489	606	
250	384.857	0.01943	141.83	59.0	-18.511	-17.127	0.89418	0.197	0.625	1445	0.1341
250	384.857	0.14575	30.99	3.1	27.841	38.228	1.11566	0.202	0.514	604	
252	404.159	0.01970	128.97	56.8	-17.411	-15.937	0.89864	0.197	0.650	1404	0.1225
252	404.159	0.13727	29.45	3.4	27.568	37.861	1.11219	0.204	0.542	602	
254	424.156	0.01999	115.04	54.2	-16.286	-14.716	0.90318	0.198	0.677	1352	0.1112
254	424.156	0.12920	27.82	3.6	27.300	37.447	1.10860	0.207	0.576	599	
256	444.870	0.02031	103.62	52.1	-15.134	-13.461	0.90780	0.198	0.709	1311	0.1001
256	444.870	0.12151	26.12	3.9	26.971	36.981	1.10489	0.209	0.615	597	
258	466.319	0.02065	90.37	49.4	-13.949	-12.166	0.91252	0.199	0.750	1256	0.0892
258	466.319	0.11416	24.33	4.2	26.598	36.455	1.10102	0.211	0.662	594	
260	488.528	0.02102	79.37	46.9	-12.728	-10.826	0.91736	0.200	0.789	1204	0.0786
260	488.528	0.10711	22.44	4.5	26.171	35.860	1.09697	0.214	0.720	592	
262	511.521	0.02143	68.52	44.2	-11.463	-9.433	0.92235	0.202	0.836	1147	0.0682
262	511.521	0.10031	20.45	4.9	25.681	35.182	1.09268	0.217	0.792	589	
264	535.324	0.02189	57.38	42.0	-10.145	-7.975	0.92753	0.203	0.923	1099	0.0580
264	535.324	0.09373	18.34	5.3	25.114	34.406	1.08810	0.220	0.887	586	
266	559.968	0.02241	46.89	39.1	-8.762	-6.438	0.93295	0.205	1.011	1035	0.0482
266	559.968	0.08732	16.09	5.8	24.451	33.505	1.08315	0.223	1.015	583	
268	585.486	0.02301	37.64	36.9	-7.294	-4.799	0.93869	0.208	1.157	986	0.0388
268	585.486	0.08099	13.69	6.4	23.662	32.443	1.07768	0.227	1.202	579	
270	611.917	0.02372	29.12	34.5	-5.715	-3.028	0.94485	0.211	1.358	931	0.0297
270	611.917	0.07462	11.62	7.0	22.688	31.143	1.07143	0.232	1.396	570	
272	639.301	0.02459	20.56	31.3	-3.982	-1.071	0.95162	0.217	1.672	856	0.0212
272	639.301	0.06836	8.93	7.8	21.509	29.601	1.06440	0.241	1.851	563	
278.237	731.379	0.03673									0.0000
278.237	731.379	0.03673									

THERMODYNAMIC PROPERTIES OF COEXISTING GASEOUS AND LIQUID OXYGEN

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
216	60.80446	116.42	5.241	25431.04	0.0039259	0.06376	6.523	0.00229	1.40747	1.6834
216	2.46137	37.50	2.220	118.71	0.0081754	0.00784	0.725	0.01040	1.01469	1.3195
218	60.34603	114.26	5.117	24091.60	0.0040380	0.06284	6.389	0.00226	1.40404	1.6846
218	2.62329	37.47	2.222	124.92	0.0083390	0.00800	0.738	0.00976	1.01567	1.3386
220	59.87965	112.07	7.990	22783.73	0.0041583	0.06192	6.259	0.00222	1.40055	1.6959
220	2.79392	37.42	2.223	131.22	0.0085167	0.00815	0.753	0.00916	1.01669	1.3591
222	59.40482	109.86	7.863	21507.48	0.0042877	0.06100	6.134	0.00218	1.39701	1.7054
222	2.97372	37.36	2.225	137.59	0.0087097	0.00831	0.767	0.00859	1.01777	1.3810
224	58.92098	107.62	7.734	20263.01	0.0044273	0.06007	6.013	0.00214	1.39341	1.7171
224	3.16320	37.28	2.227	144.00	0.0089195	0.00850	0.782	0.00808	1.01891	1.4014
226	58.42754	105.36	7.602	19050.51	0.0045782	0.05914	5.897	0.00210	1.38974	1.7314
226	3.36292	37.20	2.229	150.43	0.0091483	0.00872	0.798	0.00762	1.02011	1.4201
228	57.92385	103.07	7.469	17870.27	0.0047415	0.05821	5.797	0.00206	1.38601	1.7522
228	3.57347	37.09	2.231	156.85	0.0093977	0.00896	0.814	0.00719	1.02138	1.4401
230	57.40919	100.76	7.333	16722.69	0.0049196	0.05727	5.709	0.00201	1.38220	1.7789
230	3.79553	36.97	2.233	163.23	0.0096702	0.00920	0.830	0.00678	1.02272	1.4613
232	56.89378	100.32	7.109	15957.39	0.0050519	0.05635	5.622	0.00195	1.37839	1.8205
232	4.02980	36.81	2.234	169.28	0.0099798	0.00946	0.848	0.00639	1.02413	1.4845
234	56.35697	97.62	6.936	14817.10	0.0052417	0.05541	5.533	0.00192	1.37443	1.8397
234	4.27711	36.66	2.236	175.42	0.0103090	0.00974	0.865	0.00603	1.02563	1.5090
236	55.80653	95.45	6.816	13851.45	0.0054430	0.05446	5.444	0.00188	1.37037	1.8696
236	4.53834	36.49	2.238	181.38	0.0106718	0.01003	0.884	0.00567	1.02721	1.5357
238	55.24149	92.95	6.730	12756.39	0.0057624	0.05351	5.353	0.00181	1.36622	1.9291
238	4.81451	36.31	2.240	187.12	0.0110729	0.01034	0.903	0.00534	1.02888	1.5645
240	54.66074	90.26	6.593	11705.24	0.0060718	0.05255	5.251	0.00175	1.36196	1.9753
240	5.10675	36.11	2.243	192.56	0.0115184	0.01067	0.923	0.00502	1.03065	1.5960
242	54.06303	87.91	6.448	10823.37	0.0063389	0.05158	5.167	0.00171	1.35759	2.0099
242	5.41633	35.90	2.245	197.65	0.0120154	0.01102	0.944	0.00472	1.03253	1.6304
244	53.44691	85.25	6.300	9871.72	0.0067022	0.05061	5.073	0.00166	1.35309	2.0619
244	5.74473	35.67	2.248	202.29	0.0125729	0.01139	0.966	0.00442	1.03452	1.6683
246	52.81073	82.72	6.149	9003.70	0.0070809	0.04963	4.977	0.00160	1.34845	2.1148
246	6.09365	35.42	2.250	206.41	0.0132029	0.01180	0.988	0.00414	1.03665	1.6104
248	52.15255	79.97	5.978	8122.34	0.0075392	0.04864	4.880	0.00155	1.34367	2.1777
248	6.46505	35.16	2.253	209.91	0.0139170	0.01224	1.012	0.00387	1.03891	1.6572
250	51.47007	77.39	5.827	7299.81	0.0080805	0.04764	4.781	0.00148	1.33872	2.2593
250	6.86127	34.88	2.256	212.66	0.0147364	0.01271	1.037	0.00360	1.04133	1.7099
252	50.76057	74.93	5.681	6546.84	0.0086785	0.04663	4.680	0.00141	1.33359	2.3496
252	7.28508	34.59	2.259	214.52	0.0156842	0.01323	1.064	0.00335	1.04392	1.7693
254	50.02077	71.93	5.483	5754.44	0.0094159	0.04561	4.577	0.00135	1.32825	2.4467
254	7.73983	34.28	2.262	215.35	0.0167931	0.01381	1.091	0.00310	1.04670	1.8375
256	49.24665	69.54	5.333	5103.03	0.0102011	0.04457	4.471	0.00128	1.32268	2.5620
256	8.22963	33.95	2.265	214.95	0.0181079	0.01446	1.121	0.00286	1.04970	1.9160
258	48.43320	66.39	5.128	4377.63	0.0112956	0.04351	4.363	0.00120	1.31685	2.7070
258	8.75965	33.61	2.268	213.09	0.0196921	0.01519	1.153	0.00262	1.05296	1.9880
260	47.57408	63.55	4.922	3775.80	0.0124110	0.04243	4.251	0.00113	1.31071	2.8446
260	9.33648	33.25	2.272	209.50	0.0216392	0.01604	1.187	0.00239	1.05651	1.9171
262	46.66103	60.51	4.697	3197.03	0.0138138	0.04132	4.135	0.00106	1.30420	3.0109
262	9.96884	32.88	2.275	203.83	0.0240924	0.01704	1.224	0.00216	1.06042	2.0449
264	45.68295	57.62	4.525	2621.33	0.0160226	0.04123	4.014	0.00098	1.29725	3.2361
264	10.66861	32.50	2.279	195.63	0.0272844	0.01825	1.264	0.00193	1.06475	2.2119
266	44.62444	54.13	4.268	2092.60	0.0186792	0.04112	3.887	0.00091	1.28976	3.4413
266	11.45275	32.11	2.282	184.30	0.0316205	0.01978	1.309	0.00170	1.06962	2.4196
268	43.46298	51.33	4.087	1636.14	0.0225452	0.04139	3.752	0.00082	1.28158	3.7764
268	12.34713	31.72	2.285	169.00	0.0378815	0.02182	1.360	0.00147	1.07519	2.6963
270	42.16349	48.39	3.869	1227.79	0.0280698	0.04200	3.606	0.00073	1.27246	4.1988
270	13.40174	31.19	2.246	155.78	0.0447593	0.02395	1.420	0.00128	1.08179	2.9788
272	40.66585	44.61	3.542	836.01	0.0374733	0.04326	3.445	0.00064	1.26241	4.7918
272	14.62827	30.89	2.212	130.17	0.0599397	0.02808	1.484	0.00104	1.08949	3.5349
278.237	27.22756						2.272		1.17082	
278.237	27.22756						2.272		1.17082	

Table C-2a

Thermodynamic Properties of Oxygen (Isobars, English Units)

THERMODYNAMIC PROPERTIES OF OXYGEN

1 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 97.833	0.01226	2090.54	317.8	-83.216	-83.214	0.50123	0.266	0.398	3804
100	0.01231	2048.49	312.2	-82.354	-82.352	0.50994	0.264	0.398	3780
105	0.01243	1953.37	299.5	-80.365	-80.363	0.52935	0.260	0.398	3722
110	0.01255	1860.86	287.2	-78.376	-78.374	0.54786	0.256	0.398	3662
115	0.01267	1770.90	275.2	-76.387	-76.385	0.56554	0.252	0.398	3602
120	0.01280	1683.42	263.6	-74.397	-74.395	0.58248	0.248	0.398	3539
125	0.01293	1598.37	252.4	-72.406	-72.404	0.59873	0.244	0.398	3476
* 127.018	0.01298	1564.72	248.0	-71.602	-71.600	0.60511	0.243	0.398	3450
* 127.018	42.40908	42.22	0.01	19.529	27.382	1.38444	0.156	0.219	524
130	43.41743	43.23	0.01	19.995	28.035	1.38952	0.156	0.219	530
135	45.18684	44.94	0.01	20.776	29.129	1.39778	0.156	0.219	541
140	46.79498	46.64	0.01	21.557	30.222	1.40573	0.156	0.219	551
145	48.48204	48.33	0.01	22.337	31.315	1.41340	0.155	0.218	561
150	50.16814	50.03	0.01	23.117	32.407	1.42080	0.156	0.218	570
155	51.85340	51.72	0.01	23.896	33.498	1.42796	0.156	0.218	580
160	53.53793	53.41	0.01	24.676	34.590	1.43489	0.156	0.218	589
165	55.22181	55.10	0.01	25.455	35.680	1.44160	0.156	0.218	598
170	56.90511	56.79	0.01	26.234	36.771	1.44811	0.156	0.218	607
175	58.58790	58.48	0.01	27.012	37.861	1.45443	0.156	0.218	616
180	60.27023	60.17	0.01	27.791	38.951	1.46058	0.155	0.218	625
185	61.95216	61.86	0.01	28.569	40.041	1.46655	0.155	0.218	634
190	63.63371	63.54	0.01	29.347	41.131	1.47236	0.155	0.218	642
195	65.31493	65.23	0.01	30.126	42.220	1.47802	0.155	0.218	651
200	66.99584	66.91	0.01	30.904	43.309	1.48353	0.155	0.218	659
205	68.67649	68.60	0.00	31.682	44.399	1.48891	0.155	0.218	667
210	70.35688	70.28	0.00	32.459	45.488	1.49416	0.155	0.218	675
215	72.03706	71.97	0.00	33.237	46.577	1.49929	0.155	0.218	683
220	73.71702	73.65	0.00	34.015	47.665	1.50429	0.155	0.218	691
225	75.39680	75.33	0.00	34.793	48.754	1.50919	0.155	0.218	699
230	77.07641	77.01	0.00	35.570	49.843	1.51397	0.155	0.218	707
235	78.75585	78.70	0.00	36.348	50.931	1.51865	0.155	0.218	715
240	80.43516	80.38	0.00	37.125	52.020	1.52324	0.155	0.218	722
245	82.11432	82.06	0.00	37.903	53.108	1.52772	0.155	0.218	730
250	83.79337	83.74	0.00	38.680	54.196	1.53212	0.155	0.218	737
255	85.47230	85.42	0.00	39.457	55.284	1.53643	0.155	0.218	745
260	87.15112	87.10	0.00	40.235	56.373	1.54066	0.155	0.218	752
265	88.82985	88.78	0.00	41.012	57.461	1.54480	0.155	0.218	759
270	90.50848	90.46	0.00	41.789	58.549	1.54887	0.155	0.218	766
275	92.18703	92.14	0.00	42.566	59.637	1.55286	0.155	0.218	773
280	93.86551	93.82	0.00	43.344	60.725	1.55678	0.155	0.218	780
285	95.54390	95.50	0.00	44.121	61.813	1.56064	0.155	0.218	787
290	97.22223	97.18	0.00	44.898	62.901	1.56442	0.155	0.218	794
295	98.90050	98.86	0.00	45.675	63.989	1.56814	0.155	0.218	801
300	100.57871	100.54	0.00	46.453	65.077	1.57180	0.155	0.218	808
310	103.93495	103.90	0.00	48.007	67.253	1.57893	0.155	0.218	821
320	107.29100	107.26	0.00	49.561	69.429	1.58584	0.155	0.218	834
330	110.64688	110.62	0.00	51.116	71.605	1.59253	0.155	0.218	847
340	114.00260	113.97	0.00	52.670	73.781	1.59903	0.155	0.218	860
350	117.35818	117.33	0.00	54.225	75.957	1.60534	0.155	0.218	872
360	120.71363	120.69	0.00	55.780	78.133	1.61147	0.155	0.218	885
370	124.06898	124.05	0.00	57.335	80.309	1.61743	0.156	0.218	897
380	127.42423	127.40	0.00	58.891	82.486	1.62324	0.156	0.218	909
390	130.77938	130.76	0.00	60.446	84.663	1.62889	0.156	0.218	921
400	134.13446	134.11	0.00	62.003	86.841	1.63440	0.156	0.218	932
410	137.48946	137.47	0.00	63.559	89.019	1.63978	0.156	0.218	944
420	140.84439	140.83	0.00	65.117	91.198	1.64503	0.156	0.218	955
430	144.19926	144.18	0.00	66.675	93.377	1.65016	0.156	0.218	967
440	147.55408	147.54	0.00	68.234	95.557	1.65517	0.156	0.218	978
450	150.90884	150.89	0.00	69.794	97.738	1.66007	0.156	0.218	989
460	154.26356	154.25	0.00	71.355	99.920	1.66487	0.156	0.218	1000
470	157.61823	157.61	0.00	72.917	102.103	1.66956	0.156	0.218	1010
480	160.97286	160.96	0.00	74.480	104.288	1.67416	0.156	0.218	1021
490	164.32745	164.32	0.00	76.044	106.473	1.67867	0.157	0.219	1031
500	167.68201	167.67	0.00	77.610	108.660	1.68309	0.157	0.219	1042
510	171.03654	171.03	0.00	79.178	110.849	1.68742	0.157	0.219	1052
520	174.39104	174.38	0.00	80.747	113.039	1.69168	0.157	0.219	1062
530	177.74551	177.74	0.00	82.318	115.232	1.69585	0.157	0.219	1072
540	181.09995	181.09	0.00	83.891	117.426	1.69995	0.157	0.220	1082
550	184.45437	184.45	0.00	85.466	119.622	1.70398	0.158	0.220	1092
560	187.80876	187.80	0.00	87.043	121.820	1.70794	0.158	0.220	1101
570	191.16313	191.16	0.00	88.622	124.021	1.71184	0.158	0.220	1111
580	194.51749	194.51	0.00	90.204	126.224	1.71567	0.158	0.220	1120
590	197.87182	197.87	0.00	91.789	128.429	1.71944	0.159	0.221	1130
600	201.22614	201.22	0.00	93.376	130.637	1.72315	0.159	0.221	1139

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 97.833	81.56741	213.44	14.634	170520.12	0.0018640	0.11156	41.622	0.00344	1.56869	5.3438
100	81.23750	212.04	14.541	166413.69	0.0018761	0.11092	39.906	0.00343	1.56603	5.1522
105	80.47321	208.77	14.320	157193.86	0.0019052	0.10939	36.234	0.00342	1.55990	4.7428
110	79.70416	205.45	14.091	148318.24	0.0019361	0.10779	32.932	0.00340	1.55375	4.3751
115	78.92987	202.07	13.855	139776.68	0.0019690	0.10610	29.962	0.00338	1.54757	4.0447
120	78.14985	198.63	13.613	131559.02	0.0020040	0.10435	27.291	0.00335	1.54136	3.7478
125	77.36352	195.13	13.364	123655.23	0.0020415	0.10254	24.889	0.00333	1.53512	3.4809
* 127.018	77.04429	193.69	13.263	120552.46	0.0020574	0.10179	23.990	0.00332	1.53259	3.3810
* 127.018	0.02358	27.45	2.161	1.00	0.0079747	0.00369	0.346	0.71467	1.00014	0.7388
130	0.02303	28.11	2.161	1.00	0.0077854	0.00378	0.354	0.75014	1.00014	0.7382
135	0.02217	29.21	2.161	1.00	0.0074879	0.00393	0.368	0.81160	1.00013	0.7372
140	0.02137	30.30	2.161	1.00	0.0072126	0.00409	0.383	0.87554	1.00013	0.7364
145	0.02063	31.40	2.161	1.00	0.0069575	0.00424	0.397	0.94196	1.00012	0.7357
150	0.01993	32.49	2.160	1.00	0.0067201	0.00440	0.411	1.01086	1.00012	0.7350
155	0.01929	33.59	2.160	1.00	0.0064986	0.00456	0.426	1.08223	1.00011	0.7344
160	0.01868	34.68	2.160	1.00	0.0062916	0.00471	0.440	1.15606	1.00011	0.7339
165	0.01811	35.77	2.160	1.00	0.0060975	0.00487	0.455	1.23234	1.00011	0.7335
170	0.01757	36.87	2.160	1.00	0.0059152	0.00502	0.469	1.31105	1.00010	0.7331
175	0.01707	37.96	2.160	1.00	0.0057437	0.00518	0.484	1.39217	1.00010	0.7327
180	0.01659	39.05	2.160	1.00	0.0055819	0.00534	0.498	1.47569	1.00010	0.7323
185	0.01614	40.14	2.160	1.00	0.0054291	0.00549	0.513	1.56160	1.00010	0.7320
190	0.01571	41.23	2.160	1.00	0.0052846	0.00565	0.527	1.64986	1.00009	0.7317
195	0.01531	42.32	2.160	1.00	0.0051476	0.00581	0.541	1.74046	1.00009	0.7314
200	0.01493	43.42	2.160	1.00	0.0050176	0.00596	0.556	1.83337	1.00009	0.7312
209	0.01456	44.51	2.160	1.00	0.0048940	0.00612	0.570	1.92858	1.00009	0.7309
210	0.01421	45.60	2.160	1.00	0.0047765	0.00627	0.584	2.02606	1.00008	0.7307
215	0.01388	46.69	2.160	1.00	0.0046645	0.00643	0.599	2.12579	1.00008	0.7305
220	0.01357	47.78	2.160	1.00	0.0045576	0.00658	0.613	2.22774	1.00008	0.7303
225	0.01326	48.87	2.160	1.00	0.0044556	0.00673	0.627	2.33190	1.00008	0.7301
230	0.01297	49.95	2.160	1.00	0.0043581	0.00689	0.641	2.43823	1.00008	0.7299
235	0.01270	51.04	2.160	1.00	0.0042648	0.00704	0.655	2.54671	1.00008	0.7297
240	0.01243	52.13	2.160	1.00	0.0041754	0.00719	0.669	2.65733	1.00007	0.7295
245	0.01218	53.22	2.160	1.00	0.0040897	0.00734	0.683	2.77006	1.00007	0.7293
250	0.01193	54.31	2.160	1.00	0.0040074	0.00749	0.697	2.88487	1.00007	0.7291
255	0.01170	55.40	2.159	1.00	0.0039285	0.00764	0.711	3.00178	1.00007	0.7289
260	0.01147	56.49	2.159	1.00	0.0038526	0.00779	0.725	3.12075	1.00007	0.7287
265	0.01126	57.58	2.159	1.00	0.0037795	0.00794	0.739	3.24173	1.00007	0.7285
270	0.01105	58.67	2.159	1.00	0.0037093	0.00809	0.752	3.36470	1.00007	0.7283
275	0.01085	59.76	2.159	1.00	0.0036415	0.00824	0.766	3.48964	1.00006	0.7282
280	0.01065	60.85	2.159	1.00	0.0035763	0.00838	0.779	3.61653	1.00006	0.7280
285	0.01047	61.94	2.159	1.00	0.0035133	0.00853	0.793	3.74536	1.00006	0.7278
290	0.01029	63.02	2.159	1.00	0.0034525	0.00868	0.806	3.87611	1.00006	0.7276
295	0.01011	64.11	2.159	1.00	0.0033938	0.00882	0.819	4.00876	1.00006	0.7275
300	0.00994	65.20	2.159	1.00	0.0033370	0.00896	0.832	4.14329	1.00006	0.7273
310	0.00962	67.38	2.159	1.00	0.0032291	0.00925	0.858	4.41793	1.00006	0.7270
320	0.00932	69.56	2.159	1.00	0.0031279	0.00953	0.884	4.69991	1.00006	0.7267
330	0.00904	71.74	2.159	1.00	0.0030329	0.00981	0.910	4.98908	1.00005	0.7264
340	0.00877	73.92	2.158	1.00	0.0029435	0.01009	0.935	5.28532	1.00005	0.7261
350	0.00852	76.11	2.158	1.00	0.0028592	0.01036	0.960	5.58850	1.00005	0.7259
360	0.00828	78.29	2.158	1.00	0.0027796	0.01063	0.985	5.89849	1.00005	0.7256
370	0.00806	80.48	2.157	1.00	0.0027044	0.01090	1.009	6.21515	1.00005	0.7254
380	0.00785	82.67	2.157	1.00	0.0026331	0.01117	1.034	6.53836	1.00005	0.7252
390	0.00765	84.87	2.156	1.00	0.0025655	0.01143	1.058	6.86797	1.00005	0.7250
400	0.00746	87.07	2.155	1.00	0.0025013	0.01170	1.081	7.20386	1.00004	0.7249
410	0.00727	89.27	2.155	1.00	0.0024402	0.01196	1.105	7.54588	1.00004	0.7247
420	0.00710	91.48	2.154	1.00	0.0023820	0.01221	1.128	7.89388	1.00004	0.7246
430	0.00693	93.69	2.153	1.00	0.0023265	0.01247	1.151	8.24772	1.00004	0.7245
440	0.00678	95.91	2.151	1.00	0.0022736	0.01272	1.174	8.60726	1.00004	0.7245
450	0.00663	98.13	2.150	1.00	0.0022230	0.01297	1.196	8.97234	1.00004	0.7244
460	0.00648	100.36	2.149	1.00	0.0021747	0.01322	1.219	9.34281	1.00004	0.7244
470	0.00634	102.60	2.147	1.00	0.0021283	0.01346	1.241	9.71854	1.00004	0.7245
480	0.00621	104.85	2.145	1.00	0.0020840	0.01371	1.263	10.09937	1.00004	0.7245
490	0.00609	107.10	2.143	1.00	0.0020414	0.01395	1.284	10.48518	1.00004	0.7246
500	0.00596	109.36	2.141	1.00	0.0020005	0.01419	1.306	10.87583	1.00004	0.7248
510	0.00585	111.63	2.139	1.00	0.0019613	0.01443	1.327	11.27117	1.00003	0.7250
520	0.00573	113.92	2.137	1.00	0.0019235	0.01466	1.348	11.67113	1.00003	0.7252
530	0.00563	116.21	2.134	1.00	0.0018872	0.01490	1.369	12.07559	1.00003	0.7254
540	0.00552	118.51	2.131	1.00	0.0018523	0.01513	1.390	12.48443	1.00003	0.7257
550	0.00542	120.82	2.128	1.00	0.0018186	0.01536	1.410	12.89757	1.00003	0.7260
560	0.00532	123.14	2.125	1.00	0.0017861	0.01559	1.430	13.31491	1.00003	0.7264
570	0.00523	125.48	2.122	1.00	0.0017547	0.01582	1.451	13.73636	1.00003	0.7268
580	0.00514	127.82	2.119	1.00	0.0017244	0.01605	1.471	14.16189	1.00003	0.7272
590	0.00505	130.18	2.115	1.00	0.0016952	0.01627	1.491	14.59139	1.00003	0.7277
600	0.00497	132.54	2.112	1.00	0.0016669	0.01650	1.510	15.02479	1.00003	0.7282

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

5 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	C_P	VELOCITY OF SOUND FT/SEC
* 97.838	0.01226	2090.79	317.8	-83.216	-83.204	0.50123	0.266	0.398	3804
100	0.01231	2048.85	312.2	-82.356	-82.344	0.50993	0.264	0.398	3780
105	0.01243	1953.74	299.5	-80.367	-80.355	0.52933	0.260	0.398	3722
110	0.01255	1861.23	287.2	-78.378	-78.367	0.54784	0.256	0.398	3663
115	0.01267	1771.28	275.2	-76.389	-76.377	0.56552	0.252	0.398	3602
120	0.01280	1683.81	263.7	-74.399	-74.388	0.58246	0.248	0.398	3540
125	0.01293	1598.76	252.5	-72.408	-72.397	0.59871	0.244	0.398	3476
130	0.01306	1516.06	241.6	-70.416	-70.404	0.61434	0.241	0.399	3411
135	0.01320	1435.69	231.1	-68.421	-68.409	0.62940	0.237	0.399	3345
140	0.01334	1357.53	220.9	-66.423	-66.410	0.64394	0.234	0.400	3278
145	0.01349	1281.55	211.1	-64.421	-64.408	0.65799	0.231	0.401	3209
* 145.836	0.01351	1269.05	209.4	-64.085	-64.073	0.66029	0.231	0.401	3198
* 145.836	9.63255	47.41	0.04	22.259	31.177	1.31326	0.157	0.223	558
150	9.91981	48.89	0.03	22.919	32.104	1.31953	0.157	0.222	567
155	10.26391	50.65	0.03	23.711	33.214	1.32681	0.157	0.222	577
160	10.60720	52.41	0.03	24.501	34.322	1.33384	0.157	0.221	586
165	10.94978	54.16	0.03	25.290	35.428	1.34065	0.156	0.221	596
170	11.29174	55.90	0.03	26.078	36.533	1.34725	0.156	0.221	605
175	11.63315	57.64	0.03	26.865	37.636	1.35364	0.156	0.220	614
180	11.97407	59.37	0.03	27.651	38.738	1.35985	0.156	0.220	623
185	12.31456	61.10	0.03	28.437	39.838	1.36588	0.156	0.220	632
190	12.65466	62.82	0.03	29.221	40.938	1.37175	0.156	0.220	640
195	12.99441	64.54	0.03	30.005	42.036	1.37745	0.156	0.220	649
200	13.33385	66.26	0.03	30.789	43.134	1.38301	0.156	0.219	657
205	13.67301	67.98	0.02	31.572	44.231	1.38843	0.156	0.219	666
210	14.01191	69.69	0.02	32.355	45.328	1.39371	0.156	0.219	674
215	14.35058	71.40	0.02	33.137	46.423	1.39887	0.156	0.219	682
220	14.68904	73.11	0.02	33.919	47.519	1.40391	0.156	0.219	690
225	15.02730	74.81	0.02	34.700	48.613	1.40883	0.156	0.219	698
230	15.36539	76.52	0.02	35.481	49.708	1.41364	0.156	0.219	706
235	15.70332	78.22	0.02	36.262	50.801	1.41834	0.156	0.219	713
240	16.04110	79.92	0.02	37.043	51.895	1.42294	0.156	0.219	721
245	16.37874	81.62	0.02	37.823	52.988	1.42745	0.156	0.219	729
250	16.71626	83.32	0.02	38.603	54.080	1.43187	0.156	0.219	736
255	17.05366	85.01	0.02	39.383	55.173	1.43619	0.156	0.218	744
260	17.39096	86.71	0.02	40.163	56.265	1.44043	0.156	0.218	751
265	17.72815	88.40	0.02	40.943	57.357	1.44459	0.156	0.218	758
270	18.06525	90.10	0.02	41.722	58.448	1.44867	0.156	0.218	765
275	18.40227	91.79	0.02	42.502	59.540	1.45268	0.156	0.218	772
280	18.73921	93.48	0.02	43.281	60.631	1.45661	0.156	0.218	779
285	19.07607	95.18	0.02	44.060	61.722	1.46047	0.156	0.218	786
290	19.41287	96.87	0.02	44.839	62.813	1.46427	0.156	0.218	793
295	19.74960	98.56	0.02	45.618	63.903	1.46800	0.156	0.218	800
300	20.08627	100.25	0.02	46.397	64.994	1.47166	0.156	0.218	807
310	20.75944	103.63	0.02	47.954	67.175	1.47881	0.156	0.218	820
320	21.43241	107.00	0.02	49.511	69.355	1.48573	0.156	0.218	834
330	22.10521	110.38	0.02	51.068	71.535	1.49244	0.156	0.218	847
340	22.77785	113.75	0.01	52.625	73.714	1.49895	0.156	0.218	859
350	23.45036	117.12	0.01	54.182	75.894	1.50527	0.156	0.218	872
360	24.12274	120.49	0.01	55.739	78.073	1.51141	0.156	0.218	884
370	24.79501	123.86	0.01	57.295	80.252	1.51738	0.156	0.218	897
380	25.46717	127.23	0.01	58.853	82.432	1.52319	0.156	0.218	909
390	26.13925	130.59	0.01	60.410	84.611	1.52885	0.156	0.218	921
400	26.81125	133.96	0.01	61.968	86.791	1.53437	0.156	0.218	932
410	27.48317	137.32	0.01	63.526	88.971	1.53975	0.156	0.218	944
420	28.15502	140.69	0.01	65.084	91.152	1.54501	0.156	0.218	955
430	28.82681	144.05	0.01	66.643	93.333	1.55014	0.156	0.218	966
440	29.49855	147.42	0.01	68.203	95.515	1.55516	0.156	0.218	978
450	30.17023	150.78	0.01	69.764	97.698	1.56006	0.156	0.218	989
460	30.84187	154.14	0.01	71.326	99.881	1.56486	0.156	0.218	999
470	31.51346	157.50	0.01	72.889	102.066	1.56956	0.156	0.219	1010
480	32.18501	160.87	0.01	74.453	104.252	1.57416	0.156	0.219	1021
490	32.85653	164.23	0.01	76.018	106.439	1.57867	0.157	0.219	1031
500	33.52800	167.59	0.01	77.585	108.627	1.58309	0.157	0.219	1042
510	34.19945	170.95	0.01	79.153	110.817	1.58743	0.157	0.219	1052
520	34.87087	174.31	0.01	80.723	113.008	1.59168	0.157	0.219	1062
530	35.54226	177.67	0.01	82.294	115.202	1.59586	0.157	0.219	1072
540	36.21362	181.03	0.01	83.868	117.397	1.59996	0.157	0.220	1082
550	36.88496	184.39	0.01	85.443	119.594	1.60399	0.158	0.220	1092
560	37.55627	187.75	0.01	87.021	121.793	1.60796	0.158	0.220	1101
570	38.22756	191.11	0.01	88.601	123.994	1.61185	0.158	0.220	1111
580	38.89884	194.46	0.01	90.183	126.198	1.61569	0.158	0.221	1120
590	39.57009	197.82	0.01	91.768	128.405	1.61946	0.159	0.221	1130
600	40.24133	201.18	0.01	93.355	130.613	1.62317	0.159	0.221	1139

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

5 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_p$ BTU/LB	$V(\partial P/\partial U)_v$ PSIA	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_p/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 97.838	81.56846	213.46	14.634	170542.62	0.0018637	0.11156	41.628	0.00344	1.56869	5.3443
100	81.23945	212.07	14.541	166447.37	0.0018758	0.11393	39.916	0.00343	1.56605	5.1532
105	80.47526	208.80	14.320	157227.54	0.0019049	0.10940	36.243	0.00342	1.55992	4.7438
110	79.70631	205.47	14.091	148352.12	0.0019358	0.10779	32.941	0.00340	1.55377	4.3760
115	78.93213	202.10	13.855	139810.77	0.0019687	0.10611	29.970	0.00338	1.54759	4.0455
120	78.15222	198.66	13.613	131593.33	0.0020037	0.10436	27.299	0.00335	1.54138	3.7485
125	77.36602	195.16	13.365	123689.77	0.0020411	0.10255	24.896	0.00333	1.53514	3.4815
130	76.57289	191.59	13.111	116090.25	0.0020812	0.10068	22.736	0.00330	1.52886	3.2416
135	75.77214	187.95	12.852	108785.07	0.0021243	0.09876	20.792	0.00326	1.52253	3.0262
140	74.96297	184.24	12.588	101764.69	0.0021709	0.09679	19.044	0.00323	1.51616	2.8330
145	74.14449	180.45	12.321	95019.74	0.0022212	0.09478	17.472	0.00319	1.50973	2.6598
* 145.836	74.00665	179.80	12.276	93916.07	0.0022300	0.09445	17.225	0.00318	1.50865	2.6327
* 145.836	0.10361	31.06	2.167	4.92	0.0071705	0.00432	0.404	0.18679	1.00062	0.7494
150	0.10081	32.00	2.166	4.93	0.0069466	0.00445	0.416	0.19646	1.00060	0.7477
155	0.09743	33.12	2.166	4.93	0.0066968	0.00460	0.430	0.21290	1.00058	0.7459
160	0.09428	34.24	2.165	4.94	0.0064658	0.00476	0.444	0.22783	1.00056	0.7443
165	0.09133	35.36	2.165	4.95	0.0062514	0.00491	0.458	0.24323	1.00054	0.7429
170	0.08856	36.48	2.164	4.95	0.0060517	0.00507	0.473	0.25911	1.00053	0.7417
175	0.08596	37.59	2.164	4.95	0.0058653	0.00522	0.487	0.27547	1.00051	0.7405
180	0.08351	38.70	2.164	4.96	0.0056906	0.00538	0.501	0.29230	1.00050	0.7395
185	0.08120	39.81	2.163	4.96	0.0055266	0.00553	0.516	0.30960	1.00048	0.7387
190	0.07902	40.92	2.163	4.96	0.0053723	0.00569	0.530	0.32736	1.00047	0.7378
195	0.07696	42.02	2.163	4.97	0.0052267	0.00584	0.545	0.34559	1.00046	0.7371
200	0.07500	43.13	2.163	4.97	0.0050892	0.00600	0.559	0.36428	1.00045	0.7364
205	0.07314	44.23	2.162	4.97	0.0049590	0.00615	0.573	0.38342	1.00043	0.7358
210	0.07137	45.33	2.162	4.97	0.0048356	0.00630	0.587	0.40300	1.00042	0.7352
215	0.06968	46.43	2.162	4.98	0.0047184	0.00646	0.602	0.42304	1.00041	0.7347
220	0.06808	47.53	2.162	4.98	0.0046070	0.00661	0.616	0.44352	1.00040	0.7342
225	0.06655	48.63	2.162	4.98	0.0045008	0.00676	0.630	0.46443	1.00040	0.7337
230	0.06508	49.73	2.162	4.98	0.0043996	0.00692	0.644	0.48578	1.00039	0.7333
235	0.06368	50.83	2.162	4.98	0.0043029	0.00707	0.658	0.50755	1.00038	0.7329
240	0.06234	51.93	2.162	4.98	0.0042106	0.00722	0.672	0.52975	1.00037	0.7325
245	0.06105	53.02	2.161	4.98	0.0041222	0.00737	0.686	0.55237	1.00036	0.7321
250	0.05982	54.12	2.161	4.98	0.0040375	0.00752	0.700	0.57540	1.00036	0.7318
255	0.05864	55.21	2.161	4.99	0.0039563	0.00767	0.713	0.59884	1.00035	0.7314
260	0.05750	56.31	2.161	4.99	0.0038784	0.00782	0.727	0.62268	1.00034	0.7310
265	0.05641	57.40	2.161	4.99	0.0038035	0.00797	0.741	0.64708	1.00034	0.7307
270	0.05535	58.50	2.161	4.99	0.0037316	0.00812	0.754	0.67176	1.00033	0.7303
275	0.05434	59.59	2.161	4.99	0.0036623	0.00826	0.768	0.69682	1.00032	0.7300
280	0.05336	60.69	2.161	4.99	0.0035957	0.00841	0.781	0.72227	1.00032	0.7297
285	0.05242	61.78	2.161	4.99	0.0035314	0.00856	0.795	0.74811	1.00031	0.7295
290	0.05151	62.88	2.161	4.99	0.0034695	0.00870	0.808	0.77431	1.00031	0.7292
295	0.05063	63.97	2.161	4.99	0.0034097	0.00885	0.821	0.80090	1.00030	0.7290
300	0.04979	65.06	2.161	4.99	0.0033520	0.00899	0.834	0.82786	1.00030	0.7287
310	0.04817	67.25	2.160	4.99	0.0032422	0.00927	0.860	0.88289	1.00029	0.7283
320	0.04666	69.44	2.160	4.99	0.0031396	0.00955	0.886	0.93938	1.00028	0.7278
330	0.04524	71.62	2.160	4.99	0.0030433	0.00983	0.912	0.99730	1.00027	0.7275
340	0.04390	73.81	2.160	4.99	0.0029527	0.01011	0.937	1.05662	1.00026	0.7271
350	0.04264	76.00	2.159	4.99	0.0028675	0.01038	0.962	1.11734	1.00025	0.7268
360	0.04145	78.19	2.159	4.99	0.0027871	0.01065	0.987	1.17941	1.00025	0.7264
370	0.04033	80.38	2.159	5.00	0.0027111	0.01092	1.011	1.24280	1.00024	0.7262
380	0.03927	82.58	2.158	5.00	0.0026392	0.01119	1.035	1.30750	1.00023	0.7259
390	0.03826	84.78	2.157	5.00	0.0025710	0.01145	1.059	1.37348	1.00023	0.7257
400	0.03730	86.98	2.157	5.00	0.0025063	0.01171	1.083	1.44072	1.00022	0.7255
410	0.03639	89.19	2.156	5.00	0.0024447	0.01197	1.106	1.50917	1.00022	0.7253
420	0.03552	91.40	2.155	5.00	0.0023862	0.01223	1.130	1.57883	1.00021	0.7252
430	0.03469	93.61	2.154	5.00	0.0023303	0.01248	1.153	1.64965	1.00021	0.7250
440	0.03390	95.83	2.153	5.00	0.0022771	0.01274	1.175	1.72160	1.00020	0.7250
450	0.03315	98.06	2.151	5.00	0.0022262	0.01299	1.198	1.79467	1.00020	0.7249
460	0.03242	100.29	2.150	5.00	0.0021776	0.01323	1.220	1.86881	1.00019	0.7249
470	0.03173	102.54	2.148	5.00	0.0021311	0.01348	1.242	1.94400	1.00019	0.7249
480	0.03107	104.78	2.146	5.00	0.0020865	0.01372	1.264	2.02021	1.00018	0.7249
490	0.03044	107.04	2.144	5.00	0.0020437	0.01396	1.286	2.09741	1.00018	0.7250
500	0.02983	109.30	2.142	5.00	0.0020027	0.01420	1.307	2.17558	1.00018	0.7251
510	0.02924	111.58	2.140	5.00	0.0019633	0.01444	1.328	2.25467	1.00017	0.7253
520	0.02868	113.86	2.138	5.00	0.0019254	0.01468	1.349	2.33471	1.00017	0.7255
530	0.02814	116.15	2.135	5.00	0.0018890	0.01491	1.370	2.41564	1.00017	0.7257
540	0.02761	118.46	2.132	5.00	0.0018539	0.01514	1.391	2.49745	1.00016	0.7260
550	0.02711	120.77	2.129	5.00	0.0018201	0.01538	1.411	2.58012	1.00016	0.7263
560	0.02663	123.10	2.126	5.00	0.0017875	0.01561	1.432	2.66362	1.00016	0.7266
570	0.02616	125.43	2.123	5.00	0.0017560	0.01583	1.452	2.74796	1.00016	0.7270
580	0.02571	127.78	2.120	5.00	0.0017257	0.01606	1.472	2.83310	1.00015	0.7274
590	0.02527	130.13	2.116	5.00	0.0016963	0.01628	1.492	2.91903	1.00015	0.7279
600	0.02485	132.50	2.113	5.00	0.0016680	0.01651	1.511	3.00574	1.00015	0.7284

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

10 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	Cp	VELOCITY OF SOUND FT/SEC
* 97.845	0.01226	2091.10	317.8	-83.215	-83.192	0.50124	0.266	0.398	3805
100	0.01231	2049.30	312.2	-82.358	-82.335	0.50990	0.264	0.398	3780
105	0.01243	1954.20	299.5	-80.369	-80.346	0.52931	0.260	0.398	3722
110	0.01255	1861.70	287.2	-78.381	-78.357	0.54781	0.256	0.398	3663
115	0.01267	1771.75	275.3	-76.392	-76.368	0.56550	0.252	0.398	3602
120	0.01280	1684.29	263.7	-74.402	-74.379	0.58243	0.248	0.398	3540
125	0.01293	1599.25	252.5	-72.412	-72.388	0.59869	0.244	0.398	3477
130	0.01306	1516.58	241.6	-70.419	-70.395	0.61432	0.241	0.399	3412
135	0.01320	1436.20	231.1	-68.424	-68.400	0.62938	0.237	0.399	3346
140	0.01334	1358.05	220.9	-66.426	-66.402	0.64391	0.234	0.400	3278
145	0.01349	1282.08	211.1	-64.425	-64.400	0.65796	0.231	0.401	3210
150	0.01364	1208.21	201.5	-62.418	-62.393	0.67156	0.228	0.402	3140
155	0.01380	1136.38	192.3	-60.406	-60.380	0.68476	0.225	0.403	3069
* 155.986	0.01383	1122.45	190.5	-60.088	-59.983	0.68732	0.225	0.403	3055
* 155.986	5.09792	49.64	0.07	23.629	33.069	1.28362	0.158	0.227	574
160	5.23914	51.11	0.07	24.275	33.977	1.28937	0.158	0.226	582
165	5.41436	52.94	0.06	25.078	35.104	1.29631	0.158	0.225	592
170	5.58888	54.76	0.06	25.878	36.227	1.30382	0.157	0.224	601
175	5.76281	56.56	0.06	26.677	37.348	1.30951	0.157	0.224	611
180	5.93621	58.35	0.06	27.473	38.465	1.31581	0.157	0.223	620
185	6.10915	60.14	0.06	28.268	39.580	1.32192	0.157	0.223	629
190	6.28168	61.91	0.05	29.061	40.693	1.32785	0.157	0.222	638
195	6.45383	63.68	0.05	29.853	41.803	1.33362	0.157	0.222	647
200	6.62566	65.44	0.05	30.643	42.912	1.33924	0.157	0.222	655
205	6.79719	67.19	0.05	31.433	44.020	1.34470	0.156	0.221	664
210	6.96846	68.94	0.05	32.222	45.126	1.35003	0.156	0.221	672
215	7.13948	70.68	0.05	33.010	46.230	1.35523	0.156	0.221	680
220	7.31029	72.42	0.05	33.797	47.334	1.36031	0.156	0.221	688
225	7.48090	74.16	0.05	34.584	48.436	1.36526	0.156	0.220	696
230	7.65132	75.89	0.04	35.369	49.538	1.37010	0.156	0.220	704
235	7.82158	77.62	0.04	36.155	50.638	1.37484	0.156	0.220	712
240	7.99169	79.34	0.04	36.939	51.738	1.37947	0.156	0.220	720
245	8.16166	81.06	0.04	37.724	52.837	1.38400	0.156	0.220	727
250	8.33150	82.78	0.04	38.507	53.935	1.38844	0.156	0.220	735
255	8.50123	84.50	0.04	39.291	55.033	1.39278	0.156	0.219	742
260	8.67084	86.22	0.04	40.074	56.130	1.39704	0.156	0.219	750
265	8.84036	87.93	0.04	40.856	57.226	1.40122	0.156	0.219	757
270	9.00978	89.64	0.04	41.639	58.322	1.40532	0.156	0.219	764
275	9.17911	91.35	0.04	42.421	59.418	1.40934	0.156	0.219	771
280	9.34836	93.06	0.04	43.202	60.513	1.41329	0.156	0.219	779
285	9.51754	94.77	0.04	43.984	61.608	1.41716	0.156	0.219	786
290	9.68665	96.47	0.03	44.765	62.702	1.42097	0.156	0.219	793
295	9.85569	98.18	0.03	45.546	63.796	1.42471	0.156	0.219	799
300	10.02468	99.88	0.03	46.327	64.890	1.42838	0.156	0.219	806
310	10.36247	103.28	0.03	47.888	67.077	1.43555	0.156	0.219	820
320	10.70007	106.68	0.03	49.449	69.262	1.44249	0.156	0.219	833
330	11.03749	110.07	0.03	51.009	71.447	1.44922	0.156	0.218	846
340	11.37475	113.46	0.03	52.568	73.631	1.45574	0.156	0.218	859
350	11.71187	116.85	0.03	54.128	75.815	1.46207	0.156	0.218	872
360	12.04887	120.24	0.03	55.687	77.998	1.46822	0.156	0.218	884
370	12.38575	123.62	0.03	57.246	80.181	1.47420	0.156	0.218	896
380	12.72254	127.00	0.03	58.805	82.364	1.48002	0.156	0.218	908
390	13.05923	130.38	0.03	60.364	84.546	1.48569	0.156	0.218	920
400	13.39584	133.76	0.03	61.924	86.729	1.49121	0.156	0.218	932
410	13.73238	137.14	0.02	63.483	88.912	1.49660	0.156	0.218	944
420	14.06885	140.52	0.02	65.043	91.095	1.50186	0.156	0.218	955
430	14.40526	143.89	0.02	66.604	93.279	1.50700	0.156	0.218	966
440	14.74161	147.26	0.02	68.165	95.463	1.51202	0.156	0.218	977
450	15.07791	150.63	0.02	69.727	97.647	1.51693	0.156	0.219	988
460	15.41416	154.01	0.02	71.290	99.833	1.52174	0.156	0.219	999
470	15.75037	157.38	0.02	72.854	102.019	1.52644	0.156	0.219	1010
480	16.08654	160.75	0.02	74.419	104.207	1.53104	0.156	0.219	1021
490	16.42266	164.11	0.02	75.985	106.395	1.53556	0.157	0.219	1031
500	16.75876	167.48	0.02	77.552	108.585	1.53998	0.157	0.219	1042
510	17.09482	170.85	0.02	79.121	110.776	1.54432	0.157	0.219	1052
520	17.43085	174.22	0.02	80.692	112.969	1.54858	0.157	0.219	1062
530	17.76686	177.58	0.02	82.264	115.164	1.55276	0.157	0.220	1072
540	18.10283	180.95	0.02	83.839	117.360	1.55686	0.157	0.220	1082
550	18.43879	184.31	0.02	85.415	119.559	1.56090	0.158	0.220	1092
560	18.77472	187.68	0.02	86.993	121.759	1.56486	0.158	0.220	1101
570	19.11062	191.04	0.02	88.574	123.961	1.56876	0.158	0.220	1111
580	19.44651	194.41	0.02	90.157	126.166	1.57259	0.158	0.221	1120
590	19.78238	197.77	0.02	91.742	128.374	1.57637	0.159	0.221	1130
600	20.11823	201.13	0.02	93.330	130.584	1.58008	0.159	0.221	1139

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

10 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 97.845	81.56977	213.49	14.634	170570.74	0.0018634	0.11156	41.635	0.00344	1.56870	5.3449
100	81.24189	212.10	14.541	166489.22	0.0018755	0.11093	39.928	0.00343	1.56607	5.1544
105	80.47782	208.83	14.320	157269.63	0.0019046	0.10940	36.255	0.00342	1.55994	4.7449
110	79.70899	205.51	14.091	148394.46	0.0019354	0.10780	32.951	0.00340	1.55379	4.3771
115	78.93495	202.13	13.856	139853.34	0.0019682	0.10611	29.980	0.00338	1.54761	4.0465
120	78.15519	198.70	13.613	131636.21	0.0020032	0.10436	27.308	0.00335	1.54140	3.7494
125	77.36915	195.20	13.365	123732.94	0.0020405	0.10255	24.905	0.00333	1.53516	3.4824
130	76.57619	191.63	13.111	116133.72	0.0020806	0.10069	22.744	0.00330	1.52888	3.2424
135	75.77562	187.99	12.852	108828.84	0.0021237	0.09877	20.800	0.00326	1.52256	3.0270
140	74.96665	184.28	12.589	101808.79	0.0021702	0.09680	19.052	0.00323	1.51619	2.8336
145	74.14840	180.49	12.321	95064.18	0.0022205	0.09479	17.479	0.00319	1.50976	2.6604
150	73.31985	176.62	12.050	88585.81	0.0022751	0.09275	16.065	0.00315	1.50327	2.5055
155	72.47987	172.65	11.776	82364.64	0.0023347	0.09067	14.792	0.00310	1.49671	2.3674
* 155.986	72.31273	171.86	11.721	81167.16	0.0023471	0.09026	14.557	0.00309	1.49541	2.3420
* 155.986	0.19616	32.77	2.172	9.74	0.0069145	0.00469	0.438	0.10551	1.00117	0.7612
160	0.19087	33.69	2.171	9.76	0.0067033	0.00481	0.449	0.11162	1.00113	0.7586
165	0.18469	34.84	2.170	9.78	0.0064589	0.00496	0.463	0.11944	1.00110	0.7558
170	0.17893	35.99	2.169	9.80	0.0062344	0.00512	0.477	0.12749	1.00106	0.7533
175	0.17353	37.13	2.169	9.81	0.0060267	0.00527	0.492	0.13577	1.00103	0.7511
180	0.16846	38.26	2.168	9.83	0.0058341	0.00543	0.506	0.14428	1.00100	0.7492
185	0.16369	39.39	2.167	9.84	0.0056546	0.00558	0.520	0.15301	1.00097	0.7475
190	0.15919	40.52	2.167	9.86	0.0054869	0.00573	0.534	0.16198	1.00095	0.7459
195	0.15495	41.64	2.167	9.87	0.0053298	0.00589	0.549	0.17117	1.00092	0.7445
200	0.15093	42.77	2.166	9.88	0.0051821	0.00604	0.563	0.18058	1.00090	0.7433
205	0.14712	43.89	2.166	9.89	0.0050431	0.00619	0.577	0.19022	1.00087	0.7421
210	0.14350	45.00	2.165	9.89	0.0049119	0.00635	0.591	0.20008	1.00085	0.7411
215	0.14007	46.12	2.165	9.90	0.0047878	0.00650	0.605	0.21016	1.00083	0.7402
220	0.13679	47.23	2.165	9.91	0.0046702	0.00665	0.619	0.22045	1.00081	0.7393
225	0.13367	48.34	2.165	9.91	0.0045587	0.00680	0.633	0.23096	1.00079	0.7385
230	0.13070	49.45	2.164	9.92	0.0044526	0.00696	0.647	0.24169	1.00078	0.7377
235	0.12785	50.56	2.164	9.92	0.0043516	0.00711	0.661	0.25263	1.00076	0.7370
240	0.12513	51.67	2.164	9.93	0.0042554	0.00726	0.675	0.26378	1.00074	0.7364
245	0.12252	52.77	2.164	9.93	0.0041635	0.00741	0.689	0.27513	1.00073	0.7358
250	0.12003	53.88	2.164	9.94	0.0040756	0.00756	0.703	0.28670	1.00071	0.7352
255	0.11763	54.98	2.164	9.94	0.0039916	0.00771	0.716	0.29850	1.00070	0.7346
260	0.11533	56.08	2.163	9.94	0.0039111	0.00786	0.730	0.31052	1.00069	0.7339
265	0.11312	57.19	2.163	9.95	0.0038339	0.00800	0.744	0.32273	1.00067	0.7334
270	0.11099	58.29	2.163	9.95	0.0037598	0.00815	0.757	0.33513	1.00066	0.7329
275	0.10894	59.39	2.163	9.95	0.0036886	0.00830	0.771	0.34771	1.00065	0.7324
280	0.10697	60.49	2.163	9.95	0.0036202	0.00844	0.784	0.36048	1.00064	0.7319
285	0.10507	61.59	2.163	9.96	0.0035543	0.00859	0.797	0.37344	1.00062	0.7315
290	0.10323	62.69	2.163	9.96	0.0034909	0.00873	0.811	0.38658	1.00061	0.7312
295	0.10146	63.79	2.163	9.96	0.0034297	0.00888	0.824	0.39991	1.00060	0.7308
300	0.09975	64.89	2.163	9.96	0.0033707	0.00902	0.837	0.41342	1.00059	0.7305
310	0.09650	67.08	2.162	9.97	0.0032588	0.00930	0.863	0.44100	1.00057	0.7299
320	0.09346	69.28	2.162	9.97	0.0031542	0.00958	0.889	0.46930	1.00056	0.7293
330	0.09060	71.47	2.162	9.97	0.0030563	0.00986	0.914	0.49832	1.00054	0.7288
340	0.08791	73.67	2.161	9.98	0.0029644	0.01014	0.939	0.52803	1.00052	0.7283
350	0.08538	75.87	2.161	9.98	0.0028779	0.01041	0.964	0.55844	1.00051	0.7279
360	0.08300	78.06	2.161	9.98	0.0027964	0.01068	0.989	0.58952	1.00049	0.7275
370	0.08074	80.26	2.160	9.98	0.0027195	0.01095	1.013	0.62126	1.00048	0.7271
380	0.07860	82.46	2.160	9.98	0.0026468	0.01121	1.037	0.65364	1.00047	0.7268
390	0.07657	84.67	2.159	9.98	0.0025779	0.01148	1.061	0.68667	1.00045	0.7265
400	0.07465	86.87	2.158	9.99	0.0025125	0.01174	1.085	0.72032	1.00044	0.7263
410	0.07282	89.08	2.157	9.99	0.0024504	0.01200	1.108	0.75458	1.00043	0.7260
420	0.07108	91.30	2.156	9.99	0.0023914	0.01225	1.131	0.78944	1.00042	0.7258
430	0.06942	93.52	2.155	9.99	0.0023351	0.01250	1.154	0.82488	1.00041	0.7257
440	0.06784	95.74	2.154	9.99	0.0022815	0.01276	1.177	0.86089	1.00040	0.7256
450	0.06632	97.97	2.153	9.99	0.0022302	0.01301	1.199	0.89745	1.00039	0.7255
460	0.06488	100.21	2.151	9.99	0.0021813	0.01325	1.222	0.93455	1.00039	0.7254
470	0.06349	102.45	2.149	9.99	0.0021345	0.01350	1.244	0.97218	1.00038	0.7254
480	0.06216	104.71	2.148	9.99	0.0020896	0.01374	1.266	1.01031	1.00037	0.7254
490	0.06089	106.97	2.146	9.99	0.0020466	0.01398	1.287	1.04893	1.00036	0.7255
500	0.05967	109.23	2.143	9.99	0.0020054	0.01422	1.309	1.08805	1.00035	0.7256
510	0.05850	111.51	2.141	9.99	0.0019658	0.01446	1.330	1.12761	1.00035	0.7257
520	0.05737	113.80	2.139	9.99	0.0019277	0.01469	1.351	1.16765	1.00034	0.7259
530	0.05628	116.09	2.136	10.00	0.0018911	0.01493	1.372	1.20815	1.00033	0.7261
540	0.05524	118.40	2.133	10.00	0.0018559	0.01516	1.392	1.24908	1.00033	0.7264
550	0.05423	120.71	2.130	10.00	0.0018219	0.01539	1.413	1.29044	1.00032	0.7266
560	0.05326	123.04	2.127	10.00	0.0017892	0.01562	1.433	1.33221	1.00032	0.7270
570	0.05233	125.38	2.124	10.00	0.0017577	0.01585	1.453	1.37440	1.00031	0.7273
580	0.05142	127.72	2.121	10.00	0.0017272	0.01607	1.473	1.41700	1.00031	0.7278
590	0.05055	130.08	2.117	10.00	0.0016978	0.01630	1.493	1.45998	1.00030	0.7282
600	0.04971	132.45	2.114	10.00	0.0016693	0.01652	1.513	1.50336	1.00030	0.7287

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

14.696 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 97.852	0.01226	2091.39	317.8	-83.214	-83.181	0.50125	0.266	0.398	3805
100	0.01231	2049.73	312.3	-82.360	-82.326	0.50988	0.264	0.398	3780
105	0.01243	1954.63	299.6	-80.371	-80.338	0.52929	0.260	0.398	3723
110	0.01255	1862.14	287.2	-78.383	-78.349	0.54779	0.256	0.398	3663
115	0.01267	1772.20	275.3	-76.394	-76.360	0.56548	0.252	0.398	3602
120	0.01279	1684.75	263.7	-74.405	-74.370	0.58241	0.248	0.398	3540
125	0.01292	1599.72	252.5	-72.414	-72.379	0.59867	0.244	0.398	3477
130	0.01306	1517.05	241.7	-70.422	-70.387	0.61430	0.241	0.399	3412
135	0.01320	1436.68	231.1	-68.428	-68.392	0.62935	0.237	0.399	3346
140	0.01334	1358.54	221.0	-66.430	-66.394	0.64388	0.234	0.400	3279
145	0.01349	1282.58	211.1	-64.428	-64.392	0.65793	0.231	0.401	3210
150	0.01364	1208.72	201.6	-62.422	-62.385	0.67154	0.228	0.402	3141
155	0.01380	1136.90	192.3	-60.410	-60.373	0.68473	0.225	0.403	3070
160	0.01396	1067.05	183.4	-58.391	-58.353	0.69755	0.223	0.405	2997
* 162.324	0.01404	1035.24	179.3	-57.450	-57.412	0.70339	0.221	0.405	2963
* 162.324	3.57933	58.76	0.10	24.435	34.176	1.26737	0.159	0.230	583
165	3.64458	51.77	0.09	24.872	34.798	1.27113	0.159	0.229	588
170	3.76571	53.66	0.09	25.685	35.933	1.27795	0.158	0.228	598
175	3.88627	55.53	0.09	26.495	37.070	1.28455	0.158	0.227	608
180	4.00626	57.38	0.09	27.301	38.204	1.29093	0.158	0.226	617
185	4.12575	59.22	0.08	28.105	39.333	1.29712	0.158	0.225	626
190	4.24480	61.04	0.08	28.907	40.459	1.30313	0.157	0.225	635
195	4.36347	62.85	0.08	29.707	41.581	1.30896	0.157	0.224	644
200	4.48179	64.65	0.08	30.505	42.701	1.31463	0.157	0.224	653
205	4.59981	66.44	0.07	31.301	43.819	1.32015	0.157	0.223	662
210	4.71754	68.23	0.07	32.096	44.934	1.32552	0.157	0.223	670
215	4.83503	70.00	0.07	32.889	46.047	1.33076	0.157	0.222	678
220	4.95229	71.77	0.07	33.682	47.158	1.33587	0.157	0.222	687
225	5.06935	73.54	0.07	34.473	48.268	1.34086	0.157	0.222	695
230	5.18622	75.30	0.07	35.263	49.377	1.34573	0.156	0.222	703
235	5.30292	77.05	0.06	36.053	50.484	1.35049	0.156	0.221	711
240	5.41946	78.80	0.06	36.841	51.589	1.35515	0.156	0.221	718
245	5.53586	80.54	0.06	37.629	52.694	1.35970	0.156	0.221	726
250	5.65214	82.28	0.06	38.416	53.798	1.36416	0.156	0.221	734
255	5.76829	84.02	0.06	39.203	54.900	1.36853	0.156	0.220	741
260	5.88433	85.75	0.06	39.989	56.002	1.37281	0.156	0.220	749
265	6.00027	87.48	0.06	40.775	57.103	1.37700	0.156	0.220	756
270	6.11612	89.21	0.06	41.560	58.203	1.38112	0.156	0.220	763
275	6.23187	90.94	0.05	42.344	59.303	1.38515	0.156	0.220	771
280	6.34755	92.66	0.05	43.128	60.402	1.38911	0.156	0.220	778
285	6.46315	94.38	0.05	43.912	61.500	1.39300	0.156	0.220	785
290	6.57868	96.10	0.05	44.695	62.598	1.39682	0.156	0.220	792
295	6.69414	97.82	0.05	45.478	63.695	1.40057	0.156	0.219	799
300	6.80954	99.53	0.05	46.261	64.792	1.40426	0.156	0.219	806
310	7.04018	102.96	0.05	47.826	66.984	1.41145	0.156	0.219	819
320	7.27061	106.38	0.05	49.390	69.175	1.41840	0.156	0.219	832
330	7.50086	109.79	0.04	50.953	71.365	1.42514	0.156	0.219	846
340	7.73096	113.20	0.04	52.515	73.553	1.43167	0.156	0.219	858
350	7.96091	116.60	0.04	54.077	75.741	1.43801	0.156	0.219	871
360	8.19075	120.00	0.04	55.638	77.928	1.44417	0.156	0.219	884
370	8.42046	123.40	0.04	57.199	80.114	1.45016	0.156	0.219	896
380	8.65008	126.80	0.04	58.760	82.300	1.45599	0.156	0.219	908
390	8.87961	130.19	0.04	60.321	84.485	1.46167	0.156	0.219	920
400	9.10905	133.58	0.04	61.882	86.671	1.46720	0.156	0.219	932
410	9.33842	136.97	0.04	63.443	88.856	1.47260	0.156	0.219	943
420	9.56772	140.35	0.04	65.005	91.042	1.47786	0.156	0.219	955
430	9.79696	143.74	0.03	66.567	93.227	1.48301	0.156	0.219	966
440	10.02614	147.12	0.03	68.129	95.413	1.48803	0.156	0.219	977
450	10.25527	150.50	0.03	69.692	97.600	1.49295	0.156	0.219	988
460	10.48435	153.88	0.03	71.256	99.787	1.49775	0.156	0.219	999
470	10.71339	157.26	0.03	72.821	101.975	1.50246	0.156	0.219	1010
480	10.94239	160.63	0.03	74.387	104.164	1.50707	0.156	0.219	1021
490	11.17135	164.01	0.03	75.954	106.355	1.51158	0.157	0.219	1031
500	11.40027	167.38	0.03	77.522	108.546	1.51601	0.157	0.219	1041
510	11.62916	170.76	0.03	79.092	110.739	1.52035	0.157	0.219	1052
520	11.85803	174.13	0.03	80.663	112.933	1.52461	0.157	0.219	1062
530	12.08686	177.50	0.03	82.237	115.129	1.52880	0.157	0.220	1072
540	12.31567	180.87	0.03	83.811	117.326	1.53290	0.157	0.220	1082
550	12.54445	184.24	0.03	85.388	119.526	1.53694	0.158	0.220	1092
560	12.77321	187.61	0.03	86.967	121.727	1.54091	0.158	0.220	1101
570	13.00195	190.98	0.03	88.548	123.931	1.54481	0.158	0.220	1111
580	13.23067	194.35	0.03	90.132	126.136	1.54864	0.158	0.221	1120
590	13.45937	197.72	0.02	91.718	128.345	1.55242	0.159	0.221	1130
600	13.68805	201.09	0.02	93.306	130.555	1.55613	0.159	0.221	1139

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

14.696 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(DH/DV)_P$ BTU/LB	$V(DP/DU)_V$ PSIA-CU FT/BTU	$-V(DP/DV)_T$ PSIA	$(DV/DT)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 97.852	81.57099	213.52	14.634	170597.15	0.0018632	0.11156	41.641	0.00344	1.56871	5.3455
100	81.24418	212.13	14.541	166528.52	0.0018752	0.11094	39.940	0.00343	1.56609	5.1555
105	80.48022	208.86	14.320	157309.16	0.0019042	0.10941	36.266	0.00342	1.55996	4.7460
110	79.71151	205.54	14.091	148434.23	0.0019351	0.10780	32.962	0.00340	1.55381	4.3780
115	78.93760	202.17	13.856	139893.39	0.0019678	0.10612	29.990	0.00338	1.54763	4.0474
120	78.15798	198.73	13.613	131676.48	0.0020028	0.10437	27.318	0.00336	1.54142	3.7503
125	77.37208	195.24	13.365	123773.48	0.0020401	0.10256	24.914	0.00333	1.53518	3.4832
130	76.57929	191.67	13.111	116174.53	0.0020801	0.10069	22.752	0.00330	1.52891	3.2432
135	75.77889	188.04	12.852	108869.95	0.0021232	0.09878	20.808	0.00326	1.52259	3.0276
140	74.97011	184.33	12.589	101850.20	0.0021696	0.09681	19.059	0.00323	1.51621	2.8343
145	74.15286	180.54	12.322	95105.91	0.0022198	0.09480	17.486	0.00319	1.50979	2.6610
150	73.32373	176.66	12.050	88627.88	0.0022744	0.09276	16.071	0.00315	1.50330	2.5061
155	72.46480	172.70	11.776	82407.07	0.0023339	0.09068	14.798	0.00310	1.49674	2.3679
160	71.63157	168.64	11.499	76434.59	0.0023991	0.08857	13.652	0.00306	1.49010	2.2451
* 162.324	71.23063	166.72	11.369	73740.67	0.0024316	0.08758	13.160	0.00303	1.48699	2.1929
* 162.324	0.27938	33.72	2.176	14.18	0.0068153	0.00494	0.460	0.07687	1.00166	0.7714
165	0.27439	34.35	2.175	14.20	0.0066711	0.00502	0.468	0.07978	1.00163	0.7691
170	0.26555	35.52	2.174	14.25	0.0064193	0.00517	0.482	0.08534	1.00158	0.7652
175	0.25732	36.69	2.173	14.29	0.0061890	0.00532	0.496	0.09105	1.00153	0.7618
180	0.24961	37.85	2.172	14.32	0.0059772	0.00547	0.510	0.09691	1.00148	0.7589
185	0.24238	39.00	2.171	14.35	0.0057815	0.00562	0.524	0.10292	1.00144	0.7563
190	0.23558	40.15	2.171	14.38	0.0056000	0.00578	0.538	0.10908	1.00140	0.7539
195	0.22918	41.29	2.170	14.40	0.0054309	0.00593	0.552	0.11538	1.00136	0.7519
200	0.22312	42.43	2.169	14.43	0.0052730	0.00608	0.566	0.12184	1.00133	0.7500
205	0.21740	43.56	2.169	14.45	0.0051258	0.00623	0.580	0.12845	1.00129	0.7484
210	0.21197	44.69	2.168	14.46	0.0049859	0.00639	0.595	0.13520	1.00126	0.7468
215	0.20682	45.82	2.168	14.48	0.0048558	0.00654	0.609	0.14210	1.00123	0.7455
220	0.20193	46.95	2.168	14.49	0.0047314	0.00669	0.623	0.14915	1.00120	0.7442
225	0.19726	48.07	2.167	14.51	0.0046144	0.00684	0.637	0.15634	1.00117	0.7431
230	0.19282	49.19	2.167	14.52	0.0045036	0.00699	0.650	0.16367	1.00115	0.7420
235	0.18858	50.31	2.167	14.53	0.0043984	0.00714	0.664	0.17115	1.00112	0.7410
240	0.18452	51.42	2.166	14.54	0.0042983	0.00729	0.678	0.17877	1.00110	0.7401
245	0.18064	52.54	2.166	14.55	0.0042030	0.00744	0.692	0.18653	1.00107	0.7393
250	0.17692	53.65	2.166	14.56	0.0041121	0.00759	0.706	0.19443	1.00105	0.7385
255	0.17336	54.76	2.166	14.57	0.0040253	0.00774	0.719	0.20251	1.00103	0.7376
260	0.16994	55.87	2.166	14.57	0.0039423	0.00789	0.733	0.21073	1.00101	0.7367
265	0.16666	56.98	2.165	14.58	0.0038629	0.00804	0.746	0.21908	1.00099	0.7359
270	0.16350	58.09	2.165	14.59	0.0037867	0.00818	0.760	0.22755	1.00097	0.7353
275	0.16047	59.20	2.165	14.59	0.0037137	0.00833	0.773	0.23615	1.00095	0.7346
280	0.15754	60.30	2.165	14.60	0.0036435	0.00848	0.787	0.24487	1.00094	0.7341
285	0.15472	61.41	2.165	14.60	0.0035761	0.00862	0.800	0.25371	1.00092	0.7335
290	0.15201	62.51	2.165	14.61	0.0035112	0.00876	0.813	0.26267	1.00090	0.7331
295	0.14938	63.62	2.164	14.61	0.0034487	0.00891	0.826	0.27177	1.00089	0.7326
300	0.14685	64.72	2.164	14.62	0.0033886	0.00905	0.839	0.28099	1.00087	0.7322
310	0.14204	66.93	2.164	14.62	0.0032745	0.00933	0.865	0.29979	1.00084	0.7314
320	0.13754	69.13	2.164	14.63	0.0031681	0.00961	0.891	0.31909	1.00082	0.7307
330	0.13332	71.33	2.163	14.64	0.0030686	0.00989	0.916	0.33887	1.00079	0.7300
340	0.12935	73.54	2.163	14.64	0.0029754	0.01016	0.941	0.35912	1.00077	0.7295
350	0.12561	75.74	2.163	14.65	0.0028877	0.01044	0.966	0.37984	1.00075	0.7289
360	0.12209	77.94	2.162	14.65	0.0028053	0.01071	0.991	0.40102	1.00073	0.7284
370	0.11876	80.15	2.162	14.66	0.0027275	0.01097	1.015	0.42264	1.00071	0.7280
380	0.11561	82.35	2.161	14.66	0.0026540	0.01124	1.039	0.44470	1.00069	0.7276
390	0.11262	84.56	2.160	14.66	0.0025844	0.01150	1.063	0.46720	1.00067	0.7273
400	0.10978	86.77	2.160	14.66	0.0025184	0.01176	1.087	0.49012	1.00065	0.7270
410	0.10708	88.99	2.159	14.67	0.0024558	0.01202	1.110	0.51346	1.00064	0.7267
420	0.10452	91.21	2.158	14.67	0.0023963	0.01227	1.133	0.53720	1.00062	0.7265
430	0.10207	93.43	2.158	14.67	0.0023396	0.01252	1.156	0.56133	1.00061	0.7263
440	0.09974	95.66	2.155	14.67	0.0022856	0.01278	1.179	0.58586	1.00059	0.7261
450	0.09751	97.89	2.154	14.68	0.0022340	0.01302	1.201	0.61075	1.00058	0.7260
460	0.09538	100.13	2.152	14.68	0.0021848	0.01327	1.223	0.63602	1.00057	0.7259
470	0.09334	102.38	2.151	14.68	0.0021377	0.01352	1.245	0.66164	1.00055	0.7259
480	0.09139	104.63	2.149	14.68	0.0020926	0.01376	1.267	0.68760	1.00054	0.7259
490	0.08951	106.89	2.147	14.68	0.0020494	0.01400	1.289	0.71390	1.00053	0.7259
500	0.08772	109.17	2.145	14.68	0.0020079	0.01424	1.310	0.74053	1.00052	0.7260
510	0.08599	111.44	2.142	14.68	0.0019681	0.01448	1.331	0.76746	1.00051	0.7261
520	0.08433	113.73	2.140	14.68	0.0019299	0.01471	1.352	0.79473	1.00050	0.7263
530	0.08273	116.03	2.137	14.69	0.0018931	0.01494	1.373	0.82230	1.00049	0.7265
540	0.08120	118.34	2.134	14.69	0.0018578	0.01518	1.393	0.85017	1.00048	0.7267
550	0.07972	120.66	2.132	14.69	0.0018237	0.01541	1.414	0.87833	1.00047	0.7270
560	0.07829	122.98	2.128	14.69	0.0017909	0.01564	1.434	0.90677	1.00047	0.7273
570	0.07691	125.32	2.125	14.69	0.0017592	0.01586	1.454	0.93549	1.00046	0.7277
580	0.07558	127.67	2.122	14.69	0.0017286	0.01609	1.474	0.96449	1.00045	0.7280
590	0.07430	130.04	2.118	14.69	0.0016991	0.01631	1.494	0.99376	1.00044	0.7285
600	0.07306	132.41	2.115	14.69	0.0016706	0.01654	1.514	1.02329	1.00043	0.7289

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

15 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 97.853	0.01226	2191.41	317.9	-83.214	-83.180	0.50125	0.266	0.398	3805
100	0.01231	2049.76	312.3	-82.360	-82.326	0.50988	0.264	0.398	3780
105	0.01243	1954.66	299.6	-80.371	-80.337	0.52929	0.260	0.398	3723
110	0.01255	1862.17	287.2	-78.383	-78.348	0.54779	0.256	0.398	3663
115	0.01267	1772.23	275.3	-76.394	-76.359	0.56547	0.252	0.398	3603
120	0.01279	1684.78	263.7	-74.405	-74.370	0.58241	0.248	0.398	3540
125	0.01292	1599.75	252.5	-72.415	-72.379	0.59866	0.244	0.398	3477
130	0.01306	1517.08	241.7	-70.422	-70.386	0.61429	0.241	0.399	3412
135	0.01320	1436.71	231.1	-68.428	-68.391	0.62935	0.237	0.399	3346
140	0.01334	1358.58	221.0	-66.430	-66.393	0.64388	0.234	0.400	3279
145	0.01349	1282.61	211.1	-64.429	-64.391	0.65793	0.231	0.401	3210
150	0.01364	1208.75	201.6	-62.422	-62.385	0.67154	0.228	0.402	3141
155	0.01380	1136.93	192.3	-60.410	-60.372	0.68473	0.225	0.403	3070
160	0.01396	1067.09	183.4	-58.392	-58.353	0.69755	0.223	0.405	2997
* 162.677	0.01405	1038.48	178.7	-57.387	-57.268	0.70427	0.221	0.406	2958
* 162.677	3.51259	50.81	0.10	24.479	34.235	1.26651	0.159	0.230	584
165	3.56809	51.69	0.10	24.858	34.769	1.26977	0.159	0.229	588
170	3.68708	53.59	0.09	25.672	35.913	1.27661	0.159	0.228	598
175	3.80526	55.46	0.09	26.483	37.052	1.28321	0.158	0.227	608
180	3.92294	57.32	0.09	27.290	38.186	1.28960	0.158	0.226	617
185	4.04013	59.16	0.08	28.095	39.317	1.29579	0.158	0.226	626
190	4.15688	60.98	0.08	28.897	40.443	1.30180	0.158	0.225	635
195	4.27324	62.80	0.08	29.697	41.567	1.30764	0.157	0.224	644
200	4.38926	64.60	0.08	30.496	42.687	1.31331	0.157	0.224	653
205	4.50496	66.40	0.08	31.292	43.805	1.31883	0.157	0.223	661
210	4.62039	68.18	0.07	32.088	44.921	1.32421	0.157	0.223	670
215	4.73557	69.96	0.07	32.882	46.035	1.32945	0.157	0.223	678
220	4.85052	71.73	0.07	33.674	47.147	1.33457	0.157	0.222	687
225	4.96526	73.50	0.07	34.466	48.257	1.33956	0.157	0.222	695
230	5.07982	75.26	0.07	35.256	49.366	1.34443	0.157	0.222	703
235	5.19421	77.01	0.07	36.046	50.474	1.34919	0.156	0.221	711
240	5.30845	78.76	0.06	36.835	51.580	1.35385	0.156	0.221	718
245	5.42254	80.51	0.06	37.623	52.685	1.35841	0.156	0.221	726
250	5.53650	82.25	0.06	38.411	53.789	1.36287	0.156	0.221	734
255	5.65034	83.99	0.06	39.197	54.892	1.36724	0.156	0.221	741
260	5.76407	85.72	0.06	39.984	55.994	1.37152	0.156	0.220	749
265	5.87770	87.46	0.06	40.769	57.095	1.37571	0.156	0.220	756
270	5.99123	89.18	0.06	41.554	58.196	1.37983	0.156	0.220	763
275	6.10468	90.91	0.06	42.339	59.295	1.38386	0.156	0.220	771
280	6.21804	92.63	0.05	43.123	60.395	1.38782	0.156	0.220	778
285	6.33133	94.36	0.05	43.907	61.493	1.39171	0.156	0.220	785
290	6.44454	96.08	0.05	44.691	62.591	1.39553	0.156	0.220	792
295	6.55769	97.79	0.05	45.474	63.689	1.39928	0.156	0.219	799
300	6.67078	99.51	0.05	46.257	64.786	1.40297	0.156	0.219	806
310	6.89679	102.94	0.05	47.822	66.978	1.41016	0.156	0.219	819
320	7.12260	106.36	0.05	49.386	69.170	1.41712	0.156	0.219	832
330	7.34823	109.77	0.05	50.949	71.359	1.42386	0.156	0.219	846
340	7.57370	113.18	0.04	52.512	73.548	1.43039	0.156	0.219	858
350	7.79903	116.59	0.04	54.073	75.736	1.43673	0.156	0.219	871
360	8.02424	119.99	0.04	55.635	77.923	1.44289	0.156	0.219	884
370	8.24933	123.39	0.04	57.196	80.110	1.44888	0.156	0.219	896
380	8.47432	126.78	0.04	58.757	82.296	1.45471	0.156	0.219	908
390	8.69923	130.18	0.04	60.318	84.481	1.46039	0.156	0.219	920
400	8.92404	133.57	0.04	61.879	86.667	1.46592	0.156	0.219	932
410	9.14879	136.96	0.04	63.441	88.852	1.47132	0.156	0.219	943
420	9.37346	140.34	0.04	65.002	91.038	1.47659	0.156	0.219	955
430	9.59808	143.73	0.04	66.564	93.224	1.48173	0.156	0.219	966
440	9.82263	147.11	0.03	68.127	95.410	1.48676	0.156	0.219	977
450	10.04714	150.49	0.03	69.690	97.597	1.49167	0.156	0.219	988
460	10.27160	153.87	0.03	71.254	99.784	1.49648	0.156	0.219	999
470	10.49601	157.25	0.03	72.819	101.973	1.50118	0.156	0.219	1010
480	10.72038	160.63	0.03	74.385	104.162	1.50579	0.156	0.219	1021
490	10.94471	164.00	0.03	75.952	106.352	1.51031	0.157	0.219	1031
500	11.16901	167.38	0.03	77.520	108.543	1.51474	0.157	0.219	1041
510	11.39328	170.75	0.03	79.090	110.736	1.51908	0.157	0.219	1052
520	11.61752	174.13	0.03	80.662	112.930	1.52334	0.157	0.220	1062
530	11.84173	177.50	0.03	82.235	115.126	1.52752	0.157	0.220	1072
540	12.06591	180.87	0.03	83.810	117.324	1.53163	0.157	0.220	1082
550	12.29007	184.24	0.03	85.387	119.523	1.53567	0.158	0.220	1092
560	12.51420	187.61	0.03	86.965	121.725	1.53963	0.158	0.220	1101
570	12.73831	190.98	0.03	88.547	123.929	1.54353	0.158	0.220	1111
580	12.96241	194.35	0.03	90.130	126.134	1.54737	0.158	0.221	1120
590	13.18648	197.72	0.03	91.716	128.343	1.55114	0.159	0.221	1130
600	13.41054	201.09	0.03	93.305	130.554	1.55486	0.159	0.221	1139

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

15 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 97.853	81.57107	213.52	14.634	170598.85	0.0018631	0.11156	41.642	0.00344	1.56871	5.3455
100	81.24433	212.13	14.541	166531.06	0.0018751	0.11094	39.940	0.00343	1.56609	5.1556
105	80.48038	208.87	14.320	157311.72	0.0019042	0.10941	36.267	0.00342	1.55996	4.7460
110	79.71168	205.55	14.091	148436.81	0.0019350	0.10780	32.962	0.00340	1.55381	4.3781
115	78.93777	202.17	13.856	139895.98	0.0019678	0.10612	29.991	0.00338	1.54763	4.0475
120	78.15816	198.74	13.613	131679.09	0.0020027	0.10437	27.318	0.00336	1.54143	3.7503
125	77.37227	195.24	13.365	123776.10	0.0020401	0.10256	24.914	0.00333	1.53519	3.4832
130	76.57949	191.67	13.111	116177.17	0.0020801	0.10069	22.753	0.00330	1.52891	3.2432
135	75.77910	188.04	12.852	108872.61	0.0021231	0.09878	20.808	0.00326	1.52259	3.0277
140	74.97033	184.33	12.589	101852.88	0.0021695	0.09681	19.060	0.00323	1.51622	2.8343
145	74.15229	180.54	12.322	95108.61	0.0022198	0.09481	17.487	0.00319	1.50979	2.6610
150	73.32398	176.67	12.058	88630.61	0.0022743	0.09276	16.072	0.00315	1.50330	2.5061
155	72.48427	172.70	11.776	82409.81	0.0023338	0.09068	14.798	0.00310	1.49675	2.3679
160	71.63186	168.64	11.499	76437.36	0.0023990	0.08857	13.653	0.00306	1.49011	2.2451
* 162.677	71.16978	166.43	11.349	73336.95	0.0024366	0.08743	13.087	0.00303	1.48652	2.1853
* 162.677	0.28469	33.77	2.176	14.47	0.0066112	0.00495	0.461	0.07558	1.00169	0.7721
165	0.28026	34.32	2.176	14.49	0.0066855	0.00502	0.468	0.07807	1.00167	0.7700
170	0.27122	35.49	2.174	14.53	0.0064318	0.00517	0.482	0.08352	1.00161	0.7660
175	0.26279	36.66	2.173	14.57	0.0061999	0.00532	0.496	0.08912	1.00156	0.7626
180	0.25491	37.82	2.172	14.61	0.0059867	0.00548	0.510	0.09486	1.00151	0.7595
185	0.24752	38.97	2.171	14.64	0.0057900	0.00563	0.524	0.10075	1.00147	0.7569
190	0.24056	40.12	2.171	14.67	0.0056075	0.00578	0.538	0.10679	1.00143	0.7545
195	0.23401	41.27	2.170	14.70	0.0054376	0.00593	0.553	0.11298	1.00139	0.7524
200	0.22783	42.41	2.170	14.72	0.0052790	0.00608	0.567	0.11930	1.00135	0.7505
205	0.22198	43.54	2.169	14.74	0.0051304	0.00624	0.581	0.12578	1.00132	0.7488
210	0.21643	44.67	2.169	14.76	0.0049908	0.00639	0.595	0.13240	1.00129	0.7472
215	0.21117	45.80	2.168	14.77	0.0048594	0.00654	0.609	0.13916	1.00125	0.7458
220	0.20616	46.93	2.168	14.79	0.0047354	0.00669	0.623	0.14607	1.00123	0.7445
225	0.20140	48.05	2.167	14.80	0.0046181	0.00684	0.637	0.15312	1.00120	0.7434
230	0.19686	49.17	2.167	14.82	0.0045069	0.00699	0.651	0.16031	1.00117	0.7423
235	0.19252	50.29	2.167	14.83	0.0044014	0.00714	0.665	0.16764	1.00114	0.7413
240	0.18838	51.41	2.167	14.84	0.0043011	0.00729	0.678	0.17510	1.00112	0.7404
245	0.18442	52.52	2.166	14.85	0.0042056	0.00744	0.692	0.18271	1.00110	0.7395
250	0.18062	53.64	2.166	14.86	0.0041145	0.00759	0.706	0.19045	1.00107	0.7387
255	0.17698	54.75	2.166	14.86	0.0040275	0.00774	0.719	0.19837	1.00105	0.7378
260	0.17349	55.86	2.166	14.87	0.0039444	0.00789	0.733	0.20642	1.00103	0.7369
265	0.17013	56.97	2.166	14.88	0.0038647	0.00804	0.747	0.21461	1.00101	0.7361
270	0.16691	58.08	2.165	14.89	0.0037885	0.00819	0.760	0.22291	1.00099	0.7354
275	0.16381	59.19	2.165	14.89	0.0037153	0.00833	0.773	0.23133	1.00097	0.7348
280	0.16082	60.29	2.165	14.90	0.0036450	0.00848	0.787	0.23988	1.00096	0.7342
285	0.15794	61.40	2.165	14.90	0.0035775	0.00862	0.800	0.24854	1.00094	0.7337
290	0.15517	62.50	2.165	14.91	0.0035125	0.00877	0.813	0.25733	1.00092	0.7332
295	0.15249	63.61	2.165	14.91	0.0034500	0.00891	0.826	0.26624	1.00091	0.7327
300	0.14991	64.71	2.164	14.92	0.0033897	0.00905	0.839	0.27527	1.00089	0.7323
310	0.14499	66.92	2.164	14.93	0.0032755	0.00933	0.865	0.29370	1.00086	0.7315
320	0.14040	69.12	2.164	14.93	0.0031690	0.00961	0.891	0.31261	1.00083	0.7308
330	0.13609	71.32	2.164	14.94	0.0030694	0.00989	0.916	0.33198	1.00081	0.7301
340	0.13204	73.53	2.163	14.94	0.0029761	0.01017	0.941	0.35183	1.00078	0.7295
350	0.12822	75.73	2.163	14.95	0.0028884	0.01044	0.966	0.37213	1.00076	0.7290
360	0.12462	77.93	2.162	14.95	0.0028058	0.01071	0.991	0.39289	1.00074	0.7285
370	0.12122	80.14	2.162	14.96	0.0027280	0.01097	1.015	0.41407	1.00072	0.7281
380	0.11800	82.35	2.161	14.96	0.0026544	0.01124	1.039	0.43569	1.00070	0.7277
390	0.11495	84.55	2.160	14.96	0.0025848	0.01150	1.063	0.45773	1.00068	0.7274
400	0.11206	86.77	2.160	14.97	0.0025188	0.01176	1.087	0.48019	1.00067	0.7270
410	0.10930	88.98	2.159	14.97	0.0024562	0.01202	1.110	0.50305	1.00065	0.7268
420	0.10668	91.20	2.158	14.97	0.0023966	0.01227	1.133	0.52631	1.00063	0.7265
430	0.10419	93.42	2.157	14.97	0.0023399	0.01253	1.156	0.54996	1.00062	0.7263
440	0.10181	95.65	2.155	14.98	0.0022858	0.01278	1.179	0.57399	1.00060	0.7262
450	0.09953	97.89	2.154	14.98	0.0022343	0.01303	1.201	0.59838	1.00059	0.7261
460	0.09736	100.13	2.152	14.98	0.0021850	0.01327	1.223	0.62313	1.00058	0.7260
470	0.09527	102.37	2.151	14.98	0.0021379	0.01352	1.245	0.64823	1.00057	0.7259
480	0.09328	104.63	2.149	14.98	0.0020928	0.01376	1.267	0.67367	1.00055	0.7259
490	0.09137	106.89	2.147	14.98	0.0020495	0.01400	1.289	0.69944	1.00054	0.7260
500	0.08953	109.16	2.145	14.99	0.0020081	0.01424	1.310	0.72553	1.00053	0.7260
510	0.08777	111.44	2.142	14.99	0.0019683	0.01448	1.331	0.75192	1.00052	0.7262
520	0.08608	113.73	2.140	14.99	0.0019300	0.01471	1.352	0.77863	1.00051	0.7263
530	0.08445	116.03	2.137	14.99	0.0018933	0.01495	1.373	0.80565	1.00050	0.7265
540	0.08288	118.33	2.135	14.99	0.0018579	0.01518	1.394	0.83295	1.00049	0.7267
550	0.08137	120.65	2.132	14.99	0.0018238	0.01541	1.414	0.86054	1.00048	0.7270
560	0.07991	122.98	2.129	14.99	0.0017910	0.01564	1.434	0.88841	1.00047	0.7273
570	0.07850	125.32	2.125	14.99	0.0017593	0.01586	1.454	0.91655	1.00047	0.7277
580	0.07715	127.67	2.122	14.99	0.0017287	0.01609	1.474	0.94496	1.00046	0.7281
590	0.07584	130.03	2.118	14.99	0.0016992	0.01631	1.494	0.97364	1.00045	0.7285
600	0.07457	132.41	2.115	14.99	0.0016707	0.01654	1.514	1.00257	1.00044	0.7290

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

20 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	C_P	VELOCITY OF SOUND FT/SEC
* 97.860	0.01226	2091.72	317.9	-83.213	-83.168	0.50126	0.266	0.398	3805
100	0.01231	2050.21	312.3	-82.362	-82.316	0.50986	0.264	0.398	3781
105	0.01242	1955.12	299.6	-80.374	-80.328	0.52927	0.260	0.398	3723
110	0.01254	1862.64	287.3	-78.386	-78.339	0.54777	0.256	0.398	3664
115	0.01267	1772.71	275.3	-76.397	-76.350	0.56545	0.252	0.398	3603
120	0.01279	1685.26	263.7	-74.408	-74.361	0.58239	0.248	0.398	3541
125	0.01292	1600.24	252.5	-72.418	-72.370	0.59864	0.244	0.398	3477
130	0.01306	1517.58	241.7	-70.426	-70.377	0.61427	0.241	0.399	3413
135	0.01320	1437.22	231.2	-68.431	-68.382	0.62933	0.237	0.399	3347
140	0.01334	1359.10	221.0	-66.434	-66.384	0.64386	0.234	0.400	3279
145	0.01349	1283.14	211.1	-64.433	-64.383	0.65790	0.231	0.401	3211
150	0.01364	1209.38	201.6	-62.427	-62.376	0.67151	0.228	0.402	3141
155	0.01388	1137.49	192.4	-60.415	-60.364	0.68478	0.225	0.403	3070
160	0.01396	1067.65	183.4	-58.397	-58.345	0.69752	0.223	0.405	2998
165	0.01413	999.72	174.7	-56.370	-56.317	0.71008	0.220	0.406	2925
* 167.816	0.01423	962.27	170.0	-55.224	-55.171	0.71689	0.219	0.408	2883
* 167.816	2.69553	51.53	0.13	25.098	35.081	1.25444	0.160	0.233	590
170	2.73931	52.38	0.13	25.459	35.590	1.25746	0.160	0.233	594
175	2.82586	54.33	0.12	26.283	36.749	1.26418	0.159	0.231	604
180	2.91579	56.26	0.12	27.103	37.901	1.27067	0.159	0.230	614
185	3.00519	58.16	0.11	27.918	39.048	1.27696	0.159	0.229	623
190	3.09412	60.04	0.11	28.730	40.189	1.28305	0.158	0.228	633
195	3.18264	61.91	0.11	29.539	41.326	1.28895	0.158	0.227	642
200	3.27079	63.76	0.10	30.346	42.459	1.29469	0.158	0.226	651
205	3.35862	65.59	0.10	31.150	43.588	1.30026	0.158	0.226	659
210	3.44616	67.42	0.10	31.952	44.714	1.30569	0.157	0.225	668
215	3.53344	69.23	0.10	32.752	45.838	1.31098	0.157	0.224	676
220	3.62049	71.04	0.09	33.550	46.959	1.31613	0.157	0.224	685
225	3.70732	72.83	0.09	34.347	48.077	1.32116	0.157	0.223	693
230	3.79396	74.62	0.09	35.143	49.193	1.32607	0.157	0.223	701
235	3.88043	76.41	0.09	35.937	50.308	1.33086	0.157	0.223	709
240	3.96674	78.18	0.09	36.730	51.421	1.33555	0.157	0.222	717
245	4.05290	79.95	0.08	37.522	52.532	1.34013	0.157	0.222	725
250	4.13893	81.71	0.08	38.313	53.642	1.34461	0.157	0.222	732
255	4.22484	83.47	0.08	39.104	54.750	1.34900	0.156	0.222	740
260	4.31063	85.23	0.08	39.893	55.857	1.35330	0.156	0.221	748
265	4.39632	86.98	0.08	40.682	56.963	1.35752	0.156	0.221	755
270	4.48192	88.73	0.08	41.470	58.068	1.36165	0.156	0.221	762
275	4.56742	90.47	0.07	42.257	59.173	1.36570	0.156	0.221	770
280	4.65284	92.21	0.07	43.044	60.276	1.36967	0.156	0.221	777
285	4.73819	93.95	0.07	43.830	61.378	1.37358	0.156	0.220	784
290	4.82346	95.68	0.07	44.616	62.480	1.37741	0.156	0.220	791
295	4.90867	97.41	0.07	45.402	63.581	1.38117	0.156	0.220	798
300	4.99382	99.14	0.07	46.187	64.681	1.38487	0.156	0.220	805
310	5.16394	102.59	0.07	47.755	66.888	1.39208	0.156	0.220	818
320	5.33386	106.03	0.06	49.323	69.077	1.39905	0.156	0.220	832
330	5.50359	109.47	0.06	50.889	71.272	1.40581	0.156	0.219	845
340	5.67317	112.90	0.06	52.455	73.465	1.41236	0.156	0.219	858
350	5.84261	116.32	0.06	54.019	75.657	1.41871	0.156	0.219	871
360	6.01192	119.74	0.06	55.583	77.848	1.42488	0.156	0.219	883
370	6.18112	123.15	0.05	57.147	80.038	1.43088	0.156	0.219	896
380	6.35022	126.56	0.05	58.710	82.227	1.43672	0.156	0.219	908
390	6.51922	129.97	0.05	60.273	84.416	1.44241	0.156	0.219	920
400	6.68814	133.37	0.05	61.835	86.605	1.44795	0.156	0.219	931
410	6.85699	136.77	0.05	63.398	88.793	1.45335	0.156	0.219	943
420	7.02577	140.17	0.05	64.961	90.981	1.45862	0.156	0.219	955
430	7.19449	143.56	0.05	66.525	93.169	1.46377	0.156	0.219	966
440	7.36315	146.96	0.05	68.089	95.358	1.46880	0.156	0.219	977
450	7.53175	150.35	0.04	69.653	97.547	1.47372	0.156	0.219	988
460	7.70031	153.74	0.04	71.218	99.736	1.47853	0.156	0.219	999
470	7.86883	157.12	0.04	72.784	101.926	1.48324	0.156	0.219	1010
480	8.03731	160.51	0.04	74.351	104.117	1.48786	0.156	0.219	1021
490	8.20574	163.89	0.04	75.919	106.309	1.49238	0.157	0.219	1031
500	8.37414	167.27	0.04	77.488	108.502	1.49681	0.157	0.219	1041
510	8.54251	170.65	0.04	79.059	110.696	1.50115	0.157	0.219	1052
520	8.71085	174.03	0.04	80.631	112.891	1.50542	0.157	0.220	1062
530	8.87916	177.41	0.04	82.205	115.089	1.50960	0.157	0.220	1072
540	9.04745	180.79	0.04	83.781	117.288	1.51371	0.157	0.220	1082
550	9.21571	184.17	0.04	85.358	119.488	1.51775	0.158	0.220	1092
560	9.38395	187.54	0.04	86.938	121.691	1.52172	0.158	0.220	1101
570	9.55216	190.92	0.04	88.520	123.896	1.52562	0.158	0.221	1111
580	9.72036	194.29	0.03	90.104	126.103	1.52946	0.158	0.221	1120
590	9.88853	197.66	0.03	91.690	128.312	1.53323	0.159	0.221	1130
600	10.05669	201.04	0.03	93.279	130.524	1.53695	0.159	0.221	1139

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

20 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 97.860	81.57238	213.55	14.634	170626.97	0.0018629	0.11157	41.649	0.00344	1.56472	5.3461
100	81.24677	212.16	14.542	166572.91	0.0018748	0.11094	39.953	0.00343	1.56611	5.1568
105	80.48294	208.90	14.320	157353.81	0.0019038	0.10942	36.278	0.00342	1.55998	4.7472
110	79.71436	205.58	14.092	148479.14	0.0019346	0.10781	32.973	0.00340	1.55383	4.3792
115	78.94059	202.21	13.856	139938.59	0.0019674	0.10613	30.001	0.00338	1.54765	4.0485
120	78.16113	198.77	13.614	131721.96	0.0020023	0.10438	27.328	0.00336	1.54145	3.7512
125	77.37540	195.28	13.365	123819.26	0.0020396	0.10257	24.924	0.00333	1.53521	3.4841
130	76.58278	191.71	13.111	116220.63	0.0020795	0.10070	22.761	0.00330	1.52893	3.2440
135	75.78256	188.08	12.853	108916.37	0.0021225	0.09878	20.816	0.00327	1.52261	3.0284
140	74.97401	184.37	12.589	101896.97	0.0021689	0.09682	19.067	0.00323	1.51625	2.8350
145	74.15619	180.59	12.322	95153.04	0.0022190	0.09482	17.494	0.00319	1.50982	2.6617
150	73.32812	176.71	12.051	88675.39	0.0022735	0.09277	16.078	0.00315	1.50334	2.5067
155	72.48867	172.75	11.777	82454.98	0.0023329	0.09069	14.805	0.00310	1.49678	2.3684
160	71.63654	168.70	11.499	76482.92	0.0023980	0.08858	13.659	0.00306	1.49014	2.2456
165	70.77026	164.54	11.220	70750.52	0.0024697	0.08645	12.627	0.00301	1.48342	2.1369
* 167.816	70.27551	162.15	11.061	67624.32	0.0025133	0.08523	12.092	0.00298	1.47958	2.0815
* 167.816	0.37098	34.48	2.180	19.12	0.0067670	0.00516	0.481	0.05963	1.00221	0.7824
170	0.36559	35.00	2.179	19.15	0.0066458	0.00523	0.487	0.06146	1.00217	0.7800
175	0.35387	36.19	2.178	19.23	0.0063859	0.00538	0.501	0.06573	1.00210	0.7750
180	0.34296	37.38	2.176	19.29	0.0061496	0.00553	0.515	0.07010	1.00204	0.7707
185	0.33276	38.56	2.175	19.35	0.0059334	0.00568	0.529	0.07457	1.00198	0.7669
190	0.32319	39.73	2.174	19.40	0.0057345	0.00583	0.543	0.07916	1.00192	0.7636
195	0.31420	40.89	2.174	19.45	0.0055507	0.00598	0.557	0.08384	1.00187	0.7606
200	0.30574	42.04	2.173	19.49	0.0053801	0.00613	0.571	0.08863	1.00182	0.7580
205	0.29774	43.20	2.172	19.53	0.0052211	0.00628	0.585	0.09353	1.00177	0.7557
210	0.29018	44.34	2.172	19.56	0.0050726	0.00643	0.599	0.09853	1.00172	0.7536
215	0.28301	45.49	2.171	19.59	0.0049333	0.00658	0.612	0.10364	1.00168	0.7517
220	0.27621	46.63	2.171	19.62	0.0048025	0.00673	0.626	0.10886	1.00164	0.7500
225	0.26974	47.76	2.170	19.65	0.0046791	0.00688	0.640	0.11418	1.00160	0.7484
230	0.26358	48.89	2.170	19.67	0.0045626	0.00703	0.654	0.11960	1.00157	0.7470
235	0.25770	50.02	2.169	19.69	0.0044524	0.00718	0.668	0.12512	1.00153	0.7456
240	0.25210	51.15	2.169	19.71	0.0043478	0.00733	0.682	0.13075	1.00150	0.7444
245	0.24674	52.27	2.169	19.73	0.0042485	0.00748	0.695	0.13648	1.00147	0.7433
250	0.24161	53.40	2.168	19.74	0.0041541	0.00763	0.709	0.14231	1.00144	0.7423
255	0.23670	54.52	2.168	19.76	0.0040640	0.00778	0.723	0.14829	1.00141	0.7411
260	0.23198	55.64	2.168	19.77	0.0039781	0.00793	0.736	0.15437	1.00138	0.7399
265	0.22746	56.75	2.168	19.78	0.0038960	0.00807	0.749	0.16054	1.00135	0.7389
270	0.22312	57.87	2.167	19.80	0.0038175	0.00822	0.763	0.16679	1.00133	0.7380
275	0.21894	58.98	2.167	19.81	0.0037423	0.00837	0.776	0.17313	1.00130	0.7372
280	0.21492	60.09	2.167	19.82	0.0036702	0.00851	0.790	0.17957	1.00128	0.7365
285	0.21105	61.21	2.167	19.83	0.0036009	0.00866	0.803	0.18609	1.00125	0.7358
290	0.20732	62.32	2.167	19.84	0.0035344	0.00880	0.816	0.19269	1.00123	0.7352
295	0.20372	63.43	2.167	19.84	0.0034704	0.00894	0.829	0.19940	1.00121	0.7346
300	0.20025	64.54	2.166	19.85	0.0034089	0.00908	0.842	0.20619	1.00119	0.7341
310	0.19365	66.75	2.166	19.87	0.0032923	0.00936	0.868	0.22004	1.00115	0.7331
320	0.18748	68.96	2.166	19.88	0.0031839	0.00964	0.893	0.23425	1.00111	0.7323
330	0.18170	71.18	2.165	19.89	0.0030826	0.00992	0.919	0.24882	1.00108	0.7315
340	0.17627	73.39	2.165	19.90	0.0029878	0.01019	0.944	0.26373	1.00105	0.7308
350	0.17116	75.60	2.164	19.91	0.0028989	0.01046	0.968	0.27898	1.00102	0.7301
360	0.16634	77.81	2.164	19.92	0.0028153	0.01073	0.993	0.29457	1.00099	0.7296
370	0.16178	80.02	2.163	19.92	0.0027365	0.01100	1.017	0.31047	1.00096	0.7291
380	0.15747	82.23	2.163	19.93	0.0026621	0.01126	1.041	0.32671	1.00094	0.7286
390	0.15339	84.44	2.162	19.94	0.0025918	0.01152	1.065	0.34326	1.00091	0.7282
400	0.14952	86.65	2.161	19.94	0.0025251	0.01178	1.089	0.36012	1.00089	0.7278
410	0.14584	88.88	2.160	19.95	0.0024619	0.01204	1.112	0.37728	1.00087	0.7275
420	0.14233	91.10	2.159	19.95	0.0024018	0.01229	1.135	0.39474	1.00085	0.7272
430	0.13900	93.33	2.158	19.95	0.0023447	0.01255	1.158	0.41250	1.00083	0.7270
440	0.13581	95.56	2.157	19.96	0.0022902	0.01280	1.180	0.43053	1.00081	0.7268
450	0.13277	97.80	2.155	19.96	0.0022383	0.01305	1.203	0.44884	1.00079	0.7266
460	0.12986	100.04	2.154	19.96	0.0021887	0.01329	1.225	0.46742	1.00077	0.7265
470	0.12708	102.29	2.152	19.97	0.0021413	0.01354	1.247	0.48626	1.00076	0.7264
480	0.12442	104.55	2.150	19.97	0.0020959	0.01378	1.269	0.50535	1.00074	0.7264
490	0.12187	106.82	2.148	19.97	0.0020525	0.01402	1.290	0.52470	1.00072	0.7264
500	0.11942	109.09	2.146	19.98	0.0020108	0.01426	1.312	0.54428	1.00071	0.7265
510	0.11706	111.37	2.144	19.98	0.0019708	0.01449	1.333	0.56407	1.00070	0.7266
520	0.11480	113.66	2.141	19.98	0.0019324	0.01473	1.354	0.58412	1.00068	0.7267
530	0.11262	115.96	2.139	19.98	0.0018954	0.01496	1.374	0.60440	1.00067	0.7269
540	0.11053	118.27	2.136	19.98	0.0018599	0.01519	1.395	0.62489	1.00066	0.7271
550	0.10851	120.59	2.133	19.98	0.0018257	0.01542	1.415	0.64559	1.00064	0.7274
560	0.10656	122.92	2.130	19.99	0.0017927	0.01565	1.436	0.66651	1.00063	0.7277
570	0.10469	125.26	2.126	19.99	0.0017609	0.01588	1.456	0.68762	1.00062	0.7280
580	0.10288	127.62	2.123	19.99	0.0017302	0.01610	1.476	0.70894	1.00061	0.7284
590	0.10113	129.98	2.120	19.99	0.0017006	0.01633	1.495	0.73046	1.00060	0.7288
600	0.09944	132.36	2.116	19.99	0.0016720	0.01655	1.515	0.75217	1.00059	0.7292

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

25 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	C_p BTU / LB -R	VELOCITY OF SOUND FT/SEC
* 97.867	0.01226	2092.04	317.9	-83.212	-83.156	0.53126	0.266	0.398	3805
100	0.01231	2050.66	312.3	-82.364	-82.307	0.50984	0.264	0.398	3781
105	0.01242	1955.58	299.6	-80.376	-80.319	0.52925	0.260	0.398	3723
110	0.01254	1863.11	287.3	-78.388	-78.330	0.54775	0.256	0.398	3664
115	0.01267	1773.18	275.3	-76.400	-76.341	0.56543	0.252	0.398	3603
120	0.01279	1685.75	263.8	-74.411	-74.352	0.58236	0.248	0.398	3541
125	0.01292	1600.73	252.6	-72.421	-72.361	0.59862	0.244	0.398	3478
130	0.01306	1518.08	241.7	-70.429	-70.368	0.61424	0.241	0.399	3413
135	0.01320	1437.73	231.2	-68.435	-68.374	0.62930	0.237	0.399	3347
140	0.01334	1359.62	221.0	-66.438	-66.376	0.64383	0.234	0.400	3280
145	0.01348	1283.68	211.2	-64.437	-64.374	0.65788	0.231	0.401	3211
150	0.01364	1209.84	201.6	-62.431	-62.368	0.67148	0.228	0.402	3142
155	0.01379	1138.04	192.4	-60.420	-60.356	0.68467	0.225	0.403	3071
160	0.01396	1068.22	183.4	-58.401	-58.337	0.69749	0.223	0.405	2999
165	0.01413	1000.30	174.8	-56.375	-56.310	0.70997	0.220	0.406	2925
170	0.01431	934.22	166.4	-54.339	-54.272	0.72213	0.218	0.408	2850
* 172.051	0.01438	907.63	163.0	-53.500	-53.434	0.72703	0.217	0.409	2819
* 172.051	2.19410	51.99	0.16	25.584	35.741	1.24511	0.161	0.236	595
175	2.23769	53.16	0.16	26.078	36.437	1.24912	0.161	0.235	601
180	2.31106	55.17	0.15	26.910	37.609	1.25572	0.160	0.234	611
185	2.38386	57.14	0.15	27.737	38.773	1.26210	0.160	0.232	620
190	2.45616	59.08	0.14	28.560	39.930	1.26827	0.159	0.231	630
195	2.52802	61.00	0.14	29.378	41.081	1.27425	0.159	0.230	639
200	2.59949	62.90	0.13	30.193	42.227	1.28006	0.159	0.229	648
205	2.67063	64.78	0.13	31.005	43.368	1.28569	0.158	0.228	657
210	2.74146	66.65	0.13	31.814	44.505	1.29117	0.158	0.227	666
215	2.81203	68.50	0.12	32.621	45.638	1.29650	0.158	0.226	674
220	2.88235	70.34	0.12	33.425	46.768	1.30170	0.158	0.226	683
225	2.95245	72.17	0.12	34.227	47.895	1.30676	0.157	0.225	691
230	3.02235	73.98	0.11	35.028	49.019	1.31171	0.157	0.225	699
235	3.09208	75.79	0.11	35.827	50.141	1.31653	0.157	0.224	708
240	3.16164	77.60	0.11	36.624	51.260	1.32124	0.157	0.224	716
245	3.23106	79.39	0.11	37.420	52.378	1.32585	0.157	0.223	723
250	3.30034	81.18	0.10	38.215	53.494	1.33036	0.157	0.223	731
255	3.36949	82.96	0.10	39.009	54.608	1.33477	0.157	0.223	739
260	3.43853	84.73	0.10	39.802	55.720	1.33909	0.157	0.222	746
265	3.50746	86.50	0.10	40.594	56.831	1.34332	0.157	0.222	754
270	3.57630	88.27	0.09	41.385	57.941	1.34747	0.157	0.222	761
275	3.64504	90.03	0.09	42.175	59.049	1.35154	0.156	0.222	769
280	3.71370	91.78	0.09	42.965	60.156	1.35553	0.156	0.221	776
285	3.78228	93.53	0.09	43.753	61.263	1.35945	0.156	0.221	783
290	3.85080	95.28	0.09	44.542	62.368	1.36329	0.156	0.221	790
295	3.91924	97.03	0.09	45.329	63.473	1.36707	0.156	0.221	797
300	3.98762	98.77	0.08	46.116	64.576	1.37078	0.156	0.221	804
310	4.12421	102.24	0.08	47.689	66.781	1.37801	0.156	0.220	818
320	4.26060	105.71	0.08	49.260	68.983	1.38500	0.156	0.220	831
330	4.39680	109.17	0.08	50.829	71.184	1.39177	0.156	0.220	844
340	4.53285	112.61	0.07	52.398	73.382	1.39833	0.156	0.220	857
350	4.66875	116.05	0.07	53.965	75.578	1.40470	0.156	0.220	870
360	4.80453	119.49	0.07	55.531	77.773	1.41088	0.156	0.219	883
370	4.94019	122.92	0.07	57.097	79.967	1.41689	0.156	0.219	895
380	5.07575	126.34	0.07	58.662	82.159	1.42274	0.156	0.219	907
390	5.21122	129.76	0.06	60.227	84.351	1.42843	0.156	0.219	919
400	5.34660	133.18	0.06	61.791	86.542	1.43398	0.156	0.219	931
410	5.48191	136.59	0.06	63.356	88.733	1.43939	0.156	0.219	943
420	5.61716	140.00	0.06	64.920	90.924	1.44467	0.156	0.219	954
430	5.75233	143.40	0.06	66.485	93.115	1.44982	0.156	0.219	966
440	5.88746	146.80	0.06	68.050	95.305	1.45486	0.156	0.219	977
450	6.02253	150.20	0.06	69.616	97.496	1.45978	0.156	0.219	988
460	6.15755	153.60	0.05	71.182	99.687	1.46460	0.156	0.219	999
470	6.29253	157.00	0.05	72.749	101.879	1.46931	0.156	0.219	1010
480	6.42746	160.39	0.05	74.317	104.072	1.47393	0.156	0.219	1020
490	6.56236	163.79	0.05	75.886	106.265	1.47845	0.157	0.219	1031
500	6.69723	167.17	0.05	77.456	108.460	1.48288	0.157	0.220	1041
510	6.83206	170.56	0.05	79.028	110.656	1.48723	0.157	0.220	1052
520	6.96686	173.94	0.05	80.601	112.853	1.49150	0.157	0.220	1062
530	7.10163	177.33	0.05	82.175	115.051	1.49569	0.157	0.220	1072
540	7.23638	180.71	0.05	83.752	117.251	1.49980	0.157	0.220	1082
550	7.37110	184.09	0.05	85.330	119.453	1.50384	0.158	0.220	1092
560	7.50580	187.47	0.04	86.910	121.657	1.50781	0.158	0.220	1101
570	7.64047	190.85	0.04	88.492	123.863	1.51171	0.158	0.221	1111
580	7.77513	194.23	0.04	90.077	126.071	1.51555	0.158	0.221	1120
590	7.90977	197.61	0.04	91.664	128.281	1.51933	0.159	0.221	1130
600	8.04439	200.99	0.04	93.254	130.494	1.52305	0.159	0.221	1139

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

25 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 97.867	81.57369	213.58	14.634	170655.09	0.0018626	0.11157	41.656	0.00344	1.56874	5.3468
100	81.24921	212.20	14.542	166614.74	0.0018745	0.11095	39.965	0.00343	1.56613	5.1581
105	80.48549	208.93	14.320	157395.89	0.0019035	0.10942	36.290	0.00342	1.56000	4.7483
110	79.71705	205.62	14.092	148521.48	0.0019342	0.10782	32.984	0.00340	1.55385	4.3802
115	78.94341	202.24	13.856	139981.18	0.0019670	0.10614	30.011	0.00338	1.54768	4.0495
120	78.16409	198.81	13.614	131764.83	0.0020018	0.10439	27.337	0.00336	1.54147	3.7521
125	77.37852	195.32	13.365	123862.41	0.0020391	0.10258	24.933	0.00333	1.53524	3.4849
130	76.58608	191.76	13.112	116264.07	0.0020790	0.10071	22.770	0.00330	1.52896	3.2448
135	75.78606	188.12	12.853	108960.13	0.0021219	0.09879	20.824	0.00327	1.52264	3.0291
140	74.97769	184.42	12.590	101941.04	0.0021682	0.09683	19.075	0.00323	1.51627	2.8356
145	74.16009	180.63	12.322	95197.46	0.0022183	0.09483	17.501	0.00319	1.50985	2.6623
150	73.33225	176.76	12.051	88720.16	0.0022727	0.09278	16.085	0.00315	1.50337	2.5072
155	72.49306	172.81	11.777	82500.13	0.0023321	0.09071	14.811	0.00310	1.49681	2.3689
160	71.64122	168.75	11.500	76528.48	0.0023970	0.08860	13.665	0.00306	1.49018	2.2460
165	70.77526	164.60	11.220	70796.51	0.0024686	0.08646	12.633	0.00301	1.48346	2.1373
170	69.89348	160.33	10.938	65295.68	0.0025477	0.08429	11.704	0.00295	1.47663	2.0417
* 172.051	69.52683	158.55	10.822	63104.66	0.0025826	0.08340	11.350	0.00293	1.47380	2.0061
* 172.051	0.45577	35.01	2.183	23.70	0.0067540	0.00534	0.497	0.04958	1.00271	0.7924
175	0.44689	35.72	2.182	23.76	0.0065864	0.00543	0.505	0.05164	1.00266	0.7885
180	0.43270	36.93	2.180	23.87	0.0063237	0.00558	0.519	0.05519	1.00257	0.7826
185	0.41949	38.14	2.179	23.97	0.0060856	0.00573	0.533	0.05883	1.00249	0.7776
190	0.40714	39.33	2.178	24.05	0.0058685	0.00588	0.547	0.06254	1.00242	0.7732
195	0.39557	40.51	2.177	24.13	0.0056693	0.00603	0.561	0.06633	1.00235	0.7693
200	0.38469	41.68	2.176	24.20	0.0054856	0.00618	0.575	0.07020	1.00229	0.7659
205	0.37444	42.85	2.175	24.26	0.0053155	0.00632	0.588	0.07416	1.00223	0.7629
210	0.36477	44.01	2.175	24.31	0.0051574	0.00647	0.602	0.07819	1.00217	0.7602
215	0.35562	45.17	2.174	24.36	0.0050098	0.00662	0.616	0.08231	1.00211	0.7578
220	0.34694	46.32	2.173	24.40	0.0048716	0.00677	0.630	0.08651	1.00206	0.7556
225	0.33870	47.47	2.173	24.44	0.0047419	0.00692	0.644	0.09080	1.00201	0.7536
230	0.33087	48.61	2.172	24.48	0.0046197	0.00707	0.657	0.09516	1.00197	0.7518
235	0.32341	49.75	2.172	24.51	0.0045045	0.00722	0.671	0.09960	1.00192	0.7501
240	0.31629	50.89	2.171	24.54	0.0043956	0.00737	0.685	0.10413	1.00188	0.7486
245	0.30950	52.02	2.171	24.57	0.0042924	0.00751	0.698	0.10873	1.00184	0.7472
250	0.30300	53.16	2.171	24.60	0.0041944	0.00766	0.712	0.11342	1.00180	0.7459
255	0.29678	54.28	2.170	24.62	0.0041012	0.00781	0.726	0.11824	1.00176	0.7444
260	0.29082	55.41	2.170	24.64	0.0040124	0.00796	0.739	0.12313	1.00173	0.7430
265	0.28511	56.54	2.170	24.66	0.0039278	0.00811	0.752	0.12809	1.00169	0.7417
270	0.27962	57.66	2.170	24.68	0.0038469	0.00826	0.766	0.13311	1.00166	0.7406
275	0.27435	58.78	2.169	24.70	0.0037696	0.00840	0.779	0.13821	1.00163	0.7396
280	0.26927	59.90	2.169	24.71	0.0036956	0.00855	0.792	0.14338	1.00160	0.7388
285	0.26439	61.02	2.169	24.73	0.0036246	0.00869	0.805	0.14861	1.00157	0.7380
290	0.25969	62.13	2.169	24.74	0.0035565	0.00883	0.819	0.15391	1.00154	0.7372
295	0.25515	63.25	2.168	24.76	0.0034911	0.00897	0.832	0.15929	1.00152	0.7365
300	0.25078	64.36	2.168	24.77	0.0034282	0.00912	0.844	0.16474	1.00149	0.7359
310	0.24247	66.59	2.168	24.79	0.0033093	0.00940	0.870	0.17585	1.00144	0.7348
320	0.23471	68.81	2.167	24.81	0.0031989	0.00967	0.896	0.18724	1.00139	0.7337
330	0.22744	71.03	2.167	24.83	0.0030959	0.00995	0.921	0.19891	1.00135	0.7328
340	0.22061	73.25	2.167	24.84	0.0029997	0.01022	0.946	0.21086	1.00131	0.7320
350	0.21419	75.46	2.166	24.86	0.0029099	0.01049	0.971	0.22308	1.00127	0.7313
360	0.20814	77.68	2.166	24.87	0.0028244	0.01076	0.995	0.23557	1.00124	0.7306
370	0.20242	79.89	2.165	24.88	0.0027450	0.01102	1.019	0.24831	1.00120	0.7300
380	0.19702	82.11	2.164	24.89	0.0026698	0.01129	1.043	0.26132	1.00117	0.7295
390	0.19189	84.33	2.163	24.91	0.0025987	0.01155	1.067	0.27457	1.00114	0.7290
400	0.18703	86.55	2.163	24.91	0.0025315	0.01181	1.091	0.28807	1.00111	0.7286
410	0.18242	88.78	2.162	24.92	0.0024677	0.01206	1.114	0.30182	1.00108	0.7283
420	0.17803	91.00	2.161	24.92	0.0024071	0.01232	1.137	0.31580	1.00106	0.7279
430	0.17384	93.23	2.159	24.93	0.0023495	0.01257	1.160	0.33002	1.00103	0.7276
440	0.16985	95.47	2.158	24.94	0.0022946	0.01282	1.182	0.34446	1.00101	0.7274
450	0.16604	97.71	2.157	24.94	0.0022423	0.01307	1.205	0.35912	1.00099	0.7272
460	0.16240	99.96	2.155	24.95	0.0021924	0.01331	1.227	0.37399	1.00097	0.7271
470	0.15892	102.21	2.153	24.95	0.0021447	0.01355	1.249	0.38908	1.00094	0.7270
480	0.15558	104.47	2.151	24.95	0.0020991	0.01380	1.270	0.40436	1.00092	0.7269
490	0.15238	106.74	2.149	24.96	0.0020554	0.01404	1.292	0.41985	1.00091	0.7269
500	0.14932	109.02	2.147	24.96	0.0020135	0.01427	1.313	0.43552	1.00089	0.7269
510	0.14637	111.30	2.145	24.96	0.0019733	0.01451	1.334	0.45136	1.00087	0.7270
520	0.14354	113.60	2.142	24.97	0.0019347	0.01474	1.355	0.46742	1.00085	0.7271
530	0.14081	115.90	2.140	24.97	0.0018976	0.01498	1.376	0.48365	1.00084	0.7273
540	0.13819	118.21	2.137	24.97	0.0018619	0.01521	1.396	0.50005	1.00082	0.7275
550	0.13566	120.53	2.134	24.98	0.0018275	0.01544	1.417	0.51662	1.00081	0.7277
560	0.13323	122.87	2.131	24.98	0.0017945	0.01567	1.437	0.53336	1.00079	0.7280
570	0.13088	125.21	2.128	24.98	0.0017625	0.01589	1.457	0.55027	1.00078	0.7283
580	0.12862	127.56	2.124	24.98	0.0017318	0.01612	1.477	0.56733	1.00076	0.7287
590	0.12643	129.93	2.121	24.98	0.0017021	0.01634	1.497	0.58455	1.00075	0.7291
600	0.12431	132.31	2.117	24.98	0.0016734	0.01657	1.516	0.60193	1.00074	0.7295

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

30 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 97.674	0.01226	2092.35	317.9	-83.212	-83.144	0.50127	0.266	0.398	3805
100	0.01231	2051.12	312.3	-82.366	-82.298	0.51982	0.264	0.398	3781
105	0.01242	1956.04	299.6	-80.378	-80.309	0.52922	0.260	0.398	3724
110	0.01254	1863.58	287.3	-78.391	-78.321	0.54772	0.256	0.398	3664
115	0.01267	1773.66	275.4	-76.402	-76.332	0.56541	0.252	0.398	3604
120	0.01279	1686.23	263.8	-74.414	-74.343	0.58234	0.248	0.398	3541
125	0.01292	1601.23	252.6	-72.424	-72.352	0.59859	0.244	0.398	3478
130	0.01306	1518.59	241.7	-70.432	-70.360	0.61422	0.241	0.399	3413
135	0.01319	1438.24	231.2	-68.438	-68.365	0.62927	0.237	0.399	3347
140	0.01334	1360.14	221.1	-66.441	-66.367	0.64380	0.234	0.400	3280
145	0.01348	1284.21	211.2	-64.441	-64.366	0.65785	0.231	0.401	3212
150	0.01364	1210.38	201.7	-62.435	-62.360	0.67145	0.228	0.402	3142
155	0.01379	1138.60	192.4	-60.424	-60.348	0.68464	0.225	0.403	3071
160	0.01396	1068.78	183.5	-58.406	-58.329	0.69746	0.223	0.404	2999
165	0.01413	1000.88	174.8	-56.380	-56.302	0.70993	0.220	0.406	2926
170	0.01431	934.81	166.4	-54.344	-54.265	0.72209	0.218	0.408	2851
175	0.01449	870.51	158.2	-52.297	-52.216	0.73397	0.215	0.411	2775
* 175.684	0.01452	861.64	157.1	-52.016	-51.935	0.73558	0.215	0.411	2765
* 175.684	1.85369	52.29	0.19	25.983	36.280	1.23748	0.162	0.239	599
180	1.90752	54.07	0.18	26.713	37.309	1.24327	0.161	0.238	608
185	1.96932	56.11	0.18	27.552	38.492	1.24976	0.161	0.236	618
190	2.03058	58.11	0.17	28.386	39.666	1.25602	0.160	0.234	627
195	2.09138	60.08	0.17	29.214	40.832	1.26207	0.160	0.233	637
200	2.15177	62.03	0.16	30.038	41.991	1.26794	0.159	0.231	646
205	2.21181	63.96	0.16	30.858	43.145	1.27364	0.159	0.230	655
210	2.27153	65.87	0.15	31.674	44.293	1.27917	0.159	0.229	664
215	2.33096	67.76	0.15	32.487	45.436	1.28455	0.158	0.228	673
220	2.39015	69.63	0.14	33.298	46.576	1.28979	0.158	0.227	681
225	2.44911	71.49	0.14	34.106	47.711	1.29490	0.158	0.227	690
230	2.50787	73.34	0.14	34.912	48.843	1.29987	0.158	0.226	698
235	2.56645	75.18	0.13	35.715	49.973	1.30473	0.158	0.226	706
240	2.62485	77.01	0.13	36.517	51.099	1.30947	0.157	0.225	714
245	2.68311	78.82	0.13	37.318	52.223	1.31411	0.157	0.225	722
250	2.74123	80.63	0.12	38.117	53.345	1.31864	0.157	0.224	730
255	2.79922	82.44	0.12	38.914	54.464	1.32307	0.157	0.224	738
260	2.85709	84.23	0.12	39.710	55.582	1.32742	0.157	0.223	745
265	2.91485	86.02	0.12	40.505	56.698	1.33167	0.157	0.223	753
270	2.97252	87.80	0.11	41.299	57.812	1.33583	0.157	0.223	760
275	3.03009	89.58	0.11	42.092	58.925	1.33992	0.157	0.222	768
280	3.08758	91.35	0.11	42.885	60.037	1.34392	0.157	0.222	775
285	3.14500	93.12	0.11	43.676	61.147	1.34785	0.157	0.222	782
290	3.20233	94.88	0.11	44.466	62.256	1.35171	0.156	0.222	789
295	3.25960	96.64	0.10	45.256	63.364	1.35550	0.156	0.221	796
300	3.31681	98.40	0.10	46.045	64.471	1.35922	0.156	0.221	803
310	3.43105	101.90	0.10	47.622	66.682	1.36647	0.156	0.221	817
320	3.54509	105.39	0.10	49.196	68.890	1.37348	0.156	0.221	831
330	3.65894	108.86	0.09	50.769	71.095	1.38026	0.156	0.220	844
340	3.77263	112.33	0.09	52.340	73.298	1.38684	0.156	0.220	857
350	3.88617	115.79	0.09	53.910	75.499	1.39322	0.156	0.220	870
360	3.99959	119.24	0.08	55.479	77.698	1.39941	0.156	0.220	882
370	4.11290	122.68	0.08	57.047	79.895	1.40543	0.156	0.220	895
380	4.22610	126.12	0.08	58.614	82.091	1.41129	0.156	0.220	907
390	4.33921	129.56	0.08	60.181	84.286	1.41699	0.156	0.219	919
400	4.45224	132.98	0.08	61.747	86.480	1.42255	0.156	0.219	931
410	4.56520	136.41	0.07	63.313	88.674	1.42796	0.156	0.219	943
420	4.67808	139.83	0.07	64.879	90.867	1.43325	0.156	0.219	954
430	4.79090	143.24	0.07	66.445	93.060	1.43841	0.156	0.219	966
440	4.90366	146.65	0.07	68.012	95.253	1.44345	0.156	0.219	977
450	5.01638	150.06	0.07	69.579	97.446	1.44838	0.156	0.219	988
460	5.12904	153.47	0.07	71.146	99.639	1.45320	0.156	0.219	999
470	5.24166	156.87	0.06	72.714	101.833	1.45792	0.156	0.219	1010
480	5.35424	160.27	0.06	74.283	104.027	1.46254	0.157	0.219	1020
490	5.46678	163.67	0.06	75.853	106.222	1.46706	0.157	0.220	1031
500	5.57928	167.07	0.06	77.424	108.418	1.47150	0.157	0.220	1041
510	5.69175	170.46	0.06	78.996	110.615	1.47585	0.157	0.220	1052
520	5.80420	173.85	0.06	80.570	112.814	1.48012	0.157	0.220	1062
530	5.91661	177.24	0.06	82.146	115.013	1.48431	0.157	0.220	1072
540	6.02900	180.63	0.06	83.723	117.215	1.48842	0.157	0.220	1082
550	6.14136	184.02	0.05	85.302	119.418	1.49247	0.158	0.220	1092
560	6.25370	187.41	0.05	86.882	121.623	1.49644	0.158	0.221	1101
570	6.36602	190.79	0.05	88.465	123.830	1.50034	0.158	0.221	1111
580	6.47832	194.18	0.05	90.051	126.039	1.50419	0.158	0.221	1121
590	6.59059	197.56	0.05	91.638	128.250	1.50797	0.159	0.221	1130
600	6.70286	200.94	0.05	93.228	130.464	1.51169	0.159	0.221	1139

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

30 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 97.874	81.57499	213.60	14.633	170683.20	0.0018623	0.11157	41.663	0.00344	1.56875	5.3474
100	81.25164	212.23	14.542	166656.59	0.0018741	0.11095	39.978	0.00343	1.56615	5.1593
105	80.48805	208.97	14.321	157437.97	0.0019031	0.10943	36.302	0.00342	1.56002	4.7495
110	79.71973	205.65	14.092	148563.81	0.0019338	0.10782	32.995	0.00340	1.55387	4.3613
115	78.94623	202.28	13.856	140023.77	0.0019665	0.10614	30.022	0.00338	1.54770	4.0504
120	78.16706	198.85	13.614	131807.69	0.0020013	0.10439	27.347	0.00336	1.54150	3.7531
125	77.38165	195.36	13.366	123905.55	0.0020386	0.10258	24.942	0.00333	1.53526	3.4858
130	76.58937	191.80	13.112	116307.51	0.0020784	0.10072	22.778	0.00330	1.52899	3.2456
135	75.78954	188.17	12.853	109003.87	0.0021213	0.09880	20.832	0.00327	1.52267	3.0298
140	74.98137	184.46	12.590	101985.11	0.0021675	0.09684	19.082	0.00323	1.51630	2.8363
145	74.16398	180.68	12.323	95241.87	0.0022176	0.09484	17.508	0.00319	1.50988	2.6629
150	73.33639	176.81	12.052	88764.93	0.0022719	0.09279	16.092	0.00315	1.50340	2.5078
155	72.49745	172.86	11.777	82545.27	0.0023312	0.09072	14.817	0.00311	1.49685	2.3694
160	71.64590	168.81	11.500	76574.02	0.0023960	0.08861	13.671	0.00306	1.49022	2.2465
165	70.78026	164.65	11.221	70842.48	0.0024675	0.08647	12.639	0.00301	1.48349	2.1377
170	69.89883	160.39	10.939	65342.11	0.0025464	0.08431	11.709	0.00295	1.47667	2.0421
175	68.99963	156.01	10.654	60064.54	0.0026343	0.08212	10.872	0.00290	1.46973	1.9588
* 175.684	68.87503	155.40	10.615	59358.96	0.0026471	0.08182	10.764	0.00289	1.46877	1.9483
* 175.684	0.53946	35.42	2.186	28.21	0.0067599	0.00550	0.512	0.04261	1.00321	0.8020
180	0.52424	36.49	2.184	28.34	0.0065102	0.00563	0.524	0.04522	1.00312	0.7956
185	0.50779	37.71	2.183	28.49	0.0062475	0.00578	0.537	0.04829	1.00302	0.7891
190	0.49247	38.93	2.181	28.62	0.0060101	0.00593	0.551	0.05143	1.00293	0.7834
195	0.47815	40.13	2.180	28.73	0.0057939	0.00607	0.565	0.05463	1.00284	0.7785
200	0.46473	41.32	2.179	28.83	0.0055960	0.00622	0.579	0.05789	1.00276	0.7742
205	0.45212	42.51	2.178	28.92	0.0054138	0.00637	0.592	0.06122	1.00269	0.7705
210	0.44023	43.68	2.177	29.00	0.0052453	0.00652	0.606	0.06462	1.00262	0.7671
215	0.42901	44.86	2.177	29.07	0.0050888	0.00667	0.620	0.06808	1.00255	0.7641
220	0.41838	46.02	2.176	29.13	0.0049428	0.00681	0.634	0.07160	1.00249	0.7614
225	0.40831	47.18	2.175	29.19	0.0048064	0.00696	0.647	0.07520	1.00243	0.7589
230	0.39874	48.34	2.175	29.24	0.0046784	0.00711	0.661	0.07886	1.00237	0.7567
235	0.38964	49.49	2.174	29.29	0.0045579	0.00726	0.675	0.08258	1.00232	0.7547
240	0.38097	50.63	2.174	29.34	0.0044444	0.00740	0.688	0.08637	1.00226	0.7529
245	0.37270	51.78	2.173	29.38	0.0043371	0.00755	0.702	0.09023	1.00222	0.7512
250	0.36480	52.92	2.173	29.42	0.0042354	0.00770	0.715	0.09415	1.00217	0.7496
255	0.35724	54.05	2.173	29.45	0.0041390	0.00785	0.729	0.09819	1.00212	0.7478
260	0.35001	55.19	2.172	29.48	0.0040473	0.00800	0.742	0.10230	1.00208	0.7461
265	0.34307	56.32	2.172	29.51	0.0039600	0.00814	0.755	0.10645	1.00204	0.7446
270	0.33641	57.45	2.172	29.54	0.0038768	0.00829	0.769	0.11066	1.00200	0.7433
275	0.33002	58.58	2.171	29.56	0.0037973	0.00844	0.782	0.11492	1.00196	0.7421
280	0.32388	59.70	2.171	29.59	0.0037213	0.00858	0.795	0.11924	1.00193	0.7411
285	0.31797	60.82	2.171	29.61	0.0036486	0.00872	0.808	0.12362	1.00189	0.7401
290	0.31227	61.95	2.171	29.63	0.0035789	0.00887	0.821	0.12805	1.00186	0.7393
295	0.30679	63.07	2.170	29.65	0.0035120	0.00901	0.834	0.13255	1.00182	0.7385
300	0.30149	64.19	2.170	29.67	0.0034477	0.00915	0.847	0.13710	1.00179	0.7377
310	0.29146	66.42	2.170	29.70	0.0033265	0.00943	0.873	0.14638	1.00173	0.7364
320	0.28208	68.65	2.169	29.73	0.0032140	0.00970	0.898	0.15589	1.00168	0.7352
330	0.27330	70.88	2.169	29.75	0.0031093	0.00998	0.923	0.16564	1.00162	0.7342
340	0.26507	73.10	2.168	29.78	0.0030116	0.01025	0.948	0.17562	1.00158	0.7333
350	0.25732	75.33	2.168	29.80	0.0029201	0.01052	0.973	0.18582	1.00153	0.7324
360	0.25003	77.55	2.167	29.81	0.0028343	0.01078	0.997	0.19624	1.00149	0.7317
370	0.24314	79.77	2.166	29.83	0.0027536	0.01105	1.021	0.20687	1.00144	0.7310
380	0.23662	82.00	2.166	29.84	0.0026776	0.01131	1.045	0.21772	1.00141	0.7304
390	0.23046	84.22	2.165	29.86	0.0026057	0.01157	1.069	0.22878	1.00137	0.7299
400	0.22461	86.45	2.164	29.87	0.0025378	0.01183	1.092	0.24004	1.00133	0.7294
410	0.21905	88.67	2.163	29.88	0.0024734	0.01208	1.116	0.25151	1.00130	0.7290
420	0.21376	90.91	2.162	29.89	0.0024124	0.01234	1.139	0.26317	1.00127	0.7286
430	0.20873	93.14	2.161	29.90	0.0023543	0.01259	1.161	0.27503	1.00124	0.7283
440	0.20393	95.38	2.159	29.91	0.0022990	0.01284	1.184	0.28708	1.00121	0.7280
450	0.19935	97.63	2.158	29.91	0.0022464	0.01308	1.206	0.29930	1.00118	0.7278
460	0.19497	99.88	2.156	29.92	0.0021961	0.01333	1.228	0.31171	1.00116	0.7276
470	0.19078	102.13	2.155	29.93	0.0021481	0.01357	1.250	0.32429	1.00113	0.7275
480	0.18677	104.40	2.153	29.93	0.0021022	0.01381	1.272	0.33703	1.00111	0.7274
490	0.18292	106.67	2.151	29.94	0.0020583	0.01405	1.293	0.34995	1.00109	0.7274
500	0.17923	108.95	2.148	29.94	0.0020162	0.01429	1.315	0.36302	1.00107	0.7274
510	0.17569	111.23	2.146	29.95	0.0019758	0.01453	1.336	0.37622	1.00104	0.7275
520	0.17229	113.53	2.144	29.95	0.0019370	0.01476	1.357	0.38961	1.00102	0.7275
530	0.16902	115.83	2.141	29.96	0.0018997	0.01499	1.377	0.40314	1.00100	0.7277
540	0.16587	118.15	2.138	29.96	0.0018639	0.01523	1.398	0.41682	1.00099	0.7278
550	0.16283	120.47	2.135	29.96	0.0018294	0.01545	1.418	0.43064	1.00097	0.7281
560	0.15991	122.81	2.132	29.97	0.0017962	0.01568	1.438	0.44460	1.00095	0.7283
570	0.15708	125.15	2.129	29.97	0.0017642	0.01591	1.458	0.45870	1.00093	0.7286
580	0.15436	127.51	2.125	29.97	0.0017333	0.01613	1.478	0.47292	1.00092	0.7290
590	0.15173	129.88	2.122	29.98	0.0017035	0.01636	1.498	0.48728	1.00090	0.7294
600	0.14919	132.26	2.118	29.98	0.0016747	0.01658	1.518	0.50177	1.00089	0.7298

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

35 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 97.881	0.01226	2092.66	317.9	-83.211	-83.131	0.50128	0.266	0.398	3806
100	0.01231	2051.57	312.4	-82.368	-82.289	0.50980	0.264	0.398	3782
105	0.01242	1956.50	299.6	-80.381	-80.300	0.52920	0.260	0.398	3724
110	0.01254	1864.04	287.3	-78.393	-78.312	0.54770	0.256	0.398	3665
115	0.01267	1774.14	275.4	-76.405	-76.323	0.56538	0.252	0.398	3604
120	0.01279	1686.71	263.8	-74.416	-74.334	0.58232	0.248	0.398	3542
125	0.01292	1601.72	252.6	-72.427	-72.343	0.59857	0.244	0.398	3478
130	0.01306	1519.09	241.8	-70.435	-70.351	0.61419	0.241	0.399	3414
135	0.01319	1438.76	231.3	-68.442	-68.356	0.62925	0.237	0.399	3348
140	0.01334	1360.66	221.1	-66.445	-66.359	0.64378	0.234	0.400	3281
145	0.01348	1284.74	211.2	-64.445	-64.357	0.65782	0.231	0.401	3212
150	0.01364	1210.92	201.7	-62.440	-62.351	0.67142	0.228	0.402	3143
155	0.01379	1139.15	192.5	-60.429	-60.348	0.68461	0.225	0.403	3072
160	0.01396	1069.35	183.5	-58.411	-58.321	0.69743	0.223	0.404	3000
165	0.01413	1001.46	174.8	-56.386	-56.294	0.70990	0.220	0.406	2926
170	0.01431	935.40	166.4	-54.350	-54.257	0.72206	0.218	0.408	2852
175	0.01449	871.11	158.3	-52.303	-52.209	0.73394	0.215	0.411	2776
* 178.887	0.01464	822.31	152.1	-50.702	-50.607	0.74299	0.213	0.413	2716
* 178.887	1.60682	52.47	0.22	26.319	36.732	1.23103	0.163	0.242	602
180	1.61892	52.94	0.22	26.510	37.002	1.23253	0.162	0.242	604
185	1.67293	55.05	0.21	27.362	38.205	1.23913	0.162	0.239	615
190	1.72635	57.12	0.20	28.208	39.396	1.24548	0.161	0.237	624
195	1.77929	59.15	0.20	29.047	40.578	1.25162	0.161	0.236	634
200	1.83180	61.15	0.19	29.880	41.752	1.25756	0.160	0.234	644
205	1.88393	63.13	0.18	30.708	42.918	1.26332	0.160	0.233	653
210	1.93573	65.08	0.18	31.532	44.078	1.26891	0.159	0.231	662
215	1.98724	67.01	0.17	32.353	45.232	1.27434	0.159	0.230	671
220	2.03849	68.92	0.17	33.169	46.381	1.27963	0.159	0.229	679
225	2.08951	70.81	0.17	33.983	47.526	1.28477	0.158	0.228	688
230	2.14032	72.69	0.16	34.795	48.666	1.28979	0.158	0.228	696
235	2.19093	74.56	0.16	35.603	49.803	1.29468	0.158	0.227	705
240	2.24138	76.42	0.15	36.410	50.936	1.29945	0.158	0.226	713
245	2.29167	78.26	0.15	37.215	52.067	1.30411	0.158	0.226	721
250	2.34182	80.09	0.15	38.017	53.195	1.30867	0.157	0.225	729
255	2.39184	81.92	0.14	38.819	54.320	1.31312	0.157	0.225	736
260	2.44174	83.73	0.14	39.618	55.443	1.31749	0.157	0.224	744
265	2.49154	85.54	0.14	40.417	56.564	1.32176	0.157	0.224	752
270	2.54123	87.34	0.13	41.214	57.683	1.32594	0.157	0.224	759
275	2.59083	89.14	0.13	42.009	58.801	1.33004	0.157	0.223	767
280	2.64034	90.92	0.13	42.804	59.916	1.33406	0.157	0.223	774
285	2.68977	92.71	0.13	43.598	61.031	1.33801	0.157	0.223	781
290	2.73913	94.48	0.12	44.391	62.144	1.34188	0.157	0.222	788
295	2.78842	96.26	0.12	45.183	63.255	1.34568	0.157	0.222	796
300	2.83765	98.03	0.12	45.974	64.365	1.34941	0.156	0.222	803
310	2.93593	101.55	0.12	47.555	66.583	1.35668	0.156	0.222	816
320	3.03400	105.06	0.11	49.133	68.797	1.36371	0.156	0.221	830
330	3.13188	108.56	0.11	50.709	71.007	1.37051	0.156	0.221	843
340	3.22961	112.05	0.10	52.283	73.214	1.37710	0.156	0.221	856
350	3.32719	115.52	0.10	53.856	75.419	1.38349	0.156	0.220	869
360	3.42464	118.99	0.10	55.427	77.622	1.38970	0.156	0.220	882
370	3.52198	122.45	0.10	56.997	79.823	1.39573	0.156	0.220	894
380	3.61921	125.90	0.09	58.566	82.023	1.40159	0.156	0.220	907
390	3.71635	129.35	0.09	60.135	84.221	1.40738	0.156	0.220	919
400	3.81341	132.79	0.09	61.703	86.418	1.41286	0.156	0.220	931
410	3.91040	136.22	0.09	63.271	88.614	1.41829	0.156	0.220	942
420	4.00731	139.65	0.08	64.838	90.810	1.42358	0.156	0.220	954
430	4.10416	143.08	0.08	66.406	93.005	1.42874	0.156	0.220	965
440	4.20096	146.50	0.08	67.973	95.200	1.43379	0.156	0.219	977
450	4.29770	149.92	0.08	69.541	97.395	1.43872	0.156	0.220	988
460	4.39439	153.33	0.08	71.110	99.590	1.44355	0.156	0.220	999
470	4.49104	156.74	0.08	72.679	101.786	1.44827	0.156	0.220	1010
480	4.58765	160.15	0.07	74.249	103.982	1.45289	0.157	0.220	1020
490	4.68422	163.56	0.07	75.820	106.179	1.45742	0.157	0.220	1031
500	4.78075	166.96	0.07	77.392	108.376	1.46186	0.157	0.220	1041
510	4.87725	170.36	0.07	78.965	110.575	1.46621	0.157	0.220	1052
520	4.97372	173.76	0.07	80.540	112.775	1.47049	0.157	0.220	1062
530	5.07017	177.16	0.07	82.116	114.976	1.47468	0.157	0.220	1072
540	5.16658	180.55	0.07	83.694	117.179	1.47880	0.157	0.220	1082
550	5.26298	183.95	0.06	85.273	119.383	1.48284	0.158	0.221	1092
560	5.35935	187.34	0.06	86.855	121.589	1.48682	0.158	0.221	1101
570	5.45569	190.73	0.06	88.438	123.797	1.49072	0.158	0.221	1111
580	5.55202	194.12	0.06	90.024	126.007	1.49457	0.158	0.221	1121
590	5.64833	197.51	0.06	91.612	128.219	1.49835	0.159	0.221	1130
600	5.74462	200.89	0.06	93.203	130.434	1.50207	0.159	0.222	1139

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN.

35 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 97.881	81.57630	213.63	14.633	170711.32	0.0018620	0.11158	41.670	0.00344	1.56876	5.3480
100	81.25408	212.26	14.542	166698.41	0.0018738	0.11096	39.990	0.00343	1.56617	5.1605
105	80.49061	209.00	14.321	157480.04	0.0019027	0.10943	36.313	0.00342	1.56004	4.7506
110	79.72241	205.69	14.092	148606.13	0.0019335	0.10783	33.006	0.00340	1.55389	4.3823
115	78.94985	202.32	13.856	140066.36	0.0019661	0.10615	30.032	0.00338	1.54772	4.0514
120	78.17002	198.89	13.614	131850.55	0.0020009	0.10440	27.357	0.00336	1.54152	3.7540
125	77.38477	195.40	13.366	123948.69	0.0020381	0.10259	24.951	0.00333	1.53528	3.4866
130	76.59266	191.84	13.112	116350.95	0.0020779	0.10073	22.787	0.00330	1.52901	3.2463
135	75.79302	188.21	12.853	109047.62	0.0021207	0.09881	20.841	0.00327	1.52270	3.0306
140	74.98504	184.51	12.590	102029.18	0.0021669	0.09685	19.090	0.00323	1.51633	2.8370
145	74.16787	188.73	12.323	95286.27	0.0022166	0.09485	17.515	0.00319	1.50991	2.6635
150	73.34052	176.86	12.052	88809.63	0.0022711	0.09281	16.098	0.00315	1.50343	2.5083
155	72.50184	172.91	11.778	82590.41	0.0023303	0.09073	14.824	0.00311	1.49688	2.3699
160	71.65058	168.86	11.501	76619.56	0.0023951	0.08862	13.677	0.00306	1.49025	2.2469
165	70.78525	164.71	11.221	70888.44	0.0024663	0.08649	12.644	0.00301	1.48353	2.1381
170	69.90417	160.45	10.940	65388.53	0.0025452	0.08432	11.715	0.00295	1.47671	2.0424
175	69.00537	156.08	10.655	60111.45	0.0026328	0.08213	10.877	0.00290	1.46977	1.9590
* 178.887	68.29292	152.59	10.433	56157.66	0.0027081	0.08042	10.283	0.00285	1.46429	1.9023
* 178.887	0.62235	35.76	2.188	32.66	0.0067787	0.00565	0.526	0.03746	1.00370	0.8115
180	0.61769	36.04	2.188	32.70	0.0067105	0.00568	0.529	0.03805	1.00367	0.8095
185	0.59776	37.29	2.186	32.91	0.0064200	0.00583	0.542	0.04074	1.00356	0.8013
190	0.57926	38.52	2.185	33.09	0.0061599	0.00598	0.556	0.04347	1.00344	0.7943
195	0.56202	39.75	2.183	33.24	0.0059251	0.00612	0.569	0.04625	1.00334	0.7883
200	0.54591	40.96	2.182	33.38	0.0057116	0.00627	0.583	0.04908	1.00325	0.7830
205	0.53081	42.16	2.181	33.51	0.0055162	0.00641	0.596	0.05196	1.00316	0.7784
210	0.51660	43.35	2.180	33.62	0.0053365	0.00656	0.610	0.05490	1.00307	0.7743
215	0.50321	44.54	2.179	33.72	0.0051705	0.00671	0.624	0.05789	1.00299	0.7706
220	0.49056	45.72	2.179	33.81	0.0050163	0.00686	0.637	0.06094	1.00292	0.7674
225	0.47858	46.89	2.178	33.89	0.0048727	0.00700	0.651	0.06404	1.00285	0.7644
230	0.46722	48.06	2.177	33.96	0.0047385	0.00715	0.664	0.06720	1.00278	0.7618
235	0.45643	49.22	2.177	34.03	0.0046126	0.00730	0.678	0.07041	1.00271	0.7594
240	0.44615	50.37	2.176	34.09	0.0044943	0.00744	0.691	0.07368	1.00265	0.7572
245	0.43636	51.53	2.176	34.15	0.0043827	0.00759	0.705	0.07700	1.00259	0.7552
250	0.42702	52.68	2.175	34.20	0.0042773	0.00773	0.718	0.08038	1.00254	0.7534
255	0.41809	53.82	2.175	34.25	0.0041774	0.00788	0.732	0.08387	1.00249	0.7512
260	0.40954	54.96	2.175	34.29	0.0040827	0.00803	0.745	0.08741	1.00243	0.7492
265	0.40136	56.10	2.174	34.33	0.0039927	0.00818	0.758	0.09099	1.00239	0.7475
270	0.39351	57.24	2.174	34.37	0.0039071	0.00833	0.772	0.09462	1.00234	0.7460
275	0.38598	58.37	2.173	34.40	0.0038254	0.00847	0.785	0.09829	1.00229	0.7446
280	0.37874	59.50	2.173	34.44	0.0037474	0.00861	0.798	0.10200	1.00225	0.7434
285	0.37178	60.63	2.173	34.47	0.0036728	0.00876	0.811	0.10577	1.00221	0.7424
290	0.36508	61.76	2.173	34.49	0.0036015	0.00890	0.824	0.10958	1.00217	0.7414
295	0.35863	62.89	2.172	34.52	0.0035330	0.00904	0.837	0.11344	1.00213	0.7405
300	0.35240	64.01	2.172	34.55	0.0034674	0.00918	0.850	0.11736	1.00209	0.7396
310	0.34061	66.26	2.172	34.59	0.0033437	0.00946	0.875	0.12533	1.00202	0.7381
320	0.32960	68.50	2.171	34.63	0.0032292	0.00973	0.901	0.13350	1.00196	0.7368
330	0.31930	70.73	2.170	34.66	0.0031228	0.01001	0.926	0.14187	1.00190	0.7356
340	0.30964	72.96	2.170	34.69	0.0030236	0.01028	0.950	0.15044	1.00184	0.7345
350	0.30055	75.19	2.169	34.72	0.0029308	0.01054	0.975	0.15920	1.00179	0.7336
360	0.29200	77.42	2.169	34.75	0.0028439	0.01081	0.999	0.16815	1.00174	0.7327
370	0.28393	79.65	2.168	34.77	0.0027622	0.01107	1.023	0.17727	1.00169	0.7320
380	0.27630	81.88	2.167	34.79	0.0026853	0.01133	1.047	0.18658	1.00164	0.7313
390	0.26908	84.11	2.167	34.81	0.0026128	0.01159	1.071	0.19607	1.00160	0.7307
400	0.26223	86.34	2.166	34.82	0.0025442	0.01185	1.094	0.20574	1.00156	0.7302
410	0.25573	88.57	2.165	34.84	0.0024792	0.01211	1.117	0.21557	1.00152	0.7297
420	0.24954	90.81	2.163	34.85	0.0024176	0.01236	1.140	0.22558	1.00148	0.7293
430	0.24366	93.05	2.162	34.86	0.0023591	0.01261	1.163	0.23575	1.00145	0.7290
440	0.23804	95.29	2.161	34.87	0.0023035	0.01286	1.186	0.24609	1.00141	0.7287
450	0.23268	97.54	2.159	34.88	0.0022504	0.01310	1.208	0.25658	1.00138	0.7284
460	0.22756	99.79	2.158	34.89	0.0021999	0.01335	1.230	0.26722	1.00135	0.7282
470	0.22267	102.05	2.156	34.90	0.0021516	0.01359	1.252	0.27801	1.00132	0.7280
480	0.21798	104.32	2.154	34.91	0.0021054	0.01383	1.273	0.28894	1.00130	0.7279
490	0.21348	106.59	2.152	34.92	0.0020612	0.01407	1.295	0.30002	1.00127	0.7278
500	0.20917	108.87	2.150	34.92	0.0020189	0.01431	1.316	0.31123	1.00124	0.7278
510	0.20503	111.16	2.147	34.93	0.0019783	0.01454	1.337	0.32255	1.00122	0.7279
520	0.20106	113.46	2.145	34.94	0.0019393	0.01478	1.358	0.33403	1.00119	0.7280
530	0.19723	115.77	2.142	34.94	0.0019019	0.01501	1.379	0.34564	1.00117	0.7281
540	0.19355	118.09	2.139	34.95	0.0018659	0.01524	1.399	0.35737	1.00115	0.7282
550	0.19001	120.41	2.136	34.95	0.0018313	0.01547	1.420	0.36923	1.00113	0.7284
560	0.18659	122.75	2.133	34.96	0.0017979	0.01570	1.440	0.38120	1.00111	0.7287
570	0.18329	125.10	2.130	34.96	0.0017658	0.01592	1.460	0.39329	1.00109	0.7290
580	0.18011	127.46	2.126	34.96	0.0017348	0.01615	1.480	0.40549	1.00107	0.7293
590	0.17704	129.83	2.123	34.97	0.0017049	0.01637	1.499	0.41780	1.00105	0.7297
600	0.17408	132.21	2.119	34.97	0.0016760	0.01660	1.519	0.43023	1.00103	0.7301

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

40 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	C_P BTU / LB -R	VELOCITY OF SOUND FT/SEC
* 97.888	0.01226	2892.97	317.9	-83.210	-83.119	0.50129	0.266	0.398	3806
100	0.01231	2852.02	312.4	-82.371	-82.279	0.50978	0.264	0.398	3782
105	0.01242	1956.96	299.7	-80.363	-80.291	0.52918	0.260	0.398	3724
110	0.01254	1864.51	287.3	-78.395	-78.303	0.54768	0.256	0.398	3665
115	0.01267	1774.61	275.4	-76.408	-76.314	0.56536	0.252	0.398	3604
120	0.01279	1687.20	263.8	-74.419	-74.325	0.58229	0.248	0.398	3542
125	0.01292	1602.21	252.6	-72.430	-72.334	0.59856	0.244	0.398	3479
130	0.01306	1519.59	241.8	-70.439	-70.342	0.61417	0.241	0.399	3414
135	0.01319	1439.27	231.3	-68.445	-68.347	0.62922	0.237	0.399	3348
140	0.01334	1361.18	221.1	-66.449	-66.350	0.64375	0.234	0.400	3281
145	0.01348	1285.27	211.3	-64.449	-64.349	0.65779	0.231	0.401	3213
150	0.01363	1211.46	201.7	-62.444	-62.343	0.67139	0.228	0.402	3143
155	0.01379	1139.73	192.5	-60.434	-60.331	0.68458	0.225	0.403	3072
160	0.01396	1069.92	183.5	-58.416	-58.313	0.69748	0.223	0.404	3000
165	0.01413	1002.84	174.9	-56.391	-56.286	0.70987	0.220	0.406	2927
170	0.01430	935.99	166.5	-54.356	-54.250	0.72203	0.218	0.408	2852
175	0.01449	871.72	158.3	-52.309	-52.202	0.73398	0.215	0.411	2776
180	0.01469	809.14	150.4	-50.249	-50.140	0.74552	0.213	0.414	2699
* 181.763	0.01476	787.46	147.6	-49.519	-49.409	0.74956	0.212	0.415	2671
* 181.763	1.41922	52.57	0.25	26.607	37.120	1.22542	0.163	0.245	605
185	1.45836	53.97	0.25	27.168	37.911	1.22975	0.163	0.243	611
190	1.49796	56.11	0.24	28.026	39.121	1.23628	0.162	0.241	622
195	1.54584	58.20	0.23	28.676	40.320	1.24243	0.161	0.239	631
200	1.59166	60.26	0.22	29.719	41.509	1.24845	0.161	0.237	641
205	1.63709	62.29	0.21	30.557	42.688	1.25427	0.160	0.235	650
210	1.68378	64.28	0.21	31.389	43.860	1.25992	0.160	0.234	660
215	1.72936	66.25	0.20	32.216	45.025	1.26541	0.160	0.232	669
220	1.77467	68.20	0.20	33.040	46.185	1.27074	0.159	0.231	677
225	1.81974	70.13	0.19	33.860	47.338	1.27592	0.159	0.230	686
230	1.86459	72.04	0.19	34.676	48.487	1.28097	0.159	0.229	695
235	1.90925	73.94	0.18	35.490	49.632	1.28590	0.158	0.229	703
240	1.95373	75.82	0.18	36.302	50.773	1.29070	0.158	0.228	711
245	1.99805	77.69	0.17	37.111	51.910	1.29539	0.158	0.227	719
250	2.04223	79.55	0.17	37.917	53.044	1.29997	0.158	0.227	727
255	2.08628	81.39	0.16	38.722	54.175	1.30445	0.158	0.226	735
260	2.13021	83.23	0.16	39.526	55.304	1.30883	0.157	0.225	743
265	2.17402	85.06	0.16	40.327	56.430	1.31312	0.157	0.225	751
270	2.21774	86.88	0.15	41.127	57.554	1.31733	0.157	0.225	758
275	2.26135	88.69	0.15	41.926	58.676	1.32144	0.157	0.224	766
280	2.30489	90.49	0.15	42.724	59.796	1.32548	0.157	0.224	773
285	2.34834	92.29	0.15	43.520	60.914	1.32944	0.157	0.223	780
290	2.39171	94.09	0.14	44.315	62.031	1.33332	0.157	0.223	788
295	2.43502	95.87	0.14	45.110	63.146	1.33713	0.157	0.223	795
300	2.47827	97.65	0.14	45.903	64.260	1.34088	0.157	0.223	802
310	2.56457	101.20	0.13	47.488	66.483	1.34817	0.157	0.222	816
320	2.65067	104.74	0.13	49.069	68.703	1.35522	0.156	0.222	829
330	2.73659	108.26	0.12	50.649	70.918	1.36203	0.156	0.221	843
340	2.82234	111.76	0.12	52.226	73.130	1.36864	0.156	0.221	856
350	2.90794	115.26	0.12	53.801	75.340	1.37504	0.156	0.221	869
360	2.99342	118.74	0.11	55.375	77.547	1.38126	0.156	0.221	882
370	3.07878	122.22	0.11	56.947	79.751	1.38730	0.156	0.220	894
380	3.16404	125.68	0.11	58.518	81.954	1.39317	0.156	0.220	906
390	3.24921	129.14	0.10	60.089	84.155	1.39889	0.156	0.220	919
400	3.33429	132.59	0.10	61.659	86.355	1.40446	0.156	0.220	930
410	3.41930	136.04	0.10	63.228	88.554	1.40989	0.156	0.220	942
420	3.50424	139.48	0.10	64.797	90.753	1.41519	0.156	0.220	954
430	3.58911	142.92	0.09	66.366	92.950	1.42036	0.156	0.220	965
440	3.67393	146.35	0.09	67.935	95.147	1.42541	0.156	0.220	977
450	3.75869	149.78	0.09	69.504	97.345	1.43035	0.156	0.220	988
460	3.84341	153.20	0.09	71.074	99.542	1.43518	0.156	0.220	999
470	3.92808	156.62	0.09	72.644	101.739	1.43990	0.156	0.220	1010
480	4.01271	160.03	0.08	74.215	103.937	1.44453	0.157	0.220	1020
490	4.09730	163.45	0.08	75.787	106.135	1.44906	0.157	0.220	1031
500	4.18185	166.86	0.08	77.360	108.334	1.45350	0.157	0.220	1041
510	4.26638	170.27	0.08	78.934	110.535	1.45786	0.157	0.220	1052
520	4.35087	173.67	0.08	80.509	112.736	1.46214	0.157	0.220	1062
530	4.43534	177.08	0.08	82.086	114.938	1.46633	0.157	0.220	1072
540	4.51978	180.48	0.07	83.665	117.142	1.47045	0.158	0.220	1082
550	4.60419	183.88	0.07	85.245	119.348	1.47450	0.158	0.221	1092
560	4.68858	187.27	0.07	86.827	121.555	1.47847	0.158	0.221	1101
570	4.77295	190.67	0.07	88.411	123.764	1.48238	0.158	0.221	1111
580	4.85730	194.06	0.07	89.998	125.975	1.48623	0.158	0.221	1121
590	4.94163	197.46	0.07	91.586	128.189	1.49001	0.159	0.221	1130
600	5.02594	200.85	0.07	93.177	130.404	1.49374	0.159	0.222	1139

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

40 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_p$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_p/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 97.888	81.57760	213.66	14.633	170739.43	0.0018617	0.11158	41.677	0.00344	1.56877	5.3486
100	81.25652	212.30	14.542	166740.23	0.0018734	0.11096	40.003	0.00343	1.56619	5.1618
105	80.49316	209.04	14.321	157522.11	0.0019024	0.10944	36.325	0.00342	1.56006	4.7517
110	79.72509	205.72	14.092	148648.45	0.0019331	0.10783	33.017	0.00340	1.55392	4.3834
115	78.95187	202.35	13.856	140188.94	0.0019657	0.10616	30.042	0.00338	1.54774	4.0524
120	78.17299	198.93	13.614	131893.40	0.0020004	0.10441	27.366	0.00336	1.54154	3.7549
125	77.38789	195.44	13.366	123991.83	0.0020376	0.10260	24.960	0.00333	1.53531	3.4875
130	76.59595	191.88	13.112	116394.37	0.0020773	0.10074	22.795	0.00330	1.52904	3.2471
135	75.79649	188.25	12.854	109091.35	0.0021201	0.09882	20.849	0.00327	1.52272	3.0313
140	74.98872	184.55	12.590	102073.23	0.0021662	0.09686	19.097	0.00323	1.51636	2.8376
145	74.17177	180.77	12.323	95330.66	0.0022161	0.09486	17.522	0.00319	1.50994	2.6641
150	73.34464	176.91	12.052	88854.44	0.0022703	0.09282	16.105	0.00315	1.50347	2.5089
155	72.50623	172.96	11.778	82635.54	0.0023294	0.09074	14.830	0.00311	1.49692	2.3704
160	71.65525	168.91	11.502	76665.09	0.0023941	0.08863	13.683	0.00306	1.49029	2.2474
165	70.79025	164.77	11.222	70934.39	0.0024652	0.08650	12.650	0.00301	1.48357	2.1385
170	69.90952	160.51	10.940	65434.93	0.0025439	0.08434	11.720	0.00295	1.47675	2.0427
175	69.01111	156.14	10.656	60158.35	0.0026314	0.08215	10.882	0.00290	1.46982	1.9593
180	68.09273	151.64	10.369	55096.44	0.0027293	0.07994	10.127	0.00284	1.46275	1.8875
* 181.763	67.76364	150.02	10.268	53361.24	0.0027667	0.07915	9.879	0.00281	1.46023	1.8649
* 181.763	0.70461	36.04	2.191	37.04	0.0060867	0.00579	0.538	0.03349	1.00419	0.8209
185	0.68948	36.86	2.189	37.21	0.0060042	0.00586	0.547	0.03504	1.00410	0.8145
190	0.66757	38.12	2.186	37.46	0.0063187	0.00603	0.560	0.03747	1.00397	0.8059
195	0.64723	39.37	2.186	37.67	0.0060632	0.00617	0.573	0.03994	1.00385	0.7986
200	0.62827	40.60	2.185	37.86	0.0058326	0.00632	0.587	0.04245	1.00374	0.7922
205	0.61054	41.82	2.184	38.03	0.0056231	0.00646	0.600	0.04501	1.00363	0.7866
210	0.59398	43.02	2.183	38.18	0.0054314	0.00661	0.614	0.04760	1.00353	0.7817
215	0.57825	44.22	2.182	38.31	0.0052551	0.00675	0.627	0.05024	1.00344	0.7774
220	0.56349	45.42	2.181	38.43	0.0050922	0.00690	0.641	0.05293	1.00335	0.7736
225	0.54953	46.60	2.181	38.54	0.0049411	0.00704	0.654	0.05567	1.00327	0.7701
230	0.53631	47.78	2.180	38.64	0.0048003	0.00719	0.668	0.05845	1.00319	0.7670
235	0.52377	48.95	2.179	38.73	0.0046687	0.00733	0.681	0.06128	1.00311	0.7642
240	0.51184	50.12	2.179	38.81	0.0045453	0.00748	0.695	0.06415	1.00304	0.7617
245	0.50049	51.28	2.178	38.88	0.0044292	0.00763	0.708	0.06708	1.00298	0.7594
250	0.48966	52.44	2.178	38.95	0.0043199	0.00777	0.722	0.07005	1.00291	0.7572
255	0.47932	53.59	2.177	39.01	0.0042166	0.00792	0.735	0.07313	1.00285	0.7547
260	0.46944	54.74	2.177	39.07	0.0041188	0.00807	0.748	0.07624	1.00279	0.7524
265	0.45998	55.89	2.176	39.12	0.0040260	0.00822	0.761	0.07939	1.00273	0.7505
270	0.45091	57.03	2.176	39.17	0.0039378	0.00836	0.774	0.08258	1.00268	0.7487
275	0.44221	58.17	2.176	39.22	0.0038538	0.00851	0.788	0.08581	1.00263	0.7472
280	0.43386	59.31	2.175	39.26	0.0037738	0.00865	0.801	0.08907	1.00258	0.7458
285	0.42583	60.44	2.175	39.30	0.0036974	0.00879	0.814	0.09238	1.00253	0.7446
290	0.41811	61.58	2.175	39.34	0.0036243	0.00893	0.827	0.09572	1.00249	0.7435
295	0.41067	62.71	2.174	39.37	0.0035543	0.00907	0.839	0.09911	1.00244	0.7424
300	0.40351	63.84	2.174	39.40	0.0034873	0.00921	0.852	0.10254	1.00240	0.7415
310	0.38993	66.09	2.173	39.46	0.0033612	0.00949	0.878	0.10954	1.00232	0.7398
320	0.37726	68.34	2.173	39.51	0.0032446	0.00976	0.903	0.11671	1.00224	0.7383
330	0.36542	70.58	2.172	39.56	0.0031364	0.01003	0.928	0.12404	1.00217	0.7370
340	0.35432	72.82	2.172	39.60	0.0030356	0.01030	0.953	0.13155	1.00211	0.7358
350	0.34389	75.06	2.171	39.64	0.0029416	0.01057	0.977	0.13923	1.00204	0.7347
360	0.33407	77.30	2.170	39.67	0.0028535	0.01084	1.001	0.14707	1.00199	0.7338
370	0.32480	79.53	2.170	39.70	0.0027709	0.01110	1.025	0.15507	1.00193	0.7330
380	0.31605	81.76	2.169	39.72	0.0026931	0.01136	1.049	0.16322	1.00188	0.7323
390	0.30777	84.00	2.168	39.75	0.0026198	0.01162	1.073	0.17154	1.00183	0.7316
400	0.29991	86.23	2.167	39.77	0.0025506	0.01187	1.096	0.18000	1.00178	0.7310
410	0.29246	88.47	2.166	39.79	0.0024850	0.01213	1.119	0.18862	1.00174	0.7305
420	0.28537	90.71	2.165	39.80	0.0024229	0.01238	1.142	0.19739	1.00170	0.7300
430	0.27862	92.95	2.164	39.82	0.0023639	0.01263	1.165	0.20630	1.00166	0.7296
440	0.27219	95.20	2.162	39.83	0.0023079	0.01288	1.187	0.21534	1.00162	0.7293
450	0.26605	97.45	2.161	39.85	0.0022545	0.01312	1.210	0.22453	1.00158	0.7290
460	0.26019	99.71	2.159	39.86	0.0022036	0.01337	1.232	0.23385	1.00155	0.7287
470	0.25458	101.97	2.157	39.87	0.0021550	0.01361	1.253	0.24330	1.00151	0.7285
480	0.24921	104.24	2.155	39.88	0.0021086	0.01385	1.275	0.25287	1.00148	0.7284
490	0.24406	106.52	2.153	39.89	0.0020641	0.01409	1.296	0.26257	1.00145	0.7283
500	0.23913	108.80	2.151	39.90	0.0020216	0.01433	1.318	0.27239	1.00142	0.7283
510	0.23439	111.10	2.149	39.91	0.0019808	0.01456	1.339	0.28230	1.00139	0.7283
520	0.22984	113.40	2.146	39.92	0.0019417	0.01479	1.359	0.29235	1.00137	0.7284
530	0.22546	115.71	2.143	39.92	0.0019041	0.01503	1.380	0.30252	1.00134	0.7285
540	0.22125	118.03	2.140	39.93	0.0018679	0.01526	1.401	0.31279	1.00131	0.7286
550	0.21719	120.36	2.137	39.94	0.0018332	0.01549	1.421	0.32317	1.00129	0.7288
560	0.21328	122.69	2.134	39.94	0.0017997	0.01571	1.441	0.33365	1.00127	0.7290
570	0.20951	125.04	2.131	39.95	0.0017674	0.01594	1.461	0.34423	1.00125	0.7293
580	0.20588	127.41	2.127	39.95	0.0017363	0.01616	1.481	0.35491	1.00122	0.7296
590	0.20236	129.78	2.124	39.96	0.0017063	0.01639	1.501	0.36570	1.00120	0.7300
600	0.19897	132.16	2.120	39.96	0.0016774	0.01661	1.520	0.37657	1.00118	0.7304

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

45 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	C_P	VELOCITY OF SOUND FT/SEC
* 97.895	0.01226	2093.28	317.9	-83.209	-83.107	0.50138	0.266	0.398	3806
100	0.01231	2052.48	312.4	-82.373	-82.270	0.50976	0.264	0.398	3782
105	0.01242	1957.42	299.7	-80.385	-80.282	0.52916	0.260	0.398	3724
110	0.01254	1864.98	287.4	-78.398	-78.293	0.54766	0.256	0.398	3665
115	0.01267	1775.09	275.4	-76.410	-76.305	0.56534	0.252	0.398	3605
120	0.01279	1687.68	263.9	-74.422	-74.316	0.58227	0.248	0.398	3543
125	0.01292	1602.71	252.7	-72.433	-72.325	0.59852	0.244	0.398	3479
130	0.01305	1520.09	241.8	-70.442	-70.333	0.61414	0.241	0.399	3415
135	0.01319	1439.78	231.3	-68.449	-68.339	0.62928	0.237	0.399	3349
140	0.01333	1361.70	221.1	-66.453	-66.341	0.64372	0.234	0.400	3281
145	0.01348	1285.80	211.3	-64.453	-64.340	0.65776	0.231	0.401	3213
150	0.01363	1212.01	201.8	-62.448	-62.335	0.67136	0.228	0.402	3143
155	0.01379	1140.26	192.5	-60.438	-60.323	0.68455	0.225	0.403	3073
160	0.01395	1070.48	183.6	-58.421	-58.305	0.69737	0.223	0.404	3001
165	0.01413	1002.61	174.9	-56.396	-56.279	0.70984	0.220	0.406	2927
170	0.01430	936.59	166.5	-54.362	-54.242	0.72199	0.218	0.408	2853
175	0.01449	872.33	158.3	-52.319	-52.195	0.73387	0.215	0.411	2777
180	0.01468	809.76	150.4	-50.266	-50.133	0.74548	0.213	0.414	2700
* 184.382	0.01486	756.26	143.7	-48.437	-48.313	0.75547	0.211	0.417	2631
* 184.382	1.27163	52.61	0.28	26.868	37.456	1.22847	0.164	0.248	607
185	1.27788	52.87	0.28	26.968	37.609	1.22131	0.164	0.248	608
190	1.32811	55.08	0.27	27.840	38.848	1.22787	0.163	0.245	619
195	1.36267	57.24	0.26	28.782	40.057	1.23419	0.162	0.242	629
200	1.40475	59.36	0.25	29.556	41.261	1.24029	0.162	0.240	639
205	1.44641	61.43	0.24	30.482	42.455	1.24619	0.161	0.238	648
210	1.48771	63.48	0.24	31.243	43.640	1.25198	0.161	0.236	657
215	1.52869	65.49	0.23	32.078	44.816	1.25744	0.160	0.235	667
220	1.56939	67.48	0.22	32.908	45.986	1.26281	0.160	0.233	676
225	1.60985	69.44	0.22	33.735	47.149	1.26804	0.159	0.232	684
230	1.65008	71.39	0.21	34.557	48.307	1.27313	0.159	0.231	693
235	1.69011	73.31	0.21	35.376	49.460	1.27809	0.159	0.230	701
240	1.72996	75.22	0.20	36.192	50.608	1.28292	0.159	0.229	710
245	1.76965	77.12	0.20	37.006	51.752	1.28764	0.158	0.228	718
250	1.80919	79.00	0.19	37.817	52.892	1.29225	0.158	0.228	726
255	1.84859	80.87	0.19	38.626	54.038	1.29675	0.158	0.227	734
260	1.88788	82.72	0.18	39.432	55.164	1.30116	0.158	0.227	742
265	1.92705	84.57	0.18	40.237	56.295	1.30547	0.158	0.226	750
270	1.96611	86.41	0.17	41.041	57.424	1.30969	0.157	0.226	757
275	2.00508	88.24	0.17	41.842	58.550	1.31382	0.157	0.225	765
280	2.04396	90.06	0.17	42.643	59.675	1.31787	0.157	0.225	772
285	2.08277	91.88	0.16	43.442	60.797	1.32185	0.157	0.224	780
290	2.12149	93.68	0.16	44.240	61.917	1.32574	0.157	0.224	787
295	2.16015	95.49	0.16	45.036	63.036	1.32957	0.157	0.224	794
300	2.19874	97.28	0.16	45.832	64.154	1.33332	0.157	0.223	801
310	2.27574	100.86	0.15	47.420	66.384	1.34064	0.157	0.223	815
320	2.35253	104.41	0.14	49.006	68.609	1.34778	0.157	0.222	829
330	2.42913	107.95	0.14	50.588	70.830	1.35453	0.156	0.222	842
340	2.50557	111.48	0.14	52.168	73.047	1.36115	0.156	0.222	855
350	2.58186	114.99	0.13	53.746	75.260	1.36757	0.156	0.221	868
360	2.65803	118.49	0.13	55.322	77.471	1.37388	0.156	0.221	881
370	2.73408	121.98	0.12	56.897	79.679	1.37985	0.156	0.221	894
380	2.81002	125.46	0.12	58.470	81.886	1.38573	0.156	0.221	906
390	2.88587	128.93	0.12	60.043	84.090	1.39146	0.156	0.220	918
400	2.96164	132.40	0.11	61.614	86.293	1.39704	0.156	0.220	930
410	3.03733	135.86	0.11	63.185	88.495	1.40247	0.156	0.220	942
420	3.11295	139.31	0.11	64.756	90.695	1.40777	0.156	0.220	954
430	3.18851	142.76	0.11	66.326	92.895	1.41295	0.156	0.220	965
440	3.26401	146.20	0.10	67.896	95.095	1.41801	0.156	0.220	976
450	3.33946	149.63	0.10	69.467	97.294	1.42295	0.156	0.220	988
460	3.41486	153.06	0.10	71.038	99.493	1.42778	0.156	0.220	999
470	3.49022	156.49	0.10	72.609	101.692	1.43251	0.156	0.220	1009
480	3.56553	159.92	0.09	74.181	103.892	1.43714	0.157	0.220	1020
490	3.64081	163.34	0.09	75.754	106.092	1.44168	0.157	0.220	1031
500	3.71605	166.76	0.09	77.328	108.293	1.44613	0.157	0.220	1041
510	3.79126	170.17	0.09	78.902	110.494	1.45049	0.157	0.220	1052
520	3.86643	173.58	0.09	80.479	112.697	1.45476	0.157	0.220	1062
530	3.94158	176.99	0.09	82.056	114.901	1.45896	0.157	0.220	1072
540	4.01671	180.40	0.08	83.635	117.106	1.46308	0.158	0.221	1082
550	4.09180	183.80	0.08	85.216	119.313	1.46713	0.158	0.221	1092
560	4.16688	187.21	0.08	86.799	121.521	1.47111	0.158	0.221	1101
570	4.24193	190.61	0.08	88.384	123.731	1.47502	0.158	0.221	1111
580	4.31696	194.01	0.08	89.971	125.943	1.47887	0.158	0.221	1121
590	4.39198	197.40	0.08	91.560	128.158	1.48265	0.159	0.222	1130
600	4.46697	200.80	0.08	93.152	130.374	1.48638	0.159	0.222	1139

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

45 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 97.895	81.57891	213.69	14.633	170767.54	0.0018614	0.11158	41.684	0.00344	1.56878	5.3493
100	81.25896	212.33	14.542	166782.05	0.0018731	0.11097	40.015	0.00343	1.56621	5.1630
105	80.49571	209.07	14.321	157564.18	0.0019020	0.10944	36.337	0.00342	1.56008	4.7529
110	79.72778	205.76	14.092	148690.77	0.0019327	0.10784	33.028	0.00340	1.55394	4.3845
115	78.95469	202.39	13.857	140151.52	0.0019652	0.10616	30.052	0.00338	1.54777	4.0534
120	78.17595	198.96	13.614	131936.25	0.0020000	0.10442	27.376	0.00336	1.54157	3.7558
125	77.39101	195.48	13.366	124034.96	0.0020370	0.10261	24.969	0.00333	1.53533	3.4883
130	76.59924	191.92	13.113	116437.80	0.0020768	0.10074	22.804	0.00330	1.52906	3.2479
135	75.79996	188.30	12.854	109135.09	0.0021195	0.09883	20.857	0.00327	1.52275	3.0320
140	74.99239	184.60	12.591	102117.28	0.0021656	0.09687	19.105	0.00323	1.51639	2.8383
145	74.17566	180.82	12.324	95375.05	0.0022154	0.09487	17.529	0.00319	1.50997	2.6647
150	73.34877	176.96	12.053	88899.18	0.0022695	0.09283	16.112	0.00315	1.50350	2.5094
155	72.51062	173.01	11.779	82680.65	0.0023285	0.09075	14.837	0.00311	1.49695	2.3709
160	71.65993	168.97	11.502	76710.60	0.0023931	0.08865	13.689	0.00306	1.49033	2.2478
165	70.79523	164.82	11.223	70980.33	0.0024641	0.08651	12.656	0.00301	1.48361	2.1389
170	69.91486	160.57	10.941	65481.33	0.0025426	0.08435	11.725	0.00296	1.47679	2.0431
175	69.01684	156.20	10.657	60205.23	0.0026300	0.08216	10.887	0.00290	1.46986	1.9596
180	68.09890	151.70	10.370	55143.85	0.0027277	0.07995	10.132	0.00284	1.46280	1.8877
* 184.382	67.27593	147.65	10.117	50878.37	0.0028234	0.07800	9.531	0.00278	1.45649	1.8339
* 184.382	0.78639	36.28	2.193	41.37	0.0068416	0.00592	0.550	0.03032	1.00468	0.8301
185	0.78309	36.43	2.192	41.40	0.0068014	0.00594	0.551	0.03059	1.00466	0.8287
190	0.75751	37.72	2.191	41.72	0.0064874	0.00608	0.565	0.03279	1.00451	0.8183
195	0.73385	38.98	2.189	42.01	0.0062090	0.00622	0.578	0.03502	1.00437	0.8095
200	0.71187	40.23	2.188	42.26	0.0059597	0.00636	0.591	0.03728	1.00423	0.8019
205	0.69137	41.47	2.187	42.47	0.0057346	0.00651	0.604	0.03958	1.00411	0.7953
210	0.67217	42.69	2.186	42.67	0.0055300	0.00665	0.618	0.04191	1.00400	0.7895
215	0.65415	43.91	2.185	42.84	0.0053428	0.00680	0.631	0.04428	1.00389	0.7845
220	0.63719	45.11	2.184	43.00	0.0051706	0.00694	0.645	0.04669	1.00379	0.7800
225	0.62118	46.31	2.183	43.14	0.0050114	0.00708	0.658	0.04915	1.00369	0.7760
230	0.60603	47.50	2.182	43.26	0.0048637	0.00723	0.671	0.05164	1.00360	0.7724
235	0.59166	48.68	2.182	43.38	0.0047261	0.00737	0.685	0.05417	1.00352	0.7692
240	0.57805	49.86	2.181	43.48	0.0045974	0.00752	0.698	0.05674	1.00344	0.7663
245	0.56508	51.03	2.180	43.58	0.0044768	0.00766	0.711	0.05935	1.00336	0.7636
250	0.55273	52.20	2.180	43.66	0.0043634	0.00781	0.725	0.06202	1.00329	0.7611
255	0.54095	53.36	2.179	43.75	0.0042564	0.00796	0.738	0.06477	1.00322	0.7588
260	0.52970	54.52	2.179	43.82	0.0041554	0.00811	0.751	0.06755	1.00315	0.7567
265	0.51893	55.67	2.178	43.89	0.0040597	0.00825	0.764	0.07037	1.00309	0.7545
270	0.50862	56.82	2.178	43.95	0.0039689	0.00840	0.777	0.07321	1.00302	0.7515
275	0.49873	57.97	2.178	44.01	0.0038827	0.00854	0.790	0.07609	1.00297	0.7498
280	0.48925	59.11	2.177	44.06	0.0038005	0.00868	0.803	0.07901	1.00291	0.7482
285	0.48013	60.25	2.177	44.11	0.0037222	0.00883	0.816	0.08196	1.00285	0.7468
290	0.47137	61.39	2.177	44.16	0.0036474	0.00897	0.829	0.08494	1.00280	0.7456
295	0.46293	62.53	2.176	44.20	0.0035759	0.00910	0.842	0.08796	1.00275	0.7445
300	0.45481	63.66	2.176	44.24	0.0035074	0.00924	0.855	0.09102	1.00270	0.7434
310	0.43942	65.93	2.175	44.32	0.0033787	0.00952	0.880	0.09726	1.00261	0.7415
320	0.42507	68.18	2.175	44.38	0.0032600	0.00979	0.905	0.10364	1.00253	0.7398
330	0.41167	70.44	2.174	44.44	0.0031500	0.01006	0.930	0.11016	1.00245	0.7384
340	0.39911	72.68	2.173	44.49	0.0030478	0.01033	0.955	0.11686	1.00237	0.7371
350	0.38732	74.93	2.173	44.54	0.0029524	0.01060	0.979	0.12370	1.00230	0.7359
360	0.37622	77.17	2.172	44.58	0.0028632	0.01086	1.004	0.13068	1.00224	0.7349
370	0.36575	79.41	2.171	44.62	0.0027796	0.01112	1.028	0.13780	1.00217	0.7340
380	0.35587	81.65	2.170	44.65	0.0027009	0.01138	1.051	0.14506	1.00212	0.7332
390	0.34652	83.89	2.170	44.68	0.0026269	0.01164	1.075	0.15245	1.00206	0.7325
400	0.33765	86.13	2.169	44.70	0.0025570	0.01190	1.098	0.15999	1.00201	0.7318
410	0.32924	88.37	2.168	44.73	0.0024909	0.01215	1.121	0.16766	1.00196	0.7312
420	0.32124	90.61	2.166	44.75	0.0024282	0.01240	1.144	0.17546	1.00191	0.7307
430	0.31363	92.86	2.165	44.77	0.0023688	0.01265	1.167	0.18338	1.00186	0.7303
440	0.30637	95.11	2.164	44.79	0.0023123	0.01290	1.189	0.19143	1.00182	0.7299
450	0.29945	97.37	2.162	44.81	0.0022585	0.01314	1.211	0.19961	1.00178	0.7296
460	0.29284	99.63	2.160	44.82	0.0022073	0.01339	1.233	0.20790	1.00174	0.7293
470	0.28652	101.89	2.159	44.84	0.0021584	0.01363	1.255	0.21630	1.00170	0.7291
480	0.28046	104.17	2.157	44.85	0.0021117	0.01387	1.277	0.22482	1.00167	0.7289
490	0.27466	106.45	2.154	44.86	0.0020671	0.01411	1.298	0.23344	1.00163	0.7288
500	0.26910	108.73	2.152	44.87	0.0020243	0.01434	1.319	0.24217	1.00160	0.7287
510	0.26376	111.03	2.150	44.88	0.0019833	0.01458	1.340	0.25099	1.00157	0.7288
520	0.25864	113.33	2.147	44.89	0.0019440	0.01481	1.361	0.25993	1.00154	0.7288
530	0.25371	115.64	2.144	44.90	0.0019062	0.01504	1.382	0.26897	1.00151	0.7288
540	0.24896	117.97	2.142	44.91	0.0018699	0.01527	1.402	0.27811	1.00148	0.7290
550	0.24439	120.30	2.139	44.92	0.0018350	0.01550	1.422	0.28734	1.00145	0.7291
560	0.23999	122.64	2.135	44.93	0.0018014	0.01573	1.442	0.29666	1.00143	0.7293
570	0.23574	124.99	2.132	44.93	0.0017691	0.01595	1.462	0.30608	1.00140	0.7296
580	0.23164	127.35	2.129	44.94	0.0017379	0.01618	1.482	0.31558	1.00138	0.7299
590	0.22769	129.73	2.125	44.95	0.0017078	0.01640	1.502	0.32517	1.00135	0.7303
600	0.22387	132.11	2.121	44.95	0.0016787	0.01662	1.521	0.33484	1.00133	0.7307

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

50 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p BTU / LB -R	VELOCITY OF SOUND FT/SEC
* 97.903	0.01226	2093.59	317.9	-83.209	-83.095	0.50130	0.266	0.398	3806
100	0.01231	2052.93	312.4	-82.375	-82.261	0.50373	0.264	0.398	3783
105	0.01242	1957.84	299.7	-80.388	-80.273	0.52914	0.260	0.398	3725
110	0.01254	1865.45	287.4	-78.400	-78.284	0.54764	0.256	0.398	3666
115	0.01267	1775.56	275.5	-76.413	-76.296	0.56531	0.252	0.398	3605
120	0.01279	1688.17	263.9	-74.425	-74.307	0.58224	0.248	0.398	3543
125	0.01292	1603.20	252.7	-72.436	-72.316	0.59849	0.244	0.398	3480
130	0.01305	1520.59	241.8	-70.445	-70.324	0.61412	0.241	0.399	3415
135	0.01319	1440.29	231.3	-68.452	-68.330	0.62917	0.237	0.399	3349
140	0.01333	1362.22	221.2	-66.456	-66.333	0.64370	0.234	0.400	3282
145	0.01348	1286.33	211.3	-64.457	-64.332	0.65774	0.231	0.401	3214
150	0.01363	1212.55	201.8	-62.453	-62.326	0.67133	0.228	0.402	3144
155	0.01379	1140.81	192.6	-60.443	-60.315	0.68452	0.225	0.403	3073
160	0.01395	1071.05	183.6	-58.426	-58.297	0.69734	0.223	0.404	3001
165	0.01412	1003.19	174.9	-56.402	-56.271	0.70980	0.220	0.406	2928
170	0.01430	937.18	166.5	-54.367	-54.235	0.72196	0.218	0.408	2854
175	0.01449	872.93	158.4	-52.322	-52.187	0.73383	0.215	0.411	2778
180	0.01468	810.38	150.5	-50.262	-50.126	0.74544	0.213	0.414	2700
185	0.01489	749.46	142.8	-48.187	-48.049	0.75683	0.211	0.417	2622
* 186.792	0.01497	727.99	140.0	-47.438	-47.300	0.76086	0.210	0.419	2593
* 186.792	1.15233	52.59	0.31	27.082	37.751	1.21602	0.165	0.251	609
190	1.17764	54.03	0.31	27.649	38.553	1.22029	0.164	0.249	616
195	1.21661	56.26	0.29	28.524	39.788	1.22671	0.163	0.246	626
200	1.25508	58.44	0.28	29.389	41.009	1.23289	0.163	0.243	636
205	1.29311	60.57	0.27	30.246	42.218	1.23886	0.162	0.241	646
210	1.33076	62.66	0.27	31.095	43.416	1.24463	0.161	0.239	655
215	1.36808	64.72	0.26	31.938	44.604	1.25023	0.161	0.237	665
220	1.40511	66.75	0.25	32.775	45.785	1.25565	0.160	0.235	674
225	1.44188	68.75	0.24	33.608	46.958	1.26093	0.160	0.234	683
230	1.47842	70.73	0.24	34.437	48.125	1.26605	0.160	0.233	691
235	1.51475	72.68	0.23	35.261	49.286	1.27105	0.159	0.232	700
240	1.55091	74.62	0.22	36.082	50.442	1.27591	0.159	0.231	708
245	1.58689	76.54	0.22	36.900	51.593	1.28066	0.159	0.230	717
250	1.62272	78.45	0.21	37.716	52.740	1.28530	0.158	0.229	725
255	1.65842	80.34	0.21	38.528	53.883	1.28982	0.158	0.228	733
260	1.69399	82.22	0.20	39.339	55.023	1.29425	0.158	0.228	741
265	1.72944	84.09	0.20	40.147	56.159	1.29858	0.158	0.227	748
270	1.76480	85.94	0.19	40.954	57.293	1.30282	0.158	0.226	756
275	1.80005	87.79	0.19	41.758	58.424	1.30697	0.158	0.226	764
280	1.83521	89.63	0.19	42.561	59.553	1.31104	0.157	0.226	771
285	1.87030	91.46	0.18	43.363	60.679	1.31503	0.157	0.225	779
290	1.90530	93.28	0.18	44.163	61.804	1.31894	0.157	0.225	786
295	1.94024	95.10	0.18	44.962	62.926	1.32277	0.157	0.224	793
300	1.97510	96.91	0.17	45.760	64.047	1.32654	0.157	0.224	800
310	2.04466	100.51	0.17	47.353	66.284	1.33387	0.157	0.223	814
320	2.11401	104.09	0.16	48.942	68.515	1.34096	0.157	0.223	828
330	2.18316	107.65	0.16	50.527	70.741	1.34781	0.157	0.222	842
340	2.25215	111.19	0.15	52.110	72.962	1.35444	0.156	0.222	855
350	2.32100	114.72	0.15	53.691	75.180	1.36087	0.156	0.222	868
360	2.38971	118.24	0.14	55.270	77.395	1.36711	0.156	0.221	881
370	2.45831	121.75	0.14	56.847	79.607	1.37317	0.156	0.221	893
380	2.52680	125.24	0.13	58.422	81.817	1.37906	0.156	0.221	905
390	2.59521	128.73	0.13	59.996	84.025	1.38480	0.156	0.221	918
400	2.66352	132.20	0.13	61.570	86.230	1.39038	0.156	0.221	930
410	2.73176	135.67	0.12	63.142	88.435	1.39582	0.156	0.220	942
420	2.79993	139.14	0.12	64.715	90.638	1.40113	0.156	0.220	953
430	2.86804	142.59	0.12	66.286	92.841	1.40632	0.156	0.220	965
440	2.93609	146.04	0.12	67.858	95.042	1.41138	0.156	0.220	976
450	3.00408	149.49	0.11	69.430	97.244	1.41632	0.156	0.220	987
460	3.07203	152.93	0.11	71.002	99.445	1.42116	0.156	0.220	998
470	3.13993	156.37	0.11	72.574	101.646	1.42590	0.157	0.220	1009
480	3.20779	159.80	0.11	74.147	103.847	1.43053	0.157	0.220	1020
490	3.27562	163.23	0.10	75.721	106.049	1.43507	0.157	0.220	1031
500	3.34340	166.65	0.10	77.295	108.251	1.43952	0.157	0.220	1041
510	3.41116	170.07	0.10	78.871	110.454	1.44388	0.157	0.220	1052
520	3.47888	173.49	0.10	80.448	112.658	1.44816	0.157	0.220	1062
530	3.54658	176.91	0.10	82.026	114.863	1.45236	0.157	0.221	1072
540	3.61425	180.32	0.09	83.606	117.070	1.45649	0.158	0.221	1082
550	3.68189	183.73	0.09	85.188	119.277	1.46054	0.158	0.221	1092
560	3.74952	187.14	0.09	86.771	121.487	1.46452	0.158	0.221	1102
570	3.81712	190.55	0.09	88.357	123.698	1.46843	0.158	0.221	1111
580	3.88470	193.95	0.09	89.945	125.912	1.47228	0.158	0.221	1121
590	3.95226	197.35	0.09	91.534	128.127	1.47607	0.159	0.222	1130
600	4.01980	200.75	0.08	93.127	130.345	1.47979	0.159	0.222	1140

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

50 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 97.903	81.58022	213.71	14.633	170795.65	0.0018611	0.11159	41.691	0.00344	1.56879	5.3499
100	81.26139	212.36	14.542	166823.87	0.0018728	0.11097	40.028	0.00343	1.56623	5.1642
105	80.49827	209.10	14.321	157606.24	0.0019016	0.10945	36.348	0.00342	1.56010	4.7540
110	79.73046	205.79	14.093	148733.08	0.0019323	0.10785	33.039	0.00340	1.55346	4.3855
115	78.95750	202.43	13.857	140194.09	0.0019648	0.10617	30.063	0.00338	1.54779	4.0544
120	78.17891	199.00	13.615	131979.09	0.0019995	0.10442	27.386	0.00336	1.54159	3.7567
125	77.39413	195.52	13.366	124078.08	0.0020365	0.10262	24.978	0.00333	1.53536	3.4891
130	76.60253	191.96	13.113	116481.21	0.0020762	0.10075	22.812	0.00330	1.52909	3.2487
135	75.80344	188.34	12.854	109178.80	0.0021189	0.09884	20.865	0.00327	1.52278	3.0327
140	74.99606	184.64	12.591	102161.33	0.0021649	0.09688	19.113	0.00323	1.51642	2.8390
145	74.17954	180.87	12.324	95419.43	0.0022147	0.09488	17.537	0.00319	1.51001	2.6653
150	73.35289	177.01	12.053	88943.92	0.0022687	0.09284	16.119	0.00315	1.50353	2.5100
155	72.51500	173.06	11.779	82725.76	0.0023276	0.09076	14.843	0.00311	1.49698	2.3714
160	71.66460	169.02	11.503	76756.11	0.0023921	0.08866	13.695	0.00306	1.49036	2.2483
165	70.80022	164.88	11.223	71026.26	0.0024630	0.08653	12.661	0.00301	1.48365	2.1393
170	69.92019	160.63	10.942	65527.71	0.0025414	0.08436	11.731	0.00296	1.47684	2.0434
175	69.02257	156.26	10.658	60252.13	0.0026286	0.08218	10.892	0.00290	1.46991	1.9599
180	68.10508	151.77	10.371	55191.25	0.0027261	0.07997	10.137	0.00284	1.46285	1.8860
185	67.16501	147.14	10.083	50337.16	0.0028359	0.07774	9.455	0.00277	1.45564	1.8271
* 186.792	66.82191	145.45	9.978	48645.83	0.0028788	0.07693	9.227	0.00275	1.45301	1.8079
* 186.792	0.86781	36.48	2.195	45.64	0.0068819	0.30604	0.561	0.02772	1.00516	0.8392
190	0.84916	37.31	2.193	45.88	0.0066670	0.00613	0.569	0.02902	1.00505	0.8315
195	0.82195	38.60	2.192	46.25	0.0063631	0.00627	0.582	0.03106	1.00489	0.8210
200	0.79676	39.87	2.190	46.56	0.0060932	0.00641	0.595	0.03313	1.00474	0.8121
205	0.77333	41.12	2.189	46.84	0.0058512	0.00655	0.609	0.03522	1.00460	0.8044
210	0.75145	42.36	2.188	47.09	0.0056326	0.00670	0.622	0.03735	1.00447	0.7977
215	0.73095	43.59	2.187	47.31	0.0054336	0.00684	0.635	0.03951	1.00435	0.7918
220	0.71169	44.81	2.186	47.50	0.0052515	0.00698	0.648	0.04170	1.00423	0.7866
225	0.69354	46.02	2.185	47.68	0.0050839	0.00713	0.662	0.04392	1.00413	0.7821
230	0.67640	47.22	2.185	47.84	0.0049289	0.00727	0.675	0.04618	1.00402	0.7780
235	0.66017	48.41	2.184	47.98	0.0047850	0.00741	0.688	0.04847	1.00393	0.7743
240	0.64478	49.60	2.183	48.11	0.0046508	0.00756	0.701	0.05080	1.00384	0.7710
245	0.63016	50.78	2.183	48.23	0.0045254	0.00770	0.715	0.05317	1.00375	0.7680
250	0.61625	51.96	2.182	48.34	0.0044077	0.00784	0.728	0.05558	1.00367	0.7651
255	0.60298	53.13	2.182	48.44	0.0042970	0.00799	0.741	0.05808	1.00359	0.7618
260	0.59032	54.29	2.181	48.54	0.0041926	0.00814	0.754	0.06060	1.00351	0.7590
265	0.57822	55.45	2.181	48.62	0.0040940	0.00829	0.767	0.06315	1.00344	0.7565
270	0.56664	56.61	2.180	48.70	0.0040005	0.00843	0.780	0.06572	1.00337	0.7543
275	0.55554	57.77	2.180	48.77	0.0039119	0.00858	0.793	0.06832	1.00330	0.7524
280	0.54490	58.92	2.179	48.84	0.0038276	0.00872	0.806	0.07096	1.00324	0.7507
285	0.53467	60.06	2.179	48.90	0.0037473	0.00886	0.819	0.07362	1.00318	0.7491
290	0.52485	61.21	2.178	48.96	0.0036707	0.00900	0.832	0.07631	1.00312	0.7478
295	0.51540	62.35	2.178	49.01	0.0035976	0.00914	0.845	0.07904	1.00306	0.7465
300	0.50630	63.49	2.178	49.07	0.0035277	0.00928	0.857	0.08180	1.00301	0.7453
310	0.48908	65.76	2.177	49.16	0.0033965	0.00955	0.883	0.08743	1.00291	0.7432
320	0.47304	68.03	2.176	49.24	0.0032756	0.00982	0.908	0.09319	1.00281	0.7414
330	0.45805	70.29	2.176	49.31	0.0031638	0.01009	0.933	0.09908	1.00272	0.7398
340	0.44402	72.54	2.175	49.37	0.0030600	0.01036	0.957	0.10511	1.00264	0.7383
350	0.43085	74.79	2.174	49.43	0.0029633	0.01063	0.982	0.11127	1.00256	0.7371
360	0.41846	77.04	2.174	49.48	0.0028729	0.01089	1.006	0.11757	1.00249	0.7359
370	0.40678	79.29	2.173	49.52	0.0027883	0.01115	1.030	0.12398	1.00242	0.7350
380	0.39576	81.53	2.172	49.57	0.0027088	0.01141	1.053	0.13052	1.00235	0.7341
390	0.38533	83.78	2.171	49.60	0.0026340	0.01166	1.077	0.13719	1.00229	0.7333
400	0.37544	86.02	2.170	49.64	0.0025634	0.01192	1.100	0.14398	1.00223	0.7326
410	0.36606	88.27	2.169	49.67	0.0024967	0.01217	1.123	0.15088	1.00218	0.7320
420	0.35715	90.52	2.168	49.69	0.0024335	0.01242	1.146	0.15791	1.00212	0.7315
430	0.34867	92.77	2.166	49.72	0.0023736	0.01267	1.168	0.16505	1.00207	0.7310
440	0.34059	95.02	2.165	49.74	0.0023167	0.01292	1.191	0.17230	1.00202	0.7305
450	0.33288	97.28	2.163	49.75	0.0022626	0.01316	1.213	0.17966	1.00198	0.7302
460	0.32552	99.54	2.162	49.78	0.0022111	0.01341	1.235	0.18713	1.00193	0.7299
470	0.31848	101.81	2.160	49.80	0.0021619	0.01365	1.257	0.19470	1.00189	0.7296
480	0.31174	104.09	2.158	49.82	0.0021149	0.01389	1.278	0.20237	1.00185	0.7294
490	0.30529	106.37	2.156	49.83	0.0020700	0.01413	1.300	0.21014	1.00181	0.7293
500	0.29910	108.66	2.153	49.85	0.0020270	0.01436	1.321	0.21801	1.00178	0.7292
510	0.29316	110.96	2.151	49.86	0.0019858	0.01459	1.342	0.22594	1.00174	0.7292
520	0.28745	113.27	2.148	49.87	0.0019463	0.01483	1.362	0.23400	1.00171	0.7292
530	0.28196	115.58	2.146	49.88	0.0019084	0.01506	1.383	0.24214	1.00168	0.7292
540	0.27668	117.90	2.143	49.89	0.0018720	0.01529	1.403	0.25037	1.00164	0.7293
550	0.27160	120.24	2.140	49.90	0.0018369	0.01552	1.424	0.25868	1.00161	0.7295
560	0.26670	122.58	2.137	49.91	0.0018032	0.01574	1.444	0.26708	1.00159	0.7297
570	0.26198	124.94	2.133	49.92	0.0017707	0.01597	1.464	0.27555	1.00156	0.7299
580	0.25742	127.30	2.130	49.93	0.0017394	0.01619	1.483	0.28411	1.00153	0.7302
590	0.25302	129.68	2.126	49.93	0.0017092	0.01642	1.503	0.29274	1.00150	0.7306
600	0.24877	132.06	2.122	49.94	0.0016800	0.01664	1.523	0.30145	1.00148	0.7310

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

100 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	Cp	VELOCITY OF SOUND FT/SEC
* 97.974	0.01226	2096.70	317.9	-83.201	-82.974	0.50138	0.266	0.398	3809
100	0.01230	2057.46	312.6	-82.396	-82.168	0.50952	0.264	0.398	3786
105	0.01242	1962.48	299.9	-80.410	-80.180	0.52892	0.260	0.398	3728
110	0.01254	1870.12	287.6	-78.425	-78.193	0.54741	0.256	0.398	3669
115	0.01266	1780.32	275.7	-76.439	-76.205	0.56508	0.252	0.398	3608
120	0.01279	1693.00	264.1	-74.453	-74.217	0.58201	0.248	0.398	3547
125	0.01292	1608.12	252.9	-72.466	-72.227	0.59825	0.244	0.398	3483
130	0.01305	1525.60	242.1	-70.478	-70.236	0.61387	0.241	0.398	3419
135	0.01319	1445.39	231.6	-68.487	-68.243	0.62891	0.238	0.399	3353
140	0.01333	1367.42	221.4	-66.494	-66.247	0.64343	0.234	0.399	3286
145	0.01347	1291.63	211.6	-64.497	-64.247	0.65746	0.231	0.400	3218
150	0.01363	1217.96	202.1	-62.495	-62.243	0.67105	0.228	0.401	3149
155	0.01378	1146.33	192.9	-60.489	-60.233	0.68423	0.226	0.402	3078
160	0.01394	1076.69	183.9	-58.475	-58.217	0.69703	0.223	0.404	3007
165	0.01411	1008.96	175.3	-56.454	-56.193	0.70948	0.220	0.406	2934
170	0.01429	943.09	166.9	-54.424	-54.160	0.72162	0.218	0.408	2860
175	0.01448	878.99	158.7	-52.383	-52.115	0.73348	0.215	0.410	2784
180	0.01467	816.59	150.8	-50.328	-50.057	0.74507	0.213	0.413	2708
185	0.01487	755.84	143.2	-48.259	-47.983	0.75644	0.211	0.416	2629
190	0.01509	696.64	135.7	-46.178	-45.891	0.76760	0.209	0.421	2549
195	0.01532	638.91	128.4	-44.060	-43.776	0.77859	0.207	0.425	2468
200	0.01556	582.59	121.3	-41.923	-41.635	0.78943	0.205	0.431	2384
* 204.428	0.01579	533.80	115.1	-40.085	-39.712	0.79894	0.203	0.437	2307
* 204.428	0.59696	50.93	0.64	28.395	39.449	1.18613	0.172	0.279	619
205	0.59951	51.22	0.63	28.507	39.609	1.18692	0.172	0.278	620
210	0.62139	53.93	0.60	29.474	40.981	1.19353	0.170	0.271	632
215	0.64274	56.53	0.58	30.420	42.322	1.19984	0.168	0.265	643
220	0.66364	59.04	0.56	31.347	43.636	1.20589	0.167	0.261	653
225	0.68417	61.47	0.53	32.260	44.929	1.21170	0.166	0.257	664
230	0.70438	63.84	0.52	33.160	46.203	1.21730	0.165	0.253	674
235	0.72431	66.15	0.50	34.048	47.461	1.22271	0.164	0.250	684
240	0.74400	68.41	0.48	34.928	48.705	1.22794	0.163	0.247	693
245	0.76347	70.62	0.47	35.799	49.936	1.23302	0.163	0.245	702
250	0.78276	72.80	0.46	36.662	51.157	1.23795	0.162	0.243	711
255	0.80187	74.94	0.44	37.519	52.368	1.24275	0.162	0.241	720
260	0.82083	77.05	0.43	38.370	53.570	1.24742	0.161	0.240	729
265	0.83966	79.14	0.42	39.216	54.765	1.25197	0.161	0.238	737
270	0.85836	81.20	0.41	40.058	55.952	1.25641	0.160	0.237	746
275	0.87695	83.23	0.40	40.895	57.134	1.26075	0.160	0.236	754
280	0.89543	85.25	0.39	41.728	58.309	1.26498	0.160	0.235	762
285	0.91383	87.25	0.38	42.558	59.480	1.26913	0.159	0.234	770
290	0.93213	89.23	0.38	43.385	60.646	1.27318	0.159	0.233	778
295	0.95036	91.20	0.37	44.209	61.807	1.27715	0.159	0.232	785
300	0.96852	93.15	0.36	45.030	62.965	1.28104	0.159	0.231	793
310	1.00463	97.01	0.35	46.666	65.269	1.28860	0.158	0.230	808
320	1.04051	100.83	0.33	48.293	67.561	1.29587	0.158	0.229	822
330	1.07619	104.61	0.32	49.913	69.841	1.30289	0.158	0.228	836
340	1.11169	108.35	0.31	51.527	72.113	1.30967	0.157	0.227	850
350	1.14703	112.06	0.30	53.136	74.376	1.31623	0.157	0.226	864
360	1.18224	115.75	0.29	54.740	76.632	1.32259	0.157	0.225	877
370	1.21733	119.41	0.28	56.341	78.882	1.32875	0.157	0.225	890
380	1.25231	123.05	0.27	57.938	81.127	1.33474	0.157	0.224	903
390	1.28719	126.67	0.27	59.532	83.367	1.34056	0.157	0.224	915
400	1.32198	130.27	0.26	61.123	85.603	1.34622	0.157	0.223	928
410	1.35669	133.86	0.25	62.712	87.835	1.35173	0.157	0.223	940
420	1.39134	137.43	0.25	64.300	90.064	1.35710	0.157	0.223	952
430	1.42591	140.99	0.24	65.886	92.290	1.36234	0.157	0.223	963
440	1.46043	144.54	0.23	67.471	94.515	1.36745	0.157	0.222	975
450	1.49489	148.08	0.23	69.056	96.737	1.37245	0.157	0.222	986
460	1.52931	151.61	0.22	70.639	98.958	1.37733	0.157	0.222	998
470	1.56367	155.12	0.22	72.223	101.178	1.38210	0.157	0.222	1009
480	1.59800	158.63	0.21	73.806	103.397	1.38678	0.157	0.222	1020
490	1.63229	162.14	0.21	75.389	105.615	1.39135	0.157	0.222	1030
500	1.66654	165.63	0.20	76.973	107.833	1.39583	0.157	0.222	1041
510	1.70076	169.12	0.20	78.557	110.051	1.40022	0.157	0.222	1051
520	1.73494	172.61	0.20	80.142	112.269	1.40453	0.157	0.222	1062
530	1.76910	176.08	0.19	81.728	114.487	1.40875	0.158	0.222	1072
540	1.80323	179.55	0.19	83.315	116.706	1.41290	0.158	0.222	1082
550	1.83734	183.02	0.18	84.904	118.926	1.41698	0.158	0.222	1092
560	1.87142	186.48	0.18	86.494	121.148	1.42098	0.158	0.222	1102
570	1.90549	189.94	0.18	88.085	123.370	1.42491	0.158	0.222	1112
580	1.93953	193.40	0.17	89.679	125.594	1.42878	0.159	0.222	1121
590	1.97355	196.85	0.17	91.274	127.819	1.43258	0.159	0.223	1131
600	2.00755	200.29	0.17	92.872	130.046	1.43633	0.159	0.223	1140

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

100 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 97.974	81.59326	213.99	14.631	171076.65	0.0018582	0.11161	41.761	0.00344	1.56889	5.3561
100	81.28572	212.69	14.544	167241.85	0.0018694	0.11102	40.152	0.00344	1.56842	5.1765
105	80.52378	209.44	14.323	158026.63	0.0018980	0.10951	36.465	0.00342	1.56031	4.7654
110	79.75723	206.14	14.094	149155.97	0.0019283	0.10791	33.149	0.00340	1.55417	4.3961
115	78.98563	202.79	13.858	140619.56	0.0019606	0.10624	30.166	0.00338	1.54801	4.0642
120	78.20849	199.38	13.616	132407.24	0.0019949	0.10450	27.483	0.00336	1.54183	3.7659
125	77.42527	195.91	13.368	124509.02	0.0020315	0.10269	25.069	0.00333	1.53561	3.4976
130	76.63536	192.37	13.115	116915.06	0.0020708	0.10084	22.898	0.00330	1.52935	3.2565
135	75.83809	188.77	12.857	109615.68	0.0021129	0.09893	20.945	0.00327	1.52305	3.0400
140	75.03270	185.09	12.594	102601.37	0.0021583	0.09698	19.188	0.00324	1.51671	2.8456
145	74.21833	181.33	12.327	95862.81	0.0022074	0.09498	17.606	0.00320	1.51031	2.6714
150	73.39404	177.50	12.057	89390.88	0.0022607	0.09295	16.186	0.00316	1.50385	2.5156
155	72.55872	173.57	11.784	83176.35	0.0023187	0.09088	14.907	0.00311	1.49733	2.3765
160	71.71116	169.55	11.508	77218.62	0.0023822	0.08878	13.755	0.00307	1.49072	2.2528
165	70.84992	165.44	11.229	71484.95	0.0024519	0.08666	12.718	0.00302	1.48403	2.1432
170	69.97338	161.22	10.949	65990.86	0.0025289	0.08450	11.785	0.00296	1.47725	2.0469
175	69.07965	156.88	10.666	60720.04	0.0026144	0.08233	10.943	0.00291	1.47035	1.9627
180	68.16654	152.42	10.381	55664.38	0.0027099	0.08013	10.185	0.00285	1.46332	1.8902
185	67.23144	147.83	10.094	50815.91	0.0028174	0.07790	9.501	0.00278	1.45615	1.8286
190	66.27127	143.09	9.804	46166.98	0.0029391	0.07566	8.883	0.00271	1.44880	1.7778
195	65.28230	138.20	9.511	41709.79	0.0030783	0.07339	8.325	0.00264	1.44127	1.7373
200	64.26000	133.12	9.213	37437.22	0.0032392	0.07109	7.819	0.00257	1.43350	1.7075
* 204.428	63.32227	128.47	8.945	33801.63	0.0034042	0.06903	7.410	0.00249	1.42641	1.6901
* 204.428	1.67514	37.42	2.218	85.31	0.0074533	0.00705	0.652	0.01508	1.00998	0.9293
205	1.66804	37.57	2.209	85.43	0.0074001	0.00706	0.654	0.01523	1.00994	0.9265
210	1.60931	39.00	2.209	86.79	0.0069520	0.00718	0.665	0.01646	1.00959	0.9035
215	1.55585	40.39	2.208	87.96	0.0065707	0.00731	0.677	0.01770	1.00927	0.8846
220	1.50683	41.76	2.207	88.97	0.0062410	0.00743	0.688	0.01893	1.00898	0.8688
225	1.46162	43.10	2.207	89.85	0.0059524	0.00756	0.700	0.02017	1.00871	0.8554
230	1.41968	44.43	2.206	90.63	0.0056967	0.00769	0.712	0.02141	1.00846	0.8438
235	1.38062	45.73	2.205	91.32	0.0054682	0.00782	0.725	0.02266	1.00822	0.8338
240	1.34408	47.03	2.205	91.94	0.0052622	0.00795	0.737	0.02391	1.00801	0.8251
245	1.30980	48.30	2.204	92.50	0.0050752	0.00809	0.749	0.02519	1.00780	0.8173
250	1.27754	49.57	2.203	93.00	0.0049045	0.00824	0.761	0.02652	1.00761	0.8088
255	1.24708	50.82	2.202	93.46	0.0047476	0.00838	0.774	0.02786	1.00743	0.8015
260	1.21828	52.07	2.202	93.87	0.0046029	0.00853	0.786	0.02921	1.00725	0.7951
265	1.19096	53.31	2.201	94.25	0.0044688	0.00867	0.798	0.03056	1.00709	0.7896
270	1.16501	54.53	2.200	94.59	0.0043440	0.00881	0.810	0.03191	1.00694	0.7848
275	1.14032	55.75	2.200	94.91	0.0042275	0.00894	0.823	0.03328	1.00679	0.7806
280	1.11678	56.97	2.199	95.20	0.0041183	0.00908	0.835	0.03465	1.00665	0.7769
285	1.09430	58.17	2.199	95.48	0.0040158	0.00921	0.847	0.03603	1.00651	0.7736
290	1.07281	59.36	2.198	95.73	0.0039193	0.00934	0.860	0.03743	1.00639	0.7707
295	1.05223	60.57	2.197	95.96	0.0038281	0.00948	0.872	0.03884	1.00626	0.7680
300	1.03251	61.76	2.197	96.17	0.0037419	0.00961	0.884	0.04026	1.00615	0.7655
310	0.99539	64.13	2.196	96.56	0.0035825	0.00987	0.908	0.04315	1.00592	0.7613
320	0.96107	66.49	2.194	96.90	0.0034381	0.01013	0.932	0.04610	1.00572	0.7576
330	0.92921	68.83	2.193	97.20	0.0033066	0.01039	0.956	0.04911	1.00553	0.7544
340	0.89953	71.16	2.192	97.46	0.0031862	0.01064	0.980	0.05219	1.00535	0.7517
350	0.87181	73.47	2.191	97.70	0.0030753	0.01090	1.004	0.05533	1.00519	0.7492
360	0.84585	75.79	2.190	97.90	0.0029728	0.01115	1.027	0.05853	1.00503	0.7471
370	0.82147	78.09	2.189	98.09	0.0028776	0.01140	1.051	0.06178	1.00489	0.7453
380	0.79853	80.39	2.188	98.26	0.0027891	0.01165	1.074	0.06509	1.00475	0.7437
390	0.77689	82.69	2.187	98.41	0.0027063	0.01190	1.097	0.06847	1.00462	0.7422
400	0.75644	84.98	2.186	98.54	0.0026288	0.01215	1.119	0.07190	1.00450	0.7409
410	0.73709	87.27	2.184	98.66	0.0025560	0.01240	1.142	0.07539	1.00438	0.7397
420	0.71873	89.56	2.182	98.78	0.0024874	0.01264	1.164	0.07894	1.00428	0.7387
430	0.70131	91.85	2.181	98.88	0.0024227	0.01288	1.186	0.08254	1.00417	0.7378
440	0.68473	94.14	2.179	98.97	0.0023616	0.01312	1.208	0.08620	1.00407	0.7369
450	0.66894	96.44	2.177	99.06	0.0023037	0.01336	1.230	0.08992	1.00398	0.7362
460	0.65389	98.73	2.175	99.13	0.0022487	0.01360	1.252	0.09368	1.00389	0.7355
470	0.63952	101.03	2.173	99.20	0.0021965	0.01384	1.273	0.09750	1.00380	0.7350
480	0.62578	103.34	2.171	99.27	0.0021468	0.01407	1.294	0.10136	1.00372	0.7345
490	0.61264	105.65	2.169	99.33	0.0020994	0.01431	1.315	0.10528	1.00364	0.7341
500	0.60005	107.97	2.166	99.39	0.0020542	0.01454	1.336	0.10923	1.00357	0.7338
510	0.58797	110.29	2.163	99.44	0.0020110	0.01476	1.357	0.11322	1.00350	0.7336
520	0.57639	112.62	2.161	99.49	0.0019697	0.01499	1.377	0.11726	1.00343	0.7334
530	0.56526	114.96	2.158	99.53	0.0019301	0.01522	1.397	0.12137	1.00336	0.7332
540	0.55456	117.30	2.155	99.57	0.0018921	0.01545	1.417	0.12552	1.00330	0.7331
550	0.54426	119.66	2.151	99.61	0.0018557	0.01567	1.437	0.12970	1.00324	0.7331
560	0.53435	122.02	2.148	99.65	0.0018207	0.01590	1.457	0.13392	1.00318	0.7331
570	0.52480	124.40	2.144	99.68	0.0017870	0.01612	1.477	0.13819	1.00312	0.7332
580	0.51559	126.78	2.141	99.71	0.0017546	0.01634	1.497	0.14249	1.00307	0.7334
590	0.50670	129.18	2.137	99.74	0.0017234	0.01656	1.516	0.14683	1.00301	0.7336
600	0.49812	131.58	2.133	99.77	0.0016934	0.01678	1.535	0.15121	1.00296	0.7338

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

150 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p BTU / LB -R	VELOCITY OF SOUND FT/SEC
* 98.045	0.01225	2099.81	317.9	-83.193	-82.853	0.50146	0.266	0.398	3811
100	0.01230	2061.98	312.9	-82.417	-82.076	0.50931	0.265	0.397	3769
105	0.01241	1967.08	300.2	-80.433	-80.088	0.52870	0.260	0.397	3731
110	0.01253	1874.79	287.9	-78.449	-78.101	0.54719	0.256	0.397	3672
115	0.01266	1785.07	275.9	-76.466	-76.114	0.56485	0.252	0.397	3612
120	0.01278	1697.83	264.4	-74.482	-74.126	0.58177	0.248	0.398	3550
125	0.01291	1613.03	253.2	-72.496	-72.138	0.59801	0.244	0.398	3487
130	0.01304	1530.60	242.4	-70.510	-70.148	0.61362	0.241	0.398	3423
135	0.01318	1450.48	231.9	-68.522	-68.156	0.62865	0.238	0.399	3357
140	0.01332	1372.61	221.7	-66.531	-66.161	0.64316	0.234	0.399	3291
145	0.01347	1296.92	211.9	-64.536	-64.162	0.65719	0.231	0.400	3223
150	0.01362	1223.35	202.4	-62.538	-62.160	0.67076	0.229	0.401	3154
155	0.01377	1151.84	193.2	-60.534	-60.152	0.68393	0.226	0.402	3083
160	0.01394	1082.31	184.3	-58.524	-58.137	0.69672	0.223	0.404	3012
165	0.01410	1014.71	175.6	-56.507	-56.115	0.70916	0.220	0.405	2939
170	0.01428	948.97	167.2	-54.481	-54.084	0.72129	0.218	0.407	2866
175	0.01446	885.01	159.1	-52.444	-52.042	0.73313	0.216	0.410	2791
180	0.01466	822.78	151.2	-50.394	-49.987	0.74471	0.213	0.412	2715
185	0.01486	762.19	143.6	-48.330	-47.917	0.75605	0.211	0.416	2637
190	0.01507	703.17	136.1	-46.247	-45.829	0.76719	0.209	0.420	2558
195	0.01530	645.64	128.9	-44.144	-43.719	0.77815	0.207	0.424	2476
200	0.01554	589.54	121.8	-42.016	-41.584	0.78897	0.205	0.430	2393
205	0.01580	534.77	114.8	-39.857	-39.418	0.79967	0.203	0.437	2308
210	0.01608	481.24	108.0	-37.661	-37.215	0.81029	0.201	0.445	2220
215	0.01638	428.87	101.2	-35.421	-34.966	0.82087	0.200	0.455	2128
* 216.384	0.01647	414.57	99.3	-34.792	-34.335	0.82380	0.199	0.458	2102
* 216.384	0.40132	48.12	0.98	28.914	40.061	1.16761	0.178	0.308	621
220	0.41306	50.39	0.95	29.684	41.158	1.17265	0.176	0.299	630
225	0.42879	53.43	0.90	30.718	42.628	1.17926	0.174	0.289	643
230	0.44403	56.33	0.86	31.721	44.055	1.18554	0.172	0.281	654
235	0.45887	59.09	0.82	32.700	45.445	1.19152	0.170	0.275	666
240	0.47337	61.75	0.79	33.657	46.806	1.19725	0.169	0.269	676
245	0.48758	64.34	0.76	34.598	48.141	1.20275	0.167	0.265	687
250	0.50155	66.84	0.74	35.523	49.454	1.20806	0.166	0.261	697
255	0.51531	69.28	0.71	36.436	50.749	1.21319	0.165	0.257	707
260	0.52888	71.67	0.69	37.337	52.027	1.21815	0.164	0.254	716
265	0.54228	74.00	0.67	38.229	53.291	1.22296	0.164	0.251	726
270	0.55553	76.29	0.65	39.112	54.542	1.22764	0.163	0.249	735
275	0.56865	78.54	0.63	39.987	55.782	1.23219	0.163	0.247	743
280	0.58165	80.76	0.62	40.856	57.012	1.23662	0.162	0.245	752
285	0.59455	82.94	0.60	41.718	58.232	1.24094	0.162	0.243	761
290	0.60734	85.09	0.59	42.575	59.445	1.24516	0.161	0.242	769
295	0.62005	87.22	0.57	43.427	60.650	1.24928	0.161	0.240	777
300	0.63268	89.33	0.56	44.275	61.848	1.25331	0.160	0.239	785
310	0.65771	93.47	0.54	45.958	64.226	1.26111	0.160	0.237	801
320	0.68249	97.54	0.52	47.627	66.584	1.26859	0.159	0.235	816
330	0.70705	101.54	0.50	49.284	68.923	1.27579	0.159	0.233	831
340	0.73143	105.49	0.48	50.931	71.248	1.28273	0.159	0.232	845
350	0.75563	109.40	0.46	52.570	73.559	1.28943	0.158	0.231	859
360	0.77970	113.25	0.45	54.202	75.858	1.29591	0.158	0.229	873
370	0.80363	117.08	0.43	55.827	78.148	1.30218	0.158	0.229	887
380	0.82745	120.86	0.42	57.446	80.429	1.30827	0.158	0.228	900
390	0.85117	124.62	0.41	59.061	82.703	1.31417	0.157	0.227	913
400	0.87480	128.35	0.40	60.671	84.970	1.31991	0.157	0.226	925
410	0.89835	132.06	0.38	62.278	87.230	1.32549	0.157	0.226	938
420	0.92182	135.74	0.37	63.882	89.486	1.33093	0.157	0.225	950
430	0.94523	139.41	0.36	65.483	91.737	1.33623	0.157	0.225	962
440	0.96857	143.05	0.36	67.082	93.985	1.34139	0.157	0.225	974
450	0.99186	146.69	0.35	68.679	96.229	1.34643	0.157	0.224	985
460	1.01510	150.30	0.34	70.275	98.470	1.35136	0.157	0.224	997
470	1.03829	153.90	0.33	71.869	100.709	1.35617	0.157	0.224	1008
480	1.06144	157.49	0.32	73.463	102.945	1.36088	0.157	0.224	1019
490	1.08455	161.07	0.32	75.056	105.181	1.36549	0.157	0.223	1030
500	1.10762	164.64	0.31	76.649	107.414	1.37001	0.157	0.223	1041
510	1.13066	168.19	0.30	78.242	109.647	1.37443	0.157	0.223	1051
520	1.15367	171.74	0.30	79.835	111.880	1.37876	0.158	0.223	1062
530	1.17665	175.28	0.29	81.429	114.112	1.38301	0.158	0.223	1072
540	1.19961	178.81	0.29	83.023	116.344	1.38719	0.158	0.223	1082
550	1.22253	182.33	0.28	84.619	118.576	1.39128	0.158	0.223	1093
560	1.24544	185.85	0.27	86.215	120.809	1.39530	0.158	0.223	1102
570	1.26832	189.36	0.27	87.813	123.042	1.39926	0.158	0.223	1112
580	1.29118	192.86	0.26	89.413	125.276	1.40314	0.159	0.223	1122
590	1.31402	196.36	0.26	91.014	127.512	1.40696	0.159	0.224	1132
600	1.33685	199.85	0.26	92.617	129.749	1.41072	0.159	0.224	1141

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

150 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/ DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 98.045	81.60630	214.27	14.629	171357.50	0.0018554	0.11164	41.831	0.00344	1.56900	5.3624
100	81.30999	213.01	14.545	167659.45	0.0018660	0.11108	40.277	0.00344	1.56662	5.1888
105	80.54922	209.78	14.324	158466.61	0.0018944	0.10956	36.582	0.00342	1.56051	4.7769
110	79.78393	206.50	14.095	149578.42	0.0019244	0.10797	33.259	0.00341	1.55439	4.4068
115	79.01367	203.16	13.860	141044.56	0.0019563	0.10630	30.269	0.00339	1.54824	4.0741
120	78.23798	199.76	13.618	132834.89	0.0019903	0.10457	27.579	0.00336	1.54206	3.7750
125	77.45631	196.31	13.370	124939.42	0.0020266	0.10277	25.160	0.00334	1.53585	3.5061
130	76.66808	192.79	13.117	117348.31	0.0020653	0.10092	22.984	0.00331	1.52961	3.2644
135	75.87262	189.20	12.859	110051.92	0.0021070	0.09902	21.026	0.00327	1.52332	3.0473
140	75.06919	185.54	12.597	103040.73	0.0021518	0.09707	19.264	0.00324	1.51699	2.8523
145	74.25696	181.80	12.330	96305.44	0.0022003	0.09508	17.680	0.00320	1.51061	2.6776
150	73.43500	177.98	12.061	89836.87	0.0022528	0.09306	16.254	0.00316	1.50417	2.5212
155	72.60224	174.08	11.788	83626.04	0.0023100	0.09100	14.970	0.00312	1.49767	2.3816
160	71.75747	170.09	11.513	77664.15	0.0023725	0.08891	13.815	0.00307	1.49108	2.2573
165	70.89933	166.00	11.235	71942.56	0.0024410	0.08679	12.775	0.00302	1.48442	2.1473
170	70.02623	161.80	10.955	66452.82	0.0025167	0.08464	11.839	0.00297	1.47766	2.0503
175	69.13634	157.50	10.674	61186.67	0.0026006	0.08247	10.995	0.00291	1.47078	1.9656
180	68.22754	153.07	10.390	56136.03	0.0026941	0.08028	10.234	0.00285	1.46379	1.8925
185	67.29732	148.51	10.105	51293.01	0.0027992	0.07807	9.548	0.00279	1.45665	1.8302
190	66.34271	143.82	9.817	46649.94	0.0029180	0.07583	8.928	0.00272	1.44935	1.7786
195	65.36015	138.97	9.526	42199.36	0.0030535	0.07357	8.367	0.00265	1.44186	1.7373
200	64.34532	133.94	9.231	37934.01	0.0032098	0.07129	7.860	0.00258	1.43415	1.7064
205	63.29285	128.73	8.931	33846.91	0.0033918	0.06898	7.399	0.00250	1.42618	1.6862
210	62.19601	123.30	8.624	29931.38	0.0036070	0.06663	6.980	0.00241	1.41791	1.6773
215	61.04614	117.63	8.307	26181.08	0.0038657	0.06425	6.597	0.00231	1.40928	1.6808
* 216.384	58.71712	116.01	8.218	25171.65	0.0039468	0.06358	6.497	0.00229	1.40681	1.6843
* 216.384	2.49178	37.49	2.220	119.89	0.0082057	0.00787	0.727	0.01027	1.01488	1.0230
220	2.42895	38.60	2.220	121.99	0.0077497	0.00795	0.734	0.01097	1.01445	0.9949
225	2.33215	40.11	2.221	124.61	0.0072144	0.00805	0.744	0.01193	1.01392	0.9627
230	2.25211	41.59	2.222	126.85	0.0067686	0.00816	0.754	0.01287	1.01344	0.9365
235	2.17928	43.02	2.222	128.78	0.0063901	0.00827	0.764	0.01380	1.01300	0.9148
240	2.11252	44.43	2.222	130.47	0.0060635	0.00840	0.775	0.01475	1.01260	0.8954
245	2.05093	45.82	2.222	131.96	0.0057780	0.00854	0.786	0.01572	1.01223	0.8775
250	1.99380	47.18	2.222	133.27	0.0055256	0.00868	0.797	0.01669	1.01189	0.8622
255	1.94059	48.53	2.222	134.45	0.0053004	0.00881	0.808	0.01766	1.01157	0.8492
260	1.89081	49.86	2.221	135.51	0.0050978	0.00895	0.820	0.01862	1.01127	0.8380
265	1.84408	51.17	2.221	136.46	0.0049141	0.00908	0.831	0.01958	1.01099	0.8284
270	1.80009	52.47	2.220	137.33	0.0047467	0.00921	0.842	0.02054	1.01073	0.8201
275	1.75855	53.76	2.219	138.12	0.0045931	0.00934	0.854	0.02150	1.01048	0.8130
280	1.71924	55.04	2.219	138.84	0.0044516	0.00946	0.865	0.02246	1.01025	0.8067
285	1.68196	56.31	2.218	139.50	0.0043206	0.00958	0.877	0.02342	1.01003	0.8012
290	1.64652	57.56	2.217	140.11	0.0041989	0.00971	0.888	0.02439	1.00981	0.7964
295	1.61277	58.82	2.216	140.67	0.0040855	0.00983	0.900	0.02537	1.00961	0.7919
300	1.58059	60.06	2.216	141.19	0.0039793	0.00995	0.912	0.02635	1.00942	0.7880
310	1.52042	62.53	2.214	142.11	0.0037860	0.01020	0.935	0.02833	1.00906	0.7810
320	1.46522	64.97	2.213	142.92	0.0036141	0.01044	0.958	0.03036	1.00873	0.7752
330	1.41432	67.39	2.211	143.62	0.0034598	0.01069	0.981	0.03241	1.00843	0.7702
340	1.36719	69.79	2.210	144.23	0.0033204	0.01093	1.004	0.03451	1.00814	0.7659
350	1.32339	72.18	2.208	144.77	0.0031936	0.01118	1.027	0.03664	1.00788	0.7622
360	1.28255	74.55	2.207	145.25	0.0030776	0.01142	1.049	0.03881	1.00764	0.7589
370	1.24435	76.92	2.205	145.68	0.0029710	0.01166	1.072	0.04101	1.00741	0.7561
380	1.20853	79.27	2.204	146.07	0.0028725	0.01190	1.094	0.04325	1.00720	0.7537
390	1.17485	81.62	2.202	146.41	0.0027812	0.01214	1.117	0.04553	1.00700	0.7515
400	1.14312	83.96	2.201	146.72	0.0026962	0.01238	1.139	0.04785	1.00681	0.7495
410	1.11315	86.29	2.199	147.00	0.0026169	0.01262	1.161	0.05020	1.00663	0.7478
420	1.08481	88.62	2.197	147.25	0.0025426	0.01286	1.183	0.05260	1.00646	0.7462
430	1.05795	90.95	2.195	147.49	0.0024729	0.01309	1.204	0.05502	1.00630	0.7448
440	1.03245	93.28	2.193	147.70	0.0024073	0.01333	1.226	0.05749	1.00615	0.7435
450	1.00821	95.61	2.191	147.89	0.0023454	0.01356	1.247	0.05999	1.00600	0.7424
460	0.98513	97.94	2.189	148.07	0.0022869	0.01379	1.268	0.06252	1.00586	0.7414
470	0.96312	100.27	2.187	148.23	0.0022316	0.01403	1.289	0.06508	1.00573	0.7405
480	0.94212	102.61	2.184	148.38	0.0021790	0.01426	1.310	0.06768	1.00561	0.7397
490	0.92204	104.94	2.182	148.51	0.0021291	0.01448	1.331	0.07031	1.00549	0.7390
500	0.90283	107.29	2.179	148.64	0.0020816	0.01471	1.351	0.07297	1.00537	0.7384
510	0.88444	109.64	2.176	148.76	0.0020363	0.01493	1.372	0.07563	1.00526	0.7381
520	0.86680	111.99	2.173	148.86	0.0019931	0.01516	1.392	0.07836	1.00516	0.7377
530	0.84987	114.35	2.170	148.96	0.0019518	0.01539	1.412	0.08111	1.00506	0.7373
540	0.83361	116.72	2.167	149.06	0.0019123	0.01561	1.432	0.08389	1.00496	0.7370
550	0.81797	119.10	2.163	149.14	0.0018745	0.01583	1.451	0.08670	1.00487	0.7367
560	0.80293	121.48	2.160	149.22	0.0018382	0.01605	1.471	0.08953	1.00478	0.7366
570	0.78844	123.87	2.156	149.30	0.0018033	0.01627	1.490	0.09239	1.00469	0.7365
580	0.77448	126.28	2.152	149.37	0.0017699	0.01649	1.510	0.09528	1.00461	0.7365
590	0.76102	128.69	2.148	149.44	0.0017377	0.01671	1.529	0.09818	1.00453	0.7366
600	0.74803	131.11	2.144	149.50	0.0017067	0.01693	1.548	0.10112	1.00445	0.7367

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

200 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 98.116	0.01225	2102.91	318.0	-83.185	-82.732	0.50154	0.266	0.397	3813
100	0.01229	2066.49	313.1	-82.433	-81.983	0.50910	0.265	0.397	3792
105	0.01241	1971.67	300.4	-80.456	-79.996	0.52848	0.262	0.397	3734
110	0.01253	1879.46	288.1	-78.474	-78.010	0.54696	0.256	0.397	3676
115	0.01265	1789.80	276.2	-76.492	-76.023	0.56462	0.252	0.397	3615
120	0.01278	1702.65	264.6	-74.510	-74.036	0.58154	0.248	0.397	3554
125	0.01291	1617.93	253.4	-72.527	-72.049	0.59777	0.245	0.398	3491
130	0.01304	1535.59	242.6	-70.542	-70.059	0.61337	0.241	0.398	3427
135	0.01317	1455.56	232.1	-68.556	-68.068	0.62840	0.238	0.398	3361
140	0.01331	1377.79	222.0	-66.568	-66.074	0.64290	0.235	0.399	3295
145	0.01346	1302.23	212.2	-64.576	-64.077	0.65691	0.232	0.400	3227
150	0.01361	1228.73	202.7	-62.580	-62.076	0.67048	0.229	0.401	3158
155	0.01377	1157.33	193.5	-60.579	-60.070	0.68364	0.226	0.402	3088
160	0.01393	1087.92	184.6	-58.573	-58.057	0.69642	0.223	0.403	3017
165	0.01409	1020.45	176.0	-56.559	-56.037	0.70885	0.221	0.405	2945
170	0.01427	954.83	167.6	-54.537	-54.008	0.72096	0.218	0.407	2872
175	0.01445	891.02	159.5	-52.504	-51.969	0.73278	0.216	0.409	2797
180	0.01464	828.93	151.6	-50.459	-49.917	0.74434	0.214	0.412	2721
185	0.01485	768.50	144.0	-48.400	-47.850	0.75567	0.211	0.415	2644
190	0.01506	709.66	136.6	-46.324	-45.766	0.76679	0.209	0.419	2566
195	0.01528	652.33	129.3	-44.227	-43.661	0.77772	0.207	0.423	2485
200	0.01552	596.44	122.2	-42.107	-41.532	0.78851	0.205	0.429	2403
205	0.01578	541.90	115.3	-39.957	-39.373	0.79917	0.203	0.435	2318
210	0.01605	488.65	108.5	-37.773	-37.178	0.80975	0.201	0.443	2231
215	0.01635	436.57	101.8	-35.546	-34.940	0.82029	0.200	0.452	2141
220	0.01668	385.61	95.2	-33.266	-32.648	0.83082	0.198	0.464	2046
225	0.01704	335.65	88.5	-30.921	-30.290	0.84142	0.197	0.479	1946
* 225.720	0.01709	328.54	87.6	-30.577	-29.944	0.84295	0.196	0.481	1932
* 225.720	0.29991	44.85	1.4	29.057	40.164	1.15358	0.183	0.339	620
230	0.31135	47.92	1.3	30.052	41.583	1.15983	0.180	0.324	632
235	0.32413	51.34	1.2	31.164	43.168	1.16665	0.177	0.311	645
240	0.33641	54.55	1.2	32.234	44.693	1.17307	0.175	0.300	658
245	0.34828	57.60	1.1	33.269	46.168	1.17915	0.173	0.291	670
250	0.35982	60.52	1.1	34.277	47.602	1.18495	0.171	0.283	681
255	0.37107	63.32	1.0	35.261	49.003	1.19050	0.170	0.277	692
260	0.38209	66.03	0.99	36.226	50.376	1.19583	0.168	0.272	703
265	0.39289	68.65	0.95	37.174	51.724	1.20096	0.167	0.267	713
270	0.40352	71.21	0.92	38.107	53.051	1.20593	0.166	0.263	723
275	0.41399	73.70	0.89	39.028	54.360	1.21073	0.165	0.260	733
280	0.42432	76.13	0.87	39.938	55.652	1.21539	0.165	0.257	742
285	0.43452	78.52	0.84	40.838	56.931	1.21991	0.164	0.254	751
290	0.44461	80.87	0.82	41.730	58.196	1.22431	0.163	0.252	760
295	0.45460	83.17	0.80	42.614	59.450	1.22860	0.163	0.250	769
300	0.46450	85.44	0.78	43.491	60.693	1.23278	0.162	0.248	777
310	0.48406	89.89	0.74	45.226	63.153	1.24084	0.161	0.244	794
320	0.50334	94.22	0.71	46.941	65.582	1.24856	0.161	0.242	810
330	0.52238	98.47	0.68	48.639	67.985	1.25595	0.160	0.239	825
340	0.54121	102.63	0.66	50.322	70.366	1.26306	0.160	0.237	841
350	0.55988	106.73	0.63	51.993	72.728	1.26990	0.159	0.235	855
360	0.57838	110.77	0.61	53.653	75.074	1.27651	0.159	0.234	869
370	0.59676	114.75	0.59	55.304	77.405	1.28290	0.158	0.232	883
380	0.61501	118.69	0.57	56.948	79.724	1.28909	0.158	0.231	897
390	0.63316	122.59	0.55	58.584	82.033	1.29508	0.158	0.230	910
400	0.65121	126.45	0.54	60.214	84.331	1.30090	0.158	0.229	923
410	0.66918	130.28	0.52	61.839	86.622	1.30656	0.158	0.229	936
420	0.68708	134.07	0.51	63.459	88.905	1.31206	0.158	0.228	948
430	0.70490	137.84	0.49	65.076	91.182	1.31742	0.157	0.227	960
440	0.72266	141.59	0.48	66.689	93.453	1.32264	0.157	0.227	972
450	0.74037	145.31	0.47	68.300	95.719	1.32773	0.157	0.226	984
460	0.75802	149.02	0.46	69.908	97.981	1.33270	0.157	0.226	996
470	0.77563	152.70	0.45	71.514	100.239	1.33756	0.157	0.226	1007
480	0.79319	156.37	0.44	73.118	102.494	1.34230	0.157	0.225	1019
490	0.81071	160.02	0.43	74.722	104.746	1.34695	0.157	0.225	1030
500	0.82820	163.66	0.42	76.324	106.996	1.35149	0.157	0.225	1041
510	0.84565	167.28	0.41	77.926	109.244	1.35595	0.158	0.225	1051
520	0.86307	170.90	0.40	79.527	111.491	1.36031	0.158	0.225	1062
530	0.88046	174.51	0.39	81.129	113.736	1.36459	0.158	0.225	1072
540	0.89782	178.09	0.38	82.731	115.981	1.36878	0.158	0.224	1083
550	0.91516	181.67	0.38	84.333	118.226	1.37290	0.158	0.224	1093
560	0.93248	185.24	0.37	85.935	120.470	1.37694	0.158	0.224	1103
570	0.94977	188.80	0.36	87.540	122.715	1.38092	0.158	0.224	1113
580	0.96704	192.35	0.36	89.146	124.960	1.38482	0.159	0.225	1123
590	0.98429	195.90	0.35	90.752	127.205	1.38866	0.159	0.225	1133
600	1.00153	199.44	0.34	92.361	129.452	1.39244	0.159	0.225	1142

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

200 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 98.116	81.61932	214.54	14.628	171638.21	0.0018525	0.11167	41.902	0.00344	1.56910	5.3686
100	81.33422	213.34	14.546	168076.68	0.0018627	0.11113	40.402	0.00344	1.56681	5.2012
105	80.57461	210.12	14.325	158866.20	0.0018908	0.10962	36.700	0.00342	1.56071	4.7884
110	79.81057	206.85	14.097	150000.44	0.0019205	0.10803	33.369	0.00341	1.55460	4.4174
115	79.04165	203.52	13.862	141469.10	0.0019522	0.10637	30.372	0.00339	1.54846	4.0840
120	78.26739	200.14	13.620	133262.64	0.0019858	0.10464	27.676	0.00336	1.54229	3.7842
125	77.48726	196.70	13.372	125369.27	0.0020216	0.10285	25.251	0.00334	1.53610	3.5146
130	76.70069	193.20	13.119	117780.99	0.0020600	0.10101	23.069	0.00331	1.52987	3.2723
135	75.90703	189.62	12.861	110487.53	0.0021011	0.09911	21.106	0.00328	1.52360	3.0546
140	75.10555	185.98	12.599	103479.41	0.0021454	0.09717	19.340	0.00324	1.51728	2.8591
145	74.29544	182.27	12.334	96747.32	0.0021932	0.09518	17.751	0.00320	1.51091	2.6838
150	73.47578	178.47	12.064	90282.13	0.0022450	0.09316	16.321	0.00316	1.50449	2.5268
155	72.64554	174.59	11.792	84074.85	0.0023013	0.09111	15.034	0.00312	1.49800	2.3867
160	71.80355	170.62	11.518	78116.71	0.0023628	0.08903	13.875	0.00308	1.49144	2.2619
165	70.94847	166.55	11.241	72399.10	0.0024303	0.08692	12.832	0.00303	1.48480	2.1513
170	70.07876	162.38	10.962	66913.61	0.0025046	0.08478	11.893	0.00297	1.47806	2.0538
175	69.19265	158.11	10.682	61651.99	0.0025869	0.08262	11.046	0.00292	1.47122	1.9686
180	68.28808	153.71	10.400	56606.23	0.0026786	0.08044	10.283	0.00286	1.46425	1.8948
185	67.36265	149.19	10.116	51768.48	0.0027813	0.07823	9.594	0.00280	1.45715	1.8319
190	66.41349	144.54	9.829	47131.15	0.0028973	0.07601	8.972	0.00273	1.44989	1.7795
195	65.43720	139.73	9.541	42686.85	0.0030294	0.07376	8.410	0.00266	1.44245	1.7374
200	64.42963	134.76	9.249	38428.43	0.0031811	0.07149	7.901	0.00259	1.43479	1.7055
205	63.38573	129.60	8.952	34349.04	0.0033575	0.06919	7.439	0.00251	1.42689	1.6841
210	62.29912	124.24	8.649	30442.15	0.0035650	0.06687	7.019	0.00242	1.41869	1.6737
215	61.16169	118.64	8.337	26701.66	0.0038132	0.06450	6.635	0.00233	1.41015	1.6753
220	59.96281	112.78	8.013	23122.02	0.0041159	0.06210	6.283	0.00223	1.40117	1.6908
225	58.68811	106.60	7.672	19698.62	0.0044939	0.05963	5.958	0.00212	1.39168	1.7230
* 225.720	58.49728	105.68	7.621	19218.46	0.0045563	0.05927	5.913	0.00210	1.39026	1.7293
* 225.720	3.33430	37.21	2.229	149.53	0.0091150	0.00869	0.796	0.00769	1.01994	1.1174
230	3.21178	38.62	2.231	153.92	0.0083969	0.00876	0.802	0.00841	1.01920	1.0688
235	3.08515	40.23	2.234	158.39	0.0077188	0.00885	0.809	0.00924	1.01844	1.0226
240	2.97256	41.78	2.236	162.16	0.0071701	0.00895	0.818	0.01005	1.01776	0.9852
245	2.87124	43.30	2.237	165.39	0.0067147	0.00907	0.827	0.01086	1.01715	0.9545
250	2.77919	44.77	2.238	168.19	0.0063293	0.00918	0.836	0.01166	1.01660	0.9290
255	2.69490	46.22	2.238	170.64	0.0059977	0.00930	0.846	0.01245	1.01610	0.9077
260	2.61722	47.64	2.239	172.80	0.0057085	0.00942	0.856	0.01323	1.01563	0.8897
265	2.54523	49.04	2.239	174.73	0.0054535	0.00953	0.866	0.01400	1.01520	0.8745
270	2.47819	50.42	2.238	176.46	0.0052264	0.00965	0.876	0.01477	1.01479	0.8616
275	2.41553	51.78	2.238	178.02	0.0050224	0.00976	0.887	0.01553	1.01442	0.8505
280	2.35673	53.12	2.238	179.43	0.0048379	0.00987	0.897	0.01630	1.01407	0.8409
285	2.30138	54.45	2.237	180.71	0.0046699	0.00998	0.908	0.01705	1.01373	0.8326
290	2.24915	55.77	2.236	181.88	0.0045162	0.01009	0.918	0.01781	1.01342	0.8254
295	2.19972	57.08	2.235	182.95	0.0043747	0.01020	0.929	0.01858	1.01312	0.8187
300	2.15284	58.38	2.235	183.94	0.0042439	0.01032	0.940	0.01934	1.01284	0.8128
310	2.06586	60.94	2.233	185.69	0.0040096	0.01054	0.962	0.02088	1.01232	0.8027
320	1.98674	63.47	2.231	187.19	0.0038051	0.01077	0.984	0.02244	1.01185	0.7944
330	1.91433	65.98	2.229	188.50	0.0036245	0.01100	1.006	0.02403	1.01142	0.7873
340	1.84770	68.45	2.228	189.63	0.0034635	0.01123	1.028	0.02563	1.01102	0.7812
350	1.78611	70.91	2.226	190.63	0.0033188	0.01146	1.050	0.02727	1.01065	0.7759
360	1.72896	73.35	2.224	191.51	0.0031878	0.01170	1.072	0.02893	1.01031	0.7713
370	1.67572	75.77	2.222	192.29	0.0030685	0.01192	1.094	0.03061	1.00999	0.7675
380	1.62599	78.18	2.220	192.99	0.0029592	0.01216	1.115	0.03231	1.00969	0.7642
390	1.57938	80.57	2.218	193.61	0.0028586	0.01239	1.137	0.03405	1.00941	0.7612
400	1.53559	82.96	2.216	194.17	0.0027657	0.01262	1.159	0.03581	1.00915	0.7585
410	1.49436	85.34	2.214	194.68	0.0026794	0.01285	1.180	0.03759	1.00890	0.7561
420	1.45544	87.71	2.212	195.14	0.0025991	0.01308	1.201	0.03941	1.00867	0.7540
430	1.41864	90.08	2.210	195.55	0.0025241	0.01331	1.222	0.04125	1.00845	0.7520
440	1.38377	92.45	2.208	195.93	0.0024538	0.01353	1.243	0.04312	1.00824	0.7503
450	1.35068	94.81	2.205	196.27	0.0023878	0.01376	1.264	0.04501	1.00805	0.7487
460	1.31922	97.17	2.203	196.59	0.0023256	0.01399	1.285	0.04692	1.00786	0.7474
470	1.28928	99.53	2.200	196.88	0.0022670	0.01422	1.306	0.04886	1.00768	0.7461
480	1.26073	101.89	2.198	197.14	0.0022116	0.01444	1.326	0.05083	1.00751	0.7450
490	1.23348	104.26	2.195	197.39	0.0021590	0.01466	1.346	0.05281	1.00735	0.7440
500	1.20744	106.63	2.192	197.61	0.0021092	0.01489	1.367	0.05482	1.00719	0.7432
510	1.18252	109.00	2.189	197.82	0.0020618	0.01510	1.387	0.05683	1.00704	0.7427
520	1.15866	111.38	2.186	198.01	0.0020166	0.01533	1.406	0.05889	1.00690	0.7420
530	1.13577	113.76	2.182	198.19	0.0019736	0.01555	1.426	0.06097	1.00676	0.7414
540	1.11380	116.15	2.179	198.35	0.0019325	0.01577	1.446	0.06307	1.00663	0.7409
550	1.09270	118.55	2.175	198.51	0.0018932	0.01599	1.465	0.06519	1.00651	0.7404
560	1.07241	120.95	2.171	198.65	0.0018556	0.01621	1.484	0.06733	1.00638	0.7401
570	1.05289	123.36	2.168	198.78	0.0018196	0.01642	1.504	0.06949	1.00627	0.7399
580	1.03408	125.78	2.164	198.91	0.0017850	0.01664	1.523	0.07166	1.00616	0.7397
590	1.01596	128.21	2.159	199.02	0.0017519	0.01685	1.542	0.07386	1.00605	0.7396
600	0.99847	130.65	2.155	199.13	0.0017200	0.01707	1.561	0.07607	1.00594	0.7396

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

250 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 98.187	0.01225	2106.01	318.0	-83.178	-82.611	0.50162	0.266	0.397	3815
100	0.01229	2071.00	313.3	-82.459	-81.890	0.50888	0.265	0.397	3795
105	0.01241	1976.25	300.6	-80.479	-79.904	0.52827	0.260	0.397	3738
110	0.01253	1884.11	288.3	-78.498	-77.918	0.54674	0.256	0.397	3679
115	0.01265	1794.54	276.4	-76.518	-75.932	0.56440	0.252	0.397	3619
120	0.01277	1707.46	264.9	-74.538	-73.946	0.58130	0.248	0.397	3557
125	0.01290	1622.83	253.7	-72.556	-71.959	0.59752	0.245	0.397	3495
130	0.01303	1540.57	242.9	-70.574	-69.971	0.61312	0.241	0.398	3431
135	0.01317	1460.63	232.4	-68.590	-67.981	0.62814	0.238	0.398	3366
140	0.01331	1382.95	222.3	-66.604	-65.988	0.64263	0.235	0.399	3299
145	0.01345	1307.46	212.5	-64.615	-63.992	0.65664	0.232	0.399	3232
150	0.01360	1234.13	203.0	-62.622	-61.992	0.67020	0.229	0.400	3163
155	0.01376	1162.81	193.8	-60.624	-59.988	0.68334	0.226	0.401	3093
160	0.01392	1093.51	184.9	-58.621	-57.977	0.69611	0.223	0.403	3023
165	0.01409	1026.16	176.3	-56.611	-55.959	0.70853	0.221	0.404	2951
170	0.01426	960.66	167.9	-54.592	-53.932	0.72063	0.218	0.406	2878
175	0.01444	897.00	159.9	-52.564	-51.896	0.73244	0.216	0.408	2804
180	0.01463	835.06	152.0	-50.524	-49.847	0.74398	0.214	0.411	2728
185	0.01483	774.79	144.4	-48.470	-47.784	0.75529	0.211	0.414	2652
190	0.01504	716.12	137.0	-46.400	-45.703	0.76638	0.209	0.418	2574
195	0.01526	658.98	129.8	-44.310	-43.603	0.77730	0.207	0.422	2496
200	0.01550	603.30	122.7	-42.197	-41.479	0.78805	0.205	0.427	2412
205	0.01575	548.99	115.8	-40.056	-39.327	0.79869	0.203	0.434	2329
210	0.01603	495.99	109.1	-37.882	-37.140	0.80923	0.202	0.441	2243
215	0.01632	444.20	102.4	-35.667	-34.912	0.81971	0.200	0.450	2153
220	0.01664	393.56	95.8	-33.403	-32.633	0.83019	0.198	0.461	2060
225	0.01700	343.98	89.3	-31.077	-30.290	0.84071	0.197	0.475	1963
230	0.01739	295.39	82.6	-28.673	-27.867	0.85136	0.195	0.493	1859
* 233.499	0.01770	258.57	79.0	-26.927	-26.108	0.85895	0.199	0.514	1793
* 233.499	0.23731	41.27	1.8	28.960	39.945	1.14191	0.189	0.375	617
235	0.24091	42.55	1.7	29.350	40.502	1.14428	0.187	0.367	621
240	0.25239	46.56	1.6	30.593	42.277	1.15176	0.183	0.344	637
245	0.26324	50.25	1.5	31.768	43.954	1.15868	0.180	0.327	651
250	0.27360	53.71	1.5	32.890	45.556	1.16515	0.177	0.314	664
255	0.28357	56.97	1.4	33.970	47.098	1.17125	0.175	0.303	677
260	0.29321	60.07	1.3	35.017	48.591	1.17705	0.173	0.294	689
265	0.30260	63.05	1.3	36.037	50.045	1.18259	0.171	0.287	700
270	0.31175	65.91	1.2	37.032	51.465	1.18798	0.170	0.281	711
275	0.32072	68.68	1.2	38.009	52.856	1.19301	0.169	0.276	721
280	0.32951	71.37	1.1	38.968	54.222	1.19793	0.167	0.271	732
285	0.33816	73.99	1.1	39.912	55.567	1.20269	0.166	0.267	742
290	0.34668	76.54	1.1	40.844	56.893	1.20730	0.166	0.263	751
295	0.35508	79.04	1.0	41.765	58.202	1.21178	0.165	0.260	760
300	0.36338	81.49	1.0	42.675	59.497	1.21613	0.164	0.258	770
310	0.37970	86.26	0.97	44.470	62.048	1.22449	0.163	0.253	787
320	0.39572	90.88	0.92	46.236	64.555	1.23245	0.162	0.249	804
330	0.41148	95.37	0.88	47.977	67.026	1.24006	0.161	0.246	820
340	0.42702	99.76	0.84	49.699	69.468	1.24735	0.161	0.243	836
350	0.44237	104.06	0.81	51.404	71.883	1.25435	0.160	0.240	851
360	0.45756	108.29	0.78	53.095	74.277	1.26110	0.160	0.238	866
370	0.47261	112.44	0.75	54.774	76.653	1.26760	0.159	0.237	880
380	0.48754	116.53	0.73	56.442	79.012	1.27389	0.159	0.235	894
390	0.50235	120.57	0.71	58.101	81.356	1.27998	0.159	0.234	907
400	0.51707	124.56	0.68	59.751	83.688	1.28589	0.158	0.233	921
410	0.53169	128.51	0.66	61.395	86.009	1.29162	0.158	0.232	934
420	0.54624	132.43	0.64	63.033	88.321	1.29719	0.158	0.231	946
430	0.56072	136.33	0.63	64.666	90.623	1.30261	0.158	0.230	959
440	0.57514	140.15	0.61	66.294	92.919	1.30788	0.158	0.229	971
450	0.58949	143.97	0.59	67.918	95.207	1.31303	0.158	0.229	983
460	0.60380	147.76	0.58	69.539	97.490	1.31805	0.158	0.228	995
470	0.61805	151.53	0.56	71.156	99.768	1.32294	0.158	0.228	1007
480	0.63226	155.27	0.55	72.772	102.042	1.32773	0.158	0.227	1018
490	0.64644	159.00	0.54	74.385	104.311	1.33241	0.158	0.227	1029
500	0.66057	162.71	0.53	75.998	106.577	1.33699	0.158	0.226	1041
510	0.67467	166.40	0.51	77.608	108.841	1.34147	0.158	0.226	1051
520	0.68873	170.07	0.50	79.218	111.102	1.34586	0.158	0.226	1062
530	0.70277	173.74	0.49	80.828	113.362	1.35017	0.158	0.226	1073
540	0.71678	177.38	0.48	82.437	115.620	1.35439	0.158	0.226	1083
550	0.73077	181.02	0.47	84.047	117.876	1.35853	0.158	0.226	1094
560	0.74473	184.64	0.46	85.657	120.132	1.36259	0.158	0.226	1104
570	0.75867	188.26	0.46	87.267	122.388	1.36658	0.159	0.226	1114
580	0.77258	191.86	0.45	88.878	124.644	1.37051	0.159	0.226	1124
590	0.78648	195.45	0.44	90.491	126.900	1.37436	0.159	0.226	1133
600	0.80036	199.04	0.43	92.105	129.156	1.37816	0.159	0.226	1143

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

250 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV)$_P$ BTU/LB	V(DP/DV)$_h$ PSIA-CU FT/BTU	-V(DP/DV)$_T$ PSIA	(DV/DT)$_P$/V 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 98.187	81.63233	214.82	14.626	171918.76	0.0018497	0.11170	41.972	0.00344	1.56921	5.3749
100	81.35839	213.67	14.548	168493.53	0.0018594	0.11118	40.527	0.00344	1.56760	5.2136
105	80.59994	210.46	14.327	159285.38	0.0018872	0.10968	36.817	0.00343	1.56092	4.7998
110	79.83714	207.20	14.098	150422.03	0.0019167	0.10809	33.479	0.00341	1.55441	4.4241
115	79.06955	203.89	13.863	141893.18	0.0019480	0.10644	30.476	0.00339	1.54868	4.0939
120	78.29671	200.52	13.621	133688.69	0.0019812	0.10471	27.774	0.00337	1.54253	3.7934
125	77.51812	197.09	13.374	125798.60	0.0020167	0.10293	25.343	0.00334	1.53634	3.5232
130	76.73320	193.61	13.121	118213.09	0.0020546	0.10109	23.155	0.00331	1.53012	3.2802
135	75.94132	190.05	12.864	110922.52	0.0020953	0.09920	21.187	0.00328	1.52387	3.0619
140	75.14177	186.43	12.602	103917.41	0.0021390	0.09726	19.416	0.00325	1.51757	2.8658
145	74.33376	182.73	12.337	97188.48	0.0021862	0.09529	17.823	0.00321	1.51122	2.6900
150	73.51639	178.95	12.068	90726.59	0.0022373	0.09327	16.389	0.00317	1.50481	2.5325
155	72.68864	175.09	11.796	84522.79	0.0022928	0.09123	15.098	0.00313	1.49834	2.3918
160	71.84939	171.15	11.523	78568.32	0.0023533	0.08915	13.936	0.00308	1.49180	2.2665
165	70.99733	167.10	11.247	72854.60	0.0024197	0.08705	12.889	0.00303	1.48518	2.1554
170	70.13096	162.96	10.969	67373.23	0.0024927	0.08492	11.947	0.00298	1.47847	2.0574
175	69.24858	158.72	10.689	62116.03	0.0025734	0.08277	11.097	0.00293	1.47165	1.9715
180	68.34818	154.36	10.409	57075.60	0.0026633	0.08059	10.331	0.00287	1.46472	1.8972
185	67.42744	149.87	10.126	52242.36	0.0027638	0.07840	9.640	0.00281	1.45765	1.8336
190	66.48363	145.25	9.842	47610.57	0.0028771	0.07618	9.016	0.00274	1.45042	1.7805
195	65.51346	140.49	9.555	43172.31	0.0030058	0.07395	8.452	0.00267	1.44303	1.7376
200	64.51299	135.56	9.266	38920.54	0.0031533	0.07169	7.942	0.00260	1.43542	1.7048
205	63.47739	130.46	8.972	34848.51	0.0033241	0.06941	7.478	0.00252	1.42758	1.6822
210	62.40068	125.16	8.673	30949.84	0.0035245	0.06710	7.057	0.00244	1.41946	1.6703
215	61.27523	119.64	8.366	27218.61	0.0037630	0.06475	6.672	0.00235	1.41100	1.6701
220	60.09116	113.87	8.048	23649.50	0.0040520	0.06236	6.320	0.00225	1.40213	1.6832
225	58.83525	107.80	7.714	20238.17	0.0044102	0.05993	5.995	0.00214	1.39277	1.7120
230	57.48924	101.38	7.357	16981.84	0.0048670	0.05742	5.723	0.00202	1.38279	1.7705
* 233.499	56.49262	98.66	7.037	15172.29	0.0052094	0.05564	5.556	0.00192	1.37543	1.8475
* 233.499	4.21392	36.70	2.236	173.90	0.0102236	0.00967	0.861	0.00612	1.02525	1.2027
235	4.15094	37.25	2.238	176.61	0.0098494	0.00966	0.862	0.00634	1.02486	1.1795
240	3.96210	39.01	2.243	184.46	0.0088244	0.00967	0.867	0.00709	1.02372	1.1107
245	3.79882	40.69	2.247	190.90	0.0080413	0.00972	0.873	0.00782	1.02274	1.0578
250	3.65500	42.31	2.250	196.30	0.0074193	0.00978	0.880	0.00853	1.02187	1.0158
255	3.52651	43.88	2.253	200.90	0.0069107	0.00986	0.887	0.00922	1.02110	0.9817
260	3.41047	45.40	2.254	204.88	0.0064852	0.00995	0.895	0.00991	1.02040	0.9537
265	3.30473	46.90	2.255	208.35	0.0061227	0.01004	0.903	0.01058	1.01976	0.9305
270	3.20766	48.36	2.256	211.42	0.0058092	0.01013	0.912	0.01124	1.01918	0.9111
275	3.11801	49.80	2.256	214.15	0.0055347	0.01022	0.921	0.01189	1.01864	0.8947
280	3.03479	51.22	2.256	216.60	0.0052917	0.01031	0.931	0.01254	1.01814	0.8807
285	2.95718	52.62	2.256	218.80	0.0050747	0.01041	0.940	0.01318	1.01767	0.8686
290	2.88452	54.00	2.255	220.79	0.0048793	0.01050	0.950	0.01382	1.01723	0.8583
295	2.81627	55.36	2.254	222.60	0.0047023	0.01060	0.960	0.01445	1.01682	0.8489
300	2.75195	56.71	2.254	224.26	0.0045408	0.01070	0.970	0.01509	1.01644	0.8406
310	2.63363	59.36	2.252	227.17	0.0042564	0.01090	0.990	0.01637	1.01573	0.8266
320	2.52703	62.00	2.250	229.65	0.0040131	0.01111	1.011	0.01766	1.01509	0.8152
330	2.43025	64.59	2.248	231.78	0.0038019	0.01132	1.032	0.01897	1.01451	0.8056
340	2.34181	67.14	2.246	233.63	0.0036162	0.01153	1.052	0.02029	1.01398	0.7975
350	2.26054	69.66	2.243	235.24	0.0034513	0.01175	1.073	0.02162	1.01349	0.7905
360	2.18549	72.17	2.241	236.66	0.0033037	0.01197	1.094	0.02298	1.01304	0.7845
370	2.11590	74.65	2.239	237.91	0.0031704	0.01219	1.116	0.02435	1.01262	0.7795
380	2.05113	77.11	2.236	239.02	0.0030494	0.01241	1.137	0.02573	1.01223	0.7752
390	1.99064	79.56	2.234	240.02	0.0029388	0.01263	1.158	0.02714	1.01187	0.7713
400	1.93399	81.99	2.232	240.91	0.0028373	0.01285	1.178	0.02857	1.01153	0.7679
410	1.88078	84.41	2.229	241.71	0.0027436	0.01307	1.199	0.03002	1.01121	0.7648
420	1.83068	86.83	2.227	242.43	0.0026569	0.01330	1.220	0.03149	1.01091	0.7620
430	1.78341	89.23	2.225	243.09	0.0025763	0.01352	1.241	0.03297	1.01063	0.7595
440	1.73871	91.63	2.222	243.68	0.0025011	0.01374	1.261	0.03446	1.01036	0.7573
450	1.69637	94.03	2.219	244.22	0.0024308	0.01396	1.282	0.03601	1.01011	0.7553
460	1.65618	96.42	2.217	244.72	0.0023646	0.01418	1.302	0.03756	1.00987	0.7535
470	1.61798	98.81	2.214	245.17	0.0023028	0.01440	1.322	0.03913	1.00964	0.7519
480	1.58162	101.20	2.211	245.58	0.0022444	0.01462	1.342	0.04071	1.00943	0.7505
490	1.54694	103.59	2.208	245.96	0.0021891	0.01484	1.362	0.04231	1.00922	0.7492
500	1.51385	105.99	2.205	246.31	0.0021369	0.01506	1.382	0.04393	1.00902	0.7480
510	1.48221	108.38	2.202	246.64	0.0020873	0.01527	1.402	0.04555	1.00883	0.7474
520	1.45194	110.78	2.198	246.94	0.0020402	0.01549	1.421	0.04721	1.00865	0.7464
530	1.42294	113.19	2.195	247.22	0.0019954	0.01571	1.441	0.04888	1.00848	0.7455
540	1.39512	115.60	2.191	247.47	0.0019528	0.01593	1.460	0.05058	1.00831	0.7448
550	1.36843	118.01	2.187	247.71	0.0019129	0.01614	1.479	0.05228	1.00815	0.7442
560	1.34277	120.43	2.183	247.93	0.0018731	0.01636	1.498	0.05401	1.00800	0.7437
570	1.31810	122.86	2.179	248.14	0.0018359	0.01657	1.517	0.05574	1.00785	0.7433
580	1.29436	125.30	2.175	248.33	0.0018002	0.01679	1.536	0.05750	1.00771	0.7429
590	1.27148	127.74	2.171	248.52	0.0017660	0.01700	1.555	0.05926	1.00757	0.7427
600	1.24943	130.20	2.166	248.68	0.0017332	0.01721	1.573	0.06104	1.00744	0.7426

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

300 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	C_P BTU / LB -R	VELOCITY OF SOUND FT/SEC
* 98.259	0.01225	2109.11	318.0	-83.170	-82.490	0.50169	0.266	0.397	3815
100	0.01229	2075.51	313.5	-82.480	-81.798	0.50867	0.265	0.397	3798
105	0.01240	1980.82	300.8	-80.501	-79.812	0.52805	0.260	0.397	3741
110	0.01252	1886.76	288.5	-78.522	-77.827	0.54652	0.256	0.397	3682
115	0.01264	1799.26	276.6	-76.544	-75.842	0.56417	0.252	0.397	3622
120	0.01277	1712.27	265.1	-74.565	-73.856	0.58107	0.248	0.397	3561
125	0.01290	1627.71	253.9	-72.586	-71.870	0.59728	0.245	0.397	3498
130	0.01303	1545.54	243.1	-70.606	-69.883	0.61287	0.241	0.398	3435
135	0.01316	1465.69	232.7	-68.625	-67.893	0.62789	0.238	0.398	3370
140	0.01330	1388.10	222.6	-66.641	-65.902	0.64237	0.235	0.399	3303
145	0.01345	1312.71	212.8	-64.654	-63.907	0.65637	0.232	0.399	3236
150	0.01359	1239.45	203.3	-62.664	-61.909	0.66992	0.229	0.400	3168
155	0.01375	1168.27	194.1	-60.669	-59.905	0.68305	0.226	0.401	3098
160	0.01391	1099.09	185.2	-58.669	-57.896	0.69581	0.223	0.402	3028
165	0.01408	1031.85	176.6	-56.662	-55.880	0.70821	0.221	0.404	2956
170	0.01425	966.50	168.3	-54.648	-53.856	0.72030	0.218	0.406	2884
175	0.01443	902.96	160.2	-52.623	-51.822	0.73209	0.216	0.408	2810
180	0.01462	841.17	152.4	-50.588	-49.776	0.74362	0.214	0.410	2735
185	0.01482	781.05	144.8	-48.539	-47.716	0.75491	0.212	0.413	2659
190	0.01503	722.55	137.4	-46.475	-45.640	0.76598	0.210	0.417	2581
195	0.01525	665.60	130.2	-44.391	-43.545	0.77687	0.207	0.421	2502
200	0.01548	610.11	123.2	-42.286	-41.426	0.78760	0.205	0.426	2422
205	0.01573	556.03	116.4	-40.154	-39.280	0.79820	0.204	0.432	2339
210	0.01600	503.27	109.6	-37.990	-37.101	0.80871	0.202	0.439	2254
215	0.01629	451.76	103.0	-35.787	-34.882	0.81915	0.200	0.448	2166
220	0.01661	401.43	96.5	-33.538	-32.615	0.82957	0.198	0.459	2074
225	0.01696	352.21	90.0	-31.230	-30.288	0.84003	0.197	0.472	1979
230	0.01734	304.03	83.4	-28.848	-27.885	0.85058	0.195	0.489	1877
235	0.01778	261.92	78.8	-26.358	-25.378	0.86140	0.198	0.525	1792
240	0.01829	214.48	71.7	-23.737	-22.721	0.87256	0.197	0.553	1678
* 240.230	0.01832	212.26	70.8	-23.613	-22.596	0.87308	0.197	0.549	1655
* 240.230	0.19458	37.57	2.2	28.679	39.484	1.13157	0.194	0.418	612
245	0.20478	42.03	2.1	30.014	41.390	1.13943	0.189	0.383	629
250	0.21477	46.24	1.9	31.309	43.240	1.14690	0.184	0.358	645
255	0.22458	50.12	1.8	32.526	44.980	1.15379	0.181	0.339	659
260	0.23313	53.73	1.7	33.665	46.636	1.16022	0.178	0.324	673
265	0.24172	57.13	1.6	34.798	48.225	1.16628	0.176	0.312	686
270	0.25002	60.37	1.6	35.873	49.762	1.17202	0.174	0.303	698
275	0.25807	63.47	1.5	36.918	51.254	1.17750	0.172	0.295	710
280	0.26592	66.45	1.5	37.937	52.709	1.18274	0.170	0.288	721
285	0.27359	69.32	1.4	38.934	54.133	1.18778	0.169	0.282	731
290	0.28111	72.11	1.4	39.913	55.529	1.19264	0.168	0.277	742
295	0.28849	74.83	1.3	40.876	56.902	1.19734	0.167	0.272	752
300	0.29576	77.47	1.3	41.824	58.254	1.20188	0.166	0.269	761
310	0.30999	82.59	1.2	43.686	60.906	1.21058	0.165	0.262	780
320	0.32387	87.51	1.1	45.508	63.499	1.21881	0.164	0.257	798
330	0.33747	92.27	1.1	47.298	66.045	1.22664	0.163	0.252	815
340	0.35083	96.89	1.0	49.062	68.551	1.23413	0.162	0.249	831
350	0.36400	101.40	1.0	50.803	71.024	1.24129	0.161	0.246	847
360	0.37699	105.81	0.96	52.527	73.470	1.24818	0.160	0.243	862
370	0.38983	110.14	0.93	54.235	75.891	1.25482	0.160	0.241	877
380	0.40255	114.39	0.89	55.929	78.291	1.26122	0.160	0.239	891
390	0.41514	118.57	0.86	57.611	80.673	1.26741	0.159	0.237	905
400	0.42764	122.70	0.84	59.284	83.040	1.27340	0.159	0.236	919
410	0.44004	126.77	0.81	60.947	85.392	1.27921	0.159	0.235	932
420	0.45237	130.80	0.79	62.603	87.733	1.28485	0.158	0.233	945
430	0.46462	134.79	0.76	64.252	90.063	1.29033	0.158	0.232	958
440	0.47680	138.73	0.74	65.895	92.383	1.29566	0.158	0.232	970
450	0.48893	142.64	0.72	67.533	94.694	1.30086	0.158	0.231	982
460	0.50100	146.52	0.70	69.167	96.999	1.30592	0.158	0.230	994
470	0.51303	150.37	0.69	70.797	99.297	1.31086	0.158	0.229	1006
480	0.52500	154.20	0.67	72.424	101.589	1.31569	0.158	0.229	1018
490	0.53694	158.00	0.65	74.048	103.876	1.32041	0.158	0.228	1029
500	0.54884	161.78	0.64	75.670	106.159	1.32502	0.158	0.228	1041
510	0.56070	165.54	0.62	77.290	108.438	1.32953	0.158	0.228	1052
520	0.57253	169.28	0.61	78.909	110.714	1.33395	0.158	0.227	1062
530	0.58434	173.00	0.60	80.526	112.987	1.33828	0.158	0.227	1073
540	0.59611	176.70	0.58	82.143	115.258	1.34252	0.158	0.227	1084
550	0.60786	180.40	0.57	83.760	117.528	1.34669	0.158	0.227	1094
560	0.61958	184.07	0.56	85.376	119.795	1.35078	0.159	0.227	1104
570	0.63129	187.74	0.55	86.993	122.062	1.35479	0.159	0.227	1115
580	0.64297	191.39	0.54	88.611	124.329	1.35873	0.159	0.227	1125
590	0.65463	195.03	0.53	90.229	126.595	1.36260	0.159	0.227	1134
600	0.66627	198.66	0.52	91.848	128.861	1.36641	0.159	0.227	1144

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

300 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 98.259	81.64532	215.09	14.624	172199.17	0.0018468	0.11173	42.042	0.00344	1.56931	5.3811
100	81.38250	213.99	14.549	168910.02	0.0018561	0.11123	40.652	0.00344	1.56720	5.2259
105	80.62521	210.80	14.328	159704.17	0.0018837	0.10973	36.934	0.00343	1.56112	4.8113
110	79.86364	207.55	14.100	150843.20	0.0019129	0.10816	33.583	0.00341	1.55502	4.4388
115	79.09737	204.25	13.865	142316.80	0.0019438	0.10650	30.579	0.00339	1.54890	4.1038
120	78.32595	200.90	13.623	134114.86	0.0019768	0.10479	27.871	0.00337	1.54276	3.8026
125	77.54888	197.49	13.376	126227.43	0.0020118	0.10301	25.434	0.00334	1.53659	3.5317
130	76.76561	194.01	13.123	118644.61	0.0020493	0.10117	23.241	0.00331	1.53038	3.2881
135	75.97550	190.48	12.866	111356.89	0.0020895	0.09929	21.268	0.00328	1.52414	3.0692
140	75.17786	186.87	12.605	104354.74	0.0021327	0.09736	19.493	0.00325	1.51785	2.8726
145	74.37192	183.19	12.340	97628.90	0.0021792	0.09539	17.895	0.00321	1.51151	2.6962
150	73.55681	179.43	12.072	91170.25	0.0022296	0.09338	16.457	0.00317	1.50513	2.5382
155	72.73154	175.60	11.801	84969.86	0.0022843	0.09134	15.162	0.00313	1.49867	2.3970
160	71.89500	171.67	11.527	79018.98	0.0023439	0.08927	13.996	0.00309	1.49215	2.2712
165	71.04592	167.66	11.252	73309.05	0.0024092	0.08717	12.946	0.00304	1.48555	2.1595
170	70.18285	163.54	10.975	67831.71	0.0024809	0.08505	12.001	0.00299	1.47887	2.0609
175	69.30413	159.32	10.697	62578.80	0.0025602	0.08291	11.149	0.00293	1.47208	1.9745
180	68.40784	154.99	10.418	57542.37	0.0026482	0.08075	10.380	0.00288	1.46517	1.8996
185	67.49172	150.54	10.137	52714.68	0.0027466	0.07856	9.687	0.00282	1.45814	1.8354
190	66.55313	145.96	9.854	48088.23	0.0028573	0.07636	9.061	0.00275	1.45096	1.7816
195	65.58895	141.24	9.570	43655.80	0.0029828	0.07413	8.495	0.00268	1.44360	1.7379
200	64.59540	136.36	9.283	39410.40	0.0031262	0.07189	7.982	0.00261	1.43605	1.7041
205	63.56789	131.31	8.992	35345.40	0.0032918	0.06962	7.516	0.00253	1.42826	1.6804
210	62.50075	126.08	8.697	31454.55	0.0034854	0.06732	7.095	0.00245	1.42021	1.6672
215	61.38684	120.63	8.394	27732.07	0.0037147	0.06499	6.710	0.00236	1.41183	1.6653
220	60.21694	114.94	8.081	24172.85	0.0039910	0.06263	6.356	0.00227	1.40307	1.6760
225	58.97890	108.97	7.755	20772.75	0.0043310	0.06022	6.031	0.00216	1.39384	1.7017
230	57.65607	102.69	7.407	17529.23	0.0047604	0.05775	5.754	0.00205	1.38402	1.7535
235	56.23422	96.06	7.065	14728.72	0.0053526	0.05521	5.515	0.00187	1.37352	1.8878
240	54.66864	90.53	6.648	11725.32	0.0061127	0.05256	5.262	0.00174	1.36202	1.9944
* 240.230	54.59302	89.95	6.576	11587.92	0.0061079	0.05244	5.250	0.00175	1.36147	1.9803
* 240.230	5.14137	36.09	2.243	193.16	0.0115727	0.01071	0.925	0.00499	1.03086	1.2398
245	4.88326	37.93	2.252	205.22	0.0101079	0.01059	0.926	0.00566	1.02929	1.2071
250	4.65608	39.75	2.258	215.30	0.0090042	0.01055	0.929	0.00633	1.02792	1.1348
255	4.46079	41.47	2.264	223.56	0.0081703	0.01055	0.933	0.00698	1.02674	1.0792
260	4.28953	43.13	2.267	230.47	0.0075133	0.01057	0.938	0.00761	1.02570	1.0353
265	4.13708	44.74	2.270	236.37	0.0069795	0.01062	0.945	0.00822	1.02478	1.0000
270	3.99976	46.30	2.272	241.47	0.0065352	0.01067	0.951	0.00882	1.02395	0.9712
275	3.87492	47.83	2.273	245.93	0.0061583	0.01073	0.959	0.00940	1.02320	0.9474
280	3.76055	49.32	2.274	249.87	0.0058335	0.01080	0.967	0.00998	1.02251	0.9273
285	3.65509	50.79	2.274	253.38	0.0055499	0.01087	0.975	0.01055	1.02187	0.9103
290	3.55733	52.24	2.274	256.53	0.0052996	0.01094	0.983	0.01111	1.02128	0.8959
295	3.46628	53.66	2.273	259.36	0.0050766	0.01102	0.992	0.01167	1.02073	0.8830
300	3.38112	55.07	2.273	261.94	0.0048762	0.01110	1.001	0.01223	1.02022	0.8718
310	3.22596	57.84	2.271	266.42	0.0045301	0.01127	1.020	0.01334	1.01929	0.8530
320	3.08767	60.56	2.269	270.19	0.0042404	0.01146	1.039	0.01445	1.01846	0.8379
330	2.96323	63.22	2.266	273.41	0.0039933	0.01165	1.058	0.01557	1.01771	0.8254
340	2.85035	65.85	2.264	276.17	0.0037793	0.01185	1.078	0.01670	1.01703	0.8150
350	2.74726	68.45	2.261	278.58	0.0035917	0.01205	1.098	0.01784	1.01641	0.8061
360	2.65259	71.01	2.259	280.68	0.0034255	0.01226	1.118	0.01900	1.01584	0.7984
370	2.56520	73.55	2.256	282.53	0.0032769	0.01246	1.138	0.02016	1.01532	0.7922
380	2.48419	76.07	2.253	284.17	0.0031431	0.01267	1.158	0.02133	1.01483	0.7867
390	2.40881	78.56	2.250	285.62	0.0030217	0.01288	1.178	0.02252	1.01438	0.7819
400	2.33843	81.04	2.248	286.93	0.0029110	0.01309	1.199	0.02373	1.01396	0.7776
410	2.27250	83.51	2.245	288.10	0.0028095	0.01331	1.219	0.02495	1.01356	0.7737
420	2.21059	85.96	2.242	289.15	0.0027160	0.01352	1.239	0.02619	1.01319	0.7703
430	2.15230	88.41	2.239	290.10	0.0026295	0.01373	1.259	0.02745	1.01284	0.7672
440	2.09730	90.84	2.237	290.96	0.0025492	0.01395	1.279	0.02872	1.01251	0.7645
450	2.04528	93.27	2.234	291.75	0.0024744	0.01416	1.299	0.03001	1.01220	0.7620
460	1.99600	95.69	2.231	292.46	0.0024045	0.01438	1.319	0.03131	1.01190	0.7598
470	1.94922	98.11	2.228	293.11	0.0023390	0.01460	1.339	0.03263	1.01162	0.7578
480	1.90475	100.53	2.225	293.71	0.0022774	0.01481	1.358	0.03396	1.01136	0.7560
490	1.86241	102.95	2.221	294.26	0.0022195	0.01502	1.378	0.03531	1.01110	0.7544
500	1.82203	105.36	2.218	294.77	0.0021647	0.01524	1.397	0.03667	1.01086	0.7530
510	1.78348	107.78	2.214	295.23	0.0021129	0.01544	1.417	0.03802	1.01063	0.7521
520	1.74662	110.20	2.211	295.66	0.0020639	0.01566	1.436	0.03941	1.01041	0.7509
530	1.71135	112.63	2.207	296.06	0.0020173	0.01587	1.455	0.04082	1.01020	0.7498
540	1.67754	115.06	2.203	296.43	0.0019730	0.01609	1.474	0.04224	1.01000	0.7488
550	1.64512	117.49	2.199	296.77	0.0019308	0.01630	1.493	0.04368	1.00980	0.7480
560	1.61399	119.93	2.195	297.09	0.0018905	0.01651	1.512	0.04512	1.00962	0.7473
570	1.58407	122.38	2.191	297.39	0.0018521	0.01672	1.530	0.04658	1.00944	0.7467
580	1.55529	124.83	2.187	297.66	0.0018153	0.01693	1.549	0.04805	1.00927	0.7462
590	1.52758	127.29	2.182	297.92	0.0017801	0.01714	1.567	0.04953	1.00910	0.7458
600	1.50088	129.76	2.178	298.16	0.0017463	0.01735	1.586	0.05102	1.00894	0.7455

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

350 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 98.330	0.01225	2112.21	318.1	-83.162	-82.368	0.50177	0.266	0.397	3820
100	0.01228	2080.01	313.7	-82.501	-81.705	0.50946	0.265	0.397	3801
105	0.01240	1985.39	301.1	-80.524	-79.720	0.52783	0.261	0.397	3744
110	0.01252	1893.40	288.8	-78.547	-77.735	0.54630	0.256	0.397	3685
115	0.01264	1803.98	276.9	-76.570	-75.751	0.56394	0.252	0.397	3626
120	0.01276	1717.06	265.4	-74.593	-73.766	0.58084	0.249	0.397	3564
125	0.01289	1632.59	254.2	-72.616	-71.781	0.59704	0.245	0.397	3502
130	0.01302	1550.51	243.4	-70.638	-69.794	0.61263	0.241	0.397	3438
135	0.01316	1470.74	232.9	-68.658	-67.806	0.62763	0.238	0.398	3374
140	0.01330	1393.25	222.8	-66.677	-65.815	0.64211	0.235	0.398	3308
145	0.01344	1317.95	213.0	-64.693	-63.822	0.65610	0.232	0.399	3241
150	0.01359	1244.79	203.6	-62.705	-61.825	0.66964	0.229	0.400	3173
155	0.01374	1173.71	194.4	-60.714	-59.823	0.68276	0.226	0.401	3103
160	0.01390	1104.65	185.5	-58.717	-57.816	0.69551	0.224	0.402	3033
165	0.01407	1037.53	176.9	-56.713	-55.802	0.70790	0.221	0.404	2962
170	0.01424	972.30	168.6	-54.702	-53.780	0.71997	0.219	0.405	2890
175	0.01442	908.89	160.6	-52.682	-51.748	0.73175	0.216	0.407	2816
180	0.01461	847.24	152.8	-50.652	-49.705	0.74326	0.214	0.410	2742
185	0.01480	787.29	145.2	-48.608	-47.649	0.75453	0.212	0.413	2666
190	0.01501	728.95	137.8	-46.549	-45.576	0.76559	0.210	0.416	2589
195	0.01523	672.17	130.7	-44.472	-43.485	0.77645	0.208	0.420	2511
200	0.01546	616.88	123.7	-42.374	-41.372	0.78716	0.206	0.425	2431
205	0.01571	563.01	116.9	-40.250	-39.232	0.79773	0.204	0.431	2349
210	0.01597	510.49	110.2	-38.096	-37.061	0.80819	0.202	0.438	2265
215	0.01626	459.25	103.6	-35.905	-34.851	0.81859	0.200	0.446	2178
220	0.01657	409.22	97.1	-33.669	-32.595	0.82896	0.198	0.456	2088
225	0.01691	360.33	90.7	-31.379	-30.282	0.83935	0.197	0.469	1994
230	0.01730	312.55	84.2	-29.019	-27.898	0.84983	0.195	0.485	1895
235	0.01773	270.90	78.7	-26.546	-25.398	0.86059	0.198	0.511	1798
240	0.01822	224.18	72.4	-23.972	-22.792	0.87156	0.197	0.542	1690
245	0.01880	179.28	65.1	-21.232	-20.013	0.88302	0.196	0.576	1561
* 246.196	0.01896	169.03	63.5	-20.545	-19.317	0.88585	0.196	0.587	1531
* 246.196	0.16316	33.74	2.7	28.239	38.814	1.12203	0.199	0.470	608
250	0.17103	37.88	2.6	29.433	40.518	1.12690	0.194	0.429	622
255	0.18049	42.57	2.4	30.865	42.563	1.13700	0.188	0.392	643
260	0.18925	46.87	2.2	32.186	44.451	1.14434	0.184	0.365	656
265	0.19748	50.83	2.1	33.427	46.226	1.15110	0.181	0.346	671
270	0.20532	54.53	2.0	34.607	47.914	1.15741	0.178	0.330	684
275	0.21284	58.02	1.9	35.739	49.534	1.16336	0.176	0.318	697
280	0.22010	61.33	1.8	36.833	51.098	1.16899	0.174	0.308	709
285	0.22715	64.51	1.7	37.894	52.616	1.17437	0.172	0.300	721
290	0.23400	67.56	1.7	38.929	54.095	1.17951	0.171	0.292	732
295	0.24071	70.51	1.6	39.942	55.542	1.18446	0.169	0.286	743
300	0.24727	73.37	1.6	40.934	56.960	1.18923	0.168	0.281	753
310	0.26005	78.87	1.5	42.871	59.725	1.19829	0.167	0.272	773
320	0.27245	84.11	1.4	44.756	62.414	1.20683	0.165	0.265	792
330	0.28453	89.15	1.3	46.599	65.040	1.21491	0.164	0.260	810
340	0.29637	94.02	1.3	48.404	67.616	1.22260	0.163	0.255	826
350	0.30798	98.74	1.2	50.190	70.150	1.22995	0.162	0.252	843
360	0.31942	103.35	1.1	51.948	72.650	1.23699	0.161	0.248	859
370	0.33069	107.85	1.1	53.686	75.119	1.24375	0.161	0.246	874
380	0.34183	112.27	1.1	55.408	77.563	1.25027	0.160	0.243	888
390	0.35285	116.60	1.0	57.116	79.984	1.25656	0.160	0.241	903
400	0.36377	120.86	0.99	58.810	82.386	1.26264	0.159	0.239	917
410	0.37459	125.06	0.96	60.494	84.772	1.26853	0.159	0.238	930
420	0.38532	129.20	0.93	62.169	87.142	1.27424	0.159	0.236	944
430	0.39599	133.29	0.90	63.835	89.499	1.27979	0.159	0.235	957
440	0.40658	137.34	0.88	65.494	91.845	1.28518	0.158	0.234	969
450	0.41712	141.34	0.85	67.147	94.180	1.29043	0.158	0.233	982
460	0.42759	145.31	0.83	68.794	96.506	1.29554	0.158	0.232	994
470	0.43802	149.25	0.81	70.436	98.825	1.30053	0.158	0.231	1005
480	0.44841	153.15	0.79	72.074	101.136	1.30540	0.158	0.231	1018
490	0.45875	157.02	0.77	73.709	103.441	1.31015	0.158	0.230	1029
500	0.46905	160.87	0.75	75.341	105.740	1.31479	0.158	0.230	1041
510	0.47932	164.70	0.73	76.970	108.035	1.31934	0.158	0.229	1052
520	0.48955	168.50	0.72	78.598	110.326	1.32379	0.158	0.229	1063
530	0.49976	172.28	0.70	80.224	112.613	1.32814	0.158	0.229	1074
540	0.50994	176.05	0.69	81.848	114.898	1.33241	0.158	0.228	1084
550	0.52009	179.79	0.67	83.472	117.179	1.33660	0.158	0.228	1095
560	0.53021	183.52	0.66	85.096	119.459	1.34071	0.159	0.228	1105
570	0.54032	187.24	0.65	86.719	121.737	1.34474	0.159	0.228	1116
580	0.55040	190.94	0.63	88.342	124.014	1.34870	0.159	0.228	1126
590	0.56047	194.63	0.62	89.966	126.290	1.35259	0.159	0.228	1136
600	0.57052	198.30	0.61	91.591	128.566	1.35642	0.159	0.228	1145

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

350 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 98.330	81.65830	215.37	14.622	172479.42	0.0018440	0.11176	42.113	0.00345	1.56942	5.3874
100	81.40657	214.32	14.550	169326.13	0.0018529	0.11128	40.778	0.00344	1.56739	5.2384
105	80.65043	211.13	14.329	160122.57	0.0018802	0.10979	37.052	0.00343	1.56132	4.8229
110	79.89008	207.90	14.101	151263.94	0.0019091	0.10822	33.700	0.00341	1.55523	4.4495
115	79.12512	204.61	13.866	142739.97	0.0019397	0.10657	30.683	0.00339	1.54913	4.1138
120	78.35511	201.28	13.625	134540.53	0.0019723	0.10486	27.968	0.00337	1.54299	3.8119
125	77.57956	197.88	13.378	126655.66	0.0020070	0.10308	25.526	0.00335	1.53683	3.5403
130	76.79790	194.42	13.125	119075.57	0.0020441	0.10125	23.328	0.00332	1.53064	3.2961
135	76.00955	190.90	12.868	111790.64	0.0020838	0.09938	21.349	0.00329	1.52440	3.0766
140	75.21381	187.31	12.607	104791.41	0.0021264	0.09745	19.569	0.00325	1.51813	2.8794
145	74.40994	183.65	12.343	98066.61	0.0021724	0.09549	17.967	0.00322	1.51181	2.7024
150	73.59707	179.92	12.075	91613.14	0.0022220	0.09349	16.524	0.00318	1.50544	2.5439
155	72.77424	176.10	11.805	85416.08	0.0022760	0.09145	15.226	0.00314	1.49901	2.4022
160	71.94038	172.20	11.532	79468.71	0.0023347	0.08939	14.057	0.00309	1.49251	2.2758
165	71.09424	168.21	11.258	73762.48	0.0023989	0.08730	13.004	0.00304	1.48593	2.1636
170	70.23443	164.12	10.982	68289.07	0.0024694	0.08519	12.055	0.00299	1.47927	2.0645
175	69.35933	159.93	10.705	63040.33	0.0025472	0.08305	11.200	0.00294	1.47250	1.9776
180	68.46706	155.63	10.426	58008.36	0.0026335	0.08090	10.429	0.00288	1.46563	1.9021
185	67.55548	151.21	10.147	53185.46	0.0027298	0.07872	9.733	0.00282	1.45863	1.8373
190	66.62203	146.67	9.866	48564.18	0.0028379	0.07653	9.105	0.00276	1.45148	1.7828
195	65.66370	141.98	9.584	44137.34	0.0029603	0.07432	8.537	0.00269	1.44417	1.7383
200	64.67690	137.15	9.299	39898.07	0.0030998	0.07208	8.023	0.00262	1.43667	1.7036
205	63.65725	132.16	9.012	35839.79	0.0032605	0.06983	7.557	0.00255	1.42894	1.6788
210	62.59940	126.98	8.720	31956.37	0.0034475	0.06755	7.133	0.00246	1.42095	1.6643
215	61.49661	121.60	8.421	28242.17	0.0036683	0.06524	6.747	0.00238	1.41266	1.6607
220	60.34030	115.99	8.114	24692.24	0.0039328	0.06289	6.393	0.00228	1.40400	1.6693
225	59.11924	110.13	7.794	21302.61	0.0042561	0.06050	6.067	0.00218	1.39489	1.6921
230	57.81626	103.97	7.455	18070.90	0.0046607	0.05806	5.783	0.00207	1.38522	1.7375
235	56.41389	99.26	7.032	15282.42	0.0051521	0.05554	5.546	0.00193	1.37484	1.8383
240	54.89547	92.15	6.690	12306.22	0.0058857	0.05296	5.300	0.00178	1.36368	1.9541
245	53.19038	84.30	5.235	9535.95	0.0068300	0.05022	5.035	0.00164	1.35122	2.0783
* 246.196	52.74729	82.45	6.133	8915.81	0.0071236	0.04953	4.968	0.00160	1.34799	2.1208
* 246.196	6.12899	35.40	2.250	206.79	0.0132680	0.01184	0.991	0.00411	1.03686	1.4148
250	5.84708	37.00	2.260	221.03	0.0115870	0.01160	0.987	0.00483	1.03514	1.3134
255	5.54050	38.96	2.270	235.85	0.0100509	0.01143	0.986	0.00527	1.03328	1.2160
260	5.28414	40.79	2.277	247.67	0.0089543	0.01134	0.987	0.00588	1.03173	1.1444
265	5.06373	42.54	2.282	257.39	0.0081241	0.01131	0.990	0.00646	1.03039	1.0895
270	4.87042	44.21	2.286	265.58	0.0074692	0.01130	0.994	0.00702	1.02922	1.0464
275	4.69833	45.84	2.289	272.58	0.0069366	0.01131	0.999	0.00757	1.02817	1.0116
280	4.54335	47.43	2.290	278.66	0.0064930	0.01134	1.005	0.00810	1.02724	0.9831
285	4.40247	48.97	2.291	284.00	0.0061165	0.01137	1.012	0.00862	1.02638	0.9593
290	4.27342	50.49	2.292	288.73	0.0057919	0.01142	1.019	0.00913	1.02560	0.9394
295	4.15444	51.98	2.292	292.95	0.0055085	0.01147	1.026	0.00964	1.02489	0.9220
300	4.04416	53.45	2.292	296.74	0.0052584	0.01153	1.034	0.01015	1.02422	0.9070
310	3.84541	56.33	2.290	303.28	0.0048354	0.01167	1.050	0.01114	1.02302	0.8823
320	3.67043	59.13	2.288	308.72	0.0044897	0.01183	1.067	0.01214	1.02197	0.8627
330	3.51451	61.89	2.285	313.31	0.0042005	0.01199	1.085	0.01313	1.02103	0.8468
340	3.37420	64.59	2.283	317.23	0.0039539	0.01217	1.104	0.01412	1.02018	0.8337
350	3.24693	67.26	2.279	320.62	0.0037406	0.01236	1.122	0.01513	1.01941	0.8226
360	3.13071	69.88	2.276	323.56	0.0035537	0.01255	1.141	0.01614	1.01871	0.8131
370	3.02395	72.48	2.273	326.14	0.0033883	0.01274	1.161	0.01716	1.01807	0.8054
380	2.92541	75.05	2.270	328.42	0.0032405	0.01293	1.180	0.01818	1.01748	0.7987
390	2.83405	77.60	2.267	330.44	0.0031075	0.01313	1.199	0.01922	1.01693	0.7928
400	2.74902	80.12	2.264	332.24	0.0029870	0.01333	1.219	0.02027	1.01642	0.7876
410	2.66961	82.63	2.261	333.85	0.0028771	0.01354	1.239	0.02133	1.01594	0.7830
420	2.59522	85.12	2.258	335.30	0.0027765	0.01374	1.258	0.02241	1.01550	0.7789
430	2.52534	87.60	2.254	336.61	0.0026838	0.01395	1.278	0.02350	1.01508	0.7752
440	2.45953	90.07	2.251	337.79	0.0025981	0.01416	1.297	0.02460	1.01468	0.7719
450	2.39742	92.53	2.248	338.86	0.0025186	0.01437	1.317	0.02571	1.01431	0.7689
460	2.33866	94.99	2.245	339.84	0.0024446	0.01458	1.336	0.02684	1.01396	0.7662
470	2.28298	97.43	2.242	340.73	0.0023755	0.01479	1.355	0.02798	1.01362	0.7638
480	2.23012	99.86	2.238	341.54	0.0023108	0.01500	1.375	0.02913	1.01331	0.7616
490	2.17985	102.32	2.235	342.29	0.0022499	0.01520	1.394	0.03030	1.01301	0.7597
500	2.13197	104.76	2.231	342.98	0.0021927	0.01541	1.413	0.03147	1.01272	0.7580
510	2.08630	107.20	2.228	343.61	0.0021387	0.01561	1.432	0.03264	1.01245	0.7570
520	2.04268	109.64	2.224	344.19	0.0020876	0.01582	1.451	0.03384	1.01218	0.7554
530	2.00097	112.09	2.220	344.73	0.0020392	0.01604	1.469	0.03506	1.01193	0.7540
540	1.96103	114.53	2.216	345.23	0.0019932	0.01625	1.488	0.03629	1.01170	0.7528
550	1.92275	116.99	2.212	345.70	0.0019495	0.01646	1.507	0.03753	1.01147	0.7518
560	1.88603	119.44	2.208	346.13	0.0019079	0.01666	1.525	0.03877	1.01125	0.7509
570	1.85076	121.90	2.203	346.53	0.0018683	0.01687	1.544	0.04003	1.01103	0.7501
580	1.81685	124.37	2.199	346.91	0.0018304	0.01708	1.562	0.04130	1.01083	0.7495
590	1.78422	126.85	2.194	347.26	0.0017941	0.01729	1.580	0.04257	1.01064	0.7489
600	1.75280	129.33	2.190	347.58	0.0017595	0.01749	1.598	0.04386	1.01045	0.7485

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

400 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 98.401	0.01224	2115.30	318.1	-83.154	-82.247	0.50185	0.266	0.397	3822
100	0.01228	2084.50	313.9	-82.522	-81.612	0.50825	0.265	0.397	3804
105	0.01240	1989.95	301.3	-80.546	-79.628	0.52762	0.261	0.397	3747
110	0.01251	1898.04	289.0	-78.571	-77.644	0.54608	0.256	0.397	3689
115	0.01263	1808.69	277.1	-76.596	-75.660	0.56371	0.252	0.397	3629
120	0.01276	1721.85	265.6	-74.621	-73.676	0.58060	0.249	0.397	3568
125	0.01288	1637.46	254.4	-72.645	-71.691	0.59681	0.245	0.397	3506
130	0.01302	1555.46	243.7	-70.670	-69.705	0.61238	0.242	0.397	3442
135	0.01315	1475.78	233.2	-68.692	-67.718	0.62738	0.238	0.398	3378
140	0.01329	1398.38	223.1	-66.713	-65.729	0.64185	0.235	0.398	3312
145	0.01343	1323.18	213.3	-64.732	-63.737	0.65583	0.232	0.399	3245
150	0.01358	1250.12	203.9	-62.747	-61.741	0.66936	0.229	0.399	3177
155	0.01373	1179.14	194.7	-60.758	-59.741	0.68247	0.226	0.400	3108
160	0.01389	1110.19	185.8	-58.764	-57.735	0.69521	0.224	0.402	3038
165	0.01406	1043.19	177.3	-56.764	-55.723	0.70759	0.221	0.403	2967
170	0.01423	978.08	169.0	-54.757	-53.703	0.71965	0.219	0.405	2896
175	0.01441	914.81	160.9	-52.741	-51.674	0.73141	0.216	0.407	2823
180	0.01459	853.30	153.1	-50.715	-49.634	0.74291	0.214	0.409	2749
185	0.01479	793.49	145.6	-48.676	-47.581	0.75416	0.212	0.412	2673
190	0.01499	735.32	138.2	-46.623	-45.512	0.76520	0.210	0.415	2597
195	0.01521	678.71	131.1	-44.552	-43.425	0.77604	0.208	0.419	2519
200	0.01544	623.61	124.1	-42.461	-41.317	0.78672	0.206	0.424	2440
205	0.01569	569.95	117.4	-40.345	-39.183	0.79726	0.204	0.430	2359
210	0.01595	517.66	110.7	-38.201	-37.019	0.80769	0.202	0.436	2276
215	0.01623	466.67	104.2	-36.021	-34.819	0.81804	0.200	0.444	2190
220	0.01654	416.92	97.7	-33.799	-32.574	0.82836	0.198	0.454	2102
225	0.01688	368.36	91.4	-31.524	-30.275	0.83869	0.197	0.466	2009
230	0.01725	320.95	85.0	-29.185	-27.908	0.84909	0.195	0.481	1912
235	0.01767	274.94	79.4	-26.737	-25.429	0.85976	0.199	0.506	1815
240	0.01814	233.57	73.3	-24.199	-22.855	0.87059	0.197	0.533	1711
245	0.01870	189.26	66.2	-21.509	-20.124	0.88186	0.196	0.564	1587
250	0.01939	145.19	58.6	-18.619	-17.183	0.89374	0.197	0.609	1443
* 251.575	0.01964	130.85	56.9	-17.647	-16.192	0.89769	0.197	0.641	1405
* 251.575	0.13903	29.78	3.3	27.645	37.943	1.11293	0.204	0.536	602
255	0.14601	33.96	3.1	28.962	39.677	1.11978	0.198	0.480	617
260	0.15514	39.29	2.8	30.446	41.938	1.12856	0.192	0.428	637
265	0.16343	44.01	2.6	31.878	43.983	1.13635	0.187	0.393	654
270	0.17113	48.31	2.5	33.203	45.879	1.14344	0.183	0.367	669
275	0.17840	52.28	2.3	34.451	47.665	1.15000	0.180	0.348	684
280	0.18533	56.01	2.2	35.640	49.367	1.15613	0.178	0.333	697
285	0.19198	59.53	2.1	36.781	51.001	1.16192	0.175	0.321	710
290	0.19840	62.88	2.0	37.884	52.580	1.16741	0.174	0.311	722
295	0.20464	66.10	1.9	38.956	54.113	1.17265	0.172	0.303	734
300	0.21072	69.20	1.9	40.000	55.608	1.17768	0.171	0.295	745
310	0.22247	75.10	1.7	42.024	58.502	1.18717	0.168	0.284	765
320	0.23379	80.69	1.6	43.979	61.295	1.19604	0.167	0.275	786
330	0.24477	86.02	1.6	45.880	64.010	1.20439	0.165	0.268	804
340	0.25547	91.14	1.5	47.739	66.661	1.21230	0.164	0.262	822
350	0.26594	96.09	1.4	49.563	69.261	1.21984	0.163	0.258	839
360	0.27622	100.90	1.3	51.358	71.817	1.22704	0.162	0.254	855
370	0.28633	105.59	1.3	53.129	74.337	1.23395	0.162	0.250	871
380	0.29629	110.16	1.2	54.883	76.826	1.24058	0.161	0.247	886
390	0.30614	114.64	1.2	56.613	79.289	1.24698	0.160	0.245	901
400	0.31587	119.04	1.2	58.332	81.728	1.25316	0.160	0.243	915
410	0.32550	123.36	1.1	60.037	84.147	1.25913	0.160	0.241	929
420	0.33505	127.62	1.1	61.731	86.548	1.26491	0.159	0.239	942
430	0.34453	131.82	1.0	63.414	88.933	1.27053	0.159	0.238	956
440	0.35393	135.97	1.0	65.090	91.305	1.27598	0.159	0.237	968
450	0.36327	140.07	0.99	66.757	93.664	1.28128	0.159	0.235	981
460	0.37255	144.13	0.96	68.418	96.013	1.28644	0.159	0.234	994
470	0.38179	148.14	0.94	70.073	98.352	1.29147	0.158	0.233	1006
480	0.39098	152.13	0.91	71.723	100.683	1.29638	0.158	0.233	1018
490	0.40012	156.07	0.89	73.369	103.006	1.30117	0.158	0.232	1029
500	0.40923	159.99	0.87	75.011	105.322	1.30585	0.158	0.231	1041
510	0.41830	163.88	0.85	76.650	107.633	1.31043	0.158	0.231	1052
520	0.42734	167.75	0.83	78.286	109.939	1.31490	0.158	0.230	1063
530	0.43634	171.59	0.81	79.920	112.240	1.31929	0.158	0.230	1074
540	0.44532	175.41	0.79	81.553	114.537	1.32358	0.158	0.230	1085
550	0.45426	179.21	0.78	83.184	116.832	1.32779	0.159	0.229	1096
560	0.46321	183.00	0.76	84.814	119.124	1.33192	0.159	0.229	1106
570	0.47211	186.76	0.75	86.444	121.413	1.33597	0.159	0.229	1116
580	0.48100	190.51	0.73	88.073	123.701	1.33995	0.159	0.229	1127
590	0.48987	194.25	0.72	89.703	125.987	1.34386	0.159	0.229	1137
600	0.49871	197.97	0.70	91.333	128.273	1.34770	0.159	0.229	1147

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

400 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_p$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_p/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 98.401	81.67126	215.65	14.620	172759.53	0.0018412	0.11179	42.183	0.00345	1.56952	5.3937
100	81.43058	214.64	14.551	169741.88	0.0018496	0.11133	40.904	0.00344	1.56759	5.2508
105	80.67558	211.47	14.331	160540.57	0.0018767	0.10985	37.170	0.00343	1.56152	4.8344
110	79.91646	208.25	14.103	151684.27	0.0019053	0.10828	33.810	0.00341	1.55545	4.4602
115	79.15280	204.98	13.868	143162.69	0.0019356	0.10664	30.787	0.00340	1.54935	4.1237
120	78.38419	201.65	13.626	134965.72	0.0019679	0.10493	28.066	0.00337	1.54322	3.8211
125	77.61014	198.27	13.380	127083.41	0.0020022	0.10316	25.617	0.00335	1.53707	3.5489
130	76.83010	194.83	13.127	119505.97	0.0020388	0.10134	23.414	0.00332	1.53089	3.3041
135	76.04349	191.33	12.871	112223.73	0.0020781	0.09946	21.431	0.00329	1.52467	3.0839
140	75.24964	187.75	12.610	105227.42	0.0021202	0.09755	19.645	0.00326	1.51841	2.8862
145	74.44780	184.11	12.346	98507.61	0.0021655	0.09559	18.039	0.00322	1.51211	2.7087
150	73.63715	180.40	12.078	92055.24	0.0022145	0.09359	16.592	0.00318	1.50575	2.5496
155	72.81674	176.60	11.809	85861.45	0.0022677	0.09157	15.290	0.00314	1.49934	2.4074
160	71.98553	172.72	11.537	79917.51	0.0023255	0.08951	14.117	0.00310	1.49286	2.2805
165	71.14230	168.75	11.263	74214.90	0.0023887	0.08743	13.061	0.00305	1.48630	2.1678
170	70.28570	164.69	10.988	68745.31	0.0024580	0.08532	12.109	0.00300	1.47966	2.0682
175	69.41416	160.53	10.712	63500.64	0.0025343	0.08320	11.251	0.00295	1.47293	1.9807
180	68.52587	156.26	10.435	58472.99	0.0026190	0.08105	10.478	0.00289	1.46608	1.9046
185	67.61874	151.87	10.157	53654.73	0.0027133	0.07888	9.780	0.00283	1.45911	1.8392
190	66.69032	147.37	9.878	49038.44	0.0028190	0.07670	9.150	0.00277	1.45200	1.7840
195	65.73773	142.73	9.598	44617.00	0.0029383	0.07450	8.580	0.00270	1.44473	1.7387
200	64.75751	137.94	9.316	40383.59	0.0030741	0.07227	8.064	0.00263	1.43728	1.7032
205	63.74552	132.99	9.031	36331.74	0.0032300	0.07003	7.596	0.00256	1.42961	1.6774
210	62.69666	127.87	8.742	32455.39	0.0034110	0.06777	7.171	0.00248	1.42169	1.6616
215	61.60461	122.56	8.448	28749.63	0.0036236	0.06547	6.784	0.00239	1.41347	1.6565
220	60.46135	117.03	8.146	25207.82	0.0038772	0.06315	6.429	0.00230	1.40490	1.6631
225	59.25648	111.26	7.832	21827.96	0.0041859	0.06078	6.103	0.00220	1.39591	1.6831
230	57.97612	105.21	7.501	18607.18	0.0045671	0.05837	5.812	0.00210	1.38639	1.7225
235	56.59577	100.53	7.071	15786.56	0.0050320	0.05588	5.578	0.00195	1.37619	1.8179
240	55.11354	93.74	6.739	12872.82	0.0056914	0.05334	5.337	0.00181	1.36528	1.9215
245	53.46175	86.19	6.310	10118.04	0.0065449	0.05066	5.078	0.00168	1.35320	2.0355
250	51.57749	77.73	5.784	7488.37	0.0078302	0.04781	4.797	0.00152	1.33950	2.1988
* 251.575	50.91372	75.11	5.673	6662.18	0.0085382	0.04685	4.702	0.00143	1.33470	2.3172
* 251.575	7.19257	34.65	2.258	214.21	0.0154706	0.01312	1.058	0.00340	1.04335	1.5561
255	6.84895	36.23	2.270	232.56	0.0132637	0.01271	1.050	0.00386	1.04125	1.4295
260	6.44581	38.32	2.282	253.26	0.0111597	0.01236	1.044	0.00448	1.03879	1.3008
265	6.11879	40.26	2.292	269.31	0.0097492	0.01216	1.042	0.00506	1.03680	1.2106
270	5.84334	42.09	2.298	282.28	0.0087248	0.01205	1.042	0.00561	1.03512	1.1436
275	5.60535	43.84	2.303	293.06	0.0079402	0.01198	1.044	0.00614	1.03368	1.0920
280	5.39588	45.53	2.306	302.20	0.0073161	0.01195	1.047	0.00665	1.03240	1.0510
285	5.20892	47.16	2.309	310.08	0.0068051	0.01194	1.051	0.00714	1.03127	1.0177
290	5.04020	48.76	2.310	316.95	0.0063774	0.01194	1.056	0.00762	1.03025	0.9904
295	4.88658	50.32	2.311	323.01	0.0060130	0.01196	1.062	0.00809	1.02931	0.9670
300	4.74568	51.85	2.311	328.40	0.0056978	0.01200	1.068	0.00856	1.02846	0.9471
310	4.49499	54.84	2.310	337.58	0.0051778	0.01209	1.082	0.00947	1.02694	0.9149
320	4.27732	57.74	2.308	345.12	0.0047641	0.01221	1.097	0.01038	1.02563	0.8899
330	4.08546	60.58	2.305	351.42	0.0044251	0.01235	1.113	0.01128	1.02447	0.8700
340	3.91432	63.36	2.302	356.76	0.0041410	0.01251	1.130	0.01218	1.02344	0.8537
350	3.76021	66.09	2.298	361.34	0.0038986	0.01267	1.148	0.01308	1.02251	0.8401
360	3.62032	68.79	2.295	365.30	0.0036887	0.01285	1.166	0.01399	1.02166	0.8286
370	3.49249	71.44	2.291	368.76	0.0035047	0.01302	1.184	0.01489	1.02089	0.8194
380	3.37502	74.06	2.287	371.79	0.0033417	0.01320	1.202	0.01581	1.02019	0.8113
390	3.26652	76.66	2.284	374.48	0.0031961	0.01339	1.221	0.01673	1.01953	0.8043
400	3.16587	79.23	2.280	376.86	0.0030651	0.01358	1.240	0.01766	1.01893	0.7980
410	3.07216	81.78	2.277	378.99	0.0029464	0.01377	1.259	0.01861	1.01836	0.7926
420	2.98460	84.31	2.273	380.90	0.0028382	0.01397	1.277	0.01956	1.01784	0.7877
430	2.90254	86.83	2.270	382.62	0.0027390	0.01417	1.296	0.02053	1.01734	0.7833
440	2.82543	89.33	2.266	384.17	0.0026478	0.01437	1.315	0.02150	1.01688	0.7794
450	2.75277	91.82	2.263	385.58	0.0025634	0.01457	1.334	0.02249	1.01644	0.7759
460	2.68417	94.30	2.259	386.86	0.0024852	0.01477	1.353	0.02349	1.01603	0.7728
470	2.61925	96.78	2.256	388.03	0.0024123	0.01498	1.372	0.02449	1.01564	0.7699
480	2.55770	99.25	2.252	389.09	0.0023443	0.01518	1.391	0.02551	1.01527	0.7674
490	2.49924	101.71	2.248	390.07	0.0022806	0.01539	1.410	0.02654	1.01492	0.7651
500	2.44363	104.18	2.245	390.96	0.0022207	0.01559	1.428	0.02758	1.01459	0.7631
510	2.39064	106.64	2.241	391.79	0.0021644	0.01578	1.447	0.02860	1.01427	0.7618
520	2.34008	109.10	2.237	392.55	0.0021113	0.01599	1.466	0.02967	1.01397	0.7600
530	2.29177	111.56	2.233	393.25	0.0020610	0.01620	1.484	0.03074	1.01368	0.7584
540	2.24556	114.03	2.229	393.90	0.0020134	0.01640	1.502	0.03182	1.01340	0.7569
550	2.20130	116.50	2.224	394.50	0.0019682	0.01661	1.521	0.03291	1.01313	0.7555
560	2.15887	118.97	2.220	395.07	0.0019253	0.01682	1.539	0.03401	1.01288	0.7545
570	2.11814	121.45	2.215	395.59	0.0018844	0.01702	1.557	0.03512	1.01264	0.7536
580	2.07901	123.93	2.211	396.07	0.0018454	0.01723	1.575	0.03623	1.01240	0.7527
590	2.04138	126.42	2.206	396.53	0.0018081	0.01743	1.593	0.03736	1.01218	0.7520
600	2.00516	128.91	2.201	396.95	0.0017725	0.01764	1.611	0.03849	1.01196	0.7515

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

450 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 98.472	0.01224	2118.40	316.1	-83.147	-82.126	0.50193	0.266	0.397	3824
100	0.01228	2088.98	314.2	-82.543	-81.520	0.50804	0.265	0.397	3807
105	0.01239	1994.51	301.5	-80.568	-79.536	0.52740	0.261	0.397	3759
110	0.01251	1902.66	289.2	-78.594	-77.552	0.54586	0.257	0.397	3692
115	0.01263	1813.39	277.3	-76.621	-75.569	0.56349	0.253	0.397	3632
120	0.01275	1726.63	265.8	-74.648	-73.586	0.58037	0.249	0.397	3572
125	0.01288	1642.32	254.7	-72.675	-71.602	0.59657	0.245	0.397	3509
130	0.01301	1560.40	243.9	-70.701	-69.617	0.61213	0.242	0.397	3446
135	0.01314	1480.81	233.5	-68.726	-67.631	0.62713	0.238	0.397	3382
140	0.01328	1403.50	223.4	-66.749	-65.642	0.64159	0.235	0.398	3316
145	0.01343	1328.39	213.6	-64.770	-63.651	0.65556	0.232	0.398	3250
150	0.01357	1255.43	204.2	-62.788	-61.657	0.66908	0.229	0.399	3182
155	0.01373	1184.56	195.0	-60.802	-59.658	0.68219	0.227	0.400	3113
160	0.01388	1115.71	186.2	-58.811	-57.654	0.69491	0.224	0.401	3044
165	0.01405	1048.83	177.6	-56.815	-55.644	0.70728	0.221	0.403	2973
170	0.01422	983.85	169.3	-54.811	-53.626	0.71933	0.219	0.404	2901
175	0.01439	920.78	161.3	-52.799	-51.600	0.73108	0.217	0.406	2829
180	0.01458	859.33	153.5	-50.777	-49.562	0.74256	0.214	0.409	2755
185	0.01478	799.66	146.0	-48.743	-47.512	0.75379	0.212	0.411	2680
190	0.01498	741.65	138.6	-46.696	-45.447	0.76481	0.210	0.415	2605
195	0.01520	685.22	131.5	-44.631	-43.365	0.77563	0.208	0.418	2527
200	0.01542	630.30	124.6	-42.547	-41.262	0.78628	0.206	0.423	2449
205	0.01567	576.84	117.8	-40.439	-39.134	0.79679	0.204	0.428	2369
210	0.01593	524.77	111.2	-38.304	-36.977	0.80719	0.202	0.435	2287
215	0.01620	474.03	104.7	-36.135	-34.785	0.81750	0.200	0.442	2202
220	0.01651	424.56	98.3	-33.926	-32.550	0.82778	0.199	0.451	2115
225	0.01684	376.30	92.0	-31.667	-30.264	0.83805	0.197	0.463	2024
230	0.01720	329.23	85.7	-29.346	-27.914	0.84837	0.195	0.477	1929
235	0.01761	286.90	80.1	-26.923	-25.455	0.85895	0.199	0.501	1831
240	0.01808	243.22	73.6	-24.415	-22.908	0.86967	0.197	0.520	1724
245	0.01862	198.90	67.2	-21.774	-20.222	0.88075	0.196	0.554	1612
250	0.01926	155.83	60.8	-18.955	-17.349	0.89236	0.196	0.594	1478
255	0.02009	112.25	51.3	-15.858	-14.184	0.90489	0.198	0.644	1302
* 256.485	0.02039	100.35	51.4	-14.850	-13.151	0.90893	0.198	0.719	1298
* 256.485	0.11970	25.69	4.0	26.885	36.860	1.18397	0.209	0.625	596
260	0.12691	38.57	3.6	28.316	38.891	1.11184	0.202	0.538	614
265	0.13582	36.47	3.3	30.066	41.384	1.12134	0.195	0.465	635
270	0.14375	41.59	3.0	31.611	43.589	1.12958	0.190	0.420	653
275	0.15102	46.19	2.8	33.022	45.606	1.13698	0.185	0.388	670
280	0.15783	50.42	2.7	34.336	47.488	1.14377	0.182	0.365	685
285	0.16427	54.35	2.5	35.580	49.268	1.15007	0.179	0.347	699
290	0.17044	58.06	2.4	36.767	50.969	1.15598	0.177	0.333	712
295	0.17637	61.58	2.3	37.909	52.606	1.16158	0.175	0.322	725
300	0.18211	64.94	2.2	39.015	54.190	1.16690	0.173	0.312	737
310	0.19312	71.29	2.1	41.139	57.231	1.17668	0.170	0.297	759
320	0.20364	77.24	1.9	43.173	60.142	1.18612	0.168	0.286	780
330	0.21378	82.88	1.8	45.139	62.953	1.19477	0.166	0.277	799
340	0.22363	88.27	1.7	47.052	65.686	1.20293	0.165	0.270	818
350	0.23322	93.46	1.6	48.922	68.355	1.21067	0.164	0.264	835
360	0.24260	98.47	1.6	50.757	70.972	1.21804	0.163	0.259	852
370	0.25182	103.34	1.5	52.562	73.546	1.22509	0.162	0.255	868
380	0.26088	108.06	1.4	54.344	76.082	1.23186	0.162	0.252	884
390	0.26980	112.71	1.4	56.105	78.587	1.23836	0.161	0.249	899
400	0.27862	117.25	1.3	57.847	81.064	1.24463	0.161	0.246	913
410	0.28734	121.70	1.3	59.575	83.518	1.25069	0.160	0.244	927
420	0.29596	126.07	1.2	61.288	85.951	1.25656	0.160	0.242	941
430	0.30451	130.38	1.2	62.991	88.365	1.26224	0.159	0.241	955
440	0.31299	134.63	1.2	64.682	90.763	1.26775	0.159	0.239	968
450	0.32140	138.82	1.1	66.365	93.147	1.27311	0.159	0.238	981
460	0.32976	142.97	1.1	68.040	95.519	1.27832	0.159	0.237	993
470	0.33807	147.07	1.1	69.708	97.879	1.28340	0.159	0.235	1006
480	0.34632	151.13	1.0	71.370	100.229	1.28834	0.159	0.235	1018
490	0.35454	155.15	1.0	73.027	102.570	1.29317	0.159	0.234	1029
500	0.36272	159.14	0.99	74.680	104.904	1.29789	0.158	0.233	1041
510	0.37085	163.09	0.96	76.328	107.231	1.30249	0.158	0.232	1053
520	0.37896	167.02	0.94	77.974	109.552	1.30700	0.158	0.232	1064
530	0.38704	170.92	0.92	79.616	111.867	1.31141	0.159	0.231	1075
540	0.39508	174.80	0.90	81.257	114.178	1.31573	0.159	0.231	1086
550	0.40311	178.66	0.88	82.895	116.485	1.31996	0.159	0.231	1097
560	0.41110	182.49	0.86	84.532	118.789	1.32411	0.159	0.230	1107
570	0.41908	186.31	0.84	86.169	121.090	1.32819	0.159	0.230	1118
580	0.42703	190.10	0.83	87.804	123.388	1.33218	0.159	0.230	1128
590	0.43497	193.88	0.81	89.440	125.685	1.33611	0.159	0.230	1138
600	0.44288	197.65	0.80	91.075	127.980	1.33997	0.159	0.229	1148

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

450 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 98.472	81.68421	215.92	14.619	173039.49	0.0018384	0.11182	42.254	0.00345	1.56962	5.4000
100	81.45454	214.97	14.553	170157.27	0.0018463	0.11138	41.029	0.00345	1.56778	5.2632
105	80.70068	211.80	14.332	160958.18	0.0018732	0.10990	37.288	0.00343	1.56173	4.8460
110	79.94277	208.60	14.104	152104.17	0.0019015	0.10834	33.921	0.00342	1.55566	4.4710
115	79.18041	205.34	13.869	143584.96	0.0019316	0.10670	30.891	0.00340	1.54957	4.1337
120	78.41319	202.03	13.628	135390.43	0.0019635	0.10500	28.164	0.00338	1.54345	3.8304
125	77.64063	198.66	13.381	127510.64	0.0019974	0.10324	25.709	0.00335	1.53731	3.5575
130	76.86219	195.24	13.129	119935.81	0.0020337	0.10142	23.503	0.00332	1.53114	3.3120
135	76.07731	191.75	12.873	112656.33	0.0020724	0.09955	21.512	0.00329	1.52494	3.0913
140	75.28533	188.19	12.613	105662.79	0.0021140	0.09764	19.722	0.00326	1.51870	2.8930
145	74.48551	184.57	12.349	98945.88	0.0021588	0.09569	18.111	0.00322	1.51241	2.7149
150	73.67706	180.87	12.082	92496.58	0.0022071	0.09370	16.660	0.00319	1.50607	2.5553
155	72.85905	177.10	11.813	86305.99	0.0022595	0.09168	15.354	0.00314	1.49967	2.4126
160	72.03045	173.24	11.541	80365.40	0.0023164	0.08963	14.178	0.00310	1.49321	2.2852
165	71.19010	169.30	11.269	74666.32	0.0023786	0.08756	13.118	0.00305	1.48667	2.1720
170	70.33667	165.26	10.994	69200.46	0.0024467	0.08546	12.164	0.00300	1.48006	2.0719
175	69.46864	161.13	10.719	63959.74	0.0025217	0.08334	11.303	0.00295	1.47335	1.9838
180	68.58426	156.89	10.444	58936.29	0.0026047	0.08120	10.527	0.00290	1.46653	1.9071
185	67.68151	152.53	10.167	54122.52	0.0026970	0.07904	9.826	0.00284	1.45959	1.8411
190	66.75803	148.06	9.890	49511.04	0.0028004	0.07687	9.194	0.00278	1.45252	1.7853
195	65.81105	143.46	9.611	45094.80	0.0029168	0.07468	8.622	0.00271	1.44529	1.7393
200	64.83726	138.72	9.332	40867.02	0.0030490	0.07247	8.105	0.00264	1.43788	1.7029
205	63.83272	133.82	9.050	36821.31	0.0032004	0.07024	7.635	0.00257	1.43027	1.6761
210	62.79259	128.76	8.764	32951.70	0.0033755	0.06798	7.209	0.00249	1.42241	1.6591
215	61.71092	123.51	8.474	29252.75	0.0035806	0.06571	6.820	0.00241	1.41427	1.6525
220	60.58019	118.05	8.177	25719.76	0.0038239	0.06348	6.465	0.00232	1.40579	1.6572
225	59.39077	112.37	7.870	22349.02	0.0041175	0.06106	6.139	0.00222	1.39691	1.6746
230	58.12993	106.43	7.546	19138.33	0.0044790	0.05867	5.840	0.00212	1.38753	1.7083
235	56.77251	101.78	7.109	16288.28	0.0049196	0.05621	5.609	0.00198	1.37749	1.7988
240	55.32081	95.18	5.748	13455.13	0.0054672	0.05371	5.372	0.00187	1.36680	1.8737
245	53.71940	87.97	5.379	10684.64	0.0062940	0.05109	5.120	0.00172	1.35508	1.9975
250	51.91188	79.98	5.895	8089.58	0.0074230	0.04832	4.848	0.00157	1.34192	2.1445
255	49.78569	70.17	5.212	5588.49	0.0091757	0.04530	4.546	0.00141	1.32656	2.3259
* 256.485	49.05332	68.79	5.285	4922.58	0.0104502	0.04431	4.445	0.00126	1.32130	2.5961
* 256.485	8.35418	33.87	2.266	214.64	0.0184642	0.01463	1.129	0.00280	1.05047	1.7370
260	7.87960	35.63	2.281	240.90	0.0151034	0.01390	1.115	0.00328	1.04756	1.5543
265	7.36268	37.87	2.297	268.50	0.0122881	0.01332	1.103	0.00389	1.04439	1.3874
270	6.95660	39.90	2.308	289.32	0.0105232	0.01299	1.097	0.00445	1.04191	1.2763
275	6.62146	41.81	2.316	305.85	0.0092928	0.01279	1.094	0.00497	1.03986	1.1964
280	6.33598	43.62	2.321	319.43	0.0083764	0.01266	1.093	0.00547	1.03812	1.1360
285	6.08738	45.35	2.325	330.86	0.0076620	0.01258	1.094	0.00594	1.03661	1.0888
290	5.86730	47.04	2.328	340.64	0.0070862	0.01252	1.097	0.00640	1.03527	1.0510
295	5.67001	48.67	2.329	349.14	0.0066101	0.01250	1.101	0.00685	1.03407	1.0194
300	5.49133	50.27	2.330	356.61	0.0062083	0.01250	1.105	0.00729	1.03298	0.9931
310	5.17820	53.37	2.329	369.15	0.0055643	0.01254	1.116	0.00815	1.03108	0.9514
320	4.91061	56.38	2.327	379.30	0.0050673	0.01262	1.128	0.00899	1.02946	0.9199
330	4.67760	59.30	2.324	387.68	0.0046693	0.01272	1.143	0.00982	1.02805	0.8952
340	4.47175	62.16	2.321	394.72	0.0043417	0.01285	1.158	0.01065	1.02680	0.8752
350	4.28782	64.96	2.317	400.72	0.0040663	0.01300	1.174	0.01148	1.02569	0.8588
360	4.12193	67.72	2.313	405.88	0.0038307	0.01315	1.190	0.01230	1.02469	0.8450
370	3.97117	70.43	2.309	410.37	0.0036263	0.01331	1.207	0.01313	1.02378	0.8340
380	3.83325	73.10	2.305	414.29	0.0034468	0.01348	1.225	0.01395	1.02295	0.8244
390	3.70638	75.75	2.301	417.75	0.0032877	0.01365	1.243	0.01479	1.02218	0.8161
400	3.58911	78.36	2.297	420.81	0.0031455	0.01383	1.261	0.01563	1.02147	0.8089
410	3.48023	80.95	2.293	423.53	0.0030173	0.01401	1.279	0.01648	1.02082	0.8024
420	3.37879	83.52	2.289	425.97	0.0029012	0.01420	1.297	0.01734	1.02021	0.7968
430	3.28394	86.07	2.285	428.16	0.0027952	0.01439	1.315	0.01821	1.01964	0.7917
440	3.19499	88.61	2.281	430.14	0.0026981	0.01458	1.334	0.01909	1.01910	0.7872
450	3.11134	91.13	2.277	431.93	0.0026088	0.01478	1.352	0.01998	1.01860	0.7831
460	3.03249	93.64	2.274	433.55	0.0025261	0.01497	1.371	0.02087	1.01812	0.7795
470	2.95800	96.14	2.270	435.02	0.0024494	0.01517	1.389	0.02178	1.01768	0.7762
480	2.88746	98.64	2.266	436.37	0.0023780	0.01537	1.407	0.02269	1.01725	0.7733
490	2.82056	101.13	2.262	437.61	0.0023114	0.01557	1.426	0.02361	1.01685	0.7706
500	2.75698	103.61	2.258	438.74	0.0022489	0.01577	1.444	0.02454	1.01647	0.7682
510	2.69647	106.09	2.254	439.78	0.0021902	0.01595	1.462	0.02546	1.01610	0.7668
520	2.63879	108.57	2.250	440.74	0.0021350	0.01616	1.480	0.02641	1.01576	0.7646
530	2.58373	111.05	2.246	441.62	0.0020829	0.01636	1.498	0.02737	1.01543	0.7627
540	2.53110	113.53	2.241	442.44	0.0020336	0.01656	1.517	0.02834	1.01511	0.7610
550	2.48074	116.02	2.237	443.20	0.0019869	0.01677	1.535	0.02932	1.01481	0.7595
560	2.43248	118.51	2.232	443.91	0.0019426	0.01697	1.552	0.03030	1.01452	0.7582
570	2.38619	121.00	2.228	444.56	0.0019004	0.01717	1.570	0.03130	1.01424	0.7570
580	2.34174	123.50	2.223	445.16	0.0018603	0.01737	1.588	0.03229	1.01398	0.7560
590	2.29902	126.00	2.218	445.75	0.0018220	0.01758	1.606	0.03330	1.01372	0.7552
600	2.25793	128.51	2.213	446.28	0.0017855	0.01778	1.624	0.03431	1.01347	0.7544

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

500 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p BTU / LB -R	VELOCITY OF SOUND FT/SEC
* 98.543	0.01224	2121.49	318.1	-83.139	-82.005	0.50201	0.266	0.397	3826
100	0.01227	2093.47	314.4	-82.563	-81.427	0.50763	0.265	0.397	3813
105	0.01239	1999.06	301.7	-80.593	-79.443	0.52719	0.261	0.397	3753
110	0.01250	1907.28	289.5	-78.618	-77.461	0.54564	0.257	0.397	3695
115	0.01262	1818.08	277.6	-76.647	-75.478	0.56326	0.253	0.396	3636
120	0.01275	1731.40	266.1	-74.676	-73.495	0.58014	0.249	0.397	3575
125	0.01287	1647.17	254.9	-72.704	-71.512	0.59633	0.245	0.397	3513
130	0.01300	1565.33	244.2	-70.732	-69.528	0.61189	0.242	0.397	3450
135	0.01314	1485.83	233.7	-68.759	-67.543	0.62687	0.239	0.397	3386
140	0.01328	1408.61	223.6	-66.785	-65.556	0.64133	0.235	0.398	3320
145	0.01342	1333.59	213.9	-64.808	-63.566	0.65529	0.232	0.398	3254
150	0.01357	1260.73	204.4	-62.829	-61.573	0.66880	0.229	0.399	3187
155	0.01372	1189.96	195.3	-60.846	-59.576	0.68190	0.227	0.400	3118
160	0.01387	1121.22	186.5	-58.858	-57.573	0.69461	0.224	0.401	3049
165	0.01404	1054.45	177.9	-56.865	-55.565	0.70697	0.222	0.402	2978
170	0.01421	989.59	169.7	-54.865	-53.549	0.71901	0.219	0.404	2907
175	0.01438	926.57	161.6	-52.857	-51.525	0.73074	0.217	0.406	2835
180	0.01457	865.33	153.9	-50.839	-49.490	0.74221	0.214	0.408	2762
185	0.01476	805.81	146.4	-48.810	-47.443	0.75342	0.212	0.411	2688
190	0.01496	747.95	139.1	-46.768	-45.382	0.76442	0.210	0.414	2612
195	0.01518	691.69	132.0	-44.709	-43.304	0.77522	0.208	0.418	2536
200	0.01540	636.95	125.1	-42.632	-41.206	0.78585	0.206	0.422	2458
205	0.01564	583.69	118.3	-40.532	-39.084	0.79633	0.204	0.427	2378
210	0.01590	531.83	111.7	-38.405	-36.934	0.80669	0.202	0.433	2297
215	0.01618	481.33	105.3	-36.247	-34.750	0.81697	0.200	0.440	2214
220	0.01648	432.12	99.0	-34.051	-32.525	0.82720	0.199	0.449	2128
225	0.01680	384.16	92.7	-31.807	-30.252	0.83741	0.197	0.460	2039
230	0.01716	337.42	86.4	-29.506	-27.917	0.84766	0.195	0.473	1945
235	0.01756	294.81	80.8	-27.104	-25.478	0.85816	0.199	0.496	1847
240	0.01801	251.79	74.3	-24.625	-22.958	0.86877	0.197	0.513	1742
245	0.01853	208.25	68.2	-22.026	-20.311	0.87969	0.196	0.544	1636
250	0.01915	165.88	61.5	-19.271	-17.499	0.89105	0.196	0.583	1512
255	0.01992	123.97	53.6	-16.278	-14.435	0.90318	0.197	0.631	1356
260	0.02096	82.17	46.7	-12.864	-10.923	0.91681	0.200	0.761	1204
* 261.007	0.02122	73.85	45.5	-12.097	-10.132	0.91985	0.201	0.811	1176
* 261.007	0.10366	21.45	4.7	25.933	35.530	1.09484	0.215	0.754	590
265	0.11207	27.75	4.2	27.818	38.194	1.10497	0.206	0.600	612
270	0.12080	34.16	3.8	29.740	40.924	1.11518	0.197	0.503	635
275	0.12841	39.64	3.5	31.397	43.286	1.12385	0.191	0.446	654
280	0.13531	44.51	3.2	32.889	45.418	1.13154	0.187	0.409	671
285	0.14172	48.95	3.0	34.268	47.389	1.13852	0.183	0.381	687
290	0.14776	53.07	2.9	35.562	49.243	1.14497	0.180	0.361	702
295	0.15351	56.93	2.7	36.793	51.006	1.15099	0.178	0.345	715
300	0.15903	60.59	2.6	37.972	52.696	1.15667	0.176	0.332	728
310	0.16951	67.43	2.4	40.213	55.908	1.16721	0.172	0.312	752
320	0.17944	73.77	2.2	42.337	58.951	1.17687	0.170	0.297	774
330	0.18894	79.74	2.1	44.375	61.868	1.18585	0.168	0.287	794
340	0.19811	85.41	2.0	46.346	64.689	1.19427	0.166	0.278	813
350	0.20702	90.83	1.9	48.266	67.433	1.20222	0.165	0.271	831
360	0.21570	96.06	1.8	50.143	70.114	1.20978	0.164	0.265	849
370	0.22420	101.11	1.7	51.986	72.744	1.21698	0.163	0.261	865
380	0.23254	106.02	1.6	53.800	75.330	1.22388	0.162	0.257	881
390	0.24074	110.80	1.6	55.589	77.879	1.23050	0.162	0.253	897
400	0.24883	115.48	1.5	57.357	80.396	1.23687	0.161	0.250	912
410	0.25681	120.06	1.4	59.108	82.885	1.24302	0.161	0.248	926
420	0.26470	124.55	1.4	60.842	85.350	1.24896	0.160	0.245	940
430	0.27251	128.97	1.3	62.563	87.795	1.25471	0.160	0.243	954
440	0.28025	133.32	1.3	64.272	90.220	1.26029	0.160	0.242	967
450	0.28793	137.60	1.3	65.971	92.629	1.26570	0.159	0.240	980
460	0.29554	141.84	1.2	67.660	95.024	1.27096	0.159	0.239	993
470	0.30310	146.02	1.2	69.342	97.405	1.27608	0.159	0.238	1005
480	0.31062	150.15	1.2	71.016	99.775	1.28107	0.159	0.236	1018
490	0.31809	154.25	1.1	72.685	102.135	1.28594	0.159	0.236	1030
500	0.32552	158.31	1.1	74.348	104.486	1.29069	0.159	0.235	1041
510	0.33291	162.33	1.1	76.006	106.829	1.29533	0.159	0.234	1053
520	0.34028	166.32	1.1	77.660	109.165	1.29987	0.159	0.233	1064
530	0.34761	170.28	1.0	79.312	111.495	1.30430	0.159	0.233	1076
540	0.35491	174.21	1.0	80.963	113.820	1.30865	0.159	0.232	1087
550	0.36218	178.12	0.99	82.606	116.139	1.31291	0.159	0.232	1097
560	0.36944	182.01	0.97	84.250	118.455	1.31708	0.159	0.231	1108
570	0.37667	185.87	0.95	85.893	120.767	1.32117	0.159	0.231	1119
580	0.38387	189.72	0.93	87.535	123.076	1.32519	0.159	0.231	1129
590	0.39106	193.55	0.91	89.176	125.383	1.32913	0.159	0.231	1139
600	0.39823	197.35	0.89	90.817	127.688	1.33300	0.159	0.230	1149

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

500 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 98.543	81.69715	216.20	14.617	173319.31	0.0018356	0.11185	42.324	0.00345	1.56973	5.4062
100	81.47845	215.29	14.554	170572.29	0.0018431	0.11143	41.155	0.00345	1.56797	5.2757
105	80.72572	212.14	14.333	161375.41	0.0018697	0.10996	37.406	0.00343	1.56193	4.8576
110	79.96901	208.95	14.105	152523.66	0.0018978	0.10840	34.032	0.00342	1.55587	4.4817
115	79.20795	205.70	13.871	144006.78	0.0019275	0.10677	30.995	0.00340	1.54979	4.1437
120	78.44211	202.40	13.630	135814.66	0.0019591	0.10507	28.262	0.00338	1.54368	3.8397
125	77.67103	199.05	13.383	127937.35	0.0019927	0.10331	25.801	0.00335	1.53756	3.5661
130	76.89419	195.64	13.131	120365.09	0.0020285	0.10150	23.587	0.00333	1.53140	3.3200
135	76.11102	192.17	12.875	113088.28	0.0020668	0.09964	21.593	0.00330	1.52521	3.0987
140	75.32089	188.63	12.615	106097.48	0.0021079	0.09773	19.799	0.00326	1.51898	2.8998
145	74.52308	185.03	12.352	99383.47	0.0021521	0.09579	18.183	0.00323	1.51270	2.7212
150	73.71680	181.35	12.085	92937.16	0.0021998	0.09381	16.728	0.00319	1.50638	2.5611
155	72.90116	177.60	11.817	86749.70	0.0022514	0.09179	15.419	0.00315	1.50000	2.4178
160	72.07516	173.76	11.546	80812.39	0.0023075	0.08975	14.239	0.00311	1.49356	2.2900
165	71.23765	169.84	11.274	75116.76	0.0023686	0.08768	13.176	0.00306	1.48704	2.1762
170	70.38735	165.83	11.001	69654.53	0.0024356	0.08559	12.218	0.00301	1.48045	2.0756
175	69.52277	161.72	10.727	64417.65	0.0025093	0.08348	11.355	0.00296	1.47376	1.9870
180	68.64224	157.51	10.452	59398.28	0.0025907	0.08135	10.576	0.00290	1.46698	1.9097
185	67.74380	153.19	10.177	54588.85	0.0026811	0.07920	9.873	0.00285	1.46007	1.8431
190	66.82516	148.75	9.901	49982.03	0.0027821	0.07704	9.238	0.00279	1.45304	1.7866
195	65.88367	144.19	9.625	45570.79	0.0028958	0.07486	8.665	0.00272	1.44585	1.7399
200	64.91617	139.49	9.347	41348.42	0.0030245	0.07266	8.145	0.00265	1.43848	1.7027
205	63.91889	134.64	9.068	37308.58	0.0031716	0.07044	7.674	0.00258	1.43092	1.6749
210	62.88723	129.63	8.786	33445.37	0.0033412	0.06820	7.247	0.00250	1.42312	1.6568
215	61.81559	124.44	8.500	29753.45	0.0035391	0.06594	6.857	0.00242	1.41505	1.6487
220	60.69692	119.06	8.208	26228.19	0.0037728	0.06365	6.501	0.00233	1.40666	1.6516
225	59.52227	113.46	7.906	22865.96	0.0040532	0.06133	6.174	0.00224	1.39789	1.6667
230	58.27993	107.63	7.590	19664.62	0.0043960	0.05897	5.873	0.00214	1.38865	1.6963
235	56.94442	101.02	7.146	16787.59	0.0048141	0.05654	5.640	0.00200	1.37876	1.7810
240	55.52283	96.60	6.782	13979.99	0.0053149	0.05407	5.406	0.00190	1.36829	1.8480
245	53.96503	89.67	6.443	11237.95	0.0060706	0.05151	5.160	0.00175	1.35687	1.9633
250	52.22622	82.12	6.012	8663.20	0.0071012	0.04882	4.897	0.00160	1.34420	2.1060
255	50.21312	73.28	5.419	6224.68	0.0086117	0.04592	4.608	0.00145	1.32964	2.2799
260	47.71666	63.89	4.898	3920.78	0.0119107	0.04262	4.270	0.00117	1.31172	2.7451
* 261.007	47.12193	62.03	4.809	3480.02	0.0130752	0.04188	4.193	0.00110	1.30748	2.9233
* 261.007	9.64714	33.07	2.274	206.94	0.0227987	0.01652	1.205	0.00227	1.05843	1.9802
265	8.92314	35.25	2.295	247.66	0.0170055	0.01513	1.180	0.00283	1.05397	1.6832
270	8.27840	37.61	2.313	282.83	0.0133693	0.01428	1.162	0.00343	1.05008	1.4725
275	7.78763	39.72	2.326	308.68	0.0112351	0.01381	1.151	0.00397	1.04699	1.3394
280	7.39018	41.68	2.334	328.90	0.0098022	0.01351	1.145	0.00448	1.04456	1.2464
285	7.05594	43.54	2.340	345.37	0.0087608	0.01332	1.142	0.00495	1.04251	1.1774
290	6.76757	45.32	2.345	359.13	0.0079630	0.01319	1.141	0.00540	1.04075	1.1244
295	6.51410	47.04	2.347	370.86	0.0073283	0.01311	1.142	0.00584	1.03921	1.0815
300	6.28816	48.71	2.349	381.02	0.0068088	0.01305	1.144	0.00626	1.03783	1.0465
310	5.89922	51.94	2.349	397.79	0.0060038	0.01302	1.151	0.00708	1.03546	0.9926
320	5.57291	55.04	2.348	411.13	0.0054036	0.01305	1.161	0.00787	1.03348	0.9529
330	5.29261	58.06	2.345	422.02	0.0049353	0.01311	1.173	0.00865	1.03178	0.9225
340	5.04759	60.99	2.341	431.09	0.0045574	0.01321	1.186	0.00942	1.03029	0.8983
350	4.83049	63.86	2.336	438.76	0.0042445	0.01333	1.200	0.01018	1.02897	0.8786
360	4.63604	66.68	2.332	445.32	0.0039802	0.01347	1.216	0.01095	1.02780	0.8623
370	4.46032	69.45	2.327	450.98	0.0037533	0.01361	1.232	0.01170	1.02673	0.8493
380	4.30035	72.17	2.323	455.92	0.0035559	0.01376	1.248	0.01246	1.02577	0.8381
390	4.15380	74.86	2.318	460.26	0.0033823	0.01392	1.265	0.01323	1.02488	0.8285
400	4.01881	77.52	2.314	464.09	0.0032280	0.01408	1.282	0.01400	1.02407	0.8200
410	3.89389	80.15	2.309	467.49	0.0030899	0.01425	1.299	0.01478	1.02331	0.8126
420	3.77780	82.76	2.305	470.53	0.0029654	0.01443	1.317	0.01557	1.02261	0.8061
430	3.66953	85.35	2.301	473.25	0.0028524	0.01461	1.334	0.01636	1.02196	0.8003
440	3.56820	87.91	2.296	475.70	0.0027492	0.01480	1.352	0.01716	1.02135	0.7951
450	3.47311	90.46	2.292	477.91	0.0026546	0.01498	1.370	0.01796	1.02078	0.7905
460	3.38362	93.00	2.288	479.92	0.0025674	0.01517	1.388	0.01878	1.02024	0.7863
470	3.29920	95.53	2.284	481.74	0.0024868	0.01536	1.406	0.01960	1.01973	0.7826
480	3.21939	98.05	2.280	483.40	0.0024129	0.01556	1.424	0.02043	1.01925	0.7792
490	3.14377	100.56	2.276	484.92	0.0023422	0.01575	1.442	0.02127	1.01879	0.7762
500	3.07201	103.06	2.272	486.32	0.0022771	0.01594	1.460	0.02211	1.01836	0.7735
510	3.00377	105.56	2.267	487.60	0.0022160	0.01612	1.477	0.02294	1.01795	0.7718
520	2.93879	108.06	2.263	488.78	0.0021587	0.01632	1.495	0.02381	1.01756	0.7693
530	2.87681	110.56	2.259	489.87	0.0021047	0.01652	1.513	0.02468	1.01719	0.7671
540	2.81763	113.06	2.254	490.87	0.0020537	0.01672	1.531	0.02556	1.01683	0.7652
550	2.76102	115.56	2.250	491.80	0.0020055	0.01692	1.548	0.02645	1.01649	0.7634
560	2.70683	118.06	2.245	492.67	0.0019598	0.01712	1.566	0.02734	1.01617	0.7619
570	2.65487	120.57	2.240	493.47	0.0019164	0.01732	1.584	0.02824	1.01586	0.7605
580	2.60502	123.08	2.235	494.22	0.0018752	0.01752	1.601	0.02914	1.01556	0.7594
590	2.55714	125.59	2.230	494.92	0.0018359	0.01772	1.619	0.03005	1.01527	0.7583
600	2.51109	128.11	2.225	495.58	0.0017984	0.01792	1.636	0.03097	1.01499	0.7574

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

550 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p BTU / LB -R	VELOCITY OF SOUND FT/SEC
* 98.614	0.01224	2124.57	318.2	-83.131	-81.884	0.50208	0.266	0.397	3829
100	0.01227	2097.94	314.6	-82.584	-81.334	0.50762	0.265	0.397	3813
105	0.01238	2003.60	301.9	-80.613	-79.351	0.52697	0.261	0.397	3756
110	0.01250	1911.90	289.7	-78.642	-77.369	0.54542	0.257	0.396	3698
115	0.01262	1822.77	277.8	-76.672	-75.387	0.56304	0.253	0.396	3639
120	0.01274	1736.16	266.3	-74.703	-73.405	0.57991	0.249	0.396	3579
125	0.01287	1652.01	255.2	-72.733	-71.423	0.59609	0.245	0.396	3517
130	0.01300	1570.26	244.4	-70.763	-69.440	0.61165	0.242	0.397	3454
135	0.01313	1490.84	234.0	-68.793	-67.455	0.62662	0.239	0.397	3390
140	0.01327	1413.70	223.9	-66.821	-65.469	0.64107	0.235	0.397	3325
145	0.01341	1338.78	214.2	-64.846	-63.480	0.65502	0.232	0.398	3258
150	0.01356	1266.02	204.7	-62.869	-61.489	0.66853	0.230	0.399	3191
155	0.01371	1195.35	195.6	-60.889	-59.493	0.68161	0.227	0.400	3123
160	0.01387	1126.72	186.8	-58.904	-57.492	0.69432	0.224	0.401	3054
165	0.01403	1060.06	178.2	-56.914	-55.486	0.70666	0.222	0.402	2984
170	0.01420	995.31	170.0	-54.918	-53.472	0.71869	0.219	0.403	2913
175	0.01437	932.42	162.0	-52.914	-51.450	0.73041	0.217	0.405	2841
180	0.01456	871.31	154.2	-50.901	-49.418	0.74186	0.215	0.407	2768
185	0.01475	811.94	146.7	-48.876	-47.374	0.75306	0.212	0.410	2695
190	0.01495	754.23	139.5	-46.839	-45.317	0.76404	0.210	0.413	2620
195	0.01516	698.12	132.4	-44.787	-43.243	0.77481	0.208	0.417	2544
200	0.01539	643.56	125.5	-42.716	-41.149	0.78542	0.206	0.421	2467
205	0.01562	590.49	118.8	-40.624	-39.033	0.79587	0.204	0.426	2388
210	0.01588	538.84	112.3	-38.506	-36.889	0.80620	0.202	0.432	2308
215	0.01615	488.56	105.8	-36.358	-34.713	0.81644	0.201	0.439	2225
220	0.01644	439.61	99.5	-34.173	-32.498	0.82662	0.199	0.447	2141
225	0.01676	391.93	93.3	-31.944	-30.237	0.83679	0.197	0.457	2053
230	0.01712	345.50	87.2	-29.661	-27.918	0.84697	0.195	0.470	1961
235	0.01751	300.64	81.5	-27.280	-25.497	0.85739	0.199	0.491	1862
240	0.01795	260.19	75.8	-24.829	-23.001	0.86789	0.197	0.507	1760
245	0.01845	217.34	69.1	-22.269	-20.390	0.87867	0.196	0.536	1658
250	0.01904	175.71	62.6	-19.568	-17.629	0.88982	0.196	0.571	1540
255	0.01976	134.93	55.3	-16.662	-14.650	0.90162	0.196	0.614	1398
260	0.02070	93.88	49.0	-13.422	-11.314	0.91457	0.199	0.726	1261
265	0.02212	52.77	39.7	-9.507	-7.254	0.93003	0.204	0.921	1051
* 265.199	0.02219	51.01	40.3	-9.324	-7.064	0.93075	0.204	0.974	1061
* 265.199	0.08987	17.01	5.6	24.730	33.883	1.08518	0.222	0.959	584
270	0.10044	25.61	4.8	27.396	37.625	1.09918	0.208	0.659	613
275	0.10896	32.43	4.3	29.485	40.582	1.11003	0.199	0.538	637
280	0.11627	38.19	3.9	31.247	43.088	1.11907	0.193	0.470	657
285	0.12283	43.27	3.6	32.814	45.324	1.12698	0.188	0.427	675
290	0.12889	47.88	3.4	34.250	47.377	1.13412	0.184	0.396	691
295	0.13457	52.15	3.2	35.591	49.297	1.14069	0.181	0.373	706
300	0.13996	56.15	3.0	36.861	51.115	1.14680	0.178	0.355	719
310	0.15008	63.53	2.8	39.241	54.526	1.15799	0.174	0.329	745
320	0.15956	70.29	2.5	41.468	57.718	1.16812	0.172	0.311	768
330	0.16857	76.60	2.4	43.585	60.753	1.17746	0.169	0.297	789
340	0.17721	82.55	2.2	45.622	63.670	1.18617	0.167	0.287	809
350	0.18556	88.22	2.1	47.595	66.494	1.19436	0.166	0.278	828
360	0.19368	93.66	2.0	49.518	69.243	1.20210	0.165	0.272	846
370	0.20160	98.91	1.9	51.400	71.932	1.20947	0.164	0.266	863
380	0.20936	103.99	1.8	53.248	74.570	1.21650	0.163	0.262	879
390	0.21697	108.93	1.7	55.067	77.164	1.22324	0.162	0.258	895
400	0.22446	113.74	1.7	56.862	79.722	1.22972	0.162	0.254	910
410	0.23185	118.45	1.6	58.636	82.249	1.23596	0.161	0.251	925
420	0.23914	123.06	1.6	60.392	84.747	1.24198	0.161	0.249	939
430	0.24635	127.58	1.5	62.133	87.222	1.24780	0.160	0.246	953
440	0.25348	132.03	1.5	63.860	89.675	1.25344	0.160	0.244	967
450	0.26055	136.41	1.4	65.574	92.110	1.25891	0.160	0.243	980
460	0.26756	140.73	1.4	67.279	94.528	1.26423	0.159	0.241	993
470	0.27451	145.00	1.3	68.974	96.931	1.26940	0.159	0.240	1005
480	0.28142	149.21	1.3	70.661	99.322	1.27443	0.159	0.238	1016
490	0.28828	153.38	1.3	72.341	101.701	1.27933	0.159	0.237	1030
500	0.29510	157.50	1.2	74.014	104.069	1.28412	0.159	0.236	1042
510	0.30189	161.59	1.2	75.683	106.429	1.28879	0.159	0.236	1054
520	0.30864	165.64	1.2	77.346	108.780	1.29336	0.159	0.235	1065
530	0.31536	169.66	1.1	79.006	111.124	1.29782	0.159	0.234	1076
540	0.32205	173.65	1.1	80.663	113.462	1.30219	0.159	0.233	1086
550	0.32872	177.61	1.1	82.316	115.794	1.30647	0.159	0.233	1098
560	0.33536	181.55	1.1	83.967	118.122	1.31067	0.159	0.233	1109
570	0.34198	185.46	1.0	85.617	120.445	1.31478	0.159	0.232	1120
580	0.34857	189.36	1.0	87.265	122.765	1.31881	0.159	0.232	1130
590	0.35515	193.23	1.0	88.912	125.082	1.32277	0.159	0.232	1141
600	0.36171	197.08	0.99	90.558	127.397	1.32666	0.160	0.231	1151

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

550 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 98.614	81.71007	216.47	14.615	173598.98	0.0018328	0.11188	42.395	0.00345	1.56983	5.4125
100	81.50231	215.61	14.555	170986.95	0.0018399	0.11148	41.282	0.00345	1.56816	5.2582
105	80.75070	212.48	14.335	161792.25	0.0018662	0.11001	37.525	0.00344	1.56213	4.8692
110	79.99520	209.29	14.107	152942.74	0.0018941	0.10846	34.143	0.00342	1.55608	4.4925
115	79.23542	206.06	13.872	144428.16	0.0019235	0.10683	31.099	0.00340	1.55001	4.1538
120	78.47095	202.78	13.631	136238.41	0.0019548	0.10514	28.360	0.00338	1.54391	3.8490
125	77.70134	199.44	13.385	128363.55	0.0019880	0.10339	25.893	0.00336	1.53780	3.5748
130	76.92608	196.05	13.133	120793.82	0.0020234	0.10158	23.673	0.00333	1.53165	3.3281
135	76.14461	192.59	12.877	113519.63	0.0020613	0.09973	21.675	0.00330	1.52547	3.1062
140	75.35632	189.07	12.618	106531.55	0.0021018	0.09783	19.876	0.00327	1.51925	2.9067
145	74.56050	185.49	12.355	99820.35	0.0021455	0.09589	18.256	0.00323	1.51300	2.7276
150	73.75638	181.83	12.089	93376.99	0.0021925	0.09391	16.797	0.00319	1.50669	2.5669
155	72.94309	178.09	11.820	87192.59	0.0022434	0.09190	15.483	0.00315	1.50033	2.4231
160	72.11964	174.28	11.550	81258.49	0.0022986	0.08987	14.300	0.00311	1.49390	2.2947
165	71.28494	170.38	11.279	75566.22	0.0023588	0.08781	13.233	0.00306	1.48741	2.1805
170	70.43773	166.40	11.007	70107.53	0.0024246	0.08573	12.273	0.00302	1.48084	2.0793
175	69.57657	162.32	10.734	64874.38	0.0024970	0.08362	11.406	0.00297	1.47418	1.9902
180	68.69982	158.13	10.460	59858.98	0.0025768	0.08150	10.625	0.00291	1.46742	1.9124
185	67.80561	153.84	10.186	55053.75	0.0026654	0.07936	9.920	0.00285	1.46055	1.8452
190	66.89173	149.44	9.912	50451.43	0.0027643	0.07720	9.283	0.00279	1.45354	1.7881
195	65.95563	144.91	9.638	46045.01	0.0028752	0.07503	8.707	0.00273	1.44639	1.7406
200	64.99427	140.25	9.363	41827.82	0.0030007	0.07284	8.186	0.00266	1.43908	1.7026
205	64.00405	135.45	9.086	37793.60	0.0031436	0.07064	7.713	0.00259	1.43156	1.6739
210	62.98063	130.49	8.807	33936.49	0.0033080	0.06842	7.284	0.00252	1.42383	1.6546
215	61.91869	125.37	8.525	30251.22	0.0034990	0.06617	6.894	0.00244	1.41583	1.6452
220	60.81164	120.05	8.237	26733.24	0.0037237	0.06390	6.537	0.00235	1.40752	1.6464
225	59.65112	114.54	7.941	23378.97	0.0039919	0.06160	6.210	0.00226	1.39885	1.6593
230	58.42637	108.80	7.632	20186.30	0.0043175	0.05926	5.908	0.00216	1.38973	1.6858
235	57.11181	104.23	7.182	17284.53	0.0047148	0.05685	5.670	0.00203	1.38000	1.7643
240	55.71816	97.98	6.826	14497.51	0.0051765	0.05442	5.440	0.00193	1.36972	1.8250
245	54.20001	91.30	6.502	11779.76	0.0058700	0.05190	5.198	0.00179	1.35859	1.9323
250	52.51900	84.05	6.094	9228.04	0.0067881	0.04928	4.943	0.00164	1.34633	2.0600
255	50.60081	75.85	5.560	6827.63	0.0080958	0.04648	4.665	0.00150	1.33244	2.2184
260	48.29930	67.22	5.108	4534.29	0.0108068	0.04339	4.350	0.00124	1.31589	2.6218
265	45.21281	55.35	4.305	2386.08	0.0166402	0.04085	3.957	0.00098	1.29392	3.2126
* 265.199	45.05905	55.56	4.374	2298.26	0.0175249	0.04115	3.939	0.00094	1.29283	3.3550
* 265.199	11.12734	32.27	2.281	189.26	0.0297097	0.01912	1.291	0.00179	1.06760	2.3300
270	9.95601	35.12	2.312	254.93	0.0187797	0.01635	1.245	0.00249	1.06034	1.8075
275	9.17729	37.55	2.332	297.65	0.0143153	0.01521	1.220	0.00308	1.05553	1.5516
280	8.60071	39.72	2.346	328.42	0.0118394	0.01460	1.205	0.00361	1.05198	1.3971
285	8.14114	41.73	2.355	352.25	0.0102271	0.01422	1.195	0.00409	1.04916	1.2919
290	7.75869	43.62	2.361	371.52	0.0090778	0.01396	1.190	0.00454	1.04681	1.2154
295	7.43121	45.43	2.365	387.56	0.0082091	0.01379	1.187	0.00497	1.04481	1.1562
300	7.14503	47.18	2.368	401.20	0.0075249	0.01367	1.186	0.00539	1.04306	1.1092
310	6.66300	50.54	2.370	423.29	0.0065071	0.01354	1.189	0.00618	1.04011	1.0394
320	6.26717	53.75	2.368	440.52	0.0057784	0.01350	1.195	0.00694	1.03770	0.9896
330	5.93234	56.84	2.365	454.40	0.0052258	0.01352	1.204	0.00767	1.03566	0.9523
340	5.64304	59.86	2.361	465.84	0.0047893	0.01359	1.215	0.00840	1.03390	0.9232
350	5.38903	62.79	2.356	475.44	0.0044338	0.01368	1.228	0.00912	1.03236	0.8998
360	5.16317	65.67	2.351	483.60	0.0041375	0.01379	1.242	0.00983	1.03099	0.8806
370	4.96030	68.50	2.346	490.62	0.0038860	0.01391	1.256	0.01054	1.02978	0.8654
380	4.77654	71.27	2.341	496.71	0.0036691	0.01404	1.271	0.01124	1.02865	0.8524
390	4.60892	74.01	2.336	502.04	0.0034798	0.01419	1.287	0.01195	1.02763	0.8413
400	4.45509	76.71	2.331	506.73	0.0033128	0.01434	1.303	0.01266	1.02670	0.8316
410	4.31318	79.38	2.326	510.89	0.0031642	0.01450	1.320	0.01338	1.02584	0.8231
420	4.18168	82.03	2.321	514.59	0.0030308	0.01467	1.337	0.01411	1.02505	0.8157
430	4.05932	84.64	2.316	517.90	0.0029104	0.01484	1.354	0.01484	1.02431	0.8091
440	3.94507	87.24	2.312	520.88	0.0028009	0.01501	1.371	0.01557	1.02362	0.8032
450	3.83806	89.82	2.307	523.56	0.0027009	0.01519	1.388	0.01632	1.02298	0.7979
460	3.73752	92.39	2.303	525.99	0.0026091	0.01537	1.405	0.01706	1.02237	0.7932
470	3.64283	94.94	2.299	528.20	0.0025244	0.01556	1.423	0.01782	1.02180	0.7890
480	3.55343	97.48	2.294	530.21	0.0024460	0.01574	1.440	0.01858	1.02126	0.7852
490	3.46885	100.01	2.290	532.04	0.0023732	0.01593	1.458	0.01935	1.02075	0.7818
500	3.38866	102.53	2.285	533.72	0.0023053	0.01612	1.475	0.02012	1.02027	0.7787
510	3.31250	105.05	2.281	535.26	0.0022418	0.01629	1.493	0.02088	1.01981	0.7759
520	3.24003	107.57	2.276	536.68	0.0021824	0.01649	1.510	0.02168	1.01937	0.7741
530	3.17099	110.08	2.272	537.99	0.0021264	0.01668	1.528	0.02248	1.01896	0.7716
540	3.10510	112.60	2.267	539.20	0.0020737	0.01688	1.545	0.02328	1.01856	0.7694
550	3.04213	115.11	2.263	540.32	0.0020240	0.01708	1.562	0.02409	1.01818	0.7674
560	2.98188	117.63	2.258	541.36	0.0019769	0.01727	1.580	0.02491	1.01782	0.7656
570	2.92417	120.15	2.253	542.33	0.0019323	0.01747	1.597	0.02573	1.01747	0.7641
580	2.86882	122.67	2.248	543.23	0.0018899	0.01767	1.614	0.02656	1.01714	0.7627
590	2.81569	125.20	2.243	544.07	0.0018496	0.01786	1.632	0.02740	1.01682	0.7615
600	2.76462	127.73	2.238	544.86	0.0018112	0.01806	1.649	0.02823	1.01651	0.7604

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

600 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 98.684	0.01224	2127.66	318.2	-83.123	-81.763	0.50216	0.266	0.397	3831
100	0.01227	2102.41	314.8	-82.605	-81.242	0.50741	0.265	0.397	3816
105	0.01238	2008.14	302.2	-80.635	-79.259	0.52676	0.261	0.396	3768
110	0.01250	1916.51	289.9	-78.666	-77.277	0.54520	0.257	0.396	3702
115	0.01262	1827.45	278.0	-76.698	-75.296	0.56281	0.253	0.396	3643
120	0.01274	1740.92	266.6	-74.730	-73.315	0.57968	0.249	0.396	3582
125	0.01286	1656.85	255.4	-72.762	-71.333	0.59585	0.245	0.396	3520
130	0.01299	1575.17	244.7	-70.795	-69.351	0.61140	0.242	0.397	3458
135	0.01313	1495.84	234.3	-68.826	-67.367	0.62637	0.239	0.397	3394
140	0.01326	1418.79	224.2	-66.856	-65.382	0.64081	0.236	0.397	3329
145	0.01341	1343.96	214.4	-64.884	-63.395	0.65476	0.233	0.398	3263
150	0.01355	1271.29	205.0	-62.910	-61.404	0.66825	0.230	0.398	3196
155	0.01370	1200.72	195.9	-60.932	-59.410	0.68133	0.227	0.399	3128
160	0.01386	1132.20	187.1	-58.951	-57.411	0.69402	0.224	0.400	3059
165	0.01402	1065.65	178.6	-56.964	-55.406	0.70636	0.222	0.402	2989
170	0.01419	1001.02	170.3	-54.971	-53.395	0.71837	0.219	0.403	2919
175	0.01436	938.24	162.3	-52.971	-51.375	0.73008	0.217	0.405	2847
180	0.01454	877.27	154.6	-50.962	-49.346	0.74151	0.215	0.407	2775
185	0.01473	818.03	147.1	-48.942	-47.305	0.75270	0.213	0.409	2701
190	0.01493	760.47	139.9	-46.918	-45.251	0.76365	0.210	0.412	2627
195	0.01515	704.52	132.8	-44.863	-43.181	0.77441	0.208	0.416	2552
200	0.01537	650.13	126.0	-42.799	-41.092	0.78499	0.206	0.420	2475
205	0.01560	597.25	119.3	-40.714	-38.981	0.79542	0.204	0.425	2397
210	0.01585	545.80	112.8	-38.605	-36.844	0.80572	0.203	0.430	2318
215	0.01612	495.74	106.4	-36.467	-34.676	0.81592	0.201	0.437	2237
220	0.01641	447.03	100.1	-34.294	-32.470	0.82606	0.199	0.445	2153
225	0.01673	399.62	94.0	-32.079	-30.220	0.83617	0.197	0.455	2067
230	0.01707	353.49	87.8	-29.812	-27.915	0.84629	0.195	0.467	1977
235	0.01746	308.42	82.2	-27.452	-25.512	0.85663	0.199	0.487	1878
240	0.01789	268.45	75.8	-25.027	-23.039	0.86784	0.197	0.502	1776
245	0.01837	226.21	70.0	-22.502	-20.460	0.87768	0.195	0.528	1660
250	0.01894	185.22	63.7	-19.850	-17.745	0.88865	0.196	0.559	1567
255	0.01962	145.22	57.1	-17.028	-14.840	0.90016	0.196	0.604	1439
260	0.02049	105.49	50.6	-13.908	-11.632	0.91261	0.198	0.689	1305
265	0.02171	66.37	42.2	-10.291	-7.879	0.92691	0.202	0.821	1119
* 269.107	0.02338	32.45	35.2	-6.435	-3.837	0.94284	0.209	1.249	947
* 269.107	0.07749	12.27	6.8	23.154	31.764	1.07436	0.229	1.346	578
270	0.08022	14.61	6.4	23.953	32.866	1.07845	0.225	1.138	585
275	0.09134	24.21	5.3	27.085	37.233	1.09448	0.209	0.711	617
280	0.09958	31.31	4.7	29.317	40.381	1.10583	0.200	0.567	641
285	0.10656	37.25	4.3	31.169	43.008	1.11514	0.193	0.491	662
290	0.11279	42.49	4.0	32.801	45.332	1.12322	0.188	0.442	680
295	0.11851	47.23	3.7	34.287	47.455	1.13048	0.185	0.408	696
300	0.12386	51.61	3.5	35.670	49.431	1.13712	0.181	0.383	711
310	0.13377	59.58	3.2	38.216	53.078	1.14908	0.177	0.349	738
320	0.14292	66.80	2.9	40.561	56.441	1.15976	0.173	0.325	762
330	0.15154	73.46	2.7	42.769	59.606	1.16958	0.171	0.309	785
340	0.15976	79.71	2.5	44.877	62.627	1.17852	0.169	0.296	805
350	0.16767	85.64	2.4	46.908	65.537	1.18696	0.167	0.286	825
360	0.17532	91.30	2.2	48.880	68.359	1.19491	0.166	0.278	843
370	0.18277	96.74	2.1	50.804	71.110	1.20244	0.165	0.272	860
380	0.19004	101.99	2.0	52.687	73.802	1.20962	0.164	0.267	877
390	0.19717	107.08	1.9	54.538	76.444	1.21649	0.163	0.262	893
400	0.20416	112.04	1.9	56.361	79.044	1.22307	0.162	0.258	909
410	0.21105	116.87	1.8	58.160	81.609	1.22940	0.162	0.255	924
420	0.21784	121.60	1.7	59.938	84.142	1.23551	0.161	0.252	938
430	0.22455	126.23	1.7	61.699	86.648	1.24140	0.161	0.249	953
440	0.23118	130.78	1.6	63.444	89.129	1.24711	0.160	0.247	966
450	0.23775	135.25	1.6	65.175	91.590	1.25264	0.160	0.245	980
460	0.24425	139.66	1.5	66.895	94.032	1.25801	0.160	0.243	993
470	0.25070	144.00	1.5	68.604	96.457	1.26322	0.160	0.242	1006
480	0.25710	148.29	1.4	70.304	98.868	1.26830	0.159	0.240	1018
490	0.26345	152.53	1.4	71.995	101.266	1.27324	0.159	0.239	1030
500	0.26977	156.72	1.4	73.680	103.652	1.27806	0.159	0.238	1042
510	0.27604	160.86	1.3	75.359	106.028	1.28277	0.159	0.237	1054
520	0.28229	164.99	1.3	77.032	108.395	1.28736	0.159	0.236	1066
530	0.28850	169.07	1.3	78.700	110.754	1.29186	0.159	0.235	1077
540	0.29468	173.11	1.2	80.365	113.105	1.29625	0.159	0.235	1089
550	0.30084	177.13	1.2	82.026	115.450	1.30055	0.159	0.234	1100
560	0.30697	181.11	1.2	83.684	117.798	1.30477	0.159	0.234	1110
570	0.31308	185.08	1.2	85.340	120.125	1.30890	0.159	0.233	1121
580	0.31917	189.02	1.1	86.994	122.456	1.31296	0.159	0.233	1132
590	0.32524	192.93	1.1	88.647	124.783	1.31693	0.159	0.233	1142
600	0.33129	196.83	1.1	90.299	127.107	1.32084	0.160	0.232	1152

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

600 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 98.684	81.72298	216.75	14.613	173678.50	0.0018308	0.11191	42.466	0.00345	1.56994	5.4189
100	81.52612	215.94	14.556	171401.26	0.0018367	0.11153	41.408	0.00345	1.56835	5.3007
105	80.77563	212.81	14.336	162208.70	0.0018628	0.11007	37.643	0.00344	1.56233	4.8808
110	80.02132	209.64	14.108	153361.40	0.0018904	0.10852	34.254	0.00342	1.55628	4.5033
115	79.26281	206.42	13.873	144849.10	0.0019195	0.10690	31.204	0.00340	1.55022	4.1638
120	78.49971	203.15	13.633	136661.69	0.0019505	0.10521	28.458	0.00338	1.54414	3.8583
125	77.73156	199.83	13.386	128789.25	0.0019833	0.10346	25.986	0.00336	1.53804	3.5835
130	76.95787	196.45	13.135	121222.01	0.0020183	0.10166	23.760	0.00333	1.53190	3.3361
135	76.17810	193.01	12.880	113950.39	0.0020558	0.09981	21.757	0.00330	1.52574	3.1136
140	75.39162	189.51	12.620	106964.98	0.0020958	0.09792	19.952	0.00327	1.51953	2.9136
145	74.59777	185.94	12.357	100256.55	0.0021389	0.09598	18.328	0.00324	1.51329	2.7339
150	73.79579	182.30	12.092	93816.07	0.0021853	0.09402	16.865	0.00320	1.50700	2.5727
155	72.98482	178.59	11.824	87634.67	0.0022355	0.09201	15.547	0.00316	1.50065	2.4284
160	72.16391	174.80	11.555	81703.70	0.0022899	0.08999	14.361	0.00312	1.49425	2.2995
165	71.33198	170.92	11.284	76014.72	0.0023491	0.08793	13.291	0.00307	1.48778	2.1848
170	70.48782	166.96	11.013	70559.48	0.0024138	0.08586	12.327	0.00302	1.48123	2.0831
175	69.63082	162.91	10.741	65329.96	0.0024849	0.08376	11.458	0.00297	1.47459	1.9935
180	68.75701	158.75	10.468	60316.40	0.0025632	0.08165	10.674	0.00292	1.46786	1.9151
185	67.86696	154.49	10.196	55517.25	0.0026500	0.07952	9.966	0.00286	1.46102	1.8473
190	66.95775	150.12	9.923	50919.26	0.0027467	0.07737	9.327	0.00280	1.45405	1.7896
195	66.02692	145.63	9.651	46517.48	0.0028551	0.07521	8.749	0.00274	1.44694	1.7414
200	65.07157	141.01	9.378	42305.28	0.0029774	0.07303	8.226	0.00267	1.43966	1.7026
205	64.08825	136.26	9.104	38276.42	0.0031164	0.07084	7.753	0.00260	1.43220	1.6730
210	63.07283	131.35	8.828	34425.12	0.0032758	0.06863	7.322	0.00253	1.42452	1.6527
215	62.02029	126.28	8.550	30746.15	0.0034603	0.06640	6.930	0.00245	1.41659	1.6420
220	60.92443	121.03	8.266	27235.02	0.0036766	0.06414	6.573	0.00237	1.40837	1.6415
225	59.77746	115.59	7.976	23888.21	0.0039333	0.06186	6.245	0.00228	1.39979	1.6523
230	58.56943	109.95	7.673	20703.57	0.0042431	0.05955	5.943	0.00218	1.39080	1.6761
235	57.27493	105.43	7.218	17779.12	0.0046211	0.05716	5.699	0.00205	1.38120	1.7485
240	55.90733	99.33	6.870	15008.41	0.0050502	0.05476	5.472	0.00195	1.37111	1.8045
245	54.42548	92.87	6.558	12311.50	0.0056884	0.05229	5.236	0.00182	1.36024	1.9041
250	52.79609	85.88	6.169	9779.03	0.0065138	0.04973	4.986	0.00168	1.34835	2.0193
255	50.95982	78.30	5.710	7480.55	0.0077100	0.04702	4.718	0.00153	1.33503	2.1808
260	48.80112	70.05	5.248	5448.26	0.0098353	0.04407	4.419	0.00131	1.31949	2.4874
265	46.05671	59.55	4.540	3056.78	0.0137949	0.04094	4.065	0.00108	1.29990	2.9358
* 269.107	42.76382	49.26	3.932	1387.80	0.0253563	0.04159	3.673	0.00078	1.27667	3.9714
* 269.107	12.90419	31.50	2.286	158.38	0.0427338	0.02330	1.392	0.00134	1.07867	2.8943
270	12.46534	32.19	2.296	182.07	0.0353680	0.02145	1.372	0.00151	1.07593	2.6205
275	10.94825	35.24	2.333	265.08	0.0201637	0.01747	1.308	0.00225	1.06649	1.9153
280	10.04207	37.71	2.354	314.43	0.0150331	0.01608	1.276	0.00283	1.06087	1.6195
285	9.38439	39.90	2.368	349.59	0.0122939	0.01534	1.257	0.00333	1.05681	1.4467
290	8.86508	41.93	2.377	376.69	0.0105456	0.01488	1.245	0.00379	1.05362	1.3318
295	8.43797	43.85	2.383	398.53	0.0093149	0.01457	1.237	0.00423	1.05098	1.2479
300	8.07339	45.68	2.387	416.69	0.0083929	0.01436	1.232	0.00464	1.04874	1.1841
310	7.47550	49.17	2.390	445.43	0.0070884	0.01411	1.229	0.00541	1.04508	1.0929
320	6.99678	52.49	2.389	467.36	0.0061978	0.01399	1.231	0.00615	1.04215	1.0304
330	6.59885	55.67	2.386	484.77	0.0055437	0.01396	1.237	0.00685	1.03972	0.9848
340	6.25939	58.76	2.382	498.96	0.0050389	0.01398	1.246	0.00754	1.03765	0.9499
350	5.96425	61.76	2.376	510.77	0.0046350	0.01404	1.256	0.00822	1.03586	0.9223
360	5.70387	64.70	2.371	520.76	0.0043031	0.01412	1.268	0.00889	1.03427	0.8999
370	5.47146	67.58	2.365	529.30	0.0040244	0.01422	1.281	0.00956	1.03286	0.8822
380	5.26205	70.40	2.359	536.68	0.0037864	0.01433	1.295	0.01022	1.03159	0.8673
390	5.07188	73.19	2.353	543.11	0.0035803	0.01446	1.310	0.01088	1.03044	0.8545
400	4.89801	75.93	2.348	548.76	0.0033998	0.01460	1.325	0.01155	1.02938	0.8435
410	4.73815	78.64	2.343	553.75	0.0032408	0.01475	1.341	0.01222	1.02842	0.8339
420	4.59042	81.32	2.337	558.19	0.0030974	0.01490	1.357	0.01289	1.02752	0.8255
430	4.45332	83.97	2.332	562.15	0.0029692	0.01506	1.373	0.01357	1.02669	0.8181
440	4.32558	86.59	2.327	565.70	0.0028532	0.01523	1.389	0.01425	1.02592	0.8115
450	4.20616	89.20	2.322	568.90	0.0027476	0.01540	1.406	0.01494	1.02520	0.8056
460	4.09417	91.79	2.318	571.79	0.0026510	0.01558	1.423	0.01563	1.02452	0.8003
470	3.98886	94.37	2.313	574.41	0.0025622	0.01575	1.440	0.01633	1.02389	0.7956
480	3.88957	96.93	2.308	576.80	0.0024802	0.01593	1.457	0.01704	1.02329	0.7914
490	3.79575	99.48	2.304	578.97	0.0024042	0.01611	1.474	0.01775	1.02272	0.7875
500	3.70690	102.03	2.299	580.96	0.0023335	0.01630	1.491	0.01847	1.02218	0.7841
510	3.62261	104.56	2.295	582.79	0.0022676	0.01648	1.508	0.01916	1.02168	0.7810
520	3.54249	107.10	2.290	584.47	0.0022060	0.01665	1.525	0.01990	1.02119	0.7789
530	3.46621	109.62	2.285	586.02	0.0021481	0.01685	1.542	0.02064	1.02073	0.7761
540	3.39348	112.15	2.280	587.45	0.0020937	0.01704	1.559	0.02138	1.02030	0.7736
550	3.32403	114.68	2.276	588.78	0.0020424	0.01723	1.576	0.02213	1.01988	0.7713
560	3.25762	117.21	2.271	590.00	0.0019940	0.01743	1.593	0.02289	1.01948	0.7694
570	3.19405	119.74	2.266	591.15	0.0019481	0.01762	1.610	0.02365	1.01910	0.7676
580	3.13312	122.27	2.261	592.21	0.0019046	0.01781	1.627	0.02441	1.01873	0.7660
590	3.07465	124.81	2.255	593.20	0.0018633	0.01801	1.644	0.02518	1.01838	0.7646
600	3.01849	127.35	2.250	594.13	0.0018239	0.01820	1.661	0.02595	1.01804	0.7634

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

650 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	C_P	VELOCITY OF SOUND FT/SEC
* 98.755	0.01223	2130.74	318.2	-83.115	-81.643	0.50224	0.266	0.397	3833
100	0.01226	2106.87	315.0	-82.625	-81.149	0.50721	0.265	0.397	3819
105	0.01238	2012.67	302.4	-80.657	-79.167	0.52655	0.261	0.396	3763
110	0.01249	1921.11	290.1	-78.689	-77.186	0.54498	0.257	0.396	3705
115	0.01261	1832.13	278.3	-76.723	-75.205	0.56259	0.253	0.396	3646
120	0.01273	1745.67	266.8	-74.757	-73.224	0.57945	0.249	0.396	3586
125	0.01286	1661.67	255.7	-72.791	-71.243	0.59562	0.246	0.396	3524
130	0.01299	1580.08	244.9	-70.825	-69.262	0.61116	0.242	0.396	3461
135	0.01312	1500.83	234.5	-68.859	-67.280	0.62612	0.239	0.397	3398
140	0.01326	1423.87	224.4	-66.891	-65.295	0.64055	0.236	0.397	3333
145	0.01340	1349.13	214.7	-64.922	-63.309	0.65449	0.233	0.397	3267
150	0.01354	1276.55	205.3	-62.950	-61.320	0.66798	0.230	0.398	3200
155	0.01369	1206.08	196.2	-60.975	-59.327	0.68105	0.227	0.399	3133
160	0.01385	1137.66	187.4	-58.997	-57.330	0.69373	0.225	0.400	3064
165	0.01401	1071.22	178.9	-57.013	-55.327	0.70605	0.222	0.401	2995
170	0.01418	1006.70	170.7	-55.024	-53.317	0.71805	0.220	0.403	2924
175	0.01435	944.05	162.7	-53.027	-51.300	0.72975	0.217	0.404	2853
180	0.01453	883.20	155.0	-51.022	-49.273	0.74117	0.215	0.406	2781
185	0.01472	824.10	147.5	-49.007	-47.235	0.75234	0.213	0.409	2708
190	0.01492	766.68	140.3	-46.983	-45.184	0.76328	0.211	0.412	2635
195	0.01513	710.89	133.2	-44.939	-43.118	0.77401	0.209	0.415	2560
200	0.01535	656.67	126.4	-42.881	-41.034	0.78457	0.207	0.419	2484
205	0.01558	603.96	119.8	-40.804	-38.928	0.79497	0.205	0.423	2407
210	0.01583	552.71	113.3	-38.703	-36.797	0.80524	0.203	0.429	2328
215	0.01610	502.87	106.9	-36.574	-34.637	0.81541	0.201	0.435	2248
220	0.01638	454.39	100.7	-34.412	-32.440	0.82551	0.199	0.443	2165
225	0.01669	407.23	94.6	-32.211	-30.201	0.83557	0.197	0.452	2080
230	0.01703	361.38	88.5	-29.960	-27.910	0.84563	0.195	0.463	1992
235	0.01741	316.13	82.8	-27.620	-25.524	0.85589	0.199	0.483	1893
240	0.01783	276.58	76.5	-25.219	-23.073	0.86622	0.197	0.497	1796
245	0.01830	234.88	70.9	-22.726	-20.523	0.87673	0.196	0.521	1700
250	0.01885	194.46	64.7	-20.118	-17.850	0.88753	0.195	0.549	1591
255	0.01950	155.21	58.3	-17.353	-15.006	0.89879	0.196	0.589	1471
260	0.02030	116.45	52.1	-14.348	-11.905	0.91084	0.197	0.659	1344
265	0.02139	78.72	44.4	-10.947	-8.373	0.92429	0.200	0.763	1179
270	0.02310	40.40	35.6	-6.715	-3.934	0.94088	0.207	1.043	972
* 272.762	0.02499	17.50	30.1	-3.260	-0.253	0.95444	0.220	1.847	825
* 272.762	0.06592	7.68	8.2	20.981	26.916	1.06140	0.245	2.165	561
275	0.07362	14.33	7.1	23.588	32.449	1.07431	0.226	1.195	593
280	0.08425	23.61	5.9	26.914	37.054	1.09092	0.210	0.745	624
285	0.09211	30.81	5.2	29.251	40.338	1.10254	0.200	0.588	648
290	0.09873	36.84	4.7	31.172	43.056	1.11200	0.194	0.506	668
295	0.10463	42.15	4.3	32.855	45.449	1.12018	0.189	0.454	686
300	0.11003	46.98	4.0	34.383	47.626	1.12750	0.185	0.419	702
310	0.11985	55.61	3.6	37.132	51.557	1.14039	0.179	0.372	731
320	0.12877	63.30	3.3	39.615	55.114	1.15169	0.175	0.342	757
330	0.13709	70.34	3.0	41.924	58.425	1.16188	0.172	0.321	780
340	0.14497	76.90	2.8	44.111	61.560	1.17124	0.170	0.306	801
350	0.15251	83.08	2.6	46.205	64.562	1.17994	0.168	0.295	822
360	0.15978	88.96	2.5	48.229	67.461	1.18811	0.167	0.285	840
370	0.16683	94.60	2.4	50.197	70.277	1.19583	0.165	0.278	858
380	0.17370	100.02	2.3	52.119	73.026	1.20316	0.164	0.272	875
390	0.18041	105.27	2.1	54.003	75.718	1.21015	0.164	0.267	892
400	0.18700	110.37	2.1	55.854	78.362	1.21684	0.163	0.262	909
410	0.19347	115.33	2.0	57.679	80.965	1.22327	0.162	0.258	923
420	0.19984	120.17	1.9	59.481	83.534	1.22946	0.162	0.255	938
430	0.20612	124.91	1.8	61.262	86.071	1.23543	0.161	0.252	952
440	0.21233	129.56	1.8	63.026	88.582	1.24120	0.161	0.250	966
450	0.21846	134.12	1.7	64.774	91.069	1.24679	0.160	0.248	980
460	0.22454	138.62	1.7	66.509	93.536	1.25221	0.160	0.246	993
470	0.23056	143.04	1.6	68.233	95.983	1.25748	0.160	0.244	1006
480	0.23653	147.41	1.6	69.945	98.415	1.26260	0.160	0.242	1019
490	0.24246	151.71	1.5	71.649	100.832	1.26758	0.159	0.241	1031
500	0.24834	155.97	1.5	73.345	103.236	1.27244	0.159	0.240	1043
510	0.25419	160.19	1.4	75.034	105.629	1.27718	0.159	0.239	1055
520	0.26000	164.36	1.4	76.716	108.011	1.28180	0.159	0.238	1067
530	0.26578	168.50	1.4	78.394	110.384	1.28632	0.159	0.237	1078
540	0.27154	172.60	1.3	80.066	112.749	1.29074	0.159	0.236	1090
550	0.27726	176.66	1.3	81.735	115.107	1.29507	0.159	0.235	1101
560	0.28296	180.70	1.3	83.401	117.459	1.29931	0.159	0.235	1112
570	0.28864	184.71	1.3	85.063	119.805	1.30346	0.159	0.234	1122
580	0.29430	188.70	1.2	86.724	122.147	1.30753	0.159	0.234	1133
590	0.29994	192.66	1.2	88.383	124.484	1.31153	0.159	0.234	1144
600	0.30556	196.60	1.2	90.040	126.818	1.31545	0.160	0.233	1154

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

650 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 98.755	81.73587	217.03	14.611	174157.88	0.0018273	0.11193	42.537	0.00345	1.57004	5.4252
100	81.54987	216.26	14.558	171815.20	0.0018335	0.11158	41.534	0.00345	1.56854	5.3132
105	80.80050	213.14	14.337	162624.77	0.0018594	0.11012	37.762	0.00344	1.56253	4.8924
110	80.04738	209.99	14.109	153779.66	0.0018867	0.10858	34.366	0.00342	1.55649	4.5141
115	79.29014	206.78	13.875	145269.60	0.0019156	0.10696	31.309	0.00341	1.55044	4.1739
120	78.52839	203.53	13.634	137084.50	0.0019462	0.10526	28.556	0.00338	1.54437	3.8677
125	77.76169	200.22	13.388	129214.44	0.0019787	0.10354	26.078	0.00336	1.53828	3.5921
130	76.98956	196.85	13.137	121649.65	0.0020133	0.10174	23.847	0.00333	1.53215	3.3442
135	76.21147	193.43	12.882	114380.57	0.0020503	0.09990	21.838	0.00331	1.52600	3.1211
140	75.42680	189.95	12.623	107397.78	0.0020899	0.09801	20.029	0.00327	1.51981	2.9205
145	74.63491	186.39	12.360	100692.07	0.0021324	0.09608	18.401	0.00324	1.51358	2.7402
150	73.83504	182.77	12.095	94254.41	0.0021782	0.09412	16.934	0.00320	1.50730	2.5786
155	73.02637	179.08	11.828	88075.95	0.0022276	0.09213	15.612	0.00316	1.50098	2.4337
160	72.20797	175.31	11.559	82148.05	0.0022812	0.09010	14.422	0.00312	1.49459	2.3043
165	71.37878	171.46	11.289	76462.27	0.0023395	0.08806	13.349	0.00308	1.48814	2.1891
170	70.53763	167.52	11.019	71010.39	0.0024032	0.08599	12.382	0.00303	1.48161	2.0869
175	69.68315	163.49	10.748	65784.41	0.0024730	0.08390	11.510	0.00298	1.47500	1.9968
180	68.81382	159.37	10.476	60776.57	0.0025499	0.08179	10.723	0.00293	1.46830	1.9178
185	67.92786	155.14	10.205	55979.37	0.0026349	0.07967	10.013	0.00287	1.46149	1.8495
190	67.02323	150.80	9.934	51385.57	0.0027296	0.07753	9.372	0.00281	1.45455	1.7911
195	66.09757	146.35	9.664	46988.26	0.0028354	0.07538	8.792	0.00275	1.44748	1.7423
200	65.14809	141.77	9.393	42780.83	0.0029546	0.07322	8.267	0.00268	1.44025	1.7027
205	64.17150	137.05	9.121	38757.10	0.0030898	0.07103	7.792	0.00261	1.43283	1.6722
210	63.16386	132.20	8.849	34911.33	0.0032445	0.06884	7.360	0.00254	1.42521	1.6509
215	62.12043	127.18	8.574	31238.34	0.0034229	0.06662	6.967	0.00246	1.41735	1.6389
220	61.03536	122.00	8.295	27733.67	0.0036312	0.06438	6.608	0.00238	1.40920	1.6369
225	59.90140	116.63	8.009	24393.82	0.0038773	0.06212	6.280	0.00229	1.40072	1.6457
230	58.70932	111.07	7.713	21216.65	0.0041725	0.05983	5.977	0.00220	1.39184	1.6669
235	57.43403	106.61	7.254	18271.39	0.0045326	0.05747	5.728	0.00207	1.38238	1.7337
240	56.09081	100.65	5.914	15513.33	0.0049342	0.05510	5.504	0.00198	1.37246	1.7859
245	54.64237	94.38	5.611	12834.35	0.0055229	0.05267	5.272	0.00185	1.36183	1.8782
250	53.05948	87.62	5.238	10318.14	0.0062707	0.05015	5.028	0.00172	1.35026	1.9830
255	51.29273	80.41	5.888	7961.02	0.0073254	0.04752	4.768	0.00157	1.33744	2.1275
260	49.25186	72.60	5.367	5735.23	0.0090795	0.04470	4.483	0.00138	1.32272	2.3802
265	46.75227	63.19	4.752	3680.40	0.0120705	0.04153	4.155	0.00116	1.30485	2.7476
270	43.26109	51.27	3.974	1748.51	0.0203515	0.04051	3.736	0.00090	1.28030	3.4645
* 272.762	40.02139	43.06	3.409	700.51	0.0428992	0.04405	3.378	0.00060	1.25753	5.0992
* 272.762	15.16965	30.77	2.207	116.47	0.0703634	0.03063	1.520	0.00093	1.09290	3.8675
275	13.58320	32.79	2.311	194.63	0.0364436	0.02256	1.443	0.00139	1.08292	2.7510
280	11.86901	35.63	2.357	280.26	0.0209154	0.01841	1.368	0.00208	1.07221	1.9940
285	10.85635	38.07	2.378	334.44	0.0154511	0.01687	1.330	0.00264	1.06592	1.6706
290	10.12818	40.26	2.392	373.08	0.0125696	0.01602	1.307	0.00313	1.06140	1.4865
295	9.55761	42.30	2.400	402.88	0.0107439	0.01550	1.292	0.00357	1.05788	1.3634
300	9.08827	44.22	2.406	426.95	0.0094651	0.01515	1.282	0.00398	1.05498	1.2748
310	8.34392	47.85	2.411	463.98	0.0077656	0.01473	1.271	0.00475	1.05041	1.1546
320	7.76563	51.27	2.411	491.56	0.0066690	0.01451	1.269	0.00547	1.04686	1.0760
330	7.29437	54.54	2.408	513.09	0.0058922	0.01441	1.271	0.00615	1.04397	1.0204
340	6.89799	57.70	2.403	530.45	0.0053076	0.01439	1.277	0.00681	1.04155	0.9787
350	6.55700	60.77	2.397	544.77	0.0048488	0.01441	1.285	0.00746	1.03947	0.9462
360	6.25866	63.76	2.391	556.80	0.0044771	0.01447	1.295	0.00810	1.03765	0.9202
370	5.99414	66.69	2.384	567.04	0.0041687	0.01454	1.307	0.00872	1.03604	0.8998
380	5.75710	69.57	2.378	575.85	0.0039079	0.01463	1.320	0.00935	1.03460	0.8828
390	5.54281	72.39	2.372	583.50	0.0036838	0.01474	1.333	0.00997	1.03330	0.8683
400	5.34767	75.18	2.365	590.20	0.0034889	0.01486	1.347	0.01060	1.03211	0.8558
410	5.16883	77.92	2.360	596.11	0.0033174	0.01500	1.362	0.01122	1.03103	0.8450
420	5.00405	80.63	2.354	601.34	0.0031652	0.01514	1.377	0.01186	1.03003	0.8356
430	4.85151	83.32	2.348	606.01	0.0030289	0.01529	1.393	0.01249	1.02910	0.8273
440	4.70971	85.97	2.343	610.19	0.0029061	0.01545	1.408	0.01313	1.02824	0.8199
450	4.57740	88.61	2.338	613.94	0.0027947	0.01561	1.424	0.01377	1.02744	0.8134
460	4.45354	91.22	2.333	617.33	0.0026932	0.01578	1.441	0.01442	1.02669	0.8075
470	4.33724	93.82	2.328	620.40	0.0026001	0.01595	1.457	0.01507	1.02599	0.8023
480	4.22776	96.40	2.323	623.19	0.0025144	0.01612	1.474	0.01573	1.02533	0.7975
490	4.12443	98.97	2.318	625.74	0.0024352	0.01630	1.490	0.01639	1.02470	0.7933
500	4.02670	101.54	2.313	628.06	0.0023618	0.01648	1.507	0.01706	1.02411	0.7895
510	3.93408	104.09	2.308	630.20	0.0022934	0.01663	1.523	0.01771	1.02356	0.7871
520	3.84612	106.64	2.303	632.16	0.0022295	0.01682	1.540	0.01839	1.02302	0.7837
530	3.76246	109.18	2.299	633.96	0.0021697	0.01701	1.557	0.01906	1.02252	0.7806
540	3.68274	111.72	2.294	635.63	0.0021136	0.01720	1.574	0.01978	1.02204	0.7778
550	3.60668	114.26	2.289	637.17	0.0020608	0.01739	1.590	0.02047	1.02158	0.7753
560	3.53401	116.80	2.284	638.60	0.0020109	0.01758	1.607	0.02116	1.02114	0.7731
570	3.46448	119.35	2.279	639.93	0.0019638	0.01777	1.624	0.02186	1.02072	0.7711
580	3.39787	121.89	2.274	641.17	0.0019192	0.01796	1.641	0.02259	1.02032	0.7694
590	3.33399	124.44	2.268	642.32	0.0018768	0.01815	1.657	0.02331	1.01994	0.7678
600	3.27267	126.99	2.263	643.40	0.0018366	0.01834	1.674	0.02403	1.01957	0.7664

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

700 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 98.826	0.01223	2133.82	316.3	-83.107	-81.522	0.50232	0.266	0.396	3635
100	0.01226	2111.33	315.2	-82.645	-81.056	0.50780	0.265	0.396	3622
105	0.01237	2017.20	302.6	-80.678	-79.075	0.52633	0.261	0.396	3766
110	0.01249	1925.78	290.4	-78.713	-77.094	0.54476	0.257	0.396	3708
115	0.01261	1836.79	278.5	-76.748	-75.114	0.56237	0.253	0.396	3649
120	0.01273	1750.41	267.0	-74.784	-73.134	0.57922	0.249	0.396	3589
125	0.01285	1666.49	255.9	-72.820	-71.154	0.59538	0.246	0.396	3528
130	0.01298	1584.98	245.2	-70.856	-69.173	0.61092	0.242	0.396	3465
135	0.01312	1505.81	234.8	-68.892	-67.192	0.62587	0.239	0.396	3402
140	0.01325	1428.93	224.7	-66.926	-65.209	0.64030	0.236	0.397	3337
145	0.01339	1354.28	215.0	-64.959	-63.223	0.65423	0.233	0.397	3271
150	0.01354	1281.88	205.6	-62.990	-61.235	0.66771	0.230	0.398	3205
155	0.01369	1211.43	196.5	-61.018	-59.244	0.68077	0.227	0.399	3137
160	0.01384	1143.11	187.7	-59.042	-57.248	0.69344	0.225	0.400	3069
165	0.01400	1076.77	179.2	-57.062	-55.247	0.70575	0.222	0.401	3000
170	0.01417	1012.37	171.0	-55.076	-53.240	0.71774	0.220	0.402	2930
175	0.01434	949.84	163.0	-53.083	-51.224	0.72942	0.217	0.404	2859
180	0.01452	889.11	155.3	-51.082	-49.200	0.74083	0.215	0.406	2788
185	0.01471	830.14	147.9	-49.072	-47.165	0.75198	0.213	0.408	2715
190	0.01491	772.87	140.7	-47.050	-45.118	0.76290	0.211	0.411	2642
195	0.01511	717.23	133.6	-45.014	-43.055	0.77362	0.209	0.414	2568
200	0.01533	663.17	126.8	-42.963	-40.976	0.78415	0.207	0.418	2492
205	0.01556	610.64	120.2	-40.892	-38.875	0.79453	0.205	0.422	2416
210	0.01581	559.57	113.8	-38.800	-36.750	0.80477	0.203	0.428	2338
215	0.01607	509.94	107.5	-36.680	-34.597	0.81490	0.201	0.434	2259
220	0.01635	461.68	101.3	-34.529	-32.409	0.82496	0.199	0.441	2177
225	0.01666	414.77	95.2	-32.348	-30.181	0.83497	0.197	0.450	2094
230	0.01699	369.19	89.2	-30.135	-27.903	0.84498	0.196	0.461	2007
235	0.01736	325.78	83.5	-27.784	-25.533	0.85517	0.199	0.479	1908
240	0.01777	284.58	77.3	-25.405	-23.101	0.86541	0.197	0.492	1813
245	0.01823	243.37	71.7	-22.963	-20.580	0.87581	0.196	0.515	1720
250	0.01876	203.47	65.7	-20.375	-17.944	0.88646	0.195	0.541	1615
255	0.01938	164.84	59.5	-17.667	-15.155	0.89750	0.195	0.576	1508
260	0.02014	126.88	53.4	-14.752	-12.142	0.90928	0.196	0.635	1378
265	0.02112	90.03	46.2	-11.512	-8.775	0.92283	0.199	0.717	1227
270	0.02255	53.89	38.3	-7.688	-4.765	0.93782	0.204	0.897	1048
275	0.02555	16.52	28.3	-2.010	1.381	0.95926	0.222	1.832	794
* 276.191	0.02769	5.63	24.3	0.825	4.414	0.97055	0.238	4.334	689
* 276.191	0.05371	3.04	18.7	17.519	24.481	1.04322	0.267	5.798	553
280	0.06988	14.89	7.6	23.547	32.491	1.07208	0.225	1.190	684
285	0.07877	23.79	6.3	26.899	37.110	1.08844	0.209	0.759	633
290	0.08615	38.89	5.6	29.293	40.460	1.10010	0.200	0.601	656
295	0.09239	36.91	5.1	31.258	43.234	1.10959	0.193	0.516	676
300	0.09794	42.25	4.7	32.978	45.674	1.11779	0.188	0.463	694
310	0.10779	51.61	4.1	35.979	49.952	1.13182	0.182	0.399	725
320	0.11656	59.81	3.7	38.624	53.735	1.14384	0.177	0.361	751
330	0.12467	67.24	3.4	41.049	57.208	1.15452	0.174	0.335	776
340	0.13227	74.11	3.1	43.322	60.467	1.16425	0.171	0.317	798
350	0.13951	80.56	2.9	45.485	63.568	1.17324	0.169	0.304	819
360	0.14645	86.67	2.8	47.565	66.549	1.18164	0.167	0.293	838
370	0.15317	92.50	2.6	49.580	69.434	1.18955	0.166	0.284	856
380	0.15970	98.10	2.5	51.542	72.242	1.19704	0.165	0.277	874
390	0.16606	103.58	2.4	53.468	74.985	1.20416	0.164	0.272	891
400	0.17229	108.73	2.3	55.342	77.675	1.21097	0.163	0.267	907
410	0.17840	113.82	2.2	57.194	80.319	1.21758	0.163	0.262	922
420	0.18441	118.78	2.1	59.019	82.923	1.22378	0.162	0.259	937
430	0.19034	123.63	2.0	60.822	85.493	1.22982	0.162	0.255	952
440	0.19618	128.37	1.9	62.605	88.034	1.23566	0.161	0.253	966
450	0.20195	133.03	1.9	64.371	90.548	1.24131	0.161	0.250	980
460	0.20766	137.60	1.8	66.122	93.039	1.24679	0.160	0.248	993
470	0.21331	142.11	1.8	67.860	95.510	1.25210	0.160	0.246	1006
480	0.21892	146.55	1.7	69.586	97.962	1.25727	0.160	0.244	1019
490	0.22447	150.93	1.7	71.302	100.398	1.26229	0.160	0.243	1032
500	0.22999	155.25	1.6	73.009	102.821	1.26718	0.159	0.242	1044
510	0.23547	159.53	1.6	74.708	105.230	1.27195	0.159	0.240	1056
520	0.24091	163.76	1.5	76.400	107.628	1.27661	0.159	0.239	1068
530	0.24632	167.95	1.5	78.087	110.016	1.28116	0.159	0.238	1079
540	0.25171	172.11	1.5	79.768	112.394	1.28561	0.159	0.237	1091
550	0.25707	176.23	1.4	81.444	114.765	1.28996	0.159	0.237	1102
560	0.26240	180.31	1.4	83.117	117.129	1.29422	0.159	0.236	1113
570	0.26771	184.37	1.4	84.786	119.487	1.29839	0.159	0.235	1124
580	0.27300	188.40	1.3	86.453	121.839	1.30248	0.159	0.235	1135
590	0.27827	192.41	1.3	88.118	124.187	1.30649	0.159	0.235	1145
600	0.28352	196.39	1.3	89.781	126.530	1.31043	0.160	0.234	1156

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

700 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 98.826	81.74875	217.30	14.609	174437.11	0.0018249	0.11196	42.608	0.00345	1.57014	5.4315
100	81.57358	216.58	14.559	172228.79	0.0018303	0.11163	41.661	0.00345	1.56873	5.3258
105	80.82532	213.48	14.338	163040.47	0.0018560	0.11018	37.881	0.00344	1.56273	4.9041
110	80.07337	210.33	14.111	154197.51	0.0018830	0.10864	34.477	0.00343	1.55670	4.5250
115	79.31739	207.14	13.876	145689.66	0.0019116	0.10703	31.413	0.00341	1.55066	4.1839
120	78.55699	203.90	13.636	137506.84	0.0019419	0.10535	28.655	0.00339	1.54460	3.8771
125	77.79174	200.61	13.390	129639.12	0.0019741	0.10361	26.171	0.00336	1.53851	3.6008
130	77.02116	197.26	13.139	122076.75	0.0020083	0.10182	23.934	0.00334	1.53240	3.3522
135	76.24473	193.85	12.884	114810.16	0.0020449	0.09998	21.920	0.00331	1.52626	3.1285
140	75.46185	190.38	12.625	107829.95	0.0020840	0.09810	20.107	0.00328	1.52009	2.9274
145	74.67190	186.85	12.363	101126.91	0.0021259	0.09618	18.473	0.00324	1.51387	2.7466
150	73.87413	183.25	12.098	94692.02	0.0021711	0.09422	17.002	0.00321	1.50761	2.5844
155	73.06774	179.57	11.832	88516.43	0.0022199	0.09224	15.677	0.00317	1.50130	2.4391
160	72.25181	175.82	11.563	82591.53	0.0022727	0.09022	14.483	0.00312	1.49493	2.3092
165	71.42534	171.99	11.294	76908.88	0.0023301	0.08818	13.406	0.00308	1.48850	2.1934
170	70.58715	168.08	11.024	71460.27	0.0023927	0.08612	12.436	0.00303	1.48200	2.0907
175	69.73595	164.08	10.754	66237.73	0.0024613	0.08404	11.561	0.00298	1.47541	2.0001
180	68.87024	159.98	10.484	61233.51	0.0025367	0.08194	10.772	0.00293	1.46873	1.9206
185	67.98831	155.78	10.214	56440.12	0.0026201	0.07983	10.060	0.00288	1.46195	1.8517
190	67.08819	151.48	9.945	51850.37	0.0027127	0.07770	9.416	0.00282	1.45505	1.7927
195	66.16759	147.06	9.676	47457.36	0.0028161	0.07556	8.834	0.00276	1.44801	1.7432
200	65.22385	142.52	9.407	43254.53	0.0029324	0.07340	8.308	0.00269	1.44082	1.7029
205	64.25383	137.84	9.138	39235.70	0.0030640	0.07123	7.831	0.00262	1.43346	1.6715
210	63.25377	133.03	8.868	35395.20	0.0032141	0.06904	7.397	0.00255	1.42589	1.6492
215	62.21917	128.07	8.597	31727.87	0.0033868	0.06684	7.003	0.00248	1.41809	1.6360
220	61.14453	122.95	8.322	28229.23	0.0035876	0.06462	6.644	0.00240	1.41002	1.6325
225	60.02305	117.65	8.042	24895.95	0.0038237	0.06238	6.314	0.00231	1.40162	1.6395
230	58.84620	112.18	7.752	21725.70	0.0041054	0.06010	6.012	0.00222	1.39285	1.6583
235	57.58934	107.75	7.269	18761.38	0.0044468	0.05777	5.756	0.00209	1.38353	1.7195
240	56.26902	101.94	6.959	16012.83	0.0048268	0.05543	5.535	0.00200	1.37378	1.7689
245	54.85147	95.84	6.661	13349.30	0.0053712	0.05303	5.306	0.00188	1.36336	1.8544
250	53.31080	89.30	6.303	10846.91	0.0060531	0.05056	5.068	0.00175	1.35210	1.9503
255	51.60523	82.36	5.898	8506.46	0.0069940	0.04800	4.815	0.00161	1.33970	2.0810
260	49.66295	74.93	5.472	6301.27	0.0084704	0.04527	4.542	0.00144	1.32568	2.2920
265	47.34537	66.19	4.908	4262.56	0.0108311	0.04228	4.234	0.00125	1.30907	2.5844
270	44.34568	55.92	4.243	2389.96	0.0160381	0.04039	3.864	0.00102	1.28779	3.0886
275	39.14219	41.88	3.253	646.58	0.0437680	0.04302	3.291	0.00060	1.25144	5.0465
* 276.191	36.11172	36.34	2.817	203.38	0.1192392	0.05317	2.995	0.00034	1.23058	8.7891
* 276.191	18.61751	30.72	2.150	56.54	0.1887051	0.04905	1.719	0.00045	1.11481	7.3121
280	14.49204	33.66	2.336	215.73	0.0353494	0.02301	1.504	0.00133	1.08863	2.7987
285	12.69456	36.25	2.385	301.94	0.0209381	0.01915	1.424	0.00199	1.07736	2.0309
290	11.60729	38.63	2.405	358.60	0.0155437	0.01753	1.382	0.00252	1.07058	1.7036
295	10.82377	40.79	2.417	399.56	0.0126577	0.01665	1.355	0.00298	1.06571	1.5136
300	10.20965	42.81	2.425	431.38	0.0108187	0.01608	1.338	0.00340	1.06191	1.3871
310	9.27705	46.58	2.432	478.76	0.0085618	0.01542	1.318	0.00417	1.05615	1.2264
320	8.57817	50.10	2.433	513.05	0.0072004	0.01508	1.309	0.00487	1.05184	1.1272
330	8.02136	53.45	2.430	539.36	0.0062747	0.01490	1.307	0.00554	1.04843	1.0593
340	7.56028	56.68	2.425	560.32	0.0055971	0.01481	1.310	0.00618	1.04560	1.0097
350	7.16816	59.81	2.418	577.47	0.0050758	0.01479	1.315	0.00680	1.04320	0.9717
360	6.82808	62.86	2.411	591.77	0.0046599	0.01482	1.323	0.00741	1.04112	0.9417
370	6.52866	65.84	2.404	603.88	0.0043190	0.01486	1.333	0.00801	1.03930	0.9183
380	6.26188	68.77	2.397	614.26	0.0040335	0.01493	1.344	0.00860	1.03767	0.8989
390	6.02184	71.63	2.390	623.25	0.0037902	0.01502	1.357	0.00919	1.03621	0.8825
400	5.80410	74.45	2.383	631.09	0.0035800	0.01513	1.370	0.00978	1.03488	0.8685
410	5.60525	77.24	2.377	637.99	0.0033962	0.01525	1.383	0.01037	1.03367	0.8565
420	5.42257	79.98	2.371	644.09	0.0032339	0.01538	1.398	0.01097	1.03257	0.8459
430	5.25388	82.69	2.365	649.51	0.0030893	0.01552	1.412	0.01157	1.03154	0.8367
440	5.09742	85.38	2.359	654.36	0.0029595	0.01567	1.427	0.01217	1.03059	0.8285
450	4.95172	88.03	2.353	658.72	0.0028422	0.01582	1.443	0.01277	1.02971	0.8213
460	4.81558	90.67	2.348	662.64	0.0027356	0.01598	1.458	0.01338	1.02888	0.8148
470	4.68794	93.29	2.342	666.20	0.0026382	0.01615	1.474	0.01399	1.02811	0.8090
480	4.56796	95.90	2.337	669.42	0.0025487	0.01631	1.490	0.01461	1.02739	0.8038
490	4.45486	98.49	2.332	672.36	0.0024663	0.01648	1.506	0.01523	1.02670	0.7992
500	4.34802	101.06	2.327	675.04	0.0023900	0.01665	1.523	0.01586	1.02606	0.7950
510	4.24686	103.63	2.322	677.50	0.0023191	0.01682	1.539	0.01646	1.02544	0.7923
520	4.15089	106.20	2.317	679.76	0.0022530	0.01699	1.555	0.01710	1.02486	0.7885
530	4.05968	108.76	2.312	681.84	0.0021913	0.01717	1.571	0.01775	1.02431	0.7851
540	3.97285	111.31	2.307	683.75	0.0021334	0.01736	1.588	0.01840	1.02379	0.7821
550	3.89006	113.86	2.302	685.53	0.0020790	0.01754	1.604	0.01905	1.02329	0.7793
560	3.81101	116.41	2.297	687.17	0.0020278	0.01773	1.621	0.01971	1.02281	0.7769
570	3.73542	118.97	2.292	688.70	0.0019794	0.01792	1.637	0.02037	1.02236	0.7747
580	3.66305	121.52	2.287	690.12	0.0019336	0.01810	1.654	0.02103	1.02192	0.7727
590	3.59369	124.08	2.281	691.45	0.0018903	0.01829	1.670	0.02170	1.02150	0.7710
600	3.52713	126.64	2.276	692.69	0.0018491	0.01848	1.687	0.02237	1.02110	0.7694

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

731.379 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 98.871	0.01223	2135.75	318.3	-83.102	-81.446	0.50236	0.266	0.396	3837
100	0.01226	2114.13	315.4	-82.658	-80.998	0.50687	0.265	0.396	3824
105	0.01237	2020.03	302.7	-80.692	-79.017	0.52620	0.261	0.396	3768
110	0.01249	1928.58	290.5	-78.727	-77.036	0.54463	0.257	0.396	3710
115	0.01260	1839.72	278.6	-76.764	-75.057	0.56223	0.253	0.396	3651
120	0.01273	1753.38	267.2	-74.801	-73.077	0.57907	0.249	0.396	3591
125	0.01285	1669.51	256.1	-72.838	-71.098	0.59524	0.246	0.396	3530
130	0.01298	1588.05	245.3	-70.875	-69.118	0.61077	0.242	0.396	3468
135	0.01311	1508.93	234.9	-68.912	-67.137	0.62572	0.239	0.396	3404
140	0.01325	1432.11	224.9	-66.948	-65.154	0.64014	0.236	0.397	3340
145	0.01339	1357.51	215.2	-64.983	-63.170	0.65406	0.233	0.397	3274
150	0.01353	1285.09	205.8	-63.015	-61.182	0.66754	0.230	0.398	3208
155	0.01368	1214.78	196.7	-61.045	-59.192	0.68059	0.227	0.398	3140
160	0.01384	1146.52	187.9	-59.071	-57.197	0.69325	0.225	0.399	3072
165	0.01399	1080.25	179.4	-57.092	-55.197	0.70556	0.222	0.401	3003
170	0.01416	1015.92	171.2	-55.109	-53.191	0.71754	0.220	0.402	2934
175	0.01433	953.46	163.2	-53.118	-51.177	0.72922	0.217	0.404	2863
180	0.01451	892.81	155.6	-51.120	-49.154	0.74061	0.215	0.405	2792
185	0.01470	833.93	148.1	-49.112	-47.121	0.75175	0.213	0.408	2719
190	0.01490	776.74	140.9	-47.093	-45.076	0.76267	0.211	0.410	2646
195	0.01510	721.19	133.9	-45.061	-43.016	0.77337	0.209	0.414	2572
200	0.01532	667.23	127.1	-43.013	-40.939	0.78389	0.207	0.417	2498
205	0.01555	614.80	120.5	-40.947	-38.841	0.79425	0.205	0.422	2421
210	0.01580	563.86	114.1	-38.860	-36.720	0.80447	0.203	0.427	2344
215	0.01606	514.35	107.8	-36.746	-34.571	0.81459	0.201	0.433	2265
220	0.01634	466.23	101.6	-34.601	-32.389	0.82462	0.199	0.440	2185
225	0.01664	419.47	95.6	-32.420	-30.167	0.83460	0.197	0.448	2102
230	0.01697	374.05	89.6	-30.195	-27.897	0.84458	0.196	0.459	2016
235	0.01734	330.55	83.9	-27.885	-25.537	0.85473	0.199	0.477	1917
240	0.01774	289.54	77.8	-25.520	-23.117	0.86491	0.197	0.489	1824
245	0.01819	248.62	72.2	-23.075	-20.612	0.87525	0.196	0.511	1732
250	0.01870	209.01	66.2	-20.531	-17.998	0.88581	0.195	0.535	1629
255	0.01931	170.72	60.2	-17.855	-15.240	0.89673	0.195	0.569	1518
260	0.02004	133.21	54.1	-14.991	-12.277	0.90824	0.196	0.621	1398
265	0.02097	96.83	47.2	-11.835	-8.995	0.92074	0.198	0.694	1254
270	0.02228	61.64	39.8	-8.192	-5.175	0.93502	0.202	0.840	1089
275	0.02461	26.39	31.3	-3.311	0.021	0.95408	0.214	1.357	880
280	0.05789	8.11	9.7	20.112	27.953	1.05454	0.244	2.241	587
285	0.07067	19.25	7.2	25.076	34.646	1.07827	0.216	0.934	621
290	0.07879	27.00	6.3	27.934	38.605	1.09205	0.204	0.687	643
295	0.08536	33.55	5.6	30.149	41.709	1.10267	0.197	0.567	670
300	0.09107	39.25	5.1	32.025	44.359	1.11158	0.191	0.498	688
310	0.10101	49.09	4.4	35.217	48.896	1.12646	0.183	0.418	721
320	0.10974	57.63	4.0	37.978	52.840	1.13899	0.178	0.374	745
330	0.11772	65.31	3.6	40.482	56.425	1.15002	0.175	0.345	773
340	0.12518	72.38	3.3	42.815	59.768	1.16000	0.172	0.325	796
350	0.13225	79.00	3.1	45.024	62.935	1.16918	0.170	0.310	817
360	0.13902	85.25	2.9	47.142	65.970	1.17773	0.168	0.298	837
370	0.14555	91.20	2.8	49.187	68.900	1.18576	0.167	0.289	855
380	0.15189	96.91	2.6	51.175	71.746	1.19335	0.166	0.281	873
390	0.15806	102.40	2.5	53.116	74.523	1.20056	0.165	0.275	890
400	0.16409	107.73	2.4	55.018	77.242	1.20745	0.164	0.269	906
410	0.17001	112.89	2.3	56.887	79.911	1.21404	0.163	0.265	922
420	0.17582	117.92	2.2	58.728	82.539	1.22037	0.162	0.261	937
430	0.18154	122.84	2.1	60.544	85.130	1.22647	0.162	0.257	952
440	0.18718	127.64	2.0	62.339	87.689	1.23235	0.161	0.254	966
450	0.19274	132.36	2.0	64.117	90.220	1.23804	0.161	0.252	980
460	0.19825	136.99	1.9	65.878	92.727	1.24355	0.161	0.250	993
470	0.20370	141.54	1.8	67.625	95.212	1.24889	0.160	0.248	1006
480	0.20910	146.02	1.8	69.360	97.678	1.25409	0.160	0.246	1019
490	0.21445	150.45	1.7	71.083	100.127	1.25913	0.160	0.244	1032
500	0.21976	154.81	1.7	72.798	102.560	1.26405	0.160	0.243	1044
510	0.22503	159.13	1.7	74.503	104.980	1.26884	0.159	0.241	1057
520	0.23027	163.40	1.6	76.202	107.388	1.27352	0.159	0.240	1068
530	0.23546	167.62	1.6	77.894	109.785	1.27808	0.159	0.239	1080
540	0.24065	171.81	1.5	79.580	112.172	1.28255	0.159	0.238	1092
550	0.24581	175.96	1.5	81.261	114.551	1.28691	0.159	0.238	1103
560	0.25093	180.08	1.5	82.939	116.923	1.29118	0.159	0.237	1114
570	0.25604	184.17	1.4	84.612	119.288	1.29537	0.159	0.236	1125
580	0.26112	188.23	1.4	86.283	121.647	1.29947	0.159	0.236	1136
590	0.26618	192.26	1.4	87.951	124.001	1.30350	0.159	0.235	1146
600	0.27123	196.27	1.3	89.618	126.350	1.30745	0.160	0.235	1157

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

731.379 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_p$ BTU/LB	$V(\partial P/\partial U)_v$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/ DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 98.871	81.75683	217.47	14.608	174612.27	0.0018228	0.11198	42.652	0.00346	1.57041	0.4355
100	81.58843	216.78	14.560	172488.17	0.0018284	0.11186	41.741	0.00345	1.56865	0.4337
105	80.84086	213.69	14.339	163301.15	0.0018533	0.11021	37.955	0.00344	1.56235	0.4314
110	80.08965	210.55	14.111	154459.54	0.0018807	0.10868	34.547	0.00343	1.55643	0.4318
115	79.33446	207.37	13.877	145953.67	0.0019092	0.10707	31.479	0.00341	1.55060	0.4193
120	78.57490	204.13	13.637	137771.66	0.0019393	0.10540	28.716	0.00339	1.54474	0.4029
125	77.81055	200.85	13.391	129905.39	0.0019712	0.10366	26.229	0.00338	1.53886	0.4063
130	77.04094	197.51	13.140	122344.52	0.0020052	0.10187	23.989	0.00334	1.53296	0.3973
135	76.26554	194.11	12.885	115079.48	0.0020415	0.10004	21.972	0.00331	1.52643	0.3933
140	75.48379	190.65	12.626	108100.86	0.0020803	0.09816	20.155	0.00328	1.52026	0.3917
145	74.69504	187.13	12.365	101399.47	0.0021219	0.09624	18.519	0.00324	1.51405	0.3906
150	73.89858	183.54	12.100	94966.28	0.0021667	0.09429	17.045	0.00321	1.50780	0.3881
155	73.09360	179.88	11.834	88792.47	0.0022150	0.09230	15.717	0.00317	1.50150	0.3864
160	72.27922	176.15	11.566	82869.41	0.0022673	0.09029	14.521	0.00313	1.49515	0.3822
165	71.45443	172.33	11.297	77188.68	0.0023242	0.08826	13.443	0.00308	1.48873	0.3862
170	70.61809	168.43	11.028	71742.69	0.0023861	0.08620	12.471	0.00304	1.48224	0.3931
175	69.76893	164.44	10.758	66521.65	0.0024540	0.08412	11.594	0.00299	1.47567	0.3922
180	68.90546	160.36	10.489	61519.65	0.0025286	0.08203	10.803	0.00294	1.46900	0.3924
185	68.02602	156.18	10.220	56728.60	0.0026109	0.07992	10.089	0.00288	1.46224	0.3931
190	67.12869	151.90	9.952	52141.32	0.0027023	0.07780	9.444	0.00282	1.45536	0.3938
195	66.21122	147.50	9.684	47750.92	0.0028042	0.07566	8.861	0.00276	1.44834	0.3938
200	65.27103	142.98	9.416	43550.87	0.0029187	0.07351	8.333	0.00270	1.44118	0.3930
205	64.30504	138.34	9.149	39535.62	0.0030481	0.07135	7.855	0.00263	1.43384	0.3912
210	63.30963	133.56	8.881	35697.69	0.0031954	0.06917	7.421	0.00256	1.42631	0.3882
215	62.28044	128.63	8.611	32033.76	0.0033647	0.06698	7.025	0.00248	1.41855	0.3843
220	61.21216	123.54	8.339	28538.81	0.0035610	0.06477	6.666	0.00241	1.41052	0.3799
225	60.09828	118.29	8.062	25209.36	0.0037913	0.06253	6.336	0.00232	1.40219	0.3758
230	58.93064	112.86	7.776	22043.20	0.0040651	0.06027	6.033	0.00223	1.39348	0.3731
235	57.68496	108.48	7.311	19067.74	0.0043984	0.05795	5.773	0.00211	1.38424	0.3711
240	56.37834	102.74	5.986	16323.75	0.0047635	0.05563	5.554	0.00202	1.37498	0.3740
245	54.97903	96.73	5.692	13868.82	0.0052822	0.05325	5.324	0.00190	1.36429	0.3693
250	53.46296	90.31	5.341	11174.05	0.0059277	0.05082	5.092	0.00178	1.35321	0.3814
255	51.79226	83.57	5.951	8842.18	0.0068078	0.04829	4.844	0.00164	1.34156	0.3545
260	49.90427	76.31	5.532	6647.69	0.0081436	0.04562	4.576	0.00147	1.32741	0.3442
265	47.66130	67.94	4.998	4616.99	0.0102203	0.04272	4.279	0.00129	1.31147	0.3040
270	44.86934	58.40	4.386	2767.10	0.0143874	0.04049	3.931	0.00107	1.29163	0.2936
275	40.63933	46.53	3.593	1272.63	0.0291567	0.04094	3.450	0.00074	1.26162	0.2155
280	17.27269	32.53	2.287	140.16	0.0888844	0.03046	1.654	0.00079	1.10623	0.3799
285	14.15067	35.14	2.367	272.39	0.0265896	0.02126	1.493	0.00151	1.08649	0.3726
290	12.69247	37.65	2.412	342.74	0.0182425	0.01878	1.437	0.00215	1.07735	0.3919
295	11.71499	39.89	2.427	393.41	0.0142244	0.01751	1.400	0.00263	1.07125	0.3832
300	10.98022	41.96	2.437	430.93	0.0118618	0.01676	1.376	0.00307	1.06668	0.4721
310	9.90040	45.81	2.446	486.03	0.0091350	0.01590	1.349	0.00384	1.06060	0.4777
320	9.11264	49.39	2.447	525.14	0.0075690	0.01546	1.335	0.00454	1.05513	0.4626
330	8.49486	52.80	2.444	554.80	0.0065338	0.01522	1.330	0.00519	1.05133	0.4957
340	7.98870	56.07	2.439	578.26	0.0057900	0.01509	1.331	0.00582	1.04822	0.5304
350	7.56151	59.24	2.432	597.34	0.0052253	0.01504	1.335	0.00643	1.04561	0.5885
360	7.19315	62.32	2.424	613.19	0.0047792	0.01505	1.341	0.00702	1.04345	0.5957
370	6.87032	65.33	2.417	626.56	0.0044164	0.01507	1.350	0.00756	1.04158	0.6303
380	6.58372	68.28	2.409	638.00	0.0041144	0.01513	1.360	0.00818	1.03963	0.6093
390	6.32664	71.17	2.402	647.88	0.0038585	0.01521	1.371	0.00875	1.03816	0.6917
400	6.09404	74.02	2.395	656.48	0.0036383	0.01530	1.384	0.00932	1.03665	0.6767
410	5.88207	76.82	2.388	664.04	0.0034464	0.01541	1.397	0.00990	1.03536	0.6638
420	5.68771	79.58	2.381	670.72	0.0032775	0.01554	1.411	0.01047	1.03418	0.6525
430	5.50852	82.31	2.375	676.65	0.0031275	0.01567	1.425	0.01105	1.03319	0.6427
440	5.34256	85.01	2.369	681.94	0.0029932	0.01581	1.439	0.01163	1.03228	0.6340
450	5.18821	87.69	2.363	686.69	0.0028721	0.01596	1.454	0.01221	1.03114	0.6263
460	5.04413	90.34	2.357	690.97	0.0027623	0.01611	1.470	0.01280	1.03027	0.6194
470	4.90920	92.97	2.352	694.84	0.0026621	0.01627	1.485	0.01339	1.02945	0.6133
480	4.78246	95.59	2.347	698.35	0.0025703	0.01643	1.501	0.01399	1.02868	0.6078
490	4.66310	98.19	2.341	701.55	0.0024857	0.01660	1.517	0.01458	1.02796	0.6029
500	4.55042	100.78	2.336	704.47	0.0024076	0.01677	1.532	0.01519	1.02728	0.7984
510	4.44380	103.36	2.331	707.14	0.0023352	0.01691	1.548	0.01577	1.02663	0.7956
520	4.34272	105.93	2.326	709.59	0.0022677	0.01709	1.565	0.01638	1.02602	0.7916
530	4.24670	108.50	2.321	711.85	0.0022047	0.01727	1.581	0.01701	1.02544	0.7880
540	4.15533	111.06	2.316	713.94	0.0021457	0.01746	1.597	0.01763	1.02489	0.7847
550	4.06826	113.62	2.311	715.86	0.0020904	0.01764	1.613	0.01826	1.02437	0.7818
560	3.98515	116.18	2.305	717.65	0.0020383	0.01782	1.629	0.01889	1.02386	0.7792
570	3.90571	118.73	2.300	719.31	0.0019891	0.01801	1.646	0.01952	1.02338	0.7769
580	3.82969	121.29	2.295	720.85	0.0019427	0.01819	1.662	0.02016	1.02293	0.7748
590	3.75684	123.86	2.289	722.29	0.0018987	0.01838	1.678	0.02080	1.02249	0.7730
600	3.68696	126.42	2.284	723.63	0.0018569	0.01857	1.694	0.02145	1.02210	0.7713

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

750 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 98.897	0.01223	2136.90	318.3	-83.099	-81.401	0.53239	0.266	0.396	3837
100	0.01226	2115.78	315.4	-82.666	-80.964	0.50679	0.266	0.396	3825
105	0.01237	2021.71	302.8	-80.700	-78.982	0.52612	0.261	0.396	3769
110	0.01248	1930.29	290.6	-78.736	-77.002	0.54454	0.257	0.396	3711
115	0.01260	1841.45	278.7	-76.773	-75.023	0.56214	0.253	0.396	3653
120	0.01272	1755.14	267.3	-74.811	-73.043	0.57899	0.249	0.396	3593
125	0.01285	1671.30	256.2	-72.849	-71.064	0.59515	0.246	0.396	3531
130	0.01298	1589.87	245.4	-70.887	-69.084	0.61068	0.242	0.396	3469
135	0.01311	1510.78	235.0	-68.924	-67.104	0.62563	0.239	0.396	3406
140	0.01325	1433.99	225.0	-66.961	-65.122	0.64004	0.236	0.397	3341
145	0.01339	1359.43	215.3	-64.997	-63.138	0.65397	0.233	0.397	3276
150	0.01353	1287.04	205.9	-63.030	-61.151	0.66743	0.230	0.398	3209
155	0.01368	1216.76	196.8	-61.060	-59.161	0.68048	0.227	0.398	3142
160	0.01383	1148.54	188.0	-59.088	-57.167	0.69315	0.225	0.399	3074
165	0.01399	1082.31	179.5	-57.110	-55.167	0.70545	0.222	0.400	3005
170	0.01416	1018.02	171.3	-55.128	-53.162	0.71742	0.220	0.402	2936
175	0.01433	955.60	163.4	-53.139	-51.149	0.72909	0.218	0.403	2865
180	0.01451	895.00	155.7	-51.142	-49.127	0.74049	0.215	0.405	2794
185	0.01470	836.16	148.3	-49.136	-47.095	0.75162	0.213	0.406	2722
190	0.01489	779.03	141.0	-47.119	-45.051	0.76253	0.211	0.410	2649
195	0.01510	723.54	134.1	-45.089	-42.992	0.77322	0.209	0.413	2575
200	0.01531	669.63	127.3	-43.043	-40.917	0.78374	0.207	0.417	2501
205	0.01554	617.27	120.7	-40.980	-38.821	0.79409	0.205	0.421	2425
210	0.01579	566.39	114.3	-38.895	-36.702	0.80430	0.203	0.426	2348
215	0.01605	516.95	108.0	-36.784	-34.556	0.81440	0.201	0.432	2269
220	0.01633	468.91	101.8	-34.644	-32.377	0.82442	0.199	0.439	2189
225	0.01663	422.24	95.8	-32.467	-30.158	0.83439	0.197	0.448	2107
230	0.01695	376.92	89.8	-30.247	-27.893	0.84434	0.196	0.458	2022
235	0.01732	333.37	84.1	-27.944	-25.539	0.85446	0.199	0.476	1922
240	0.01772	292.46	78.8	-25.587	-23.126	0.86462	0.197	0.488	1830
245	0.01816	251.70	72.5	-23.153	-20.630	0.87492	0.196	0.509	1739
250	0.01867	212.26	66.6	-20.622	-18.029	0.88543	0.195	0.532	1637
255	0.01927	174.17	60.6	-17.964	-15.288	0.89628	0.195	0.565	1528
260	0.01998	136.89	54.6	-15.127	-12.352	0.90768	0.196	0.614	1410
265	0.02089	100.77	47.8	-12.017	-9.116	0.92001	0.198	0.683	1270
270	0.02213	66.05	40.6	-8.464	-5.390	0.93394	0.201	0.813	1111
275	0.02422	31.69	32.6	-3.879	-0.515	0.95182	0.211	1.213	918
280	0.04816	3.15	12.2	16.041	22.729	1.03522	0.267	5.973	572
285	0.06579	16.34	7.9	23.769	32.926	1.07141	0.222	1.102	613
290	0.07455	24.71	6.7	27.042	37.395	1.08697	0.207	0.744	641
295	0.08138	31.52	5.9	29.442	40.745	1.09842	0.199	0.604	666
300	0.08722	37.45	5.4	31.428	43.541	1.10782	0.193	0.521	685
310	0.09722	47.60	4.7	34.749	48.251	1.12328	0.184	0.431	718
320	0.10594	56.34	4.1	37.585	52.298	1.13613	0.179	0.382	747
330	0.11386	64.17	3.8	40.140	55.953	1.14738	0.175	0.351	772
340	0.12124	71.37	3.5	42.509	59.348	1.15751	0.172	0.329	795
350	0.12823	78.08	3.2	44.747	62.556	1.16681	0.170	0.313	816
360	0.13490	84.41	3.0	46.888	65.623	1.17546	0.168	0.301	836
370	0.14134	90.44	2.9	48.952	68.581	1.18356	0.167	0.291	855
380	0.14757	96.21	2.7	50.956	71.450	1.19121	0.166	0.283	872
390	0.15363	101.76	2.6	52.911	74.247	1.19848	0.165	0.276	888
400	0.15956	107.14	2.5	54.825	76.984	1.20541	0.164	0.271	906
410	0.16536	112.35	2.4	56.704	79.669	1.21204	0.163	0.266	922
420	0.17106	117.42	2.3	58.554	82.310	1.21840	0.162	0.262	937
430	0.17667	122.37	2.2	60.379	84.914	1.22453	0.162	0.259	952
440	0.18219	127.22	2.1	62.181	87.484	1.23044	0.161	0.256	966
450	0.18765	131.96	2.0	63.965	90.026	1.23615	0.161	0.253	980
460	0.19304	136.62	2.0	65.733	92.542	1.24166	0.161	0.250	993
470	0.19838	141.21	1.9	67.485	95.036	1.24704	0.160	0.248	1007
480	0.20366	145.72	1.8	69.225	97.510	1.25225	0.160	0.246	1020
490	0.20890	150.17	1.8	70.954	99.966	1.25732	0.160	0.245	1032
500	0.21410	154.56	1.7	72.672	102.406	1.26225	0.160	0.243	1045
510	0.21925	158.90	1.7	74.382	104.832	1.26705	0.159	0.242	1057
520	0.22438	163.19	1.7	76.084	107.246	1.27174	0.159	0.241	1069
530	0.22947	167.43	1.6	77.779	109.648	1.27631	0.159	0.240	1081
540	0.23453	171.64	1.6	79.469	112.041	1.28079	0.159	0.239	1092
550	0.23957	175.81	1.5	81.153	114.425	1.28516	0.159	0.238	1103
560	0.24458	179.95	1.5	82.833	116.801	1.28944	0.159	0.237	1114
570	0.24957	184.05	1.5	84.509	119.170	1.29363	0.159	0.237	1125
580	0.25454	188.13	1.4	86.182	121.533	1.29774	0.159	0.236	1136
590	0.25949	192.18	1.4	87.852	123.890	1.30177	0.159	0.236	1147
600	0.26442	196.20	1.4	89.521	126.244	1.30573	0.160	0.235	1157

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

750 PSIA ISOBAR

TEMPERATURE	DENSITY	$V(\partial H/\partial V)_P$	$V(\partial P/\partial U)_V$	$-V(\partial P/\partial V)_T$	$(\partial V/\partial T)_P/V$	THERMAL CONDUCTIVITY	VISCOSITY	THERMAL DIFFUSIVITY	DIELECTRIC CONSTANT	PRANDTL NUMBER
DEG. R	LB/CU FT	BTU/LB	PSIA-CU FT/BTU	PSIA	1/DEG. R	BTU/FT-HR-R	LB/FT-SEC X 10^5	SQ FT/HR		
* 98.897	81.76162	217.58	14.608	174716.20	0.0018218	0.11199	42.678	0.00346	1.57025	5.4378
100	81.59724	216.90	14.560	172642.03	0.0018272	0.11168	41.788	0.00345	1.56892	5.3384
105	80.85007	213.81	14.339	163455.78	0.0018526	0.11023	38.000	0.00344	1.56292	4.9158
110	80.09931	210.68	14.112	154614.96	0.0018794	0.10870	34.589	0.00343	1.55691	4.5358
115	79.34458	207.50	13.878	146109.30	0.0019077	0.10709	31.518	0.00341	1.55088	4.1940
120	78.58552	204.27	13.637	137928.72	0.0019377	0.10542	28.753	0.00339	1.54483	3.8864
125	77.82170	200.99	13.391	130063.31	0.0019695	0.10369	26.263	0.00337	1.53875	3.6096
130	77.05266	197.66	13.141	122503.32	0.0020034	0.10190	24.021	0.00334	1.53265	3.3603
135	76.27788	194.27	12.886	115239.18	0.0020395	0.10007	22.002	0.00331	1.52652	3.1361
140	75.49678	190.82	12.627	108261.51	0.0020781	0.09819	20.184	0.00328	1.52036	2.9343
145	74.70875	187.30	12.366	101561.08	0.0021195	0.09628	18.546	0.00325	1.51416	2.7530
150	73.91305	183.72	12.101	95128.90	0.0021641	0.09433	17.071	0.00321	1.50792	2.5903
155	73.10892	180.06	11.835	88956.13	0.0022122	0.09234	15.742	0.00317	1.50162	2.4444
160	72.29545	176.34	11.568	83034.15	0.0022642	0.09034	14.544	0.00313	1.49527	2.3140
165	71.47165	172.53	11.299	77354.56	0.0023207	0.08830	13.464	0.00309	1.48886	2.1978
170	70.63641	168.64	11.030	71909.14	0.0023823	0.08625	12.491	0.00304	1.48238	2.0946
175	69.78843	164.66	10.761	66689.94	0.0024497	0.08418	11.613	0.00299	1.47582	2.0034
180	68.92629	160.59	10.492	61689.23	0.0025237	0.08209	10.821	0.00294	1.46916	1.9235
185	68.04832	156.42	10.223	56899.54	0.0026055	0.07998	10.106	0.00288	1.46241	1.8540
190	67.15262	152.15	9.956	52313.70	0.0026961	0.07786	9.461	0.00283	1.45554	1.7944
195	66.23700	147.76	9.688	47924.83	0.0027973	0.07573	8.877	0.00277	1.44854	1.7442
200	65.29888	143.26	9.421	43726.40	0.0029107	0.07358	8.348	0.00270	1.44139	1.7031
205	64.33527	138.63	9.155	39712.27	0.0030388	0.07142	7.870	0.00264	1.43407	1.6710
210	63.34258	133.86	8.888	35876.78	0.0031845	0.06925	7.435	0.00256	1.42656	1.6477
215	62.31655	128.95	8.620	32214.81	0.0033518	0.06706	7.039	0.00249	1.41882	1.6334
220	61.25198	123.89	8.349	28721.96	0.0035455	0.06485	6.679	0.00241	1.41082	1.6285
225	60.14253	118.66	8.074	25394.73	0.0037724	0.06263	6.349	0.00233	1.40252	1.6336
230	58.98023	113.26	7.798	22230.92	0.0040416	0.06037	6.046	0.00224	1.39385	1.6501
235	57.74105	108.90	7.324	19249.13	0.0043693	0.05806	5.783	0.00211	1.38465	1.7062
240	56.44233	103.21	7.002	16507.38	0.0047271	0.05575	5.565	0.00202	1.37505	1.7533
245	55.05347	97.26	6.709	13857.19	0.0052315	0.05338	5.340	0.00191	1.36484	1.8323
250	53.55137	90.91	6.363	11366.61	0.0058569	0.05096	5.107	0.00179	1.35385	1.9206
255	51.90024	84.25	5.981	9039.26	0.0067041	0.04845	4.860	0.00165	1.34184	2.0397
260	50.04215	77.10	5.566	6850.45	0.0079663	0.04582	4.596	0.00149	1.32841	2.2181
265	47.86979	68.93	5.068	4823.93	0.0099032	0.04297	4.305	0.00131	1.31282	2.4620
270	45.18106	59.74	4.462	2984.30	0.0136086	0.04058	3.967	0.00110	1.29370	2.8611
275	41.28167	48.67	3.740	1308.09	0.0249130	0.04043	3.521	0.00081	1.26630	3.8016
280	20.76566	31.96	2.286	65.43	0.1868925	0.04272	1.855	0.00034	1.12861	9.3353
285	15.19881	34.50	2.354	248.40	0.0319474	0.02303	1.555	0.00138	1.09309	2.6776
290	13.41363	37.00	2.398	331.48	0.0201182	0.01961	1.474	0.00196	1.08186	2.0149
295	12.28747	39.37	2.433	387.36	0.0153375	0.01810	1.429	0.00244	1.07482	1.7165
300	11.46586	41.46	2.444	429.42	0.0125702	0.01720	1.401	0.00288	1.06970	1.5291
310	10.28559	45.37	2.454	489.61	0.0095062	0.01620	1.368	0.00365	1.06238	1.3108
320	9.43943	48.98	2.456	531.81	0.0078017	0.01569	1.351	0.00435	1.05715	1.1849
330	8.78249	52.42	2.453	563.60	0.0066949	0.01541	1.345	0.00500	1.05310	1.1022
340	8.24778	55.71	2.447	588.62	0.0059087	0.01526	1.343	0.00562	1.04981	1.0432
350	7.79861	58.90	2.440	608.90	0.0053166	0.01520	1.346	0.00622	1.04706	0.9988
360	7.41267	62.01	2.432	625.71	0.0048517	0.01519	1.352	0.00681	1.04470	0.9643
370	7.07536	65.03	2.424	639.87	0.0044753	0.01520	1.360	0.00738	1.04263	0.9376
380	6.77657	68.00	2.416	651.96	0.0041632	0.01524	1.370	0.00795	1.04081	0.9156
390	6.50905	70.91	2.409	662.39	0.0038995	0.01531	1.380	0.00851	1.03918	0.8972
400	6.26737	73.76	2.401	671.46	0.0036732	0.01540	1.392	0.00907	1.03770	0.8816
410	6.04742	76.58	2.394	679.42	0.0034765	0.01551	1.405	0.00963	1.03636	0.8682
420	5.84595	79.35	2.387	686.45	0.0033036	0.01563	1.418	0.01020	1.03514	0.8565
430	5.66040	82.09	2.381	692.69	0.0031503	0.01576	1.432	0.01076	1.03401	0.8463
440	5.48868	84.80	2.375	698.26	0.0030133	0.01589	1.447	0.01133	1.03297	0.8373
450	5.32910	87.49	2.369	703.25	0.0028899	0.01604	1.461	0.01190	1.03200	0.8293
460	5.18024	90.15	2.363	707.75	0.0027781	0.01619	1.476	0.01248	1.03109	0.8222
470	5.04092	92.79	2.357	711.81	0.0026763	0.01634	1.492	0.01306	1.03025	0.8159
480	4.91012	95.41	2.352	715.50	0.0025830	0.01650	1.507	0.01364	1.02946	0.8102
490	4.78699	98.02	2.347	718.85	0.0024973	0.01667	1.523	0.01422	1.02871	0.8051
500	4.67080	100.61	2.341	721.91	0.0024181	0.01683	1.538	0.01481	1.02801	0.8005
510	4.56091	103.20	2.336	724.71	0.0023447	0.01697	1.554	0.01538	1.02734	0.7976
520	4.45675	105.77	2.331	727.29	0.0022764	0.01715	1.570	0.01599	1.02671	0.7934
530	4.35785	108.34	2.326	729.66	0.0022127	0.01733	1.586	0.01659	1.02611	0.7897
540	4.26377	110.91	2.321	731.84	0.0021531	0.01752	1.602	0.01720	1.02555	0.7863
550	4.17413	113.47	2.316	733.86	0.0020971	0.01770	1.618	0.01782	1.02500	0.7833
560	4.08859	116.04	2.310	735.73	0.0020445	0.01788	1.634	0.01844	1.02449	0.7806
570	4.00685	118.60	2.305	737.47	0.0019949	0.01807	1.651	0.01906	1.02399	0.7782
580	3.92864	121.16	2.300	739.09	0.0019480	0.01825	1.667	0.01968	1.02352	0.7761
590	3.85371	123.73	2.294	740.59	0.0019036	0.01843	1.683	0.02031	1.02307	0.7741
600	3.78185	126.30	2.289	742.00	0.0018615	0.01862	1.699	0.02094	1.02264	0.7724

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

800 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p BTU / LB -R	VELOCITY OF SOUND FT/SEC
* 98.968	0.01223	2139.97	318.3	-83.091	-81.280	0.50247	0.267	0.396	3840
100	0.01225	2128.23	315.7	-82.686	-80.871	0.50658	0.266	0.396	3828
105	0.01236	2026.23	303.0	-80.722	-78.890	0.52591	0.261	0.396	3772
110	0.01248	1934.87	290.8	-78.759	-76.911	0.54433	0.257	0.396	3715
115	0.01260	1846.11	279.0	-76.798	-74.932	0.56192	0.253	0.396	3656
120	0.01272	1759.87	267.5	-74.837	-72.953	0.57876	0.249	0.396	3596
125	0.01284	1676.10	256.4	-72.877	-70.974	0.59492	0.246	0.396	3535
130	0.01297	1594.74	245.7	-70.917	-68.996	0.61044	0.242	0.396	3473
135	0.01310	1515.74	235.3	-68.957	-67.016	0.62538	0.239	0.396	3409
140	0.01324	1439.03	225.2	-66.996	-65.035	0.63979	0.236	0.396	3345
145	0.01338	1364.56	215.5	-65.034	-63.052	0.65370	0.233	0.397	3280
150	0.01352	1292.26	206.2	-63.069	-61.066	0.66716	0.230	0.397	3214
155	0.01367	1222.08	197.1	-61.103	-59.078	0.68020	0.228	0.398	3147
160	0.01382	1153.96	188.3	-59.133	-57.085	0.69286	0.225	0.399	3079
165	0.01398	1087.83	179.8	-57.159	-55.087	0.70515	0.222	0.400	3011
170	0.01415	1023.65	171.6	-55.179	-53.084	0.71711	0.220	0.401	2941
175	0.01432	961.35	163.7	-53.194	-51.073	0.72877	0.218	0.403	2871
180	0.01450	900.87	156.0	-51.201	-49.054	0.74015	0.215	0.405	2800
185	0.01468	842.16	148.6	-49.199	-47.024	0.75127	0.213	0.407	2729
190	0.01488	785.16	141.4	-47.187	-44.983	0.76216	0.211	0.410	2656
195	0.01508	729.81	134.5	-45.162	-42.928	0.77283	0.209	0.413	2583
200	0.01530	676.06	127.7	-43.123	-40.857	0.78332	0.207	0.416	2509
205	0.01552	623.87	121.1	-41.066	-38.767	0.79365	0.205	0.420	2434
210	0.01577	573.17	114.7	-38.989	-36.654	0.80384	0.203	0.425	2358
215	0.01602	523.92	108.5	-36.887	-34.514	0.81391	0.201	0.431	2280
220	0.01630	476.09	102.4	-34.757	-32.343	0.82389	0.199	0.437	2201
225	0.01659	429.64	96.4	-32.592	-30.134	0.83381	0.197	0.445	2120
230	0.01692	384.57	90.5	-30.387	-27.888	0.84371	0.196	0.455	2036
235	0.01727	340.90	84.7	-28.101	-25.542	0.85377	0.199	0.472	1937
240	0.01766	300.25	78.8	-25.764	-23.147	0.86385	0.197	0.484	1846
245	0.01818	259.89	73.3	-23.356	-20.675	0.87405	0.196	0.503	1757
250	0.01859	228.86	67.5	-20.859	-18.105	0.88443	0.195	0.525	1658
255	0.01916	183.24	61.6	-18.247	-15.408	0.89511	0.195	0.555	1554
260	0.01984	146.56	55.7	-15.478	-12.538	0.90626	0.196	0.597	1448
265	0.02069	111.06	49.3	-12.475	-9.411	0.91817	0.197	0.656	1309
270	0.02180	77.35	42.5	-9.121	-5.892	0.93132	0.200	0.756	1164
275	0.02347	44.59	35.4	-5.066	-1.588	0.94711	0.206	0.995	1008
280	0.02713	13.56	25.3	1.073	5.892	0.97116	0.226	2.027	758
285	0.05142	0.18	10.8	18.796	26.413	1.04564	0.244	2.269	591
290	0.06347	18.29	8.2	24.219	33.622	1.07175	0.217	1.010	628
295	0.07127	26.86	7.1	27.325	37.882	1.08632	0.205	0.736	658
300	0.07755	32.63	6.3	29.694	41.182	1.09742	0.197	0.600	678
310	0.08785	43.62	5.3	33.428	46.442	1.11460	0.187	0.471	712
320	0.09657	52.91	4.6	36.492	50.798	1.12851	0.181	0.407	742
330	0.10438	61.15	4.2	39.195	54.658	1.14040	0.177	0.368	768
340	0.11158	68.67	3.8	41.672	58.201	1.15098	0.174	0.342	792
350	0.11835	75.65	3.6	43.991	61.524	1.16061	0.171	0.323	814
360	0.12480	82.20	3.3	46.196	64.684	1.16951	0.169	0.309	834
370	0.13098	88.42	3.1	48.314	67.718	1.17782	0.168	0.298	853
380	0.13696	94.36	3.0	50.362	70.651	1.18565	0.166	0.289	871
390	0.14276	100.07	2.8	52.355	73.504	1.19306	0.165	0.282	889
400	0.14842	105.58	2.7	54.301	76.289	1.20011	0.164	0.275	905
410	0.15396	110.92	2.6	56.209	79.016	1.20684	0.164	0.270	921
420	0.15938	116.11	2.5	58.085	81.696	1.21330	0.163	0.266	937
430	0.16472	121.16	2.4	59.932	84.333	1.21951	0.162	0.262	952
440	0.16997	126.10	2.3	61.756	86.934	1.22549	0.162	0.258	966
450	0.17515	130.94	2.2	63.558	89.504	1.23126	0.161	0.255	980
470	0.18532	140.34	2.1	67.110	94.562	1.24226	0.161	0.251	1007
480	0.19032	144.92	2.0	68.863	97.058	1.24751	0.160	0.249	1020
490	0.19528	149.44	1.9	70.604	99.533	1.25262	0.160	0.247	1033
500	0.20020	153.89	1.9	72.335	101.992	1.25759	0.160	0.245	1046
510	0.20508	158.29	1.8	74.055	104.435	1.26242	0.160	0.244	1058
520	0.20992	162.64	1.8	75.767	106.865	1.26714	0.159	0.242	1070
530	0.21473	166.94	1.7	77.471	109.282	1.27175	0.159	0.241	1082
540	0.21952	171.20	1.7	79.169	111.688	1.27624	0.159	0.240	1093
550	0.22427	175.42	1.7	80.861	114.085	1.28064	0.159	0.239	1105
560	0.22901	179.61	1.6	82.548	116.473	1.28494	0.159	0.238	1116
570	0.23371	183.76	1.6	84.231	118.853	1.28916	0.159	0.238	1127
580	0.23840	187.88	1.5	85.911	121.227	1.29329	0.159	0.237	1138
590	0.24307	191.97	1.5	87.587	123.595	1.29733	0.159	0.237	1149
600	0.24772	196.03	1.5	89.261	125.958	1.30130	0.160	0.236	1159

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

800 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 98.968	81.77447	217.85	14.606	174995.14	0.0018190	0.11202	42.749	0.00346	1.57035	5.4442
100	81.62084	217.22	14.561	173054.91	0.0018240	0.11173	41.915	0.00345	1.56911	5.3510
105	80.87478	214.14	14.341	163870.72	0.0018492	0.11028	38.119	0.00344	1.56312	4.9275
110	80.12518	211.02	14.113	155032.00	0.0018758	0.10876	34.701	0.00343	1.55712	4.5467
115	79.37170	207.86	13.879	146528.50	0.0019038	0.10716	31.623	0.00341	1.55109	4.2042
120	78.61397	204.64	13.639	138350.14	0.0019335	0.10549	28.852	0.00339	1.54505	3.8958
125	77.85157	201.38	13.393	130487.01	0.0019650	0.10376	26.356	0.00337	1.53899	3.6183
130	77.08406	198.06	13.143	122929.36	0.0019984	0.10198	24.109	0.00334	1.53290	3.3684
135	76.31092	194.68	12.888	115667.63	0.0020341	0.10016	22.084	0.00331	1.52678	3.1436
140	75.53159	191.25	12.630	108692.44	0.0020723	0.09828	20.261	0.00328	1.52064	2.9413
145	74.74546	187.75	12.368	101994.59	0.0021132	0.09637	18.619	0.00325	1.51445	2.7594
150	73.95183	184.19	12.105	95565.07	0.0021572	0.09443	17.139	0.00321	1.50822	2.5962
155	73.14992	180.55	11.839	89395.85	0.0022046	0.09245	15.806	0.00318	1.50194	2.4498
160	72.33868	176.85	11.572	83475.94	0.0022558	0.09045	14.605	0.00313	1.49561	2.3189
165	71.51773	173.06	11.304	77799.32	0.0023115	0.08843	13.522	0.00309	1.48922	2.2022
170	70.68538	169.19	11.036	72357.01	0.0023721	0.08638	12.546	0.00304	1.48276	2.0985
175	69.84068	165.24	10.767	67141.06	0.0024383	0.08431	11.665	0.00300	1.47622	2.0068
180	68.98197	161.20	10.500	62143.75	0.0025110	0.08223	10.871	0.00295	1.46959	1.9263
185	68.10790	157.06	10.232	57357.65	0.0025911	0.08013	10.153	0.00289	1.46287	1.8563
190	67.21656	152.81	9.966	52775.58	0.0026799	0.07802	9.505	0.00283	1.45603	1.7961
195	66.30581	148.46	9.700	48390.70	0.0027788	0.07590	8.919	0.00277	1.44907	1.7453
200	65.37320	144.00	9.436	44196.49	0.0028895	0.07376	8.389	0.00271	1.44196	1.7035
205	64.41584	139.41	9.171	40186.85	0.0030142	0.07161	7.908	0.00265	1.43469	1.6705
210	63.43033	134.69	8.907	36356.13	0.0031558	0.06945	7.472	0.00258	1.42722	1.6463
215	62.41262	129.83	8.642	32699.24	0.0033178	0.06728	7.076	0.00250	1.41955	1.6309
220	61.35781	124.82	8.376	29211.79	0.0035049	0.06509	6.714	0.00242	1.41162	1.6246
225	60.25991	119.65	8.105	25890.29	0.0037231	0.06288	6.383	0.00234	1.40339	1.6281
230	59.11156	114.33	7.827	22732.44	0.0039806	0.06064	6.079	0.00225	1.39483	1.6425
235	57.88936	110.02	7.358	19734.68	0.0042937	0.05835	5.810	0.00213	1.38575	1.6934
240	56.61105	104.45	7.045	16997.41	0.0046340	0.05606	5.595	0.00205	1.37630	1.7390
245	55.24894	98.63	6.755	14356.71	0.0051022	0.05373	5.373	0.00193	1.36627	1.8118
250	53.78227	92.46	5.421	11878.27	0.0056767	0.05135	5.144	0.00182	1.35554	1.8935
255	52.18087	86.03	5.058	9561.23	0.0064474	0.04889	4.904	0.00169	1.34387	2.0027
260	50.39502	79.13	5.652	7385.69	0.0075405	0.04633	4.648	0.00154	1.33095	2.1551
265	48.34206	71.46	5.175	5368.76	0.0091747	0.04368	4.369	0.00138	1.31620	2.3654
270	45.87927	63.83	4.642	3548.59	0.0119899	0.04088	4.055	0.00116	1.29864	2.6990
275	42.60098	53.37	4.043	1899.57	0.0186492	0.03997	3.670	0.00094	1.27552	3.2904
280	36.86806	40.86	3.034	499.96	0.0506083	0.04134	3.077	0.00055	1.23571	5.4319
285	19.44751	32.96	2.265	157.47	0.0668431	0.03192	1.798	0.00072	1.12813	4.5816
290	15.75484	35.56	2.392	288.23	0.0284135	0.02287	1.598	0.00144	1.09660	2.5416
295	14.03133	38.12	2.454	365.69	0.0193158	0.02007	1.520	0.00194	1.08574	2.0067
300	12.89513	40.25	2.462	420.72	0.0140965	0.01857	1.474	0.00240	1.07862	1.7130
310	11.38261	44.24	2.477	496.51	0.0106349	0.01708	1.423	0.00319	1.06918	1.4107
320	10.35513	47.94	2.479	547.90	0.0084834	0.01636	1.397	0.00389	1.06281	1.2502
330	9.58062	51.44	2.476	585.88	0.0071564	0.01596	1.384	0.00453	1.05802	1.1492
340	8.96202	54.79	2.470	615.41	0.0062438	0.01573	1.379	0.00513	1.05421	1.0792
350	8.44922	58.04	2.462	639.14	0.0055717	0.01561	1.378	0.00571	1.05105	1.0277
360	8.01293	61.19	2.454	658.68	0.0050526	0.01556	1.382	0.00628	1.04837	0.9881
370	7.63458	64.26	2.445	675.06	0.0046376	0.01554	1.388	0.00683	1.04605	0.9577
380	7.30134	67.27	2.436	688.99	0.0042969	0.01556	1.395	0.00737	1.04401	0.9338
390	7.00452	70.21	2.428	700.97	0.0040115	0.01561	1.405	0.00791	1.04220	0.9124
400	6.73758	73.10	2.420	711.36	0.0037682	0.01568	1.415	0.00845	1.04057	0.8951
410	6.49533	75.95	2.412	720.46	0.0035588	0.01577	1.427	0.00899	1.03909	0.8802
420	6.27418	78.76	2.404	728.47	0.0033742	0.01588	1.439	0.00952	1.03774	0.8673
430	6.07103	81.52	2.397	735.58	0.0032119	0.01599	1.452	0.01006	1.03651	0.8561
440	5.88345	84.26	2.391	741.91	0.0030675	0.01612	1.466	0.01060	1.03537	0.8462
450	5.70949	86.96	2.384	747.58	0.0029378	0.01625	1.480	0.01114	1.03431	0.8375
460	5.54749	89.65	2.378	752.67	0.0028208	0.01640	1.494	0.01169	1.03332	0.8297
470	5.39611	92.31	2.372	757.28	0.0027144	0.01654	1.509	0.01224	1.03240	0.8228
480	5.25419	94.95	2.367	761.45	0.0026173	0.01670	1.524	0.01279	1.03154	0.8166
490	5.12077	97.57	2.361	765.24	0.0025282	0.01685	1.539	0.01334	1.03073	0.8110
500	4.99508	100.18	2.356	768.70	0.0024461	0.01701	1.554	0.01390	1.02997	0.8060
510	4.87618	102.78	2.350	771.86	0.0023702	0.01715	1.570	0.01444	1.02925	0.8028
520	4.76366	105.37	2.345	774.77	0.0022996	0.01732	1.585	0.01501	1.02857	0.7983
530	4.65691	107.95	2.340	777.44	0.0022339	0.01750	1.601	0.01558	1.02792	0.7943
540	4.55545	110.53	2.334	779.98	0.0021726	0.01768	1.617	0.01616	1.02731	0.7906
550	4.45884	113.10	2.329	782.18	0.0021151	0.01785	1.632	0.01674	1.02673	0.7874
560	4.36671	115.67	2.324	784.29	0.0020611	0.01803	1.648	0.01732	1.02617	0.7844
570	4.27873	118.24	2.318	786.25	0.0020102	0.01821	1.664	0.01791	1.02564	0.7816
580	4.19460	120.82	2.313	788.07	0.0019622	0.01839	1.680	0.01850	1.02513	0.7794
590	4.11403	123.39	2.308	789.77	0.0019168	0.01858	1.696	0.01909	1.02464	0.7773
600	4.03680	125.97	2.302	791.35	0.0018738	0.01876	1.712	0.01969	1.02418	0.7754

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

810 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 98.982	0.01223	2140.59	318.3	-83.090	-81.256	0.50249	0.267	0.396	3840
100	0.01225	2121.12	315.7	-82.690	-80.852	0.50654	0.266	0.396	3829
105	0.01236	2027.13	303.1	-80.726	-78.872	0.52587	0.261	0.396	3773
110	0.01248	1935.79	290.8	-78.764	-76.892	0.54428	0.257	0.396	3715
115	0.01260	1847.03	279.0	-76.803	-74.913	0.56188	0.253	0.396	3657
120	0.01272	1760.81	267.5	-74.843	-72.935	0.57872	0.250	0.396	3597
125	0.01284	1677.06	256.5	-72.883	-70.957	0.59487	0.246	0.396	3536
130	0.01297	1595.72	245.7	-70.923	-68.978	0.61039	0.243	0.396	3473
135	0.01310	1516.73	235.3	-68.964	-66.998	0.62533	0.239	0.396	3410
140	0.01324	1440.04	225.3	-67.003	-65.017	0.63974	0.236	0.396	3346
145	0.01338	1365.58	215.6	-65.041	-63.035	0.65365	0.233	0.397	3281
150	0.01352	1293.30	206.2	-63.077	-61.049	0.66711	0.230	0.397	3215
155	0.01367	1223.14	197.1	-61.111	-59.061	0.68015	0.228	0.398	3148
160	0.01382	1155.04	188.4	-59.142	-57.069	0.69280	0.225	0.399	3080
165	0.01398	1088.93	179.9	-57.168	-55.071	0.70509	0.222	0.400	3012
170	0.01415	1024.77	171.7	-55.190	-53.068	0.71705	0.220	0.401	2942
175	0.01432	962.49	163.8	-53.205	-51.058	0.72871	0.218	0.403	2872
180	0.01449	902.04	156.1	-51.213	-49.039	0.74008	0.215	0.405	2802
185	0.01468	843.35	148.7	-49.212	-47.010	0.75120	0.213	0.407	2730
190	0.01487	786.38	141.5	-47.201	-44.970	0.76208	0.211	0.409	2658
195	0.01508	731.06	134.5	-45.177	-42.916	0.77276	0.209	0.412	2585
200	0.01529	677.35	127.8	-43.139	-40.845	0.78324	0.207	0.416	2511
205	0.01552	625.18	121.2	-41.083	-38.756	0.79356	0.205	0.420	2436
210	0.01576	574.52	114.8	-39.008	-36.644	0.80374	0.203	0.425	2359
215	0.01602	525.31	108.6	-36.908	-34.505	0.81381	0.201	0.430	2282
220	0.01629	477.52	102.5	-34.779	-32.336	0.82378	0.199	0.437	2203
225	0.01659	431.12	96.5	-32.617	-30.129	0.83378	0.197	0.445	2122
230	0.01691	386.09	90.6	-30.414	-27.878	0.84359	0.196	0.455	2039
235	0.01727	342.40	84.9	-28.132	-25.542	0.85363	0.199	0.472	1940
240	0.01765	301.79	79.9	-25.798	-23.150	0.86370	0.197	0.483	1850
245	0.01809	261.51	73.4	-23.396	-20.683	0.87388	0.196	0.502	1760
250	0.01858	222.56	67.6	-20.906	-18.119	0.88424	0.195	0.524	1663
255	0.01914	185.02	61.8	-18.303	-15.431	0.89488	0.195	0.553	1559
260	0.01982	148.45	55.9	-15.545	-12.573	0.90598	0.195	0.594	1445
265	0.02065	113.87	49.5	-12.562	-9.465	0.91782	0.197	0.651	1316
270	0.02174	79.52	42.9	-9.241	-5.981	0.93084	0.199	0.746	1174
275	0.02335	47.81	35.9	-5.265	-1.762	0.94632	0.205	0.967	1014
280	0.02665	16.43	26.3	0.495	4.492	0.96884	0.223	1.772	778
285	0.04882	6.51	11.8	17.266	24.469	1.03949	0.250	2.648	586
290	0.06127	17.08	8.6	23.591	32.741	1.06831	0.220	1.098	625
295	0.06933	24.97	7.3	26.857	37.256	1.08376	0.207	0.778	657
300	0.07572	31.66	6.5	29.320	40.678	1.09527	0.198	0.618	676
310	0.08610	42.83	5.4	33.151	46.066	1.11295	0.188	0.479	711
320	0.09483	52.23	4.8	36.266	50.490	1.12780	0.181	0.412	741
330	0.10262	60.56	4.3	39.002	54.394	1.13981	0.177	0.372	768
340	0.10979	68.14	3.9	41.501	57.969	1.14969	0.174	0.345	791
350	0.11653	75.17	3.6	43.838	61.316	1.15939	0.171	0.325	813
360	0.12293	81.77	3.4	46.056	64.494	1.16835	0.169	0.311	834
370	0.12907	88.03	3.2	48.185	67.544	1.17678	0.168	0.299	853
380	0.13500	94.08	3.0	50.242	70.491	1.18456	0.167	0.290	871
390	0.14075	99.74	2.9	52.243	73.355	1.19280	0.165	0.283	888
400	0.14636	105.28	2.7	54.196	76.149	1.19988	0.165	0.278	905
410	0.15185	110.64	2.6	56.118	78.886	1.20583	0.164	0.271	921
420	0.15722	115.85	2.5	57.991	81.573	1.21231	0.163	0.266	937
430	0.16251	120.92	2.4	59.843	84.217	1.21853	0.162	0.263	952
440	0.16771	125.88	2.3	61.678	86.824	1.22453	0.162	0.259	966
450	0.17283	130.73	2.2	63.476	89.399	1.23031	0.161	0.256	980
460	0.17790	135.49	2.2	65.263	91.946	1.23591	0.161	0.253	994
470	0.18290	140.17	2.1	67.034	94.468	1.24133	0.161	0.251	1007
480	0.18786	144.77	2.0	68.791	96.967	1.24668	0.160	0.249	1020
490	0.19276	149.30	2.0	70.534	99.447	1.25171	0.160	0.247	1033
500	0.19763	153.76	1.9	72.267	101.909	1.25668	0.160	0.245	1046
510	0.20245	158.18	1.9	73.990	104.356	1.26153	0.160	0.244	1058
520	0.20725	162.53	1.8	75.703	106.788	1.26625	0.160	0.243	1070
530	0.21201	166.85	1.8	77.410	109.209	1.27086	0.159	0.241	1082
540	0.21674	171.12	1.7	79.109	111.618	1.27536	0.159	0.240	1094
550	0.22144	175.35	1.7	80.803	114.017	1.27977	0.159	0.239	1105
560	0.22612	179.54	1.6	82.492	116.408	1.28407	0.159	0.239	1116
570	0.23078	183.70	1.6	84.176	118.790	1.28829	0.159	0.238	1127
580	0.23541	187.83	1.6	85.856	121.166	1.29242	0.159	0.237	1138
590	0.24003	191.93	1.5	87.534	123.536	1.29648	0.159	0.237	1149
600	0.24463	196.00	1.5	89.209	125.901	1.30045	0.160	0.236	1159

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

810 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 98.982	81.77704	217.91	14.605	175050.91	0.0018185	0.11203	42.764	0.00346	1.57037	5.4454
100	81.62556	217.29	14.561	173137.45	0.0018234	0.11174	41.940	0.00346	1.56915	5.3535
105	80.87971	214.21	14.341	163953.66	0.0018486	0.11030	38.143	0.00344	1.56316	4.9298
110	80.13034	211.09	14.113	155115.36	0.0018759	0.10877	34.723	0.00343	1.55716	4.5489
115	79.37711	207.93	13.879	146612.29	0.0019030	0.10717	31.644	0.00341	1.55114	4.2062
120	78.61965	204.72	13.639	138434.37	0.0019326	0.10550	28.872	0.00339	1.54510	3.8977
125	77.85754	201.46	13.393	130571.69	0.0019641	0.10378	26.375	0.00337	1.53904	3.6201
130	77.09033	198.14	13.143	123014.51	0.0019975	0.10200	24.126	0.00334	1.53295	3.3701
135	76.31751	194.77	12.888	115753.25	0.0020331	0.10017	22.101	0.00331	1.52684	3.1451
140	75.53854	191.34	12.630	108778.56	0.0020711	0.09830	20.277	0.00328	1.52069	2.9427
145	74.75278	187.84	12.369	102081.21	0.0021119	0.09639	18.634	0.00325	1.51451	2.7607
150	73.95956	184.28	12.105	95652.21	0.0021558	0.09445	17.153	0.00321	1.50828	2.5974
155	73.15810	180.65	11.840	89482.74	0.0022031	0.09248	15.819	0.00318	1.50201	2.4509
160	72.34754	176.95	11.573	83564.20	0.0022542	0.09047	14.617	0.00314	1.49568	2.3199
165	71.52692	173.17	11.305	77888.16	0.0023096	0.08845	13.534	0.00309	1.48929	2.2031
170	70.69515	169.30	11.037	72446.47	0.0023700	0.08640	12.557	0.00305	1.48283	2.0993
175	69.85100	165.36	10.769	67231.15	0.0024360	0.08434	11.676	0.00300	1.47630	2.0075
180	68.99307	161.32	10.501	62234.52	0.0025085	0.08226	10.880	0.00295	1.46968	1.9269
185	68.11977	157.18	10.234	57449.11	0.0025883	0.08016	10.163	0.00289	1.46296	1.8567
190	67.22928	152.95	9.968	52867.78	0.0026767	0.07805	9.514	0.00284	1.45613	1.7964
195	66.31950	148.60	9.703	48483.68	0.0027751	0.07593	8.928	0.00278	1.44917	1.7455
200	65.38797	144.14	9.438	44290.30	0.0028853	0.07380	8.397	0.00271	1.44207	1.7036
205	64.43185	139.56	9.175	40281.53	0.0030094	0.07165	7.916	0.00265	1.43481	1.6705
210	63.44776	134.85	8.911	36451.74	0.0031502	0.06949	7.480	0.00258	1.42736	1.6460
215	62.43168	130.00	8.647	32795.84	0.0033112	0.06732	7.083	0.00251	1.41969	1.6304
220	61.37878	125.00	8.381	29309.43	0.0034969	0.06513	6.721	0.00243	1.41177	1.6239
225	60.28315	119.85	8.111	25989.02	0.0037134	0.06292	6.390	0.00235	1.40357	1.6271
230	59.13751	114.54	7.834	22832.32	0.0039688	0.06069	6.086	0.00226	1.39502	1.6410
235	57.91863	110.25	7.365	19831.52	0.0042791	0.05841	5.816	0.00214	1.38597	1.6909
240	56.64427	104.70	7.054	17094.91	0.0046160	0.05612	5.601	0.00205	1.37654	1.7362
245	55.28730	98.90	6.764	14458.31	0.0050775	0.05380	5.380	0.00194	1.36656	1.8079
250	53.82737	92.76	6.432	11979.72	0.0056450	0.05142	5.151	0.00182	1.35587	1.8884
255	52.23436	86.38	6.073	9664.46	0.0063995	0.04898	4.912	0.00170	1.34426	1.9957
260	50.46281	79.53	5.669	7491.27	0.0074631	0.04643	4.658	0.00155	1.33144	2.1436
265	48.43132	71.94	5.199	5476.61	0.0090469	0.04372	4.382	0.00139	1.31684	2.3484
270	46.00677	63.64	4.675	3658.67	0.0117265	0.04094	4.072	0.00119	1.29955	2.6718
275	42.81928	54.20	4.092	2012.87	0.0178420	0.03995	3.695	0.00096	1.27706	3.2198
280	37.52837	41.56	3.145	616.76	0.0426374	0.04068	3.142	0.00061	1.24030	4.9265
285	20.82422	32.75	2.265	135.54	0.0869687	0.03480	1.872	0.00059	1.12899	5.5133
290	16.32173	35.30	2.389	277.49	0.0308728	0.02374	1.628	0.00133	1.10019	2.6908
295	14.42331	37.88	2.456	360.12	0.0203169	0.02054	1.540	0.00185	1.08820	2.0771
300	13.20624	40.02	2.466	418.17	0.0154517	0.01888	1.490	0.00231	1.08056	1.7562
310	11.61396	44.03	2.481	497.43	0.0108864	0.01728	1.435	0.00310	1.07062	1.4328
320	10.54535	47.74	2.484	550.81	0.0086304	0.01650	1.407	0.00380	1.06399	1.2642
330	9.74495	51.25	2.481	590.12	0.0072540	0.01608	1.392	0.00444	1.05904	1.1592
340	9.10821	54.62	2.475	620.60	0.0063138	0.01583	1.386	0.00504	1.05511	1.0868
350	8.58183	57.87	2.467	645.05	0.0056244	0.01570	1.385	0.00562	1.05187	1.0337
360	8.13490	61.03	2.458	665.17	0.0050938	0.01564	1.388	0.00618	1.04912	0.9930
370	7.74785	64.11	2.449	682.01	0.0046707	0.01561	1.393	0.00673	1.04675	0.9619
380	7.40752	67.12	2.440	696.32	0.0043241	0.01563	1.401	0.00727	1.04466	0.9366
390	7.10462	70.09	2.431	708.62	0.0040342	0.01567	1.410	0.00780	1.04281	0.9155
400	6.83235	72.98	2.423	719.29	0.0037874	0.01574	1.420	0.00833	1.04115	0.8978
410	6.58560	75.83	2.415	728.62	0.0035744	0.01583	1.431	0.00887	1.03964	0.8826
420	6.36040	78.64	2.408	736.84	0.0033884	0.01593	1.444	0.00940	1.03827	0.8695
430	6.15364	81.41	2.401	744.12	0.0032243	0.01604	1.457	0.00993	1.03701	0.8581
440	5.96282	84.15	2.394	750.61	0.0030783	0.01617	1.470	0.01047	1.03585	0.8480
450	5.78592	86.86	2.388	756.42	0.0029475	0.01630	1.484	0.01100	1.03477	0.8391
460	5.62124	89.55	2.381	761.64	0.0028293	0.01644	1.498	0.01154	1.03377	0.8312
470	5.46741	92.21	2.375	766.35	0.0027221	0.01658	1.513	0.01208	1.03284	0.8242
480	5.32323	94.86	2.370	770.62	0.0026242	0.01673	1.527	0.01263	1.03196	0.8179
490	5.18772	97.48	2.364	774.51	0.0025344	0.01689	1.542	0.01318	1.03114	0.8122
500	5.06001	100.10	2.359	778.05	0.0024517	0.01705	1.558	0.01373	1.03037	0.8071
510	4.93938	102.70	2.353	781.29	0.0023752	0.01718	1.573	0.01426	1.02963	0.8039
520	4.82517	105.29	2.348	784.25	0.0023043	0.01736	1.588	0.01483	1.02894	0.7993
530	4.71683	107.87	2.343	786.99	0.0022382	0.01753	1.604	0.01539	1.02829	0.7952
540	4.61387	110.45	2.337	789.51	0.0021765	0.01771	1.619	0.01596	1.02766	0.7915
550	4.51586	113.03	2.332	791.84	0.0021187	0.01789	1.635	0.01654	1.02707	0.7882
560	4.42240	115.60	2.327	794.01	0.0020644	0.01806	1.651	0.01712	1.02651	0.7852
570	4.33316	118.18	2.321	796.03	0.0020133	0.01824	1.667	0.01770	1.02597	0.7825
580	4.24783	120.75	2.316	797.87	0.0019650	0.01842	1.682	0.01828	1.02545	0.7801
590	4.16613	123.32	2.310	799.61	0.0019195	0.01860	1.698	0.01886	1.02496	0.7779
600	4.08782	125.90	2.305	801.23	0.0018763	0.01879	1.714	0.01945	1.02448	0.7760

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

820 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 98.996	0.01223	2141.20	318.3	-83.088	-81.232	0.50250	0.267	0.396	3849
100	0.01225	2122.01	315.7	-82.694	-80.834	0.50650	0.266	0.396	3823
105	0.01236	2029.03	303.1	-80.731	-78.853	0.52582	0.261	0.396	3773
110	0.01248	1936.70	290.9	-78.769	-76.874	0.54424	0.257	0.396	3716
115	0.01260	1847.96	279.1	-76.808	-74.895	0.56183	0.253	0.396	3657
120	0.01272	1761.76	267.6	-74.848	-72.917	0.57867	0.250	0.396	3597
125	0.01284	1678.02	256.5	-72.889	-70.939	0.59482	0.246	0.396	3536
130	0.01297	1596.69	245.8	-70.929	-68.960	0.61034	0.243	0.396	3474
135	0.01310	1517.72	235.4	-68.970	-66.981	0.62528	0.239	0.396	3411
140	0.01324	1441.05	225.3	-67.010	-65.000	0.63969	0.236	0.396	3347
145	0.01338	1366.61	215.6	-65.049	-63.017	0.65360	0.233	0.397	3282
150	0.01352	1294.35	206.3	-63.085	-61.032	0.66706	0.230	0.397	3216
155	0.01367	1224.20	197.2	-61.120	-59.044	0.68009	0.228	0.398	3149
160	0.01382	1156.12	188.4	-59.151	-57.052	0.69274	0.225	0.399	3081
165	0.01398	1090.04	180.0	-57.179	-55.055	0.70503	0.223	0.400	3013
170	0.01414	1025.90	171.8	-55.200	-53.052	0.71699	0.220	0.401	2943
175	0.01431	963.64	163.8	-53.216	-51.042	0.72864	0.218	0.403	2873
180	0.01449	903.21	156.2	-51.225	-49.024	0.74001	0.216	0.405	2803
185	0.01468	844.55	148.8	-49.225	-46.996	0.75113	0.213	0.407	2731
190	0.01487	787.60	141.6	-47.214	-44.956	0.76201	0.211	0.409	2659
195	0.01508	732.31	134.6	-45.192	-42.903	0.77268	0.209	0.412	2586
200	0.01529	678.63	127.9	-43.155	-40.833	0.78316	0.207	0.416	2512
205	0.01552	626.49	121.3	-41.101	-38.745	0.79348	0.205	0.420	2437
210	0.01576	575.86	114.9	-39.026	-36.634	0.80365	0.203	0.425	2361
215	0.01601	526.69	108.7	-36.928	-34.497	0.81371	0.201	0.430	2284
220	0.01629	478.94	102.6	-34.802	-32.329	0.82366	0.199	0.437	2205
225	0.01658	432.59	96.6	-32.642	-30.124	0.83358	0.197	0.445	2125
230	0.01690	387.61	90.7	-30.442	-27.875	0.84346	0.196	0.454	2042
235	0.01726	343.90	85.0	-28.193	-25.542	0.85350	0.199	0.471	1942
240	0.01764	303.34	79.1	-25.833	-23.154	0.86355	0.198	0.483	1853
245	0.01807	263.13	73.6	-23.435	-20.691	0.87371	0.196	0.501	1764
250	0.01856	224.25	67.8	-20.952	-18.133	0.88404	0.195	0.522	1667
255	0.01912	186.80	62.0	-18.357	-15.453	0.89466	0.195	0.551	1564
260	0.01979	150.34	56.1	-15.612	-12.607	0.90571	0.195	0.590	1451
265	0.02061	115.06	49.8	-12.644	-9.518	0.91748	0.197	0.646	1324
270	0.02166	81.68	43.3	-9.359	-6.068	0.93038	0.199	0.737	1183
275	0.02324	49.39	36.4	-5.455	-1.926	0.94557	0.204	0.942	1027
280	0.02625	19.19	27.2	0.006	3.992	0.96688	0.220	1.595	803
285	0.04433	5.13	13.0	15.405	22.136	1.03100	0.256	3.659	583
290	0.05905	15.71	9.0	22.834	31.805	1.06469	0.222	1.183	622
295	0.06742	23.88	7.6	26.372	36.608	1.08113	0.208	0.806	655
300	0.07390	33.66	6.6	28.932	40.154	1.09308	0.199	0.635	673
310	0.08439	42.04	5.6	32.871	45.685	1.11121	0.189	0.488	710
320	0.09313	51.56	4.9	36.038	50.179	1.12548	0.182	0.417	740
330	0.10090	59.96	4.4	38.807	54.128	1.13764	0.177	0.375	767
340	0.10804	67.61	4.0	41.330	57.735	1.14841	0.174	0.348	791
350	0.11474	74.69	3.7	43.684	61.106	1.15818	0.172	0.328	813
360	0.12110	81.33	3.4	45.916	64.304	1.16719	0.170	0.313	833
370	0.12720	87.63	3.2	48.055	67.370	1.17559	0.168	0.301	853
380	0.13308	93.64	3.1	50.122	70.330	1.18349	0.167	0.291	871
390	0.13879	99.41	2.9	52.131	73.205	1.19095	0.166	0.284	888
400	0.14435	104.97	2.8	54.091	76.009	1.19806	0.165	0.277	905
410	0.14979	110.36	2.6	56.011	78.755	1.20483	0.164	0.272	921
420	0.15512	115.59	2.5	57.895	81.449	1.21133	0.163	0.267	937
430	0.16035	120.69	2.4	59.753	84.101	1.21757	0.162	0.263	952
440	0.16550	125.66	2.3	61.585	86.714	1.22357	0.162	0.260	966
450	0.17058	130.53	2.3	63.394	89.295	1.22937	0.161	0.257	980
460	0.17559	135.31	2.2	65.185	91.847	1.23498	0.161	0.254	994
470	0.18054	140.00	2.1	66.959	94.373	1.24042	0.161	0.251	1008
480	0.18545	144.61	2.1	68.718	96.877	1.24569	0.160	0.249	1021
490	0.19030	149.16	2.0	70.464	99.361	1.25081	0.160	0.247	1033
500	0.19512	153.64	1.9	72.199	101.827	1.25579	0.160	0.246	1046
510	0.19990	158.06	1.9	73.924	104.277	1.26064	0.160	0.244	1059
520	0.20464	162.43	1.8	75.640	106.712	1.26537	0.160	0.243	1070
530	0.20935	166.75	1.8	77.348	109.136	1.26999	0.159	0.242	1082
540	0.21403	171.03	1.7	79.049	111.547	1.27450	0.159	0.241	1094
550	0.21866	175.27	1.7	80.745	113.949	1.27890	0.159	0.240	1105
560	0.22331	179.48	1.7	82.435	116.342	1.28322	0.159	0.239	1117
570	0.22791	183.65	1.6	84.120	118.727	1.28744	0.159	0.238	1128
580	0.23250	187.79	1.6	85.802	121.105	1.29157	0.159	0.237	1139
590	0.23707	191.89	1.6	87.481	123.477	1.29563	0.159	0.237	1149
600	0.24161	195.97	1.5	89.157	125.844	1.29960	0.160	0.236	1160

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

820 PSIA ISOBAR

TEMPERATURE	DENSITY	$V(\partial H/\partial V)_p$	$V(\partial P/\partial U)_V$	$-V(\partial P/\partial V)_T$	$(\partial V/\partial T)_P/V$	THERMAL CONDUCTIVITY	VISCOSITY	THERMAL DIFFUSIVITY	DIELECTRIC CONSTANT	PRANDTL NUMBER
DEG. R	LB/CU FT	BTU/LB	PSIA-CU FT/BTU	PSIA	1/DEG. R	BTU/FT-HR-R	LB/FT-SEC x 10^5	SQ FT/HR		
* 98.996	81.77961	217.96	14.605	175106.69	0.0018179	0.11203	42.774	0.00346	1.57039	5.4467
100	81.63027	217.35	14.562	173219.97	0.0018228	0.11175	41.966	0.00346	1.56919	5.3560
105	80.84464	214.28	14.341	164036.59	0.0018479	0.11031	38.157	0.00344	1.56320	4.9322
110	80.13551	211.16	14.114	155198.71	0.0018743	0.10878	34.745	0.00343	1.55720	4.5511
115	79.38253	208.00	13.879	146696.06	0.0019023	0.10718	31.665	0.00341	1.55118	4.2092
120	78.62533	204.79	13.639	138518.53	0.0019318	0.10552	28.891	0.00339	1.54514	3.8996
125	77.86350	201.53	13.394	130656.35	0.0019632	0.10379	26.393	0.00337	1.53908	3.6218
130	77.09659	198.22	13.143	123099.63	0.0019965	0.10202	24.144	0.00334	1.53300	3.3717
135	76.32410	194.85	12.889	115838.85	0.0020320	0.10019	22.117	0.00332	1.52689	3.1466
140	75.54548	191.42	12.631	108864.65	0.0020700	0.09832	20.292	0.00328	1.52074	2.9441
145	74.76010	187.93	12.369	102167.81	0.0021107	0.09641	18.648	0.00325	1.51456	2.7620
150	73.96729	184.37	12.106	95739.33	0.0021544	0.09447	17.167	0.00322	1.50834	2.5985
155	73.16627	180.75	11.840	89570.41	0.0022016	0.09250	15.832	0.00318	1.50207	2.4520
160	72.35620	177.05	11.574	83652.42	0.0022525	0.09050	14.630	0.00314	1.49575	2.3209
165	71.53610	173.27	11.306	77976.97	0.0023078	0.08847	13.545	0.00309	1.48936	2.2040
170	70.70490	169.42	11.038	72535.84	0.0023680	0.08643	12.568	0.00305	1.48291	2.1001
175	69.86138	165.47	10.770	67321.23	0.0024338	0.08437	11.686	0.00300	1.47638	2.0082
180	69.00414	161.44	10.503	62325.23	0.0025059	0.08229	10.890	0.00295	1.46976	1.9275
185	68.13162	157.31	10.236	57540.53	0.0025855	0.08019	10.172	0.00289	1.46305	1.8572
190	67.24199	153.08	9.970	52959.93	0.0026735	0.07809	9.523	0.00284	1.45623	1.7968
195	66.33316	148.74	9.705	48576.60	0.0027715	0.07597	8.936	0.00278	1.44928	1.7457
200	65.40272	144.29	9.441	44384.03	0.0028811	0.07383	8.405	0.00272	1.44218	1.7037
205	64.44783	139.72	9.179	40376.13	0.0030046	0.07169	7.924	0.00265	1.43493	1.6704
210	63.46515	135.01	8.919	36547.26	0.0031445	0.06953	7.487	0.00258	1.42749	1.6458
215	62.45069	130.17	8.661	32892.33	0.0033045	0.06736	7.090	0.00251	1.41983	1.6299
220	61.39969	125.19	8.386	29406.96	0.0034890	0.06518	6.728	0.00243	1.41193	1.6231
225	60.30631	120.05	8.117	26087.63	0.0037039	0.06297	6.397	0.00235	1.40374	1.6260
230	59.16336	114.75	7.842	22932.06	0.0039570	0.06075	6.093	0.00226	1.39521	1.6396
235	57.94778	110.47	7.372	19928.29	0.0042646	0.05847	5.521	0.00214	1.38618	1.6885
240	56.67732	104.94	7.062	17192.24	0.0045983	0.05619	5.607	0.00205	1.37679	1.7335
245	55.32542	99.17	5.773	14557.68	0.0050531	0.05387	5.386	0.00194	1.36684	1.8040
250	53.87213	93.06	5.443	12080.88	0.0056119	0.05150	5.159	0.00183	1.35619	1.8833
255	52.28817	86.72	5.087	9767.32	0.0063527	0.04906	4.920	0.00170	1.34465	1.9889
260	50.52975	79.92	5.685	7596.39	0.0073879	0.04653	4.668	0.00156	1.33192	2.1324
265	48.51899	72.42	5.223	5582.74	0.0089242	0.04384	4.394	0.00140	1.31746	2.3320
270	46.13084	64.23	4.706	3767.94	0.0114789	0.04101	4.088	0.00121	1.30043	2.6459
275	43.12679	55.01	4.137	2124.89	0.0171221	0.03996	3.720	0.00099	1.27851	3.1558
280	38.09058	42.91	3.243	731.03	0.0371758	0.04022	3.198	0.00066	1.24417	4.5670
285	22.55895	32.62	2.248	115.67	0.1121408	0.03777	1.978	0.00046	1.14022	6.8978
290	16.93339	35.06	2.385	266.11	0.0337355	0.02472	1.662	0.00123	1.10407	2.8622
295	14.83284	37.64	2.458	354.16	0.0214113	0.02104	1.562	0.00176	1.09078	2.1531
300	13.53110	39.72	2.460	414.91	0.0159984	0.01919	1.507	0.00223	1.08260	1.7958
310	11.84961	43.82	2.486	498.21	0.0111473	0.01747	1.447	0.00302	1.07269	1.4558
320	10.73805	47.54	2.489	553.63	0.0087811	0.01665	1.416	0.00371	1.06518	1.2787
330	9.91090	51.06	2.486	594.29	0.0073533	0.01619	1.401	0.00435	1.06006	1.1693
340	9.25555	54.44	2.479	625.73	0.0063847	0.01593	1.393	0.00495	1.05602	1.0945
350	8.71530	57.71	2.471	650.93	0.0056777	0.01579	1.392	0.00553	1.05269	1.0397
360	8.25752	60.87	2.462	671.62	0.0051354	0.01572	1.394	0.00609	1.04987	0.9979
370	7.86171	63.96	2.453	688.93	0.0047041	0.01568	1.399	0.00663	1.04745	0.9660
380	7.51410	66.94	2.444	703.63	0.0043515	0.01569	1.406	0.00716	1.04532	0.9401
390	7.20504	69.94	2.435	716.26	0.0040571	0.01573	1.415	0.00769	1.04343	0.9187
400	6.92748	72.85	2.427	727.20	0.0038067	0.01579	1.425	0.00822	1.04173	0.9005
410	6.67610	75.71	2.419	736.77	0.0035909	0.01588	1.436	0.00875	1.04019	0.8851
420	6.44681	78.52	2.411	745.23	0.0034026	0.01598	1.448	0.00928	1.03880	0.8717
430	6.23642	81.30	2.404	752.65	0.0032367	0.01609	1.461	0.00980	1.03751	0.8600
440	6.04233	84.05	2.397	759.31	0.0030892	0.01621	1.474	0.01033	1.03633	0.8498
450	5.86247	86.76	2.391	765.25	0.0029571	0.01634	1.488	0.01086	1.03524	0.8408
460	5.69510	89.45	2.385	770.63	0.0028379	0.01648	1.502	0.01140	1.03422	0.8327
470	5.53879	92.12	2.379	775.43	0.0027297	0.01662	1.516	0.01194	1.03327	0.8256
480	5.39234	94.77	2.373	779.80	0.0026310	0.01677	1.531	0.01248	1.03238	0.8192
490	5.25473	97.40	2.367	783.77	0.0025406	0.01693	1.546	0.01302	1.03155	0.8134
500	5.12507	100.01	2.361	787.39	0.0024573	0.01708	1.561	0.01356	1.03076	0.8082
510	5.00262	102.62	2.356	790.71	0.0023803	0.01722	1.576	0.01409	1.03002	0.8050
520	4.88671	105.21	2.351	793.75	0.0023089	0.01739	1.591	0.01465	1.02932	0.8003
530	4.77678	107.80	2.345	796.54	0.0022424	0.01756	1.607	0.01521	1.02865	0.7961
540	4.67233	110.38	2.340	799.12	0.0021803	0.01774	1.622	0.01578	1.02802	0.7923
550	4.57290	112.96	2.335	801.51	0.0021222	0.01792	1.638	0.01634	1.02742	0.7890
560	4.47811	115.53	2.329	803.71	0.0020677	0.01809	1.654	0.01691	1.02684	0.7859
570	4.38761	118.11	2.324	805.76	0.0020163	0.01827	1.669	0.01749	1.02629	0.7832
580	4.30108	120.68	2.318	807.67	0.0019679	0.01845	1.685	0.01807	1.02577	0.7807
590	4.21824	123.26	2.313	809.43	0.0019221	0.01863	1.701	0.01864	1.02527	0.7786
600	4.13884	125.84	2.307	811.11	0.0018787	0.01881	1.717	0.01923	1.02479	0.7766

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

830 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 99.010	0.01223	2141.82	318.3	-83.087	-81.207	0.50252	0.267	0.396	3841
100	0.01225	2122.89	315.8	-82.698	-80.815	0.50646	0.266	0.396	3830
105	0.01236	2028.93	303.2	-80.735	-78.835	0.52578	0.261	0.396	3774
110	0.01248	1937.62	290.9	-78.773	-76.856	0.54420	0.257	0.396	3716
115	0.01260	1848.89	279.1	-76.813	-74.877	0.56179	0.253	0.396	3658
120	0.01272	1762.70	267.6	-74.853	-72.899	0.57863	0.250	0.396	3598
125	0.01284	1678.98	256.5	-72.894	-70.921	0.59477	0.246	0.396	3537
130	0.01297	1597.67	245.8	-70.936	-68.942	0.61029	0.243	0.396	3475
135	0.01310	1518.71	235.4	-68.976	-66.963	0.62523	0.239	0.396	3412
140	0.01324	1442.05	225.4	-67.017	-64.982	0.63964	0.236	0.396	3348
145	0.01337	1367.63	215.7	-65.056	-63.000	0.65355	0.233	0.397	3283
150	0.01352	1295.39	206.3	-63.093	-61.015	0.66700	0.230	0.397	3217
155	0.01367	1225.26	197.3	-61.124	-59.028	0.68004	0.224	0.398	3150
160	0.01382	1157.20	188.5	-59.160	-57.036	0.69268	0.225	0.399	3082
165	0.01398	1091.14	180.0	-57.187	-55.039	0.70497	0.223	0.400	3014
170	0.01414	1027.02	171.8	-55.210	-53.037	0.71693	0.220	0.401	2945
175	0.01431	964.78	163.9	-53.227	-51.027	0.72858	0.218	0.403	2875
180	0.01449	904.38	156.3	-51.236	-49.009	0.73995	0.216	0.404	2804
185	0.01467	845.74	148.8	-49.237	-46.982	0.75106	0.213	0.407	2733
190	0.01487	788.82	141.7	-47.226	-44.943	0.76194	0.211	0.409	2661
195	0.01507	733.56	134.7	-45.206	-42.890	0.77260	0.209	0.412	2588
200	0.01529	679.91	128.0	-43.170	-40.821	0.78308	0.207	0.416	2514
205	0.01551	627.80	121.4	-41.118	-38.733	0.79339	0.205	0.420	2439
210	0.01575	577.21	115.0	-39.045	-36.624	0.80356	0.203	0.424	2363
215	0.01601	528.08	108.8	-36.948	-34.488	0.81361	0.201	0.430	2286
220	0.01628	480.37	102.7	-34.824	-32.322	0.82357	0.199	0.436	2208
225	0.01658	434.05	96.7	-32.666	-30.119	0.83347	0.197	0.444	2127
230	0.01690	389.12	90.9	-30.469	-27.872	0.84334	0.196	0.454	2045
235	0.01725	345.40	85.1	-28.193	-25.542	0.85336	0.199	0.470	1945
240	0.01763	304.87	79.2	-25.864	-23.157	0.86340	0.198	0.482	1856
245	0.01806	264.74	73.7	-23.475	-20.699	0.87354	0.196	0.500	1768
250	0.01855	225.94	68.0	-20.998	-18.147	0.88385	0.195	0.521	1671
255	0.01911	188.57	62.2	-18.411	-15.475	0.89443	0.195	0.549	1569
260	0.01976	152.21	56.3	-15.678	-12.640	0.90544	0.195	0.587	1456
265	0.02057	117.04	50.1	-12.732	-9.570	0.91714	0.196	0.642	1331
270	0.02162	83.81	43.6	-9.474	-6.151	0.92992	0.199	0.729	1193
275	0.02313	51.72	36.8	-5.636	-2.081	0.94485	0.204	0.919	1039
280	0.02592	21.86	28.0	-0.421	3.563	0.96518	0.218	1.465	826
285	0.04043	4.22	14.4	13.179	19.393	1.02110	0.260	4.531	584
290	0.05683	14.44	9.4	22.372	30.806	1.06088	0.225	1.292	620
295	0.06552	22.79	7.9	25.867	35.937	1.07844	0.209	0.846	653
300	0.07214	29.71	6.8	28.539	39.626	1.09085	0.200	0.656	671
310	0.08272	41.26	5.7	32.586	45.298	1.10946	0.189	0.498	709
320	0.09146	50.89	5.0	35.808	49.866	1.12397	0.182	0.423	740
330	0.09922	59.37	4.5	38.611	53.861	1.13627	0.178	0.379	766
340	0.10634	67.08	4.1	41.157	57.500	1.14713	0.174	0.350	790
350	0.11308	74.21	3.8	43.529	60.896	1.15698	0.172	0.330	812
360	0.11932	80.90	3.5	45.775	64.114	1.16604	0.170	0.314	833
370	0.12537	87.24	3.3	47.926	67.195	1.17449	0.168	0.302	852
380	0.13121	93.29	3.1	50.002	70.169	1.18242	0.167	0.293	871
390	0.13688	99.08	3.0	52.019	73.055	1.18992	0.166	0.285	888
400	0.14239	104.67	2.8	53.985	75.870	1.19704	0.165	0.278	905
410	0.14778	110.08	2.7	55.911	78.624	1.20384	0.164	0.273	921
420	0.15306	115.34	2.6	57.802	81.326	1.21035	0.163	0.268	937
430	0.15824	120.45	2.5	59.663	83.984	1.21661	0.163	0.264	952
440	0.16335	125.45	2.4	61.499	86.604	1.22263	0.162	0.260	966
450	0.16837	130.34	2.3	63.312	89.191	1.22845	0.162	0.257	981
460	0.17334	135.13	2.2	65.107	91.748	1.23407	0.161	0.254	994
470	0.17824	139.83	2.1	66.884	94.279	1.23951	0.161	0.252	1009
480	0.18310	144.46	2.1	68.646	96.787	1.24479	0.160	0.250	1021
490	0.18791	149.02	2.0	70.394	99.274	1.24992	0.160	0.248	1034
500	0.19267	153.51	2.0	72.132	101.744	1.25491	0.160	0.246	1046
510	0.19740	157.94	1.9	73.859	104.197	1.25977	0.160	0.245	1059
520	0.20209	162.33	1.9	75.576	106.636	1.26450	0.160	0.243	1071
530	0.20675	166.66	1.8	77.286	109.063	1.26912	0.159	0.242	1083
540	0.21138	170.95	1.8	78.989	111.477	1.27364	0.159	0.241	1094
550	0.21598	175.20	1.7	80.686	113.882	1.27805	0.159	0.240	1106
560	0.22056	179.41	1.7	82.378	116.277	1.28236	0.159	0.239	1117
570	0.22512	183.59	1.6	84.065	118.664	1.28659	0.159	0.238	1128
580	0.22966	187.74	1.6	85.748	121.045	1.29073	0.159	0.238	1139
590	0.23417	191.85	1.6	87.428	123.419	1.29479	0.159	0.237	1150
600	0.23867	195.95	1.5	89.105	125.787	1.29877	0.160	0.237	1160

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

830 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.011	81.78218	218.02	14.605	175162.44	0.0018174	0.11204	42.792	0.00346	1.57041	5.4480
100	81.63498	217.41	14.562	173302.48	0.0018222	0.11176	41.991	0.00346	1.56923	5.3565
105	80.88957	214.34	14.341	164119.51	0.0018472	0.11032	38.191	0.00344	1.56324	4.9345
110	80.14067	211.23	14.114	155282.03	0.0018736	0.10879	34.768	0.00343	1.55724	4.5533
115	79.38794	208.07	13.880	146779.82	0.0019015	0.10719	31.686	0.00341	1.55122	4.2102
120	78.63100	204.87	13.640	138602.77	0.0019310	0.10553	28.911	0.00339	1.54519	3.9015
125	77.86946	201.61	13.394	130740.99	0.0019622	0.10381	26.412	0.00337	1.53913	3.6236
130	77.10285	198.30	13.144	123184.73	0.0019955	0.10203	24.161	0.00334	1.53305	3.3733
135	76.33069	194.93	12.889	115924.43	0.0020310	0.10021	22.134	0.00332	1.52694	3.1481
140	75.55242	191.51	12.631	108950.71	0.0020688	0.09834	20.308	0.00329	1.52080	2.9455
145	74.76742	188.02	12.370	102254.38	0.0021094	0.09643	18.663	0.00325	1.51462	2.7633
150	73.97501	184.47	12.106	95826.42	0.0021530	0.09449	17.181	0.00322	1.50840	2.5997
155	73.17444	180.85	11.841	89658.04	0.0022000	0.09252	15.845	0.00318	1.50213	2.4531
160	72.36484	177.15	11.574	83740.61	0.0022509	0.09052	14.642	0.00314	1.49581	2.3219
165	71.54527	173.38	11.307	78065.74	0.0023060	0.08850	13.557	0.00309	1.48943	2.2049
170	70.71464	169.53	11.039	72625.26	0.0023660	0.08646	12.579	0.00305	1.48299	2.1008
175	69.87175	165.59	10.771	67411.21	0.0024315	0.08439	11.696	0.00300	1.47646	2.0089
180	69.01521	161.56	10.504	62415.90	0.0025034	0.08232	10.900	0.00295	1.46985	1.9281
185	68.14345	157.44	10.238	57631.69	0.0025826	0.08022	10.181	0.00290	1.46314	1.8577
190	67.25468	153.21	9.972	53052.02	0.0026703	0.07812	9.532	0.00284	1.45632	1.7972
195	66.34681	148.88	9.707	48669.46	0.0027678	0.07600	8.945	0.00278	1.44938	1.7460
200	65.41744	144.44	9.444	44477.70	0.0028769	0.07387	8.413	0.00272	1.44229	1.7038
205	64.46378	139.87	9.181	40470.66	0.0029998	0.07173	7.932	0.00265	1.43505	1.6703
210	63.48249	135.18	8.919	36642.70	0.0031390	0.06957	7.495	0.00258	1.42762	1.6455
215	62.46966	130.35	8.656	32988.73	0.0032980	0.06741	7.097	0.00251	1.41997	1.6295
220	61.42054	125.37	8.391	29504.37	0.0034812	0.06522	6.735	0.00243	1.41209	1.6224
225	60.32938	120.24	8.123	26186.12	0.0036944	0.06302	6.404	0.00235	1.40391	1.6250
230	59.18911	114.96	7.849	23031.65	0.0039454	0.06080	6.100	0.00226	1.39541	1.6381
235	57.97679	110.69	7.379	20024.96	0.0042502	0.05852	5.826	0.00215	1.38640	1.6660
240	56.71020	105.19	7.071	17289.42	0.0045809	0.05625	5.612	0.00206	1.37703	1.7308
245	55.36331	99.44	6.782	14656.83	0.0050291	0.05393	5.393	0.00195	1.36711	1.8001
250	53.91656	93.37	6.454	12181.77	0.0055793	0.05157	5.166	0.00184	1.35652	1.8783
255	52.34145	87.06	6.101	9869.83	0.0063068	0.04915	4.929	0.00171	1.34504	1.9823
260	50.59586	80.36	5.701	7701.07	0.0073150	0.04663	4.678	0.00157	1.33240	2.1215
265	48.60516	72.89	5.246	5688.96	0.0088062	0.04395	4.406	0.00141	1.31808	2.3163
270	46.25170	64.81	4.737	3876.45	0.0112452	0.04107	4.103	0.00122	1.30129	2.6213
275	43.22462	55.77	4.181	2235.73	0.0164751	0.03997	3.743	0.00101	1.27990	3.0973
280	38.57824	44.17	3.331	843.37	0.0331747	0.03988	3.247	0.00071	1.24754	4.2949
285	24.73164	32.71	2.247	104.28	0.1385496	0.04007	2.118	0.00036	1.15439	8.6220
290	17.59704	34.83	2.381	254.15	0.0370858	0.02581	1.698	0.00114	1.10830	3.0605
295	15.26150	37.41	2.460	347.81	0.0226100	0.02158	1.584	0.00167	1.09348	2.2356
300	13.86242	39.49	2.463	411.80	0.0166203	0.01953	1.524	0.00215	1.08468	1.8431
310	12.38970	43.61	2.490	498.84	0.0114180	0.01768	1.459	0.00294	1.07359	1.4795
320	10.93329	47.35	2.494	556.34	0.0089356	0.01679	1.426	0.00363	1.06639	1.2934
330	10.07850	50.88	2.491	598.37	0.0074545	0.01631	1.409	0.00427	1.06110	1.1796
340	9.40405	54.27	2.484	630.81	0.0064566	0.01603	1.401	0.00486	1.05693	1.1022
350	8.84962	57.54	2.476	656.76	0.0057316	0.01587	1.398	0.00544	1.05351	1.0459
360	8.38080	60.72	2.467	678.04	0.0051774	0.01580	1.400	0.00600	1.05063	1.0029
370	7.97608	63.82	2.457	695.83	0.0047377	0.01575	1.404	0.00653	1.04815	0.9702
380	7.62110	66.85	2.448	710.92	0.0043790	0.01576	1.411	0.00706	1.04597	0.9437
390	7.30580	69.81	2.439	723.87	0.0040799	0.01579	1.420	0.00759	1.04404	0.9218
400	7.02288	72.72	2.431	735.10	0.0038260	0.01585	1.429	0.00811	1.04231	0.9033
410	6.76682	75.59	2.423	744.91	0.0036074	0.01593	1.440	0.00863	1.04075	0.8875
420	6.53342	78.41	2.415	753.54	0.0034169	0.01603	1.452	0.00916	1.03932	0.8739
430	6.31936	81.19	2.407	761.19	0.0032492	0.01614	1.465	0.00968	1.03802	0.8620
440	6.12198	83.94	2.401	767.99	0.0031001	0.01626	1.478	0.01020	1.03682	0.8516
450	5.93913	86.66	2.394	774.08	0.0029667	0.01639	1.491	0.01073	1.03570	0.8424
460	5.76905	89.36	2.388	779.56	0.0028464	0.01652	1.505	0.01126	1.03467	0.8343
470	5.61026	92.03	2.382	784.49	0.0027373	0.01666	1.520	0.01179	1.03371	0.8270
480	5.46153	94.68	2.376	788.97	0.0026379	0.01681	1.534	0.01233	1.03280	0.8205
490	5.32181	97.31	2.370	793.03	0.0025467	0.01696	1.549	0.01286	1.03195	0.8146
500	5.19019	99.93	2.364	796.74	0.0024629	0.01712	1.564	0.01340	1.03116	0.8094
510	5.06591	102.54	2.359	800.13	0.0023854	0.01725	1.579	0.01392	1.03040	0.8050
520	4.94830	105.13	2.353	803.24	0.0023135	0.01742	1.594	0.01446	1.02969	0.8013
530	4.83677	107.72	2.348	806.10	0.0022466	0.01760	1.610	0.01503	1.02901	0.7980
540	4.73081	110.31	2.343	808.73	0.0021842	0.01777	1.625	0.01559	1.02837	0.7952
550	4.62997	112.89	2.337	811.17	0.0021258	0.01795	1.641	0.01615	1.02776	0.7898
560	4.53384	115.46	2.332	813.43	0.0020709	0.01812	1.656	0.01672	1.02718	0.7867
570	4.44207	118.04	2.327	815.52	0.0020193	0.01830	1.672	0.01729	1.02662	0.7839
580	4.35433	120.61	2.321	817.47	0.0019707	0.01848	1.688	0.01786	1.02609	0.7814
590	4.27036	123.19	2.316	819.29	0.0019247	0.01866	1.703	0.01843	1.02559	0.7792
600	4.18987	125.77	2.310	820.99	0.0018811	0.01884	1.719	0.01901	1.02510	0.7772

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

840 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 99.024	0.01223	2142.43	318.3	-83.085	-81.183	0.50253	0.267	0.396	3841
100	0.01225	2123.78	315.6	-82.702	-80.797	0.50642	0.266	0.396	3830
105	0.01236	2029.83	303.2	-80.739	-78.816	0.52574	0.261	0.396	3774
110	0.01248	1938.53	291.0	-78.778	-76.837	0.54415	0.257	0.396	3717
115	0.01260	1849.82	279.1	-76.818	-74.859	0.56174	0.253	0.396	3659
120	0.01272	1763.64	267.7	-74.859	-72.881	0.57858	0.250	0.396	3599
125	0.01284	1679.93	256.6	-72.900	-70.903	0.59473	0.246	0.396	3538
130	0.01297	1598.64	245.9	-70.942	-68.924	0.61025	0.243	0.396	3476
135	0.01310	1519.70	235.5	-68.983	-66.945	0.62518	0.239	0.396	3413
140	0.01323	1443.06	225.5	-67.024	-64.965	0.63958	0.236	0.396	3349
145	0.01337	1368.66	215.8	-65.063	-62.983	0.65349	0.233	0.397	3283
150	0.01352	1296.43	206.4	-63.101	-60.999	0.66695	0.230	0.397	3216
155	0.01366	1226.32	197.3	-61.136	-59.011	0.67998	0.228	0.398	3151
160	0.01382	1158.28	188.5	-59.169	-57.019	0.69263	0.225	0.399	3083
165	0.01398	1092.24	180.1	-57.197	-55.023	0.70491	0.223	0.400	3015
170	0.01414	1028.14	171.9	-55.220	-53.021	0.71686	0.220	0.401	2946
175	0.01431	965.93	164.0	-53.238	-51.012	0.72851	0.218	0.403	2876
180	0.01449	905.55	156.3	-51.248	-48.995	0.73988	0.216	0.404	2805
185	0.01467	846.94	148.9	-49.250	-46.968	0.75099	0.213	0.406	2734
190	0.01487	790.04	141.7	-47.241	-44.929	0.76186	0.211	0.409	2662
195	0.01507	734.81	134.8	-45.221	-42.877	0.77252	0.209	0.412	2589
200	0.01528	681.18	128.0	-43.186	-40.809	0.78300	0.207	0.415	2516
205	0.01551	629.11	121.5	-41.135	-38.722	0.79331	0.205	0.419	2441
210	0.01575	578.55	115.1	-39.063	-36.614	0.80347	0.203	0.424	2365
215	0.01600	529.46	108.9	-36.969	-34.480	0.81351	0.201	0.430	2288
220	0.01628	481.79	102.8	-34.846	-32.315	0.82347	0.199	0.436	2210
225	0.01657	435.52	96.9	-32.691	-30.114	0.83336	0.197	0.444	2130
230	0.01689	390.63	91.0	-30.496	-27.869	0.84321	0.196	0.453	2047
235	0.01724	346.89	85.2	-28.224	-25.542	0.85322	0.199	0.470	1948
240	0.01762	306.41	79.3	-25.902	-23.161	0.86325	0.198	0.481	1859
245	0.01805	266.34	73.9	-23.514	-20.707	0.87337	0.196	0.499	1771
250	0.01853	227.62	68.1	-21.043	-18.160	0.88366	0.195	0.520	1675
255	0.01909	190.33	62.4	-18.465	-15.496	0.89421	0.195	0.547	1574
260	0.01974	154.07	56.5	-15.743	-12.673	0.90518	0.195	0.584	1462
265	0.02054	119.01	50.4	-12.815	-9.620	0.91680	0.196	0.638	1338
270	0.02157	85.92	43.9	-9.586	-6.232	0.92947	0.199	0.721	1202
275	0.02303	54.03	37.3	-5.811	-2.228	0.94416	0.203	0.898	1051
280	0.02563	24.45	28.7	-0.801	3.186	0.96366	0.216	1.365	846
285	0.03680	4.13	16.2	10.888	16.532	1.01081	0.260	4.784	594
290	0.05458	13.20	9.9	21.246	29.736	1.05683	0.228	1.420	617
295	0.06365	21.71	8.2	25.341	35.241	1.07567	0.211	0.890	651
300	0.07040	28.75	7.1	28.136	39.086	1.08861	0.201	0.679	678
310	0.08107	40.48	5.8	32.296	44.987	1.10771	0.190	0.588	708
320	0.08984	50.22	5.1	35.575	49.549	1.12246	0.183	0.429	739
330	0.09758	58.78	4.6	38.413	53.592	1.13490	0.178	0.383	766
340	0.10467	66.55	4.2	40.983	57.264	1.14587	0.175	0.353	790
350	0.11138	73.74	3.8	43.373	60.685	1.15578	0.172	0.332	812
360	0.11758	80.48	3.6	45.633	63.923	1.16490	0.170	0.316	833
370	0.12359	86.85	3.4	47.795	67.020	1.17339	0.168	0.304	852
380	0.12939	92.93	3.2	49.861	70.007	1.18136	0.167	0.294	871
390	0.13501	98.75	3.0	51.905	72.905	1.18889	0.166	0.286	888
400	0.14048	104.37	2.9	53.879	75.730	1.19604	0.165	0.279	905
410	0.14582	109.81	2.7	55.811	78.493	1.20286	0.164	0.274	921
420	0.15105	115.08	2.6	57.707	81.203	1.20939	0.163	0.269	937
430	0.15619	120.22	2.5	59.573	83.868	1.21566	0.163	0.264	952
440	0.16124	125.23	2.4	61.413	86.494	1.22170	0.162	0.261	966
450	0.16623	130.14	2.3	63.230	89.086	1.22752	0.162	0.258	980
460	0.17114	134.95	2.3	65.028	91.648	1.23316	0.161	0.255	994
470	0.17600	139.67	2.2	66.808	94.184	1.23861	0.161	0.252	1008
480	0.18081	144.31	2.1	68.573	96.697	1.24390	0.160	0.250	1021
490	0.18557	148.88	2.0	70.324	99.188	1.24904	0.160	0.248	1034
500	0.19028	153.38	2.0	72.064	101.661	1.25403	0.160	0.246	1046
510	0.19496	157.83	1.9	73.793	104.118	1.25890	0.160	0.245	1059
520	0.19960	162.22	1.9	75.513	106.560	1.26364	0.160	0.244	1071
530	0.20422	166.57	1.8	77.225	108.990	1.26827	0.159	0.242	1083
540	0.20880	170.87	1.8	78.929	111.407	1.27279	0.159	0.241	1094
550	0.21335	175.13	1.7	80.628	113.814	1.27720	0.159	0.240	1106
560	0.21788	179.35	1.7	82.321	116.212	1.28152	0.159	0.239	1117
570	0.22239	183.54	1.7	84.009	118.601	1.28575	0.159	0.239	1128
580	0.22688	187.69	1.6	85.694	120.984	1.28990	0.159	0.238	1139
590	0.23135	191.82	1.6	87.375	123.360	1.29396	0.159	0.237	1150
600	0.23580	195.92	1.6	89.053	125.730	1.29794	0.160	0.237	1161

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

840 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/ DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.024	81.78474	218.07	14.604	175218.19	0.0018168	0.11204	42.806	0.00346	1.57043	5.4492
100	81.63969	217.48	14.562	173384.97	0.0018216	0.11177	42.017	0.00346	1.56927	5.3611
105	80.89450	214.41	14.342	164202.40	0.0018466	0.11033	38.214	0.00344	1.56328	4.9369
110	80.14583	211.30	14.114	155365.35	0.0018729	0.10880	34.791	0.00343	1.55728	4.5554
115	79.39334	208.14	13.880	146863.56	0.0019007	0.10721	31.707	0.00341	1.55127	4.2123
120	78.63667	204.94	13.640	138686.95	0.0019301	0.10555	28.931	0.00339	1.54523	3.9034
125	77.87541	201.69	13.394	130825.61	0.0019613	0.10382	26.430	0.00337	1.53918	3.6253
130	77.10911	198.38	13.144	123269.61	0.0019945	0.10205	24.179	0.00334	1.53310	3.3750
135	76.33727	195.02	12.890	116009.98	0.0020299	0.10022	22.150	0.00332	1.52699	3.1496
140	75.55935	191.60	12.632	109036.75	0.0020677	0.09836	20.323	0.00329	1.52085	2.9469
145	74.77473	188.11	12.370	102340.92	0.0021082	0.09645	18.677	0.00325	1.51468	2.7646
150	73.98273	184.56	12.107	95913.49	0.0021517	0.09451	17.195	0.00322	1.50846	2.6009
155	73.18260	180.94	11.842	89745.54	0.0021985	0.09254	15.858	0.00318	1.50220	2.4542
160	72.37348	177.25	11.575	83828.76	0.0022492	0.09054	14.654	0.00314	1.49588	2.3229
165	71.55443	173.48	11.308	78154.48	0.0023042	0.08852	13.569	0.00309	1.48950	2.2057
170	70.72438	169.64	11.040	72714.60	0.0023640	0.08648	12.590	0.00305	1.48306	2.1016
175	69.88211	165.70	10.773	67501.18	0.0024293	0.08442	11.707	0.00300	1.47654	2.0095
180	69.02626	161.68	10.506	62506.52	0.0025009	0.08235	10.910	0.00295	1.46993	1.9286
185	68.15527	157.56	10.239	57723.20	0.0025798	0.08025	10.191	0.00290	1.46323	1.8582
190	67.26734	153.34	9.974	53144.06	0.0026671	0.07815	9.541	0.00284	1.45642	1.7975
195	66.36043	149.02	9.710	48762.25	0.0027642	0.07603	8.953	0.00278	1.44948	1.7462
200	65.43214	144.58	9.447	44571.30	0.0028728	0.07391	8.422	0.00272	1.44241	1.7039
205	64.47969	140.02	9.184	40565.11	0.0029950	0.07177	7.940	0.00265	1.43517	1.6702
210	63.49980	135.34	8.922	36738.05	0.0031334	0.06961	7.502	0.00259	1.42775	1.6453
215	62.48857	130.52	8.660	33085.03	0.0032914	0.06745	7.105	0.00251	1.42012	1.6290
220	61.44132	125.55	8.396	29601.68	0.0034734	0.06527	6.742	0.00244	1.41224	1.6217
225	60.35238	120.44	8.130	26284.48	0.0036850	0.06307	6.411	0.00235	1.40409	1.6240
230	59.21476	115.17	7.856	23131.11	0.0039339	0.06085	6.106	0.00227	1.39560	1.6367
235	58.00568	110.91	7.386	20121.55	0.0042359	0.05858	5.832	0.00215	1.38661	1.6636
240	56.74292	105.43	7.079	17386.43	0.0045636	0.05631	5.618	0.00206	1.37727	1.7282
245	55.40097	99.71	6.791	14755.76	0.0050055	0.05400	5.399	0.00195	1.36739	1.7964
250	53.96065	93.66	6.484	12282.40	0.0055474	0.05165	5.173	0.00184	1.35684	1.8734
255	52.39424	87.40	6.115	9972.00	0.0062619	0.04923	4.937	0.00172	1.34542	1.9757
260	50.66116	80.69	5.716	7805.33	0.0072441	0.04672	4.687	0.00158	1.33287	2.1109
265	48.68989	73.35	5.269	5794.69	0.0086926	0.04407	4.418	0.00142	1.31869	2.3011
270	46.36953	65.38	4.767	3984.24	0.0110244	0.04120	4.119	0.00123	1.30213	2.5944
275	43.41376	56.51	4.223	2345.50	0.0156899	0.03999	3.765	0.00103	1.28123	3.0436
280	39.01043	45.33	3.411	953.90	0.0301028	0.03963	3.291	0.00074	1.25052	4.0798
285	27.17599	33.19	2.291	112.14	0.1441473	0.04122	2.286	0.00032	1.17048	9.5522
290	18.32127	34.62	2.376	241.79	0.0410181	0.02701	1.739	0.00104	1.11292	3.2921
295	15.71103	37.19	2.462	341.13	0.0239249	0.02216	1.609	0.00159	1.09633	2.3252
300	14.20456	39.26	2.467	408.44	0.0172827	0.01989	1.542	0.00206	1.08683	1.8932
310	12.33437	43.41	2.495	499.34	0.0116988	0.01788	1.471	0.00285	1.07511	1.5041
320	11.13111	47.16	2.498	558.97	0.0090939	0.01694	1.436	0.00355	1.06762	1.3086
330	10.24778	50.70	2.495	602.39	0.0075576	0.01643	1.417	0.00418	1.06214	1.1902
340	9.55371	54.10	2.489	635.84	0.0065295	0.01613	1.408	0.00478	1.05785	1.1101
350	8.98479	57.38	2.480	662.54	0.0057861	0.01596	1.405	0.00535	1.05435	1.0521
360	8.50473	60.57	2.471	684.42	0.0052197	0.01587	1.406	0.00590	1.05139	1.0080
370	8.09096	63.67	2.462	702.69	0.0047716	0.01583	1.410	0.00644	1.04885	0.9745
380	7.72851	66.71	2.452	718.18	0.0044067	0.01582	1.416	0.00696	1.04663	0.9474
390	7.40690	69.68	2.443	731.47	0.0041029	0.01585	1.425	0.00749	1.04466	0.9249
400	7.11855	72.60	2.434	742.98	0.0038454	0.01591	1.434	0.00800	1.04298	0.9061
410	6.85778	75.47	2.426	753.03	0.0036248	0.01598	1.445	0.00852	1.04130	0.8900
420	6.62022	78.30	2.418	761.87	0.0034312	0.01608	1.456	0.00904	1.03985	0.8761
430	6.40246	81.09	2.411	769.70	0.0032616	0.01618	1.469	0.00956	1.03853	0.8640
440	6.20176	83.84	2.404	776.67	0.0031110	0.01630	1.482	0.01008	1.03730	0.8534
450	6.01592	86.56	2.397	782.90	0.0029763	0.01643	1.495	0.01060	1.03617	0.8441
460	5.84311	89.26	2.391	788.50	0.0028550	0.01656	1.509	0.01112	1.03512	0.8358
470	5.68182	91.94	2.385	793.56	0.0027450	0.01670	1.523	0.01165	1.03414	0.8284
480	5.53079	94.59	2.379	798.13	0.0026447	0.01685	1.538	0.01218	1.03322	0.8217
490	5.38894	97.23	2.373	802.29	0.0025529	0.01700	1.552	0.01271	1.03236	0.8158
500	5.25536	99.85	2.367	806.08	0.0024685	0.01716	1.567	0.01325	1.03155	0.8105
510	5.12925	102.46	2.362	809.55	0.0023904	0.01728	1.582	0.01376	1.03079	0.8071
520	5.00992	105.06	2.356	812.73	0.0023181	0.01746	1.597	0.01431	1.03006	0.8023
530	4.89679	107.65	2.351	815.65	0.0022509	0.01763	1.613	0.01486	1.02938	0.7980
540	4.78932	110.23	2.345	818.34	0.0021881	0.01780	1.628	0.01541	1.02873	0.7941
550	4.68705	112.81	2.340	820.83	0.0021294	0.01798	1.644	0.01597	1.02811	0.7906
560	4.58958	115.39	2.335	823.14	0.0020742	0.01816	1.659	0.01653	1.02752	0.7874
570	4.49654	117.97	2.329	825.28	0.0020224	0.01833	1.675	0.01709	1.02695	0.7846
580	4.40761	120.55	2.324	827.28	0.0019735	0.01851	1.690	0.01765	1.02642	0.7821
590	4.32248	123.13	2.318	829.13	0.0019273	0.01869	1.706	0.01822	1.02590	0.7798
600	4.24091	125.71	2.313	830.87	0.0018836	0.01887	1.722	0.01879	1.02541	0.7778

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

850 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	C_P	VELOCITY OF SOUND FT/SEC
* 99.036	0.01223	2143.05	316.3	-83.083	-81.159	0.50255	0.267	0.396	3642
100	0.01225	2124.67	315.9	-82.706	-80.778	0.50638	0.266	0.396	3631
105	0.01236	2030.73	303.3	-80.744	-78.798	0.52570	0.261	0.396	3775
110	0.01248	1939.45	291.0	-78.783	-76.819	0.54411	0.257	0.396	3718
115	0.01259	1850.75	279.2	-76.823	-74.848	0.56170	0.253	0.396	3659
120	0.01272	1764.59	267.7	-74.864	-72.863	0.57853	0.250	0.396	3599
125	0.01284	1680.89	256.6	-72.906	-70.885	0.59468	0.246	0.396	3539
130	0.01297	1599.61	245.9	-70.948	-68.907	0.61020	0.243	0.396	3476
135	0.01310	1520.69	235.5	-68.989	-66.928	0.62513	0.239	0.396	3413
140	0.01323	1444.07	225.5	-67.031	-64.948	0.63953	0.236	0.396	3349
145	0.01337	1369.68	215.8	-65.071	-62.966	0.65344	0.233	0.397	3284
150	0.01352	1297.47	206.4	-63.109	-60.982	0.66689	0.230	0.397	3218
155	0.01366	1227.38	197.4	-61.145	-58.994	0.67993	0.228	0.398	3152
160	0.01382	1159.36	188.6	-59.178	-57.003	0.69257	0.225	0.399	3084
165	0.01397	1093.34	180.1	-57.206	-55.007	0.70485	0.223	0.400	3016
170	0.01414	1029.26	172.0	-55.231	-53.005	0.71680	0.220	0.401	2947
175	0.01431	967.07	164.0	-53.249	-50.997	0.72845	0.218	0.402	2877
180	0.01448	906.71	156.4	-51.260	-48.980	0.73981	0.216	0.404	2807
185	0.01467	848.13	149.0	-49.262	-46.953	0.75092	0.213	0.406	2735
190	0.01486	791.26	141.8	-47.255	-44.915	0.76179	0.211	0.409	2663
195	0.01507	736.05	134.9	-45.235	-42.864	0.77245	0.209	0.412	2591
200	0.01528	682.46	128.1	-43.202	-40.797	0.78292	0.207	0.415	2517
205	0.01550	630.42	121.6	-41.152	-38.711	0.79322	0.205	0.419	2443
210	0.01574	579.90	115.2	-39.082	-36.604	0.80338	0.203	0.424	2367
215	0.01600	530.84	109.0	-36.989	-34.471	0.81342	0.201	0.429	2290
220	0.01627	483.21	102.9	-34.868	-32.308	0.82336	0.199	0.436	2212
225	0.01656	436.98	97.0	-32.715	-30.108	0.83324	0.197	0.443	2132
230	0.01688	392.14	91.1	-30.523	-27.866	0.84309	0.196	0.453	2050
235	0.01723	348.38	85.4	-28.254	-25.542	0.85309	0.199	0.469	1951
240	0.01761	307.94	79.5	-25.936	-23.164	0.86318	0.198	0.480	1863
245	0.01804	267.95	74.8	-23.553	-20.714	0.87320	0.196	0.498	1775
250	0.01852	229.29	68.3	-21.088	-18.174	0.88347	0.195	0.518	1679
255	0.01907	192.88	62.6	-18.518	-15.517	0.89399	0.195	0.546	1578
260	0.01971	155.92	56.7	-15.808	-12.705	0.90491	0.195	0.582	1467
265	0.02050	120.97	50.6	-12.896	-9.669	0.91648	0.196	0.634	1345
270	0.02151	88.02	44.2	-9.696	-6.318	0.92983	0.198	0.713	1210
275	0.02294	56.30	37.7	-5.978	-2.368	0.94350	0.203	0.879	1063
280	0.02538	26.98	29.4	-1.145	2.849	0.96229	0.214	1.284	866
285	0.03399	4.97	17.9	8.755	14.105	1.00287	0.248	4.160	622
290	0.05231	11.99	10.5	20.353	28.587	1.05253	0.231	1.572	615
295	0.06179	20.64	8.5	24.792	34.518	1.07283	0.213	0.938	658
300	0.06869	27.81	7.3	27.720	38.532	1.08633	0.203	0.782	668
310	0.07947	39.71	6.0	32.002	44.510	1.10595	0.191	0.618	707
320	0.08825	49.55	5.2	35.340	49.230	1.12894	0.183	0.635	738
330	0.09598	58.20	4.6	38.214	53.321	1.13354	0.178	0.387	765
340	0.10304	66.03	4.2	40.809	57.027	1.14460	0.175	0.356	789
350	0.10964	73.27	3.9	43.217	60.474	1.15459	0.172	0.334	812
360	0.11588	80.05	3.6	45.491	63.731	1.16377	0.170	0.318	832
370	0.12186	86.46	3.4	47.665	66.845	1.17230	0.169	0.305	852
380	0.12761	92.57	3.2	49.760	69.846	1.18031	0.167	0.295	870
390	0.13319	98.43	3.0	51.792	72.755	1.18786	0.166	0.287	888
400	0.13861	104.07	2.9	53.773	75.590	1.19504	0.165	0.280	905
410	0.14391	109.53	2.8	55.711	78.361	1.20189	0.164	0.274	921
420	0.14909	114.83	2.7	57.612	81.079	1.20844	0.163	0.269	937
430	0.15418	119.99	2.5	59.483	83.752	1.21472	0.163	0.265	952
440	0.15919	125.02	2.5	61.327	86.384	1.22078	0.162	0.261	966
450	0.16413	129.94	2.4	63.148	88.982	1.22661	0.162	0.258	981
460	0.16900	134.77	2.3	64.949	91.549	1.23226	0.161	0.255	994
470	0.17381	139.50	2.2	66.733	94.090	1.23772	0.161	0.253	1008
480	0.17857	144.16	2.1	68.500	96.606	1.24302	0.160	0.251	1021
490	0.18328	148.74	2.1	70.254	99.102	1.24816	0.160	0.249	1034
500	0.18795	153.26	2.0	71.996	101.579	1.25317	0.160	0.247	1047
510	0.19258	157.72	2.0	73.728	104.039	1.25804	0.160	0.245	1059
520	0.19718	162.12	1.9	75.449	106.485	1.26279	0.160	0.244	1071
530	0.20174	166.48	1.9	77.163	108.917	1.26742	0.160	0.243	1083
540	0.20628	170.79	1.8	78.869	111.337	1.27194	0.159	0.241	1095
550	0.21079	175.06	1.8	80.569	113.746	1.27637	0.159	0.240	1106
560	0.21527	179.29	1.7	82.264	116.147	1.28069	0.159	0.240	1118
570	0.21973	183.48	1.7	83.954	118.539	1.28492	0.159	0.239	1129
580	0.22417	187.65	1.7	85.639	120.923	1.28907	0.159	0.238	1140
590	0.22859	191.78	1.6	87.322	123.301	1.29314	0.159	0.238	1150
600	0.23299	195.89	1.6	89.001	125.673	1.29712	0.160	0.237	1161

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

850 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.036	81.78731	218.13	14.604	175273.94	0.0018163	0.11285	42.820	0.00346	1.57045	5.4505
100	81.64440	217.54	14.562	173467.45	0.0018209	0.11178	42.042	0.00346	1.56930	5.3636
105	80.89943	214.48	14.342	164285.29	0.0018459	0.11034	38.238	0.00345	1.56332	4.9392
110	80.15099	211.37	14.114	155448.65	0.0018722	0.10882	34.813	0.00343	1.55732	4.5576
115	79.39875	208.22	13.880	146947.28	0.0018999	0.10722	31.729	0.00341	1.55131	4.2143
120	78.64234	205.02	13.640	138771.10	0.0019293	0.10556	28.951	0.00339	1.54528	3.9053
125	77.88136	201.76	13.395	130910.21	0.0019604	0.10384	26.449	0.00337	1.53923	3.6271
130	77.11536	198.46	13.144	123354.87	0.0019936	0.10206	24.196	0.00335	1.53315	3.3766
135	76.34385	195.10	12.890	116095.52	0.0020288	0.10024	22.167	0.00332	1.52705	3.1511
140	75.56628	191.68	12.632	109122.77	0.0020665	0.09838	20.339	0.00329	1.52091	2.9483
145	74.78203	188.20	12.371	102427.44	0.0021069	0.09647	18.692	0.00325	1.51474	2.7659
150	73.99044	184.66	12.108	96000.52	0.0021503	0.09453	17.208	0.00322	1.50852	2.6021
155	73.19075	181.04	11.842	89833.21	0.0021970	0.09256	15.871	0.00318	1.50226	2.4552
160	72.38211	177.35	11.576	83916.89	0.0022476	0.09057	14.666	0.00314	1.49595	2.3239
165	71.56358	173.59	11.309	78243.18	0.0023023	0.08855	13.580	0.00310	1.48958	2.2066
170	70.73410	169.75	11.041	72803.89	0.0023619	0.08651	12.601	0.00305	1.48314	2.1024
175	69.89246	165.82	10.774	67591.10	0.0024270	0.08445	11.717	0.00300	1.47662	2.0102
180	69.03730	161.80	10.507	62597.10	0.0024984	0.08237	10.920	0.00295	1.47002	1.9292
185	68.16787	157.69	10.241	57814.46	0.0025770	0.08028	10.200	0.00290	1.46332	1.8586
190	67.27999	153.48	9.976	53236.03	0.0026640	0.07818	9.550	0.00284	1.45652	1.7979
195	66.37403	149.16	9.712	48854.99	0.0027606	0.07607	8.962	0.00278	1.44959	1.7464
200	65.44681	144.73	9.449	44664.84	0.0028687	0.07394	8.430	0.00272	1.44252	1.7040
205	64.49557	140.18	9.187	40659.49	0.0029902	0.07180	7.947	0.00266	1.43529	1.6702
210	63.51706	135.50	8.926	36833.31	0.0031279	0.06965	7.510	0.00259	1.42788	1.6450
215	62.50743	130.69	8.664	33181.24	0.0032849	0.06749	7.112	0.00252	1.42026	1.6286
220	61.46205	125.73	8.402	29698.89	0.0034657	0.06531	6.749	0.00244	1.41240	1.6210
225	60.37531	120.63	8.136	26382.73	0.0036757	0.06312	6.418	0.00236	1.40426	1.6229
230	59.24031	115.38	7.863	23230.43	0.0039224	0.06090	6.113	0.00227	1.39579	1.6353
235	58.03445	111.13	7.392	20216.06	0.0042218	0.05864	5.837	0.00215	1.38663	1.6613
240	56.77547	105.67	7.087	17483.29	0.0045465	0.05637	5.624	0.00207	1.37751	1.7256
245	55.43840	99.97	6.799	14854.48	0.0049821	0.05407	5.406	0.00196	1.36767	1.7926
250	54.00443	93.96	6.475	12382.76	0.0055159	0.05172	5.180	0.00185	1.35716	1.8686
255	52.44654	87.73	6.129	10073.83	0.0062179	0.04932	4.945	0.00172	1.34580	1.9693
260	50.72568	81.06	5.732	7909.16	0.0071751	0.04682	4.697	0.00159	1.33334	2.1006
265	48.77323	73.81	5.291	5899.95	0.0085832	0.04418	4.429	0.00143	1.31929	2.2864
270	46.48452	65.94	4.796	4091.35	0.0108153	0.04134	4.134	0.00125	1.30294	2.5674
275	43.59586	57.23	4.263	2454.26	0.0153574	0.04002	3.787	0.00104	1.28251	2.9941
280	39.39956	46.43	3.486	1062.87	0.0276616	0.03945	3.332	0.00078	1.25322	3.9044
285	29.41649	34.13	2.449	146.13	0.1224683	0.04153	2.451	0.00034	1.18536	6.8838
290	19.11606	34.45	2.370	229.29	0.0456255	0.02833	1.784	0.00094	1.11800	3.5641
295	16.18338	36.99	2.463	334.06	0.0253689	0.02278	1.634	0.00150	1.09932	2.4227
300	14.55819	39.85	2.470	484.84	0.0179894	0.02027	1.560	0.00196	1.08905	1.9463
310	12.58378	43.22	2.499	499.70	0.0119908	0.01810	1.484	0.00278	1.07667	1.5296
320	11.33158	46.97	2.503	561.58	0.0092563	0.01710	1.446	0.00347	1.06887	1.3241
330	10.41875	50.53	2.580	606.35	0.0076625	0.01655	1.426	0.00410	1.06320	1.2089
340	9.70456	53.93	2.494	640.81	0.0066034	0.01623	1.416	0.00470	1.05879	1.1181
350	9.12084	57.22	2.485	668.29	0.0058412	0.01605	1.412	0.00526	1.05518	1.0584
360	8.62932	60.42	2.475	690.77	0.0052624	0.01595	1.412	0.00581	1.05216	1.0131
370	8.20636	63.53	2.466	709.53	0.0048056	0.01590	1.416	0.00635	1.04956	0.9788
380	7.83632	66.57	2.456	725.42	0.0044345	0.01589	1.422	0.00687	1.04729	0.9518
390	7.50833	69.55	2.447	739.05	0.0041260	0.01591	1.430	0.00739	1.04528	0.9281
400	7.21450	72.48	2.438	750.84	0.0038649	0.01596	1.439	0.00790	1.04348	0.9089
410	6.94896	75.35	2.430	761.14	0.0036406	0.01604	1.449	0.00841	1.04186	0.8925
420	6.70721	78.19	2.422	770.20	0.0034455	0.01613	1.461	0.00893	1.04038	0.8783
430	6.48572	80.98	2.414	778.21	0.0032741	0.01623	1.473	0.00944	1.03903	0.8660
440	6.28168	83.74	2.407	785.34	0.0031219	0.01635	1.486	0.00995	1.03779	0.8553
450	6.09281	86.47	2.400	791.72	0.0029859	0.01647	1.499	0.01047	1.03664	0.8457
460	5.91726	89.17	2.394	797.45	0.0028635	0.01661	1.513	0.01099	1.03557	0.8373
470	5.75346	91.85	2.388	802.62	0.0027526	0.01674	1.527	0.01151	1.03458	0.8298
480	5.60012	94.50	2.382	807.29	0.0026516	0.01689	1.541	0.01204	1.03364	0.8230
490	5.45614	97.14	2.376	811.55	0.0025591	0.01704	1.556	0.01256	1.03277	0.8170
500	5.32058	99.77	2.370	815.42	0.0024740	0.01719	1.570	0.01309	1.03195	0.8116
510	5.19263	102.38	2.365	818.96	0.0023955	0.01732	1.585	0.01360	1.03117	0.8082
520	5.07159	104.98	2.359	822.21	0.0023227	0.01749	1.600	0.01414	1.03044	0.8033
530	4.95684	107.57	2.354	825.20	0.0022551	0.01766	1.616	0.01469	1.02974	0.7989
540	4.84786	110.16	2.348	827.96	0.0021920	0.01784	1.631	0.01524	1.02908	0.7949
550	4.74417	112.74	2.343	830.50	0.0021329	0.01801	1.646	0.01579	1.02845	0.7914
560	4.64535	115.32	2.337	832.86	0.0020775	0.01819	1.662	0.01634	1.02785	0.7882
570	4.55104	117.90	2.332	835.05	0.0020254	0.01836	1.677	0.01690	1.02728	0.7853
580	4.46089	120.48	2.327	837.08	0.0019763	0.01854	1.693	0.01745	1.02674	0.7828
590	4.37462	123.06	2.321	838.98	0.0019299	0.01872	1.709	0.01802	1.02622	0.7805
600	4.29195	125.65	2.315	840.75	0.0018860	0.01890	1.724	0.01858	1.02572	0.7784

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

660 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 99.052	0.01223	2143.66	318.4	-83.082	-81.135	0.58256	0.267	0.396	3842
100	0.01225	2125.56	315.9	-82.710	-80.760	0.58633	0.266	0.396	3832
105	0.01236	2031.64	303.3	-80.748	-78.779	0.52566	0.261	0.396	3776
110	0.01248	1940.36	291.1	-78.787	-76.801	0.54487	0.257	0.396	3718
115	0.01259	1851.68	279.2	-76.828	-74.822	0.56165	0.253	0.396	3660
120	0.01271	1765.53	267.8	-74.869	-72.844	0.57849	0.250	0.396	3600
125	0.01284	1681.85	256.7	-72.911	-70.867	0.59464	0.246	0.396	3539
130	0.01297	1600.59	246.0	-70.954	-68.889	0.61015	0.243	0.396	3477
135	0.01310	1521.68	235.6	-68.996	-66.910	0.62508	0.239	0.396	3414
140	0.01323	1445.07	225.6	-67.037	-64.930	0.63948	0.236	0.396	3350
145	0.01337	1370.78	215.9	-65.078	-62.949	0.65339	0.233	0.396	3285
150	0.01351	1298.51	206.5	-63.117	-60.965	0.66684	0.230	0.397	3219
155	0.01366	1228.44	197.4	-61.153	-58.978	0.67987	0.228	0.398	3153
160	0.01381	1160.44	188.7	-59.186	-56.987	0.69251	0.225	0.399	3085
165	0.01397	1094.44	180.2	-57.216	-54.991	0.70479	0.223	0.400	3017
170	0.01414	1030.38	172.0	-55.241	-52.990	0.71674	0.220	0.401	2948
175	0.01431	968.22	164.1	-53.260	-50.981	0.72838	0.218	0.402	2878
180	0.01448	907.88	156.5	-51.272	-48.965	0.73974	0.216	0.404	2808
185	0.01467	849.32	149.1	-49.275	-46.939	0.75085	0.213	0.406	2737
190	0.01486	792.48	141.9	-47.268	-44.902	0.76172	0.211	0.409	2665
195	0.01506	737.30	135.0	-45.250	-42.851	0.77237	0.209	0.412	2592
200	0.01528	683.74	128.2	-43.218	-40.785	0.78284	0.207	0.415	2519
205	0.01550	631.73	121.7	-41.169	-38.700	0.79313	0.205	0.419	2444
210	0.01574	581.24	115.3	-39.100	-36.594	0.80329	0.203	0.424	2369
215	0.01599	532.21	109.1	-37.009	-34.462	0.81332	0.201	0.429	2293
220	0.01626	484.62	103.0	-34.891	-32.300	0.82326	0.199	0.435	2215
225	0.01656	438.44	97.1	-32.740	-30.103	0.83313	0.197	0.443	2135
230	0.01687	393.64	91.2	-30.550	-27.863	0.84297	0.196	0.452	2053
235	0.01722	349.87	85.5	-28.285	-25.542	0.85295	0.199	0.469	1954
240	0.01760	309.46	79.6	-25.970	-23.167	0.86295	0.198	0.488	1866
245	0.01803	269.54	74.2	-23.592	-20.721	0.87304	0.196	0.497	1778
250	0.01850	230.96	68.5	-21.133	-18.186	0.88328	0.195	0.517	1683
255	0.01905	193.82	62.8	-18.571	-15.537	0.89377	0.195	0.544	1583
260	0.01969	157.76	57.8	-15.871	-12.736	0.90465	0.195	0.579	1473
265	0.02047	122.91	52.9	-12.977	-9.717	0.91615	0.196	0.630	1352
270	0.02146	90.09	44.6	-9.803	-6.386	0.92868	0.198	0.706	1219
275	0.02285	58.54	38.1	-6.139	-2.581	0.94286	0.202	0.861	1075
280	0.02515	29.44	30.8	-1.461	2.545	0.96184	0.213	1.216	884
285	0.03206	6.48	19.5	7.178	12.277	0.99543	0.242	3.411	658
290	0.05082	18.86	11.1	19.385	27.350	1.04793	0.234	1.749	613
295	0.05995	19.59	8.8	24.228	33.767	1.06990	0.214	0.992	648
300	0.06701	26.87	7.5	27.293	37.964	1.08482	0.204	0.728	667
310	0.07789	38.94	6.1	31.703	44.187	1.10418	0.191	0.529	707
320	0.08669	48.89	5.3	35.102	48.988	1.11943	0.184	0.441	737
330	0.09442	57.62	4.7	38.013	53.048	1.13218	0.179	0.391	764
340	0.10145	65.51	4.3	40.633	56.789	1.14335	0.175	0.359	789
350	0.10802	72.80	4.0	43.060	60.261	1.15341	0.172	0.337	811
360	0.11423	79.63	3.7	45.346	63.539	1.16265	0.170	0.320	832
370	0.12016	86.08	3.5	47.534	66.669	1.17122	0.169	0.307	852
380	0.12587	92.22	3.3	49.638	69.684	1.17926	0.167	0.296	870
390	0.13140	98.11	3.1	51.679	72.605	1.18685	0.166	0.286	888
400	0.13679	103.78	2.9	53.667	75.450	1.19405	0.165	0.281	905
410	0.14204	109.26	2.8	55.611	78.230	1.20092	0.164	0.275	921
420	0.14718	114.58	2.7	57.518	80.956	1.20749	0.163	0.270	937
430	0.15223	119.76	2.6	59.393	83.635	1.21379	0.163	0.266	952
440	0.15719	124.81	2.5	61.241	86.274	1.21986	0.162	0.262	966
450	0.16208	129.75	2.4	63.066	88.877	1.22571	0.162	0.259	981
460	0.16690	134.59	2.3	64.871	91.450	1.23136	0.161	0.256	995
470	0.17167	139.34	2.2	66.657	93.995	1.23684	0.161	0.253	1008
480	0.17638	144.01	2.2	68.428	96.516	1.24215	0.161	0.251	1021
490	0.18105	148.60	2.1	70.184	99.016	1.24730	0.160	0.249	1034
500	0.18567	153.13	2.0	71.929	101.496	1.25231	0.160	0.247	1047
510	0.19026	157.60	2.0	73.662	103.960	1.25719	0.160	0.246	1059
520	0.19481	162.02	1.9	75.386	106.409	1.26194	0.160	0.244	1071
530	0.19933	166.39	1.9	77.101	108.844	1.26658	0.160	0.243	1083
540	0.20381	170.71	1.8	78.809	111.267	1.27111	0.159	0.242	1095
550	0.20828	174.99	1.8	80.511	113.679	1.27554	0.159	0.241	1107
560	0.21271	179.23	1.8	82.207	116.082	1.27987	0.159	0.240	1118
570	0.21713	183.43	1.7	83.898	118.476	1.28410	0.159	0.239	1129
580	0.22152	187.61	1.7	85.585	120.862	1.28826	0.159	0.238	1140
590	0.22590	191.75	1.6	87.268	123.242	1.29232	0.159	0.238	1151
600	0.23026	195.86	1.6	88.949	125.617	1.29631	0.160	0.237	1161

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

860 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.052	81.78988	218.18	14.603	175329.68	0.0018157	0.11206	42.835	0.00346	1.57047	5.4518
100	81.64911	217.61	14.563	173549.91	0.0018203	0.11179	42.068	0.00346	1.56934	5.3661
105	80.90435	214.54	14.342	164368.16	0.0018452	0.11035	38.262	0.00345	1.56336	4.9416
110	80.15614	211.44	14.119	155531.93	0.0018715	0.10883	34.835	0.00343	1.55736	4.5598
115	79.40415	208.29	13.881	147030.98	0.0018992	0.10723	31.750	0.00341	1.55135	4.2163
120	78.64801	205.09	13.648	138855.24	0.0019285	0.10557	28.971	0.00339	1.54532	3.9072
125	77.88731	201.84	13.395	130994.79	0.0019595	0.10385	26.468	0.00337	1.53927	3.6288
130	77.12161	198.54	13.145	123439.91	0.0019926	0.10208	24.214	0.00335	1.53320	3.3782
135	76.35042	195.18	12.890	116181.02	0.0020278	0.10026	22.183	0.00332	1.52710	3.1526
140	75.57320	191.77	12.632	109208.76	0.0020654	0.09839	20.354	0.00329	1.52096	2.9497
145	74.78933	188.29	12.372	102513.93	0.0021057	0.09649	18.707	0.00325	1.51479	2.7672
150	73.99814	184.75	12.108	96087.53	0.0021489	0.09455	17.222	0.00322	1.50858	2.6033
155	73.19889	181.14	11.843	89928.74	0.0021956	0.09258	15.884	0.00318	1.50233	2.4563
160	72.39073	177.45	11.577	84004.98	0.0022459	0.09059	14.679	0.00314	1.49602	2.3248
165	71.57272	173.70	11.310	78331.84	0.0023005	0.08857	13.592	0.00310	1.48965	2.2075
170	70.74381	169.86	11.042	72893.15	0.0023599	0.08653	12.612	0.00305	1.48321	2.1032
175	69.90279	165.93	10.775	67680.98	0.0024248	0.08448	11.728	0.00300	1.47670	2.0109
180	69.04832	161.92	10.509	62687.63	0.0024959	0.08240	10.930	0.00295	1.47010	1.9298
185	68.17885	157.82	10.243	57905.67	0.0025742	0.08031	10.210	0.00290	1.46341	1.8591
190	67.29262	153.61	9.978	53327.96	0.0026608	0.07821	9.559	0.00284	1.45661	1.7982
195	66.38768	149.30	9.715	48947.66	0.0027570	0.07610	8.970	0.00278	1.44969	1.7467
200	65.46144	144.87	9.452	44758.30	0.0028646	0.07398	8.438	0.00272	1.44263	1.7041
205	64.51141	140.33	9.191	40753.78	0.0029855	0.07184	7.955	0.00266	1.43541	1.6701
210	63.53428	135.66	8.930	36928.49	0.0031224	0.06969	7.517	0.00259	1.42801	1.6448
215	62.52624	130.86	8.669	33277.36	0.0032785	0.06753	7.119	0.00252	1.42040	1.6281
220	61.48271	125.92	8.407	29795.98	0.0034580	0.06536	6.756	0.00244	1.41255	1.6203
225	60.39815	120.83	8.142	26480.85	0.0036664	0.06317	6.424	0.00236	1.40443	1.6219
230	59.26576	115.59	7.870	23329.62	0.0039111	0.06096	6.120	0.00228	1.39598	1.6339
235	58.06309	111.35	7.599	20314.46	0.0042079	0.05869	5.842	0.00216	1.38704	1.6789
240	56.80787	105.91	7.095	17580.00	0.0045297	0.05643	5.630	0.00207	1.37775	1.7230
245	55.47561	100.23	6.806	14952.99	0.0049591	0.05413	5.412	0.00196	1.36794	1.7898
250	54.04788	94.26	6.486	12482.86	0.0054650	0.05180	5.187	0.00185	1.35748	1.8639
255	52.49836	88.07	6.143	10175.33	0.0061749	0.04940	4.953	0.00173	1.34618	1.9630
260	50.78944	81.44	5.747	8012.60	0.0071081	0.04691	4.706	0.00160	1.33380	2.0906
265	48.85524	74.26	5.313	6004.75	0.0084776	0.04429	4.441	0.00144	1.31987	2.2723
270	46.59682	66.49	4.824	4197.79	0.0106169	0.04148	4.148	0.00126	1.30374	2.5416
275	43.76924	57.93	4.301	2562.10	0.0148703	0.04005	3.808	0.00106	1.28373	2.9482
280	39.75420	47.47	3.555	1170.46	0.0256690	0.03932	3.369	0.00081	1.25568	3.7577
285	31.18692	35.43	2.576	202.88	0.0962671	0.04136	2.590	0.00039	1.19720	7.6903
290	19.99245	34.31	2.366	217.09	0.0509685	0.02975	1.835	0.00085	1.12363	3.8842
295	16.68067	36.79	2.464	326.74	0.0269593	0.02345	1.661	0.00142	1.10247	2.5290
300	14.92401	38.84	2.474	401.01	0.0187429	0.02067	1.580	0.00190	1.09136	2.0026
310	12.83808	43.03	2.504	499.95	0.0122920	0.01832	1.497	0.00270	1.07826	1.5560
320	11.53475	46.79	2.508	563.95	0.0094226	0.01725	1.456	0.00339	1.07013	1.3400
330	10.59144	50.35	2.505	610.25	0.0077693	0.01667	1.435	0.00402	1.06427	1.2118
340	9.85668	53.77	2.498	645.74	0.0066783	0.01633	1.423	0.00462	1.05972	1.1262
350	9.25776	57.07	2.490	674.00	0.0058968	0.01614	1.418	0.00518	1.05603	1.0647
360	8.75458	60.27	2.480	697.09	0.0053054	0.01603	1.418	0.00573	1.05293	1.0182
370	8.32228	63.39	2.470	716.35	0.0048399	0.01597	1.421	0.00625	1.05027	0.9831
380	7.94455	66.44	2.460	732.64	0.0044624	0.01595	1.427	0.00677	1.04795	0.9547
390	7.61089	69.43	2.451	746.61	0.0041492	0.01597	1.435	0.00729	1.04590	0.9313
400	7.31872	72.36	2.442	758.69	0.0038845	0.01602	1.444	0.00780	1.04407	0.9117
410	7.06037	75.24	2.433	769.24	0.0036573	0.01609	1.454	0.00831	1.04242	0.8950
420	6.79439	78.08	2.425	778.51	0.0034599	0.01618	1.465	0.00881	1.04092	0.8806
430	6.56914	80.87	2.418	786.71	0.0032865	0.01628	1.477	0.00932	1.03954	0.8681
440	6.36173	83.64	2.410	794.01	0.0031329	0.01639	1.490	0.00983	1.03828	0.8571
450	6.16983	86.37	2.403	800.53	0.0029956	0.01652	1.503	0.01035	1.03711	0.8474
460	5.99151	89.07	2.397	806.39	0.0028720	0.01665	1.516	0.01086	1.03602	0.8388
470	5.82519	91.76	2.391	811.67	0.0027602	0.01678	1.530	0.01138	1.03501	0.8312
480	5.66953	94.42	2.385	816.45	0.0026584	0.01693	1.544	0.01190	1.03407	0.8243
490	5.52341	97.06	2.379	820.80	0.0025652	0.01708	1.559	0.01242	1.03318	0.8182
500	5.38586	99.69	2.373	824.76	0.0024796	0.01723	1.574	0.01294	1.03234	0.8127
510	5.25606	102.30	2.367	828.38	0.0024006	0.01735	1.588	0.01344	1.03155	0.8092
520	5.13329	104.90	2.362	831.70	0.0023273	0.01752	1.603	0.01398	1.03081	0.8043
530	5.01692	107.50	2.356	834.75	0.0022593	0.01769	1.619	0.01452	1.03010	0.7998
540	4.90642	110.09	2.351	837.57	0.0021958	0.01787	1.634	0.01506	1.02943	0.7958
550	4.80130	112.67	2.346	840.17	0.0021364	0.01804	1.649	0.01561	1.02880	0.7922
560	4.70114	115.26	2.340	842.57	0.0020808	0.01822	1.665	0.01616	1.02819	0.7889
570	4.60554	117.84	2.335	844.81	0.0020284	0.01839	1.680	0.01671	1.02761	0.7860
580	4.51419	120.42	2.329	846.89	0.0019791	0.01857	1.696	0.01726	1.02706	0.7834
590	4.42677	123.00	2.324	848.83	0.0019325	0.01875	1.711	0.01782	1.02653	0.7811
600	4.34301	125.58	2.318	850.64	0.0018884	0.01892	1.727	0.01837	1.02603	0.7790

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

870 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p BTU / LB -R	VELOCITY OF SOUND FT/SEC
* 99.067	0.01223	2144.27	318.4	-83.080	-81.111	0.50258	0.267	0.396	3843
100	0.01225	2126.45	316.8	-82.714	-80.741	0.50629	0.266	0.396	3832
105	0.01236	2032.54	303.3	-80.752	-78.761	0.52561	0.261	0.396	3776
110	0.01247	1941.28	291.1	-78.792	-76.782	0.54482	0.257	0.396	3719
115	0.01259	1852.61	279.3	-76.833	-74.804	0.56161	0.253	0.396	3661
120	0.01271	1766.47	267.8	-74.875	-72.826	0.57844	0.250	0.395	3601
125	0.01284	1682.81	256.7	-72.917	-70.849	0.59459	0.246	0.395	3540
130	0.01297	1601.56	246.8	-70.960	-68.871	0.61010	0.243	0.396	3478
135	0.01310	1522.67	235.6	-69.002	-66.893	0.62503	0.239	0.396	3415
140	0.01323	1446.08	225.6	-67.044	-64.913	0.63943	0.236	0.396	3351
145	0.01337	1371.73	215.9	-65.085	-62.931	0.65334	0.233	0.396	3286
150	0.01351	1299.55	206.5	-63.124	-60.948	0.66679	0.230	0.397	3220
155	0.01366	1229.50	197.5	-61.161	-58.961	0.67982	0.228	0.398	3154
160	0.01381	1161.52	188.7	-59.195	-56.970	0.69245	0.225	0.398	3086
165	0.01397	1095.54	180.3	-57.226	-54.975	0.70473	0.223	0.400	3018
170	0.01413	1031.50	172.1	-55.251	-52.974	0.71668	0.220	0.401	2949
175	0.01430	969.36	164.2	-53.271	-50.966	0.72832	0.218	0.402	2879
180	0.01448	909.05	156.5	-51.283	-48.950	0.73968	0.216	0.404	2809
185	0.01466	850.51	149.1	-49.287	-46.925	0.75078	0.213	0.406	2738
190	0.01486	793.78	142.0	-47.282	-44.888	0.76164	0.211	0.409	2666
195	0.01506	738.55	135.8	-45.264	-42.838	0.77229	0.209	0.411	2594
200	0.01527	685.01	128.3	-43.233	-40.773	0.78276	0.207	0.415	2520
205	0.01550	633.04	121.8	-41.186	-38.689	0.79305	0.205	0.419	2446
210	0.01574	582.58	115.4	-39.119	-36.584	0.80320	0.203	0.423	2371
215	0.01599	533.59	109.2	-37.029	-34.453	0.81322	0.201	0.429	2295
220	0.01626	486.04	103.1	-34.913	-32.293	0.82315	0.199	0.435	2217
225	0.01655	439.89	97.2	-32.764	-30.098	0.83302	0.197	0.443	2137
230	0.01687	395.15	91.4	-30.577	-27.860	0.84285	0.196	0.452	2056
235	0.01721	351.36	85.6	-28.315	-25.542	0.85282	0.199	0.468	1957
240	0.01759	310.99	79.8	-26.004	-23.170	0.86281	0.198	0.479	1869
245	0.01801	271.13	74.3	-23.631	-20.729	0.87287	0.196	0.496	1782
250	0.01849	232.62	68.6	-21.177	-18.199	0.88309	0.195	0.516	1687
255	0.01903	195.56	63.0	-18.623	-15.557	0.89356	0.195	0.542	1588
260	0.01966	159.59	57.2	-15.935	-12.767	0.90439	0.195	0.576	1478
265	0.02043	124.64	51.2	-13.056	-9.764	0.91583	0.196	0.626	1359
270	0.02141	92.14	44.9	-9.909	-6.459	0.92819	0.198	0.699	1228
275	0.02276	60.75	38.5	-6.295	-2.628	0.94224	0.202	0.845	1086
280	0.02495	31.66	30.7	-1.752	2.268	0.95988	0.211	1.163	902
285	0.03073	8.36	20.8	5.972	10.922	0.99048	0.237	2.817	679
290	0.04771	9.82	11.7	18.333	26.019	1.04303	0.237	1.951	612
295	0.05812	18.55	9.2	23.621	32.984	1.06687	0.216	1.051	647
300	0.06535	25.94	7.8	26.854	37.381	1.08166	0.205	0.755	666
310	0.07635	38.18	6.3	31.399	43.699	1.10241	0.192	0.540	706
320	0.08517	48.23	5.4	34.861	48.583	1.11792	0.184	0.447	737
330	0.09289	57.04	4.8	37.810	52.774	1.13082	0.179	0.395	764
340	0.09990	65.00	4.4	40.456	56.550	1.14209	0.175	0.362	788
350	0.10643	72.34	4.0	42.902	60.048	1.15224	0.173	0.339	811
360	0.11261	79.21	3.8	45.205	63.346	1.16153	0.171	0.322	832
370	0.11850	85.69	3.5	47.402	66.493	1.17015	0.169	0.308	852
380	0.12417	91.87	3.3	49.517	69.521	1.17823	0.167	0.298	870
390	0.12966	97.79	3.1	51.565	72.454	1.18585	0.166	0.289	888
400	0.13500	103.48	3.0	53.560	75.309	1.19307	0.165	0.282	905
410	0.14021	108.99	2.9	55.510	78.099	1.19996	0.164	0.276	921
420	0.14531	114.33	2.7	57.423	80.832	1.20655	0.164	0.271	937
430	0.15031	119.53	2.6	59.303	83.519	1.21287	0.163	0.266	952
440	0.15523	124.60	2.5	61.155	86.164	1.21895	0.162	0.263	967
450	0.16008	129.56	2.4	62.984	88.773	1.22481	0.162	0.259	981
460	0.16486	134.41	2.3	64.792	91.351	1.23048	0.161	0.256	995
470	0.16958	139.18	2.3	66.581	93.901	1.23596	0.161	0.254	1008
480	0.17425	143.86	2.2	68.355	96.426	1.24128	0.161	0.251	1021
490	0.17887	148.47	2.1	70.114	98.930	1.24644	0.160	0.249	1034
500	0.18345	153.01	2.1	71.861	101.414	1.25146	0.160	0.248	1047
510	0.18799	157.49	2.0	73.596	103.881	1.25635	0.160	0.246	1060
520	0.19249	161.92	2.0	75.322	106.333	1.26111	0.160	0.244	1072
530	0.19697	166.30	1.9	77.040	106.771	1.26575	0.160	0.243	1084
540	0.20141	170.63	1.9	78.749	111.197	1.27029	0.159	0.242	1095
550	0.20583	174.92	1.8	80.453	113.611	1.27472	0.159	0.241	1107
560	0.21022	179.17	1.8	82.150	116.017	1.27905	0.159	0.240	1118
570	0.21459	183.38	1.7	83.842	118.413	1.28329	0.159	0.239	1129
580	0.21894	187.56	1.7	85.531	120.802	1.28745	0.159	0.239	1140
590	0.22327	191.72	1.7	87.215	123.184	1.29152	0.159	0.238	1151
600	0.22758	195.84	1.6	88.897	125.560	1.29551	0.160	0.237	1162

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

870 PSIA ISOBAR

TEMPERATURE	DENSITY	$V(\partial H/\partial V)_P$	$V(\partial P/\partial U)_V$	$-V(\partial P/\partial V)_T$	$(\partial V/\partial T)_P/V$	THERMAL CONDUCTIVITY	VISCOSITY	THERMAL DIFFUSIVITY	DIELECTRIC CONSTANT	PRANDTL NUMBER
DEG. R	LB/CU FT	BTU/LB	PSIA-CU FT/BTU	PSIA	1/DEG. R	BTU/FT-HR-R	LB/FT-SEC x 10^5	SQ FT/HR		
* 99.067	81.79244	218.24	14.603	175385.42	0.0018152	0.11206	42.849	0.00346	1.57050	5.4531
100	81.65381	217.67	14.563	173632.37	0.0018197	0.11180	42.093	0.00346	1.56938	5.3686
105	80.90927	214.61	14.342	164451.01	0.0018445	0.11036	38.286	0.00345	1.56340	4.9439
110	80.16130	211.51	14.115	155615.19	0.0018707	0.10884	34.858	0.00343	1.55740	4.5620
115	79.40955	208.36	13.881	147114.67	0.0018984	0.10725	31.771	0.00341	1.55140	4.2184
120	78.65367	205.16	13.641	138939.36	0.0019276	0.10559	28.990	0.00339	1.54537	3.9090
125	77.89325	201.92	13.395	131079.36	0.0019587	0.10387	26.486	0.00337	1.53932	3.6306
130	77.12786	198.62	13.145	123524.93	0.0019916	0.10210	24.231	0.00335	1.53325	3.3798
135	76.35699	195.27	12.891	116266.51	0.0020267	0.10026	22.200	0.00332	1.52715	3.1541
140	75.58012	191.85	12.633	109294.73	0.0020642	0.09841	20.370	0.00329	1.52102	2.9510
145	74.79662	188.38	12.372	102600.40	0.0021044	0.09651	18.721	0.00325	1.51485	2.7685
150	74.00584	184.84	12.109	96174.51	0.0021476	0.09457	17.236	0.00322	1.50864	2.6045
155	73.20703	181.24	11.844	90008.25	0.0021941	0.09261	15.897	0.00318	1.50239	2.4574
160	72.39934	177.56	11.578	84093.04	0.0022443	0.09061	14.691	0.00314	1.49608	2.3258
165	71.58185	173.80	11.311	78420.47	0.0022987	0.08860	13.603	0.00310	1.48972	2.2084
170	70.75351	169.97	11.044	72982.37	0.0023579	0.08656	12.623	0.00305	1.48329	2.1040
175	69.91311	166.05	10.777	67770.82	0.0024226	0.08450	11.736	0.00300	1.47678	2.0116
180	69.05932	162.04	10.510	62778.11	0.0024934	0.08243	10.940	0.00295	1.47019	1.9304
185	68.19061	157.94	10.245	57996.83	0.0025714	0.08034	10.219	0.00290	1.46350	1.8598
190	67.30523	153.74	9.980	53419.62	0.0026577	0.07825	9.568	0.00285	1.45671	1.7986
195	66.40115	149.44	9.717	49040.27	0.0027535	0.07614	8.979	0.00279	1.44979	1.7469
200	65.47606	145.02	9.455	44851.69	0.0028605	0.07401	8.446	0.00272	1.44274	1.7042
205	64.52723	140.48	9.194	40848.01	0.0029808	0.07188	7.963	0.00266	1.43553	1.6701
210	63.55147	135.82	8.933	37023.59	0.0031169	0.06973	7.525	0.00259	1.42814	1.6446
215	62.54501	131.03	8.673	33373.38	0.0032720	0.06758	7.126	0.00252	1.42054	1.6277
220	61.50332	126.10	8.412	29892.97	0.0034504	0.06540	6.763	0.00244	1.41271	1.6196
225	60.42092	121.02	8.147	26578.86	0.0036572	0.06322	6.431	0.00236	1.40460	1.6210
230	59.29111	115.79	7.877	23428.67	0.0038999	0.06101	6.127	0.00228	1.39617	1.6325
235	58.09161	111.57	7.406	20410.82	0.0041940	0.05875	5.847	0.00216	1.38725	1.6766
240	56.54010	106.15	7.104	17676.56	0.0045131	0.05649	5.635	0.00207	1.37799	1.7205
245	55.51260	100.50	6.817	15051.29	0.0049364	0.05420	5.418	0.00197	1.36821	1.7853
250	54.09102	94.55	6.496	12582.71	0.0054546	0.05187	5.194	0.00186	1.35779	1.8592
255	52.54973	88.40	6.156	10276.51	0.0061327	0.04948	4.961	0.00174	1.34655	1.9568
260	50.85246	81.81	5.762	8115.64	0.0070429	0.04701	4.716	0.00160	1.33425	2.0809
265	48.93597	74.71	5.334	6109.11	0.0083757	0.04441	4.452	0.00145	1.32045	2.2586
270	46.78657	67.03	4.852	4303.61	0.0104284	0.04162	4.163	0.00127	1.30452	2.5171
275	43.93692	58.62	4.339	2669.07	0.0144238	0.04010	3.828	0.00108	1.28491	2.9055
280	40.08059	48.45	3.621	1276.82	0.0248074	0.03923	3.404	0.00084	1.25794	3.6327
285	32.54618	36.82	2.702	271.94	0.0764950	0.04096	2.702	0.00045	1.20636	6.6902
290	20.96127	34.22	2.363	205.88	0.0570050	0.03123	1.893	0.00076	1.12987	4.2579
295	17.20522	36.61	2.465	319.21	0.0286969	0.02417	1.690	0.00134	1.10588	2.6449
300	15.30277	38.64	2.477	396.98	0.0195470	0.02109	1.600	0.00182	1.09375	2.0624
310	13.09741	42.85	2.509	500.08	0.0126050	0.01855	1.510	0.00262	1.07988	1.5834
320	11.74067	46.61	2.513	566.31	0.0095930	0.01741	1.467	0.00332	1.07141	1.3563
330	10.76587	50.18	2.510	614.08	0.0078779	0.01679	1.443	0.00395	1.06535	1.2230
340	10.00984	53.60	2.503	650.62	0.0067542	0.01644	1.431	0.00454	1.06067	1.1345
350	9.39555	56.91	2.494	679.67	0.0059530	0.01623	1.425	0.00510	1.05688	1.0711
360	8.86050	60.12	2.484	703.38	0.0053488	0.01611	1.424	0.00564	1.05370	1.0234
370	8.43872	63.25	2.474	723.14	0.0048744	0.01604	1.427	0.00617	1.05099	0.9874
380	8.05320	66.31	2.464	739.84	0.0044905	0.01602	1.432	0.00668	1.04862	0.9584
390	7.71218	69.30	2.455	754.15	0.0041725	0.01604	1.440	0.00719	1.04653	0.9345
400	7.40722	72.24	2.446	766.52	0.0039041	0.01608	1.448	0.00770	1.04466	0.9145
410	7.13201	75.12	2.437	777.32	0.0036740	0.01615	1.458	0.00820	1.04298	0.8975
420	6.88176	77.97	2.429	786.81	0.0034743	0.01623	1.469	0.00871	1.04145	0.8828
430	6.65272	80.77	2.421	795.20	0.0032990	0.01633	1.481	0.00921	1.04005	0.8701
440	6.44192	83.54	2.414	802.66	0.0031438	0.01644	1.493	0.00972	1.03877	0.8589
450	6.24696	86.27	2.407	809.33	0.0030052	0.01656	1.506	0.01022	1.03758	0.8491
460	6.06586	88.98	2.400	815.32	0.0028806	0.01669	1.520	0.01073	1.03648	0.8404
470	5.89700	91.67	2.394	820.72	0.0027678	0.01683	1.534	0.01125	1.03545	0.8326
480	5.73901	94.33	2.388	825.61	0.0026652	0.01697	1.548	0.01176	1.03449	0.8256
490	5.59073	96.98	2.382	830.05	0.0025714	0.01711	1.562	0.01228	1.03359	0.8194
500	5.45119	99.61	2.376	834.10	0.0024851	0.01727	1.577	0.01280	1.03274	0.8138
510	5.31953	102.22	2.370	837.80	0.0024056	0.01739	1.592	0.01329	1.03194	0.8103
520	5.19503	104.83	2.365	841.19	0.0023319	0.01756	1.606	0.01382	1.03118	0.8053
530	5.07704	107.43	2.359	844.30	0.0022635	0.01773	1.622	0.01436	1.03047	0.8007
540	4.96502	110.02	2.354	847.18	0.0021997	0.01790	1.637	0.01490	1.02979	0.7967
550	4.85846	112.60	2.348	849.83	0.0021400	0.01807	1.652	0.01544	1.02914	0.7930
560	4.75694	115.19	2.343	852.29	0.0020840	0.01825	1.667	0.01598	1.02853	0.7897
570	4.66007	117.77	2.338	854.58	0.0020314	0.01842	1.683	0.01652	1.02794	0.7867
580	4.56750	120.35	2.332	856.70	0.0019819	0.01860	1.698	0.01707	1.02738	0.7841
590	4.47892	122.94	2.326	858.68	0.0019351	0.01878	1.714	0.01762	1.02685	0.7817
600	4.39407	125.52	2.321	860.53	0.0018908	0.01895	1.729	0.01817	1.02633	0.7796

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

880 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	C_P BTU / LB -R	VELOCITY OF SOUND FT/SEC
* 99.081	0.01223	2144.89	318.4	-83.879	-81.087	0.58259	0.267	0.396	3843
100	0.01225	2127.33	316.0	-82.718	-80.722	0.58625	0.266	0.396	3833
105	0.01236	2033.44	303.4	-80.756	-78.743	0.52557	0.261	0.396	3777
110	0.01247	1942.19	291.2	-78.796	-76.764	0.54398	0.257	0.396	3720
115	0.01259	1853.53	279.3	-76.838	-74.786	0.56157	0.253	0.396	3661
120	0.01271	1767.41	267.9	-74.880	-72.808	0.57840	0.250	0.395	3602
125	0.01284	1683.76	256.8	-72.923	-70.831	0.59454	0.246	0.395	3541
130	0.01296	1602.53	246.1	-70.966	-68.853	0.61005	0.243	0.396	3479
135	0.01310	1523.66	235.7	-69.009	-66.875	0.62499	0.239	0.396	3416
140	0.01323	1447.08	225.7	-67.051	-64.895	0.63938	0.236	0.396	3352
145	0.01337	1372.75	216.0	-65.093	-62.914	0.65329	0.233	0.396	3287
150	0.01351	1300.59	206.6	-63.132	-60.931	0.66673	0.231	0.397	3221
155	0.01366	1230.56	197.5	-61.170	-58.944	0.67976	0.228	0.398	3154
160	0.01381	1162.59	188.8	-59.204	-56.954	0.69240	0.225	0.398	3087
165	0.01397	1096.63	180.3	-57.235	-54.959	0.70467	0.223	0.399	3019
170	0.01413	1032.62	172.2	-55.261	-52.958	0.71662	0.220	0.401	2950
175	0.01430	970.50	164.2	-53.281	-50.951	0.72826	0.218	0.402	2880
180	0.01448	910.21	156.6	-51.295	-48.936	0.73961	0.216	0.404	2810
185	0.01466	851.70	149.2	-49.300	-46.911	0.75071	0.214	0.406	2739
190	0.01485	794.91	142.0	-47.295	-44.875	0.76157	0.211	0.408	2668
195	0.01506	739.79	135.1	-45.279	-42.825	0.77222	0.209	0.411	2595
200	0.01527	686.28	128.4	-43.249	-40.761	0.78267	0.207	0.415	2522
205	0.01549	634.34	121.8	-41.203	-38.678	0.79296	0.205	0.419	2448
210	0.01573	583.91	115.5	-39.137	-36.574	0.80311	0.203	0.423	2373
215	0.01598	534.96	109.3	-37.049	-34.445	0.81313	0.201	0.428	2297
220	0.01625	487.45	103.2	-34.934	-32.286	0.82305	0.199	0.435	2219
225	0.01654	441.35	97.3	-32.788	-30.092	0.83291	0.197	0.442	2140
230	0.01686	396.65	91.5	-30.604	-27.857	0.84273	0.196	0.451	2058
235	0.01721	352.84	85.7	-28.345	-25.541	0.85269	0.199	0.467	1959
240	0.01758	312.91	79.9	-26.038	-23.172	0.86266	0.198	0.478	1872
245	0.01808	272.72	74.4	-23.669	-20.735	0.87271	0.196	0.495	1785
250	0.01847	234.28	68.8	-21.222	-18.211	0.88291	0.195	0.514	1691
255	0.01901	197.29	63.2	-18.675	-15.577	0.89334	0.195	0.540	1592
260	0.01964	161.41	57.4	-15.997	-12.797	0.90414	0.195	0.574	1483
265	0.02040	126.76	51.4	-13.134	-9.810	0.91552	0.196	0.622	1365
270	0.02136	94.18	45.2	-10.012	-6.531	0.92777	0.198	0.692	1236
275	0.02268	62.93	38.9	-6.446	-2.758	0.94164	0.202	0.831	1096
280	0.02476	34.22	31.2	-2.023	2.012	0.95880	0.210	1.116	918
285	0.02975	10.41	22.0	5.032	9.880	0.98662	0.232	2.398	705
290	0.04539	0.93	12.5	17.197	24.594	1.03782	0.240	2.171	612
295	0.05631	17.54	9.5	22.994	32.169	1.06375	0.218	1.115	645
300	0.06371	25.02	8.0	26.401	36.783	1.07927	0.206	0.785	665
310	0.07484	37.43	6.5	31.090	43.285	1.10062	0.193	0.552	705
320	0.08369	47.58	5.6	34.618	48.255	1.11641	0.185	0.454	736
330	0.09139	56.47	4.9	37.606	52.498	1.12947	0.179	0.400	763
340	0.09838	64.49	4.5	40.278	56.310	1.14085	0.176	0.365	788
350	0.10489	71.88	4.1	42.743	59.834	1.15107	0.173	0.341	811
360	0.11102	78.79	3.8	45.061	63.153	1.16042	0.171	0.323	832
370	0.11688	85.31	3.6	47.270	66.316	1.16908	0.169	0.310	851
380	0.12252	91.52	3.4	49.395	69.359	1.17720	0.168	0.299	870
390	0.12797	97.47	3.2	51.451	72.304	1.18485	0.166	0.290	888
400	0.13326	103.19	3.0	53.453	75.169	1.19210	0.165	0.283	905
410	0.13843	108.72	2.9	55.410	77.967	1.19901	0.164	0.277	921
420	0.14349	114.09	2.8	57.327	80.709	1.20562	0.164	0.272	937
430	0.14845	119.30	2.7	59.212	83.402	1.21196	0.163	0.267	952
440	0.15332	124.39	2.6	61.069	86.053	1.21805	0.162	0.263	967
450	0.15812	129.37	2.5	62.902	88.668	1.22393	0.162	0.260	981
460	0.16286	134.24	2.4	64.713	91.251	1.22961	0.161	0.257	995
470	0.16754	139.02	2.3	66.506	93.806	1.23510	0.161	0.254	1008
480	0.17216	143.71	2.2	68.282	96.336	1.24043	0.161	0.252	1022
490	0.17674	148.34	2.2	70.044	98.844	1.24560	0.160	0.250	1035
500	0.18127	152.89	2.1	71.793	101.332	1.25062	0.160	0.248	1047
510	0.18577	157.38	2.0	73.531	103.802	1.25552	0.160	0.246	1060
520	0.19023	161.82	2.0	75.259	106.257	1.26028	0.160	0.245	1072
530	0.19466	166.21	1.9	76.978	108.698	1.26493	0.160	0.243	1084
540	0.19906	170.55	1.9	78.689	111.127	1.26947	0.159	0.242	1096
550	0.20343	174.85	1.8	80.394	113.544	1.27391	0.159	0.241	1107
560	0.20778	179.11	1.8	82.093	115.952	1.27824	0.159	0.240	1119
570	0.21211	183.33	1.8	83.787	118.350	1.28249	0.159	0.239	1130
580	0.21641	187.52	1.7	85.476	120.741	1.28665	0.159	0.239	1141
590	0.22070	191.66	1.7	87.162	123.125	1.29072	0.159	0.238	1151
600	0.22497	195.81	1.6	88.845	125.503	1.29472	0.160	0.238	1162

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

880 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.081	81.79501	218.29	14.683	175441.15	0.0018146	0.11207	42.863	0.00346	1.57052	5.4543
100	81.65851	217.74	14.563	173714.80	0.0018191	0.11181	42.118	0.00346	1.56942	5.3712
105	80.91419	214.68	14.343	164533.85	0.0018439	0.11037	38.310	0.00345	1.56344	4.9463
110	80.16645	211.58	14.115	155698.44	0.0018700	0.10885	34.880	0.00343	1.55745	4.5642
115	79.41495	208.43	13.881	147198.34	0.0018976	0.10726	31.792	0.00341	1.55144	4.2204
120	78.65933	205.24	13.641	139023.46	0.0019268	0.10560	29.010	0.00339	1.54541	3.9109
125	77.89919	202.00	13.396	131163.90	0.0019578	0.10388	26.505	0.00337	1.53937	3.6323
130	77.13410	198.70	13.145	123609.92	0.0019906	0.10211	24.249	0.00335	1.53330	3.3815
135	76.36356	195.35	12.891	116351.97	0.0020257	0.10029	22.216	0.00332	1.52720	3.1556
140	75.58703	191.94	12.633	109380.68	0.0020631	0.09843	20.385	0.00329	1.52107	2.9524
145	74.80391	188.47	12.373	102686.84	0.0021032	0.09653	18.736	0.00326	1.51491	2.7697
150	74.01353	184.94	12.109	96261.46	0.0021462	0.09459	17.250	0.00322	1.50870	2.6057
155	73.21516	181.33	11.845	90095.73	0.0021926	0.09263	15.910	0.00318	1.50245	2.4585
160	72.40795	177.66	11.578	84181.06	0.0022426	0.09064	14.703	0.00314	1.49615	2.3268
165	71.59098	173.91	11.312	78509.06	0.0022969	0.08862	13.615	0.00310	1.48979	2.2093
170	70.76320	170.08	11.045	73071.56	0.0023559	0.08658	12.634	0.00305	1.48336	2.1048
175	69.92342	166.16	10.778	67860.61	0.0024204	0.08453	11.748	0.00301	1.47686	2.0123
180	69.07032	162.16	10.512	62868.55	0.0024910	0.08246	10.950	0.00296	1.47027	1.9310
185	68.20236	158.07	10.246	58087.94	0.0025687	0.08038	10.228	0.00290	1.46359	1.8601
190	67.31782	153.87	9.982	53511.63	0.0026545	0.07828	9.577	0.00285	1.45681	1.7990
195	66.41468	149.57	9.719	49132.82	0.0027499	0.07617	8.987	0.00279	1.44990	1.7472
200	65.49064	145.16	9.458	44945.02	0.0028565	0.07405	8.454	0.00273	1.44285	1.7043
205	64.54301	140.64	9.197	40942.16	0.0029761	0.07192	7.971	0.00266	1.43565	1.6700
210	63.56862	135.99	8.937	37118.60	0.0031115	0.06977	7.532	0.00259	1.42827	1.6443
215	62.56373	131.20	8.677	33469.30	0.0032657	0.06762	7.134	0.00252	1.42068	1.6272
220	61.52386	126.28	8.417	29989.86	0.0034428	0.06545	6.770	0.00245	1.41286	1.6190
225	60.44362	121.21	8.153	26676.75	0.0036481	0.06327	6.438	0.00237	1.40477	1.6200
230	59.31637	116.00	7.884	23527.59	0.0038887	0.06106	6.133	0.00228	1.39635	1.6312
235	58.12001	111.79	7.412	20507.07	0.0041803	0.05881	5.853	0.00217	1.38746	1.6742
240	56.87218	106.39	7.112	17772.97	0.0044966	0.05655	5.641	0.00208	1.37823	1.7179
245	55.54938	100.76	6.825	15149.40	0.0049140	0.05427	5.425	0.00197	1.36848	1.7817
250	54.13386	94.84	6.507	12682.31	0.0054247	0.05194	5.201	0.00187	1.35810	1.8546
255	52.60064	88.72	6.159	10377.38	0.0060913	0.04956	4.969	0.00174	1.34693	1.9507
260	50.91476	82.18	5.777	8216.30	0.0069794	0.04710	4.725	0.00161	1.33470	2.0714
265	49.01546	75.15	5.356	6213.03	0.0082774	0.04452	4.463	0.00146	1.32102	2.2453
270	46.81392	67.56	4.879	4408.84	0.0102489	0.04175	4.177	0.00129	1.30529	2.4937
275	44.09864	59.28	4.375	2775.23	0.0140101	0.04014	3.847	0.00110	1.28605	2.8656
280	40.38335	49.39	3.683	1382.06	0.0225976	0.03917	3.436	0.00087	1.26004	3.5244
285	33.61741	38.19	2.819	349.94	0.0627959	0.04049	2.794	0.00050	1.21360	5.9559
290	22.03033	34.20	2.365	196.69	0.0634658	0.03268	1.958	0.00068	1.13679	4.6823
295	17.75950	36.44	2.466	311.57	0.0306044	0.02493	1.721	0.00126	1.10933	2.7715
300	15.69524	38.45	2.481	392.76	0.0204044	0.02154	1.621	0.00175	1.09623	2.1258
310	13.36194	42.67	2.513	500.10	0.0129293	0.01878	1.524	0.00255	1.08154	1.6117
320	11.94940	46.44	2.518	568.60	0.0097676	0.01757	1.477	0.00324	1.07271	1.3730
330	10.94208	50.01	2.515	617.85	0.0079885	0.01692	1.452	0.00387	1.06645	1.2343
340	10.16430	53.44	2.508	655.45	0.0068311	0.01654	1.438	0.00446	1.06163	1.1429
350	9.53423	56.76	2.499	685.30	0.0060098	0.01632	1.432	0.00502	1.05773	1.0776
360	9.00709	59.98	2.489	709.64	0.0053926	0.01619	1.431	0.00556	1.05448	1.0287
370	8.55567	63.11	2.479	729.90	0.0049092	0.01611	1.433	0.00608	1.05171	0.9918
380	8.16225	66.18	2.468	747.02	0.0045187	0.01609	1.438	0.00659	1.04929	0.9621
390	7.81461	69.18	2.459	761.68	0.0041959	0.01610	1.445	0.00710	1.04716	0.9378
400	7.50399	72.12	2.449	774.35	0.0039237	0.01614	1.453	0.00760	1.04525	0.9173
410	7.22387	75.01	2.441	785.39	0.0036907	0.01620	1.463	0.00810	1.04354	0.9000
420	6.96932	77.86	2.432	795.10	0.0034887	0.01628	1.474	0.00860	1.04199	0.8851
430	6.73646	80.67	2.424	803.68	0.0033115	0.01638	1.485	0.00910	1.04056	0.8721
440	6.52225	83.44	2.417	811.31	0.0031547	0.01649	1.497	0.00960	1.03926	0.8608
450	6.32420	86.18	2.410	818.13	0.0030149	0.01660	1.510	0.01010	1.03805	0.8508
460	6.14031	88.89	2.403	824.25	0.0028891	0.01673	1.524	0.01061	1.03693	0.8419
470	5.96889	91.58	2.397	829.77	0.0027754	0.01687	1.537	0.01112	1.03589	0.8340
480	5.80855	94.25	2.391	834.76	0.0026720	0.01701	1.551	0.01163	1.03491	0.8270
490	5.65811	96.89	2.385	839.30	0.0025775	0.01715	1.565	0.01214	1.03400	0.8206
500	5.51657	99.53	2.379	843.43	0.0024907	0.01730	1.580	0.01265	1.03314	0.8150
510	5.38305	102.15	2.373	847.21	0.0024106	0.01742	1.595	0.01314	1.03233	0.8114
520	5.25680	104.75	2.368	850.67	0.0023365	0.01759	1.610	0.01367	1.03156	0.8062
530	5.13719	107.35	2.362	853.86	0.0022677	0.01776	1.625	0.01420	1.03083	0.8016
540	5.02364	109.95	2.357	856.79	0.0022035	0.01793	1.640	0.01473	1.03015	0.7975
550	4.91564	112.54	2.351	859.50	0.0021435	0.01810	1.655	0.01527	1.02949	0.7938
560	4.81276	115.12	2.346	862.01	0.0020873	0.01828	1.670	0.01580	1.02887	0.7905
570	4.71461	117.70	2.340	864.34	0.0020345	0.01845	1.685	0.01634	1.02827	0.7875
580	4.62082	120.29	2.335	866.51	0.0019847	0.01863	1.701	0.01689	1.02771	0.7848
590	4.53109	122.87	2.329	868.53	0.0019377	0.01880	1.716	0.01743	1.02716	0.7823
600	4.44513	125.46	2.324	870.42	0.0018932	0.01898	1.732	0.01798	1.02664	0.7802

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

890 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 99.095	0.01223	2145.50	318.4	-83.077	-81.062	0.50261	0.267	0.396	3843
100	0.01225	2128.22	316.0	-82.722	-80.704	0.50621	0.266	0.396	3833
105	0.01236	2034.34	303.4	-80.761	-78.724	0.52553	0.261	0.396	3778
110	0.01247	1943.10	291.2	-78.801	-76.745	0.54394	0.257	0.396	3720
115	0.01259	1854.46	279.4	-76.843	-74.768	0.56152	0.253	0.395	3662
120	0.01271	1768.35	267.9	-74.885	-72.790	0.57835	0.250	0.395	3602
125	0.01284	1684.72	256.8	-72.928	-70.813	0.59450	0.246	0.395	3541
130	0.01296	1603.50	246.1	-70.972	-68.835	0.61001	0.243	0.396	3479
135	0.01309	1524.65	235.7	-69.015	-66.857	0.62494	0.239	0.396	3417
140	0.01323	1448.09	225.7	-67.058	-64.878	0.63933	0.236	0.396	3353
145	0.01337	1373.77	216.0	-65.100	-62.897	0.65323	0.233	0.396	3288
150	0.01351	1301.63	206.7	-63.140	-60.914	0.66668	0.231	0.397	3222
155	0.01366	1231.62	197.8	-61.178	-58.927	0.67970	0.228	0.398	3155
160	0.01381	1163.67	188.8	-59.213	-56.937	0.69234	0.225	0.398	3088
165	0.01397	1097.73	180.4	-57.245	-54.943	0.70461	0.223	0.399	3020
170	0.01413	1033.74	172.2	-55.271	-52.943	0.71656	0.220	0.401	2951
175	0.01430	971.64	164.3	-53.292	-50.936	0.72819	0.218	0.402	2882
180	0.01448	911.37	156.7	-51.306	-48.921	0.73954	0.216	0.404	2811
185	0.01466	852.89	149.3	-49.312	-46.896	0.75064	0.214	0.406	2741
190	0.01485	796.12	142.1	-47.309	-44.861	0.76150	0.211	0.408	2669
195	0.01505	741.03	135.2	-45.293	-42.812	0.77214	0.209	0.411	2597
200	0.01527	687.55	128.5	-43.264	-40.749	0.78259	0.207	0.414	2524
205	0.01549	635.64	121.9	-41.219	-38.667	0.79288	0.205	0.418	2450
210	0.01573	585.25	115.6	-39.155	-36.564	0.80302	0.203	0.423	2375
215	0.01598	536.34	109.4	-37.069	-34.436	0.81303	0.201	0.428	2299
220	0.01625	488.86	103.4	-34.956	-32.279	0.82295	0.199	0.434	2221
225	0.01654	442.80	97.4	-32.812	-30.087	0.83279	0.197	0.442	2142
230	0.01685	398.14	91.6	-30.631	-27.853	0.84260	0.196	0.451	2061
235	0.01720	354.92	85.8	-28.375	-25.541	0.85255	0.199	0.467	1962
240	0.01757	314.02	80.1	-26.071	-23.175	0.86251	0.198	0.478	1875
245	0.01799	274.30	74.6	-23.707	-20.742	0.87255	0.196	0.494	1788
250	0.01846	235.93	69.0	-21.265	-18.224	0.88272	0.195	0.513	1695
255	0.01899	199.01	63.4	-18.726	-15.596	0.89313	0.195	0.539	1597
260	0.01962	163.22	57.6	-16.059	-12.826	0.90389	0.195	0.571	1488
265	0.02037	128.66	51.7	-13.211	-9.854	0.91521	0.196	0.618	1372
270	0.02131	96.20	45.5	-10.112	-6.600	0.92737	0.198	0.686	1244
275	0.02260	65.09	39.3	-6.591	-2.867	0.94107	0.201	0.817	1107
280	0.02459	36.55	31.8	-2.278	1.775	0.95779	0.209	1.075	934
285	0.02899	12.55	23.0	4.267	9.045	0.98350	0.228	2.100	732
290	0.04311	8.23	13.3	15.984	23.088	1.03234	0.242	2.389	614
295	0.05451	16.57	9.9	22.336	31.319	1.06052	0.220	1.186	644
300	0.06210	24.12	8.3	25.934	36.169	1.07683	0.207	0.816	664
310	0.07332	36.54	6.6	30.768	42.852	1.09878	0.193	0.564	703
320	0.08223	46.94	5.7	34.372	47.924	1.11489	0.185	0.460	735
330	0.08993	55.90	5.0	37.400	52.220	1.12812	0.180	0.404	763
340	0.09690	63.98	4.6	40.099	56.068	1.13961	0.176	0.368	788
350	0.10337	71.42	4.2	42.583	59.619	1.14990	0.173	0.343	810
360	0.10948	78.37	3.9	44.917	62.959	1.15931	0.171	0.325	831
370	0.11530	84.93	3.6	47.138	66.139	1.16802	0.169	0.311	851
380	0.12089	91.18	3.4	49.272	69.196	1.17618	0.168	0.300	870
390	0.12630	97.15	3.2	51.337	72.153	1.18386	0.166	0.291	888
400	0.13156	102.90	3.1	53.346	75.028	1.19114	0.165	0.284	905
410	0.13669	108.46	2.9	55.309	77.835	1.19807	0.165	0.278	921
420	0.14170	113.84	2.8	57.232	80.585	1.20470	0.164	0.272	937
430	0.14662	119.08	2.7	59.122	83.286	1.21105	0.163	0.268	952
440	0.15145	124.18	2.6	60.983	85.943	1.21716	0.162	0.264	967
450	0.15621	129.18	2.5	62.820	88.564	1.22305	0.162	0.260	981
460	0.16090	134.06	2.4	64.634	91.152	1.22874	0.161	0.257	995
470	0.16554	138.86	2.3	66.430	93.712	1.23424	0.161	0.255	1009
480	0.17012	143.57	2.3	68.209	96.246	1.23958	0.161	0.252	1022
490	0.17466	148.20	2.2	69.974	98.758	1.24476	0.160	0.250	1035
500	0.17915	152.77	2.1	71.725	101.249	1.24979	0.160	0.248	1048
510	0.18360	157.28	2.1	73.465	103.723	1.25469	0.160	0.247	1060
520	0.18802	161.73	2.0	75.195	106.181	1.25946	0.160	0.245	1072
530	0.19240	166.12	2.0	76.916	108.625	1.26412	0.160	0.244	1084
540	0.19676	170.48	1.9	78.629	111.057	1.26866	0.159	0.243	1096
550	0.20109	174.78	1.9	80.336	113.477	1.27310	0.159	0.241	1108
560	0.20540	179.05	1.8	82.036	115.887	1.27745	0.159	0.241	1119
570	0.20968	183.28	1.8	83.731	118.288	1.28170	0.159	0.240	1130
580	0.21394	187.48	1.7	85.422	120.681	1.28586	0.159	0.239	1141
590	0.21819	191.65	1.7	87.109	123.067	1.28994	0.159	0.238	1152
600	0.22241	195.79	1.7	88.793	125.447	1.29394	0.160	0.238	1163

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

890 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.095	81.79757	218.35	14.602	175496.88	0.0018141	0.11207	42.877	0.00346	1.57054	5.4556
100	81.66321	217.88	14.563	173797.23	0.0016184	0.11182	42.144	0.00346	1.56946	5.3737
105	80.91911	214.74	14.343	164616.67	0.0016432	0.11038	38.334	0.00345	1.56348	4.9486
110	80.17159	211.64	14.115	155781.67	0.0016693	0.10886	34.903	0.00343	1.55749	4.5664
115	79.42034	208.50	13.881	147281.99	0.0016968	0.10727	31.813	0.00342	1.55148	4.2224
120	78.66499	205.31	13.641	139107.54	0.0017260	0.10561	29.030	0.00340	1.54546	3.9128
125	77.90513	202.07	13.396	131248.42	0.0017569	0.10390	26.524	0.00337	1.53941	3.6341
130	77.14034	198.78	13.146	123694.90	0.0017897	0.10213	24.266	0.00335	1.53335	3.3831
135	76.37012	195.43	12.892	116437.42	0.0018246	0.10031	22.233	0.00332	1.52725	3.1572
140	75.59394	192.03	12.634	109466.60	0.0018620	0.09845	20.401	0.00329	1.52113	2.9538
145	74.81119	188.56	12.373	102773.25	0.0019019	0.09655	18.750	0.00326	1.51497	2.7710
150	74.02122	185.03	12.110	96348.38	0.0019449	0.09461	17.263	0.00322	1.50876	2.6068
155	73.22326	181.43	11.845	90183.18	0.0019911	0.09265	15.923	0.00318	1.50252	2.4596
160	72.41655	177.76	11.579	84269.05	0.0020410	0.09066	14.716	0.00314	1.49622	2.3278
165	71.60009	174.01	11.313	78597.62	0.0020951	0.08864	13.627	0.00310	1.48986	2.2102
170	70.77287	170.19	11.046	73160.70	0.0021540	0.08661	12.645	0.00305	1.48344	2.1056
175	69.93372	166.28	10.779	67950.37	0.0022182	0.08456	11.759	0.00301	1.47694	2.0130
180	69.08130	162.28	10.513	62958.94	0.0022885	0.08249	10.959	0.00296	1.47036	1.9316
185	68.21410	158.19	10.248	58178.99	0.0023659	0.08041	10.238	0.00290	1.46368	1.8606
190	67.33039	154.00	9.984	53603.39	0.0024514	0.07831	9.585	0.00285	1.45690	1.7993
195	66.42819	149.71	9.722	49225.31	0.0025464	0.07620	8.996	0.00279	1.45000	1.7474
200	65.50520	145.31	9.460	45038.28	0.0026524	0.07408	8.462	0.00273	1.44296	1.7044
205	64.55875	140.79	9.200	41036.23	0.0027715	0.07195	7.979	0.00266	1.43577	1.6700
210	63.58572	136.15	8.941	37213.53	0.0031061	0.06981	7.540	0.00260	1.42840	1.6441
215	62.58239	131.37	8.682	33565.13	0.0032593	0.06766	7.141	0.00252	1.42082	1.6268
220	61.54435	126.46	8.422	30086.64	0.0034352	0.06550	6.777	0.00245	1.41302	1.6183
225	60.46824	121.41	8.159	26774.51	0.0036391	0.06331	6.445	0.00237	1.40494	1.6190
230	59.34154	116.21	7.891	23626.37	0.0038777	0.06111	6.140	0.00229	1.39654	1.6298
235	58.14829	112.00	7.419	20603.24	0.0041667	0.05886	5.858	0.00217	1.38767	1.6720
240	56.90410	106.63	7.120	17869.23	0.0044803	0.05661	5.647	0.00208	1.37846	1.7155
245	55.58594	101.02	6.834	15247.30	0.0048920	0.05433	5.431	0.00198	1.36875	1.7782
250	54.17639	95.13	6.517	12781.67	0.0053953	0.05202	5.208	0.00187	1.35842	1.8501
255	52.65111	89.05	6.182	10477.95	0.0060508	0.04964	4.977	0.00175	1.34729	1.9447
260	50.97637	82.54	5.792	8320.59	0.0069176	0.04719	4.734	0.00162	1.33515	2.0621
265	49.09376	75.59	5.377	6316.54	0.0081822	0.04462	4.474	0.00147	1.32159	2.2325
270	46.91898	68.08	4.906	4513.49	0.0100779	0.04189	4.191	0.00130	1.30604	2.4712
275	44.25487	59.93	4.410	2880.63	0.0136278	0.04019	3.866	0.00111	1.28715	2.8283
280	40.66603	50.29	3.741	1486.28	0.0213636	0.03913	3.467	0.00089	1.26201	3.4294
285	34.49153	39.50	2.925	432.73	0.0531750	0.04006	2.871	0.00055	1.21953	5.4172
290	23.19902	34.28	2.372	190.98	0.0696939	0.03403	2.032	0.00061	1.14438	5.1349
295	18.34607	36.30	2.466	303.96	0.0326842	0.02574	1.754	0.00118	1.11308	2.9095
300	16.10226	38.27	2.485	388.40	0.0213182	0.02200	1.643	0.00167	1.09880	2.1931
310	13.63634	42.42	2.514	498.36	0.0132941	0.01903	1.538	0.00247	1.08327	1.6414
320	12.16180	46.26	2.523	570.81	0.0099463	0.01773	1.488	0.00317	1.07403	1.3902
330	11.12008	49.85	2.520	621.57	0.0081010	0.01705	1.461	0.00380	1.06755	1.2459
340	10.31999	53.29	2.513	660.24	0.0069090	0.01665	1.446	0.00438	1.06259	1.1513
350	9.67380	56.61	2.504	690.93	0.0060672	0.01641	1.439	0.00494	1.05860	1.0842
360	9.13435	59.83	2.493	715.87	0.0054366	0.01628	1.437	0.00548	1.05527	1.0340
370	8.67315	62.98	2.483	736.64	0.0049441	0.01619	1.439	0.00599	1.05243	0.9962
380	8.27172	66.05	2.473	754.18	0.0045471	0.01615	1.443	0.00650	1.04996	0.9659
390	7.91738	69.05	2.463	769.19	0.0042193	0.01616	1.450	0.00700	1.04779	0.9410
400	7.60103	72.00	2.453	782.15	0.0039434	0.01619	1.458	0.00750	1.04585	0.9202
410	7.31596	74.90	2.444	793.46	0.0037075	0.01625	1.467	0.00800	1.04410	0.9025
420	7.05706	77.75	2.436	803.38	0.0035031	0.01633	1.478	0.00850	1.04252	0.8873
430	6.82036	80.57	2.428	812.16	0.0033240	0.01643	1.489	0.00899	1.04108	0.8741
440	6.60271	83.34	2.420	819.96	0.0031657	0.01653	1.501	0.00949	1.03975	0.8626
450	6.40156	86.09	2.413	826.92	0.0030245	0.01665	1.514	0.00999	1.03852	0.8524
460	6.21485	88.80	2.406	833.18	0.0028977	0.01677	1.527	0.01049	1.03738	0.8434
470	6.04087	91.49	2.400	838.81	0.0027831	0.01691	1.541	0.01099	1.03632	0.8354
480	5.87817	94.16	2.394	843.91	0.0026789	0.01704	1.555	0.01150	1.03533	0.8283
490	5.72556	96.81	2.388	848.55	0.0025837	0.01719	1.569	0.01200	1.03441	0.8218
500	5.58200	99.45	2.382	852.77	0.0024962	0.01734	1.583	0.01251	1.03353	0.8161
510	5.44661	102.07	2.376	856.62	0.0024157	0.01746	1.598	0.01300	1.03271	0.8124
520	5.31862	104.68	2.370	860.16	0.0023411	0.01762	1.613	0.01352	1.03193	0.8072
530	5.19737	107.28	2.365	863.41	0.0022719	0.01779	1.627	0.01405	1.03120	0.8026
540	5.08228	109.88	2.359	866.40	0.0022073	0.01796	1.642	0.01457	1.03050	0.7984
550	4.97284	112.47	2.354	869.17	0.0021470	0.01813	1.656	0.01510	1.02984	0.7946
560	4.86868	115.05	2.348	871.73	0.0020905	0.01831	1.673	0.01563	1.02921	0.7912
570	4.76916	117.64	2.343	874.11	0.0020375	0.01848	1.688	0.01617	1.02860	0.7882
580	4.67415	120.22	2.337	876.32	0.0019875	0.01866	1.703	0.01670	1.02803	0.7854
590	4.58326	122.81	2.332	878.39	0.0019403	0.01883	1.719	0.01724	1.02748	0.7830
600	4.49620	125.40	2.326	880.31	0.0018956	0.01901	1.734	0.01779	1.02695	0.7808

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

900 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 99.109	0.01222	2146.12	318.4	-83.076	-81.038	0.50262	0.267	0.396	3844
100	0.01224	2129.11	316.1	-82.726	-80.685	0.50617	0.266	0.396	3834
105	0.01236	2035.24	303.5	-80.765	-78.706	0.52549	0.261	0.396	3778
110	0.01247	1944.02	291.2	-78.806	-76.727	0.54390	0.257	0.396	3721
115	0.01259	1855.39	279.4	-76.848	-74.749	0.56148	0.253	0.395	3663
120	0.01271	1769.30	268.0	-74.890	-72.772	0.57831	0.250	0.395	3603
125	0.01284	1685.68	256.9	-72.934	-70.795	0.59445	0.246	0.395	3542
130	0.01296	1604.48	246.2	-70.979	-68.818	0.60996	0.243	0.395	3480
135	0.01309	1525.63	235.8	-69.022	-66.840	0.62489	0.239	0.396	3417
140	0.01323	1449.09	225.8	-67.065	-64.861	0.63928	0.236	0.396	3353
145	0.01337	1374.79	216.1	-65.107	-62.880	0.65318	0.233	0.396	3289
150	0.01351	1302.67	206.7	-63.148	-60.897	0.66663	0.231	0.397	3223
155	0.01366	1232.68	197.7	-61.186	-58.911	0.67965	0.228	0.397	3156
160	0.01381	1164.75	188.9	-59.222	-56.921	0.69228	0.225	0.398	3089
165	0.01396	1098.83	180.5	-57.254	-54.927	0.70455	0.223	0.399	3021
170	0.01413	1034.86	172.3	-55.281	-52.927	0.71649	0.220	0.401	2952
175	0.01430	972.78	164.4	-53.303	-50.920	0.72813	0.218	0.402	2883
180	0.01447	912.54	156.7	-51.318	-48.906	0.73948	0.216	0.404	2813
185	0.01466	854.08	149.4	-49.325	-46.882	0.75057	0.214	0.406	2742
190	0.01485	797.34	142.2	-47.322	-44.847	0.76142	0.211	0.408	2670
195	0.01505	742.27	135.3	-45.308	-42.800	0.77206	0.209	0.411	2598
200	0.01526	688.82	128.6	-43.280	-40.736	0.78251	0.207	0.414	2525
205	0.01549	636.94	122.0	-41.236	-38.655	0.79279	0.205	0.418	2451
210	0.01572	586.58	115.7	-39.174	-36.553	0.80292	0.203	0.423	2377
215	0.01597	537.70	109.5	-37.089	-34.427	0.81293	0.201	0.428	2301
220	0.01624	490.27	103.5	-34.978	-32.271	0.82284	0.199	0.434	2224
225	0.01653	444.25	97.5	-32.836	-30.081	0.83268	0.198	0.441	2145
230	0.01684	399.64	91.7	-30.657	-27.850	0.84248	0.196	0.450	2064
235	0.01719	355.80	86.0	-28.404	-25.540	0.85242	0.199	0.466	1965
240	0.01756	315.54	80.2	-26.105	-23.178	0.86237	0.198	0.477	1879
245	0.01798	275.88	74.7	-23.745	-20.749	0.87238	0.196	0.493	1792
250	0.01844	237.57	69.1	-21.309	-18.235	0.88254	0.195	0.512	1699
255	0.01897	200.72	63.6	-18.777	-15.615	0.89292	0.195	0.537	1602
260	0.01959	165.03	57.8	-16.120	-12.855	0.90364	0.195	0.569	1493
265	0.02034	130.56	51.9	-13.287	-9.898	0.91490	0.196	0.615	1379
270	0.02127	98.20	45.8	-10.211	-6.667	0.92698	0.197	0.680	1252
275	0.02252	67.23	39.6	-6.733	-2.980	0.94051	0.201	0.804	1117
280	0.02443	38.84	32.3	-2.517	1.554	0.95684	0.208	1.040	949
285	0.02839	14.72	23.9	3.622	8.353	0.98089	0.225	1.881	755
290	0.04090	7.79	14.2	14.716	21.532	1.02670	0.243	2.572	618
295	0.05272	15.63	10.4	21.648	30.434	1.05718	0.221	1.264	643
300	0.06052	23.23	8.6	25.453	35.538	1.07435	0.208	0.849	663
310	0.07187	35.79	6.8	30.448	42.425	1.09696	0.194	0.576	702
320	0.08080	46.30	5.8	34.124	47.590	1.11338	0.185	0.467	735
330	0.08850	55.33	5.1	37.192	51.941	1.12677	0.180	0.408	762
340	0.09545	63.47	4.6	39.919	55.826	1.13837	0.176	0.371	787
350	0.10189	70.96	4.3	42.423	59.404	1.14874	0.173	0.346	810
360	0.10796	77.96	4.0	44.772	62.765	1.15821	0.171	0.327	831
370	0.11375	84.56	3.7	47.005	65.962	1.16697	0.169	0.313	851
380	0.11931	90.83	3.5	49.149	69.033	1.17516	0.168	0.302	870
390	0.12468	96.84	3.3	51.221	72.002	1.18287	0.167	0.292	888
400	0.12990	102.61	3.1	53.239	74.887	1.19018	0.166	0.285	905
410	0.13498	108.19	3.0	55.208	77.704	1.19713	0.165	0.279	921
420	0.13996	113.60	2.9	57.137	80.461	1.20378	0.164	0.273	937
430	0.14483	118.86	2.7	59.031	83.169	1.21015	0.163	0.268	952
440	0.14963	123.98	2.6	60.897	85.833	1.21628	0.163	0.264	967
450	0.15434	128.99	2.5	62.737	88.460	1.22218	0.162	0.261	981
460	0.15900	133.89	2.4	64.555	91.053	1.22788	0.161	0.258	995
470	0.16359	138.70	2.4	66.354	93.617	1.23339	0.161	0.255	1009
480	0.16813	143.42	2.3	68.136	96.156	1.23874	0.161	0.253	1022
490	0.17262	148.07	2.2	69.903	98.672	1.24393	0.160	0.251	1035
500	0.17707	152.65	2.2	71.657	101.167	1.24897	0.160	0.249	1048
510	0.18148	157.17	2.1	73.400	103.644	1.25387	0.160	0.247	1060
520	0.18586	161.63	2.0	75.132	106.106	1.25865	0.160	0.245	1072
530	0.19020	166.04	2.0	76.854	108.553	1.26331	0.160	0.244	1084
540	0.19452	170.40	1.9	78.569	110.987	1.26786	0.160	0.243	1096
550	0.19880	174.72	1.9	80.277	113.409	1.27231	0.159	0.242	1108
560	0.20307	179.00	1.8	81.979	115.822	1.27665	0.159	0.241	1119
570	0.20731	183.24	1.8	83.676	118.225	1.28091	0.159	0.240	1130
580	0.21153	187.44	1.8	85.368	120.620	1.28507	0.159	0.239	1141
590	0.21573	191.62	1.7	87.056	123.008	1.28916	0.159	0.238	1152
600	0.21991	195.77	1.7	88.741	125.390	1.29316	0.160	0.238	1163

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

900 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.109	81.40014	218.40	14.602	175552.59	0.0018136	0.11208	42.892	0.00346	1.57056	5.4569
100	81.66791	217.86	14.563	173879.64	0.0018178	0.11183	42.169	0.00346	1.56949	5.3762
105	80.92402	214.81	14.343	164699.48	0.0018426	0.11039	38.358	0.00345	1.56352	4.9510
110	80.17674	211.71	14.116	155864.89	0.0018685	0.10887	34.925	0.00343	1.55753	4.5685
115	79.42573	208.57	13.882	147365.63	0.0018961	0.10728	31.834	0.00342	1.55152	4.2245
120	78.67064	205.39	13.642	139191.61	0.0019252	0.10563	29.050	0.00340	1.54550	3.9147
125	77.91107	202.15	13.396	131332.93	0.0019560	0.10391	26.542	0.00337	1.53946	3.6358
130	77.14657	198.86	13.146	123779.85	0.0019887	0.10214	24.284	0.00335	1.53340	3.3847
135	76.37668	195.52	12.892	116522.84	0.0020236	0.10033	22.243	0.00332	1.52730	3.1597
140	75.60084	192.11	12.634	109552.49	0.0020604	0.09847	20.416	0.00329	1.52118	2.9592
145	74.81847	188.65	12.374	102859.64	0.0021007	0.09657	18.765	0.00326	1.51502	2.7723
150	74.02890	185.12	12.111	96435.27	0.0021435	0.09463	17.277	0.00322	1.50882	2.6080
155	73.23140	181.53	11.846	90270.60	0.0021896	0.09267	15.936	0.00318	1.50258	2.4607
160	72.42514	177.86	11.580	84357.01	0.0022394	0.09068	14.728	0.00314	1.49628	2.3288
165	71.60920	174.12	11.314	78686.14	0.0022933	0.08867	13.638	0.00310	1.48993	2.2111
170	70.78254	170.30	11.047	73249.80	0.0023520	0.08664	12.656	0.00306	1.48351	2.1064
175	69.94401	166.39	10.780	68040.08	0.0024160	0.08458	11.769	0.00301	1.47702	2.0137
180	69.09226	162.40	10.515	63049.29	0.0024860	0.08252	10.969	0.00296	1.47044	1.9322
185	68.22581	158.32	10.250	58270.00	0.0025631	0.08044	10.247	0.00291	1.46377	1.8610
190	67.34294	154.14	9.986	53695.69	0.0026483	0.07834	9.594	0.00285	1.45700	1.7997
195	66.44167	149.85	9.724	49317.74	0.0027429	0.07624	9.004	0.00279	1.45010	1.7476
200	65.51973	145.45	9.463	45131.47	0.0028484	0.07412	8.470	0.00273	1.44307	1.7045
205	64.57447	140.94	9.203	41130.23	0.0029668	0.07199	7.986	0.00267	1.43589	1.6699
210	63.60279	136.31	8.944	37308.38	0.0031007	0.06985	7.547	0.00260	1.42853	1.6439
215	62.60102	131.54	8.686	33660.87	0.0032530	0.06770	7.148	0.00253	1.42096	1.6264
220	61.56477	126.64	8.427	30183.32	0.0034278	0.06554	6.784	0.00245	1.41317	1.6176
225	60.48879	121.60	8.165	26872.17	0.0036301	0.06336	6.452	0.00237	1.40511	1.6180
230	59.36661	116.41	7.898	23725.03	0.0038668	0.06116	6.147	0.00229	1.39673	1.6285
235	58.17646	112.22	7.426	20699.32	0.0041532	0.05892	5.863	0.00217	1.38788	1.6697
240	56.93587	106.87	7.128	17965.35	0.0044642	0.05667	5.652	0.00209	1.37870	1.7130
245	55.62229	101.28	6.842	15345.01	0.0048702	0.05440	5.437	0.00198	1.36902	1.7747
250	54.21863	95.42	6.527	12880.79	0.0053664	0.05209	5.215	0.00188	1.35872	1.8457
255	52.70114	89.37	6.195	10578.22	0.0060110	0.04972	4.985	0.00176	1.34766	1.9389
260	51.03730	82.91	5.806	8422.51	0.0068573	0.04728	4.743	0.00163	1.33559	2.0531
265	49.17092	76.02	5.397	6419.64	0.0080901	0.04473	4.485	0.00148	1.32214	2.2200
270	47.02186	68.59	4.931	4617.60	0.0099146	0.04202	4.204	0.00131	1.30677	2.4498
275	44.40603	60.56	4.444	2985.31	0.0132724	0.04025	3.885	0.00113	1.28822	2.7932
280	40.33141	51.16	3.797	1589.57	0.0203262	0.03912	3.496	0.00092	1.26386	3.3452
285	35.22676	40.73	3.023	518.45	0.0461752	0.03969	2.937	0.00060	1.22454	5.0101
290	24.45112	34.48	2.388	190.54	0.0745883	0.03517	2.113	0.00056	1.15255	5.5615
295	18.96747	36.17	2.467	296.54	0.0349344	0.02660	1.789	0.00111	1.11705	3.0596
300	16.52468	38.11	2.489	383.94	0.0222909	0.02249	1.666	0.00160	1.10148	2.2646
310	13.91486	42.24	2.520	498.03	0.0136456	0.01928	1.553	0.00240	1.08501	1.6716
320	12.37552	46.10	2.528	572.96	0.0101293	0.01790	1.499	0.00310	1.07537	1.4077
330	11.29990	49.69	2.525	625.23	0.0082154	0.01718	1.470	0.00372	1.06867	1.2577
340	10.47692	53.13	2.518	664.99	0.0069879	0.01676	1.454	0.00431	1.06356	1.1599
350	9.81427	56.45	2.508	696.46	0.0061251	0.01650	1.446	0.00486	1.05946	1.0909
360	9.26228	59.69	2.498	722.09	0.0054811	0.01636	1.443	0.00540	1.05606	1.0393
370	8.79115	62.84	2.487	743.36	0.0049792	0.01626	1.445	0.00591	1.05315	1.0007
380	8.38161	65.92	2.477	761.33	0.0045756	0.01622	1.449	0.00642	1.05064	0.9697
390	8.02048	68.93	2.467	776.68	0.0042429	0.01622	1.455	0.00692	1.04842	0.9443
400	7.69835	71.89	2.457	789.95	0.0039632	0.01625	1.463	0.00741	1.04645	0.9230
410	7.40828	74.79	2.448	801.51	0.0037243	0.01631	1.472	0.00790	1.04467	0.9050
420	7.14500	77.65	2.439	811.66	0.0035175	0.01638	1.482	0.00839	1.04306	0.8896
430	6.90442	80.46	2.431	820.63	0.0033366	0.01647	1.493	0.00889	1.04159	0.8762
440	6.68330	83.25	2.423	828.59	0.0031766	0.01658	1.505	0.00938	1.04024	0.8645
450	6.47903	85.99	2.416	835.71	0.0030341	0.01669	1.518	0.00987	1.03899	0.8541
460	6.28949	88.71	2.409	842.10	0.0029062	0.01682	1.531	0.01037	1.03784	0.8450
470	6.11292	91.41	2.403	847.86	0.0027907	0.01695	1.544	0.01087	1.03676	0.8368
480	5.94786	94.08	2.397	853.06	0.0026857	0.01708	1.558	0.01137	1.03576	0.8296
490	5.79306	96.73	2.391	857.79	0.0025898	0.01723	1.572	0.01187	1.03482	0.8231
500	5.64748	99.37	2.385	862.10	0.0025018	0.01737	1.586	0.01237	1.03393	0.8172
510	5.51021	102.00	2.379	866.04	0.0024207	0.01749	1.601	0.01286	1.03310	0.8119
520	5.38047	104.61	2.373	869.64	0.0023457	0.01766	1.616	0.01337	1.03231	0.8082
530	5.25758	107.21	2.368	872.96	0.0022760	0.01783	1.633	0.01389	1.03156	0.8035
540	5.14096	109.81	2.362	876.02	0.0022112	0.01799	1.645	0.01442	1.03086	0.7992
550	5.03007	112.40	2.357	878.84	0.0021506	0.01817	1.663	0.01494	1.03018	0.7954
560	4.92446	114.99	2.351	881.46	0.0020938	0.01834	1.675	0.01547	1.02954	0.7920
570	4.82372	117.57	2.346	883.88	0.0020405	0.01851	1.691	0.01600	1.02893	0.7889
580	4.72749	120.16	2.340	886.14	0.0019902	0.01869	1.706	0.01653	1.02835	0.7861
590	4.63544	122.75	2.335	888.24	0.0019429	0.01886	1.721	0.01706	1.02779	0.7836
600	4.54728	125.34	2.329	890.21	0.0018980	0.01904	1.737	0.01758	1.02726	0.7814

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

910 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 99.123	0.01222	2146.73	318.4	-83.074	-81.014	0.50264	0.267	0.396	3844
100	0.01224	2129.99	316.1	-82.730	-80.667	0.50613	0.266	0.396	3835
105	0.01236	2036.14	303.5	-80.769	-78.687	0.52544	0.261	0.396	3779
110	0.01247	1944.93	291.3	-78.810	-76.709	0.54365	0.257	0.396	3722
115	0.01259	1856.32	279.5	-76.853	-74.731	0.56143	0.253	0.395	3663
120	0.01271	1770.24	268.0	-74.896	-72.754	0.57826	0.250	0.395	3604
125	0.01283	1686.63	256.9	-72.940	-70.777	0.59440	0.246	0.395	3543
130	0.01296	1605.45	246.2	-70.984	-68.800	0.60991	0.243	0.395	3481
135	0.01309	1526.62	235.8	-69.028	-66.822	0.62484	0.239	0.396	3418
140	0.01323	1450.09	225.8	-67.072	-64.843	0.63923	0.236	0.396	3354
145	0.01336	1375.81	216.1	-65.115	-62.863	0.65313	0.233	0.396	3289
150	0.01351	1303.71	206.8	-63.156	-60.880	0.66657	0.231	0.397	3224
155	0.01365	1233.73	197.7	-61.195	-58.894	0.67959	0.228	0.397	3157
160	0.01381	1165.82	189.0	-59.231	-56.905	0.69222	0.225	0.398	3090
165	0.01396	1099.92	180.5	-57.264	-54.911	0.70450	0.223	0.399	3022
170	0.01413	1035.97	172.3	-55.292	-52.911	0.71643	0.220	0.400	2953
175	0.01430	973.92	164.4	-53.314	-50.905	0.72806	0.218	0.402	2884
180	0.01447	913.70	156.8	-51.330	-48.891	0.73941	0.216	0.404	2814
185	0.01465	855.26	149.4	-49.337	-46.868	0.75050	0.214	0.406	2743
190	0.01485	798.55	142.3	-47.335	-44.834	0.76135	0.211	0.408	2672
195	0.01505	743.51	135.4	-45.322	-42.787	0.77199	0.209	0.411	2600
200	0.01526	690.09	128.6	-43.296	-40.724	0.78243	0.207	0.414	2527
205	0.01548	638.24	122.1	-41.253	-38.644	0.79271	0.205	0.418	2453
210	0.01572	587.92	115.8	-39.192	-36.543	0.80283	0.203	0.422	2379
215	0.01597	539.07	109.6	-37.109	-34.418	0.81284	0.201	0.428	2303
220	0.01624	491.68	103.6	-35.000	-32.264	0.82274	0.199	0.434	2226
225	0.01653	445.70	97.7	-32.860	-30.075	0.83257	0.198	0.441	2147
230	0.01684	401.13	91.9	-30.684	-27.846	0.84236	0.196	0.450	2067
235	0.01718	357.28	86.1	-28.434	-25.539	0.85229	0.199	0.465	1968
240	0.01755	317.05	80.3	-26.138	-23.180	0.86222	0.198	0.476	1882
245	0.01797	277.45	74.9	-23.783	-20.755	0.87222	0.196	0.492	1795
250	0.01843	239.21	69.3	-21.352	-18.247	0.88236	0.195	0.511	1703
255	0.01896	202.43	63.8	-18.828	-15.633	0.89271	0.195	0.536	1606
260	0.01957	166.82	58.0	-16.183	-12.883	0.90339	0.195	0.566	1498
265	0.02031	132.44	52.2	-13.362	-9.940	0.91460	0.196	0.612	1385
270	0.02122	100.19	46.1	-10.309	-6.733	0.92659	0.197	0.674	1260
275	0.02245	69.34	40.0	-6.870	-3.088	0.93996	0.200	0.792	1127
280	0.02428	41.09	32.8	-2.744	1.347	0.95594	0.207	1.008	963
285	0.02789	16.94	24.8	3.065	7.764	0.97464	0.222	1.714	777
290	0.03884	7.66	15.2	13.434	19.978	1.02109	0.244	2.678	624
295	0.05895	14.75	10.8	20.927	29.513	1.05373	0.223	1.347	642
300	0.05895	22.37	8.8	24.957	34.891	1.07182	0.209	0.885	662
310	0.07044	35.05	7.0	30.122	41.991	1.09514	0.194	0.589	701
320	0.07941	45.66	5.9	33.872	47.254	1.11186	0.186	0.474	734
330	0.08710	54.77	5.2	36.983	51.659	1.12542	0.180	0.413	762
340	0.09403	62.97	4.7	39.737	55.582	1.13714	0.176	0.374	787
350	0.10045	70.51	4.3	42.262	59.188	1.14759	0.173	0.348	810
360	0.10649	77.55	4.0	44.626	62.570	1.15712	0.171	0.329	831
370	0.11224	84.18	3.8	46.872	65.785	1.16593	0.169	0.314	851
380	0.11776	90.49	3.5	49.026	68.869	1.17415	0.168	0.303	870
390	0.12309	96.53	3.3	51.108	71.850	1.18190	0.167	0.294	887
400	0.12827	102.33	3.2	53.132	74.747	1.18923	0.166	0.286	905
410	0.13332	107.93	3.0	55.107	77.572	1.19621	0.165	0.279	921
420	0.13825	113.36	2.9	57.041	80.338	1.20287	0.164	0.274	937
430	0.14309	118.63	2.8	58.941	83.052	1.20926	0.163	0.269	952
440	0.14784	123.78	2.7	60.811	85.723	1.21540	0.163	0.265	967
450	0.15252	128.80	2.6	62.655	88.355	1.22132	0.162	0.261	981
460	0.15713	133.72	2.5	64.476	90.954	1.22703	0.162	0.258	995
470	0.16168	138.54	2.4	66.279	93.523	1.23255	0.161	0.256	1009
480	0.16618	143.26	2.3	68.063	96.066	1.23791	0.161	0.253	1022
490	0.17063	147.94	2.3	69.833	98.586	1.24310	0.160	0.251	1035
500	0.17504	152.53	2.2	71.589	101.085	1.24815	0.160	0.249	1048
510	0.17941	157.06	2.1	73.334	103.566	1.25306	0.160	0.247	1061
520	0.18374	161.53	2.1	75.068	106.030	1.25785	0.160	0.246	1073
530	0.18805	165.95	2.0	76.793	108.480	1.26252	0.160	0.244	1085
540	0.19232	170.33	2.0	78.509	110.917	1.26707	0.160	0.243	1097
550	0.19657	174.65	1.9	80.219	113.342	1.27152	0.159	0.242	1108
560	0.20079	178.94	1.9	81.922	115.757	1.27587	0.159	0.241	1120
570	0.20499	183.19	1.8	83.620	118.162	1.28013	0.159	0.240	1131
580	0.20917	187.41	1.8	85.313	120.560	1.28430	0.159	0.239	1142
590	0.21333	191.59	1.7	87.003	122.950	1.28838	0.159	0.239	1153
600	0.21747	195.75	1.7	88.689	125.334	1.29239	0.160	0.238	1163

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

910 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.123	81.80270	218.46	14.602	175608.31	0.0018130	0.11208	42.906	0.00346	1.57058	5.4581
100	81.67261	217.93	14.564	173962.03	0.0018172	0.11184	42.195	0.00346	1.56953	5.3787
105	80.92893	214.88	14.343	164782.27	0.0018419	0.11040	38.382	0.00345	1.56356	4.9533
110	80.18188	211.78	14.116	155948.09	0.0018679	0.10889	34.948	0.00343	1.55757	4.5707
115	79.43112	208.64	13.882	147449.25	0.0018953	0.10730	31.855	0.00342	1.55157	4.2265
120	78.67629	205.46	13.642	139275.66	0.0019243	0.10564	29.070	0.00340	1.54555	3.9166
125	77.91700	202.23	13.397	131417.41	0.0019551	0.10393	26.561	0.00337	1.53951	3.6376
130	77.15288	198.94	13.147	123864.79	0.0019877	0.10216	24.301	0.00335	1.53345	3.3864
135	76.38323	195.60	12.892	116608.23	0.0020225	0.10034	22.266	0.00332	1.52736	3.1602
140	75.60774	192.20	12.635	109638.36	0.0020597	0.09848	20.432	0.00329	1.52124	2.9566
145	74.82574	188.74	12.374	102946.00	0.0020995	0.09659	18.780	0.00326	1.51508	2.7736
150	74.03657	185.22	12.111	96522.14	0.0021422	0.09465	17.291	0.00322	1.50888	2.6092
155	73.23950	181.62	11.847	90357.98	0.0021881	0.09269	15.949	0.00318	1.50264	2.4618
160	72.43372	177.96	11.581	84444.94	0.0022378	0.09070	14.740	0.00314	1.49635	2.3298
165	71.61829	174.22	11.314	78774.62	0.0022915	0.08869	13.650	0.00310	1.49000	2.2120
170	70.79220	170.41	11.048	73338.87	0.0023500	0.08666	12.667	0.00306	1.48359	2.1072
175	69.95428	166.51	10.782	68129.75	0.0024138	0.08461	11.780	0.00301	1.47710	2.0144
180	69.10321	162.52	10.516	63139.58	0.0024836	0.08255	10.979	0.00296	1.47053	1.9328
185	68.23751	158.44	10.251	58360.96	0.0025604	0.08047	10.256	0.00291	1.46386	1.8615
190	67.35547	154.27	9.988	53786.74	0.0026452	0.07837	9.603	0.00285	1.45710	1.8001
195	66.45513	149.99	9.726	49410.11	0.0027393	0.07627	9.013	0.00279	1.45021	1.7479
200	65.53423	145.60	9.466	45224.60	0.0028444	0.07415	8.478	0.00273	1.44318	1.7046
205	64.59015	141.09	9.206	41224.15	0.0029622	0.07203	7.994	0.00267	1.43601	1.6699
210	63.61982	136.47	8.948	37403.15	0.0030953	0.06989	7.555	0.00260	1.42866	1.6437
215	62.61959	131.71	8.690	33756.52	0.0032467	0.06775	7.155	0.00253	1.42110	1.6260
220	61.58514	126.82	8.432	30279.89	0.0034203	0.06559	6.791	0.00246	1.41332	1.6170
225	60.51126	121.79	8.171	26969.70	0.0036212	0.06341	6.458	0.00238	1.40527	1.6171
230	59.39158	116.62	7.905	23823.55	0.0038559	0.06122	6.153	0.00229	1.39691	1.6272
235	58.20450	112.44	7.432	20795.32	0.0041399	0.05897	5.869	0.00218	1.38809	1.6677
240	56.96749	107.10	7.136	18061.33	0.0044483	0.05673	5.658	0.00209	1.37893	1.7106
245	55.65844	101.53	6.850	15442.54	0.0048647	0.05446	5.443	0.00199	1.36928	1.7713
250	54.26058	95.70	6.537	12979.68	0.0053379	0.05216	5.222	0.00188	1.35903	1.8413
255	52.75075	89.69	5.208	10678.19	0.0059720	0.04980	4.993	0.00176	1.34802	1.9331
260	51.09797	83.26	5.820	8524.09	0.0067986	0.04737	4.752	0.00164	1.33603	2.0443
265	49.24696	76.45	5.417	6522.35	0.0080010	0.04484	4.496	0.00149	1.32269	2.2079
270	47.12267	69.09	4.957	4721.17	0.0097584	0.04214	4.218	0.00133	1.30749	2.4292
275	44.55248	61.18	4.477	3069.32	0.0129412	0.04038	3.903	0.00114	1.28925	2.7602
280	41.18171	51.99	3.850	1691.99	0.0193949	0.03911	3.523	0.00094	1.26560	3.2697
285	35.86035	41.90	3.112	605.99	0.0408976	0.03939	2.996	0.00064	1.22887	4.6922
290	25.74967	34.82	2.417	197.28	0.0769204	0.03686	2.200	0.00052	1.16107	5.8819
295	19.62601	36.07	2.468	289.56	0.0373392	0.02750	1.827	0.00104	1.12128	3.2220
300	16.96334	37.95	2.493	379.42	0.0233240	0.02301	1.690	0.00153	1.10426	2.3403
310	14.19720	42.07	2.525	497.60	0.0140100	0.01953	1.568	0.00233	1.08678	1.7029
320	12.59301	45.94	2.533	575.04	0.0103164	0.01807	1.510	0.00303	1.07673	1.4257
330	11.48155	49.53	2.530	626.84	0.0083317	0.01731	1.479	0.00365	1.06988	1.2696
340	10.63509	52.98	2.523	669.70	0.0070677	0.01686	1.462	0.00423	1.06454	1.1687
350	9.95564	56.31	2.513	702.00	0.0061836	0.01660	1.453	0.00479	1.06034	1.0976
360	9.39889	59.55	2.502	726.26	0.0055258	0.01644	1.450	0.00532	1.05685	1.0447
370	8.98968	62.71	2.492	750.06	0.0050146	0.01634	1.450	0.00583	1.05388	1.0051
380	8.49191	65.79	2.481	768.45	0.0046043	0.01629	1.454	0.00633	1.05131	0.9735
390	8.12391	68.81	2.471	784.16	0.0042666	0.01628	1.460	0.00683	1.04905	0.9476
400	7.79594	71.77	2.461	797.73	0.0039830	0.01631	1.467	0.00732	1.04704	0.9259
410	7.50082	74.68	2.451	809.55	0.0037412	0.01636	1.476	0.00781	1.04524	0.9076
420	7.23312	77.54	2.443	819.92	0.0035320	0.01643	1.487	0.00830	1.04360	0.8919
430	6.98863	80.36	2.434	829.09	0.0033491	0.01652	1.498	0.00878	1.04210	0.8782
440	6.76402	83.15	2.427	837.23	0.0031876	0.01662	1.509	0.00927	1.04073	0.8663
450	6.55661	85.90	2.419	844.50	0.0030438	0.01674	1.522	0.00976	1.03947	0.8558
460	6.36423	88.62	2.413	851.02	0.0029148	0.01686	1.535	0.01025	1.03829	0.8465
470	6.18506	91.32	2.406	856.89	0.0027983	0.01699	1.548	0.01075	1.03720	0.8383
480	6.01762	94.00	2.400	862.21	0.0026925	0.01712	1.561	0.01124	1.03618	0.8309
490	5.86063	96.65	2.394	867.04	0.0025959	0.01726	1.575	0.01174	1.03523	0.8243
500	5.71302	99.29	2.388	871.43	0.0025073	0.01741	1.590	0.01224	1.03433	0.8183
510	5.57386	101.92	2.382	875.45	0.0024257	0.01753	1.604	0.01272	1.03348	0.8146
520	5.44236	104.54	2.376	879.13	0.0023502	0.01769	1.619	0.01323	1.03269	0.8092
530	5.31782	107.14	2.371	882.51	0.0022802	0.01786	1.633	0.01375	1.03193	0.8044
540	5.19965	109.74	2.365	885.63	0.0022150	0.01803	1.648	0.01426	1.03121	0.8001
550	5.08731	112.33	2.360	888.51	0.0021541	0.01820	1.663	0.01478	1.03053	0.7962
560	4.98034	114.92	2.354	891.18	0.0020970	0.01837	1.678	0.01530	1.02988	0.7927
570	4.87831	117.51	2.349	893.66	0.0020435	0.01854	1.693	0.01583	1.02926	0.7896
580	4.78085	120.10	2.343	895.96	0.0019930	0.01871	1.709	0.01635	1.02867	0.7868
590	4.68764	122.69	2.337	898.11	0.0019454	0.01889	1.724	0.01688	1.02811	0.7842
600	4.59837	125.28	2.332	900.11	0.0019004	0.01906	1.739	0.01741	1.02757	0.7820

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

920 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p BTU / LB -R	VELOCITY OF SOUND FT/SEC
* 99.137	0.01222	2147.34	318.4	-83.072	-80.990	0.50266	0.267	0.396	3845
100	0.01224	2130.88	316.2	-82.734	-80.648	0.50609	0.266	0.396	3835
105	0.01236	2037.03	303.6	-80.774	-78.669	0.52540	0.261	0.396	3779
110	0.01247	1945.84	291.3	-78.815	-76.690	0.54381	0.257	0.396	3722
115	0.01259	1857.24	279.5	-76.857	-74.713	0.56139	0.253	0.395	3664
120	0.01271	1771.16	268.1	-74.901	-72.736	0.57822	0.250	0.395	3604
125	0.01283	1687.59	257.0	-72.945	-70.759	0.59436	0.246	0.395	3544
130	0.01296	1606.42	246.3	-70.990	-68.782	0.60986	0.243	0.395	3482
135	0.01309	1527.61	235.9	-69.035	-66.804	0.62479	0.240	0.396	3419
140	0.01322	1451.14	225.9	-67.079	-64.826	0.63918	0.236	0.396	3355
145	0.01336	1376.83	216.2	-65.122	-62.845	0.65308	0.233	0.396	3290
150	0.01351	1304.75	206.8	-63.164	-60.863	0.66652	0.231	0.397	3225
155	0.01365	1234.79	197.8	-61.203	-58.877	0.67954	0.228	0.397	3158
160	0.01380	1166.90	189.0	-59.241	-56.888	0.69217	0.225	0.398	3091
165	0.01396	1101.02	180.6	-57.273	-54.895	0.70444	0.223	0.399	3023
170	0.01412	1037.09	172.4	-55.302	-52.896	0.71637	0.220	0.400	2954
175	0.01429	975.06	164.5	-53.325	-50.890	0.72800	0.218	0.402	2885
180	0.01447	914.86	156.9	-51.341	-48.876	0.73934	0.216	0.404	2815
185	0.01465	856.45	149.5	-49.350	-46.854	0.75043	0.214	0.406	2745
190	0.01484	799.76	142.4	-47.349	-44.820	0.76128	0.212	0.408	2673
195	0.01504	744.75	135.4	-45.337	-42.774	0.77191	0.209	0.411	2601
200	0.01526	691.36	128.7	-43.311	-40.712	0.78235	0.207	0.414	2528
205	0.01548	639.54	122.2	-41.270	-38.633	0.79262	0.205	0.418	2455
210	0.01571	589.25	115.9	-39.213	-36.533	0.80274	0.203	0.422	2380
215	0.01596	540.44	109.7	-37.139	-34.409	0.81274	0.201	0.427	2305
220	0.01623	493.08	103.7	-35.022	-32.256	0.82264	0.199	0.433	2228
225	0.01652	447.14	97.8	-32.884	-30.070	0.83246	0.198	0.441	2150
230	0.01683	402.61	92.0	-30.713	-27.843	0.84224	0.196	0.449	2069
235	0.01717	358.76	86.2	-28.464	-25.538	0.85216	0.199	0.465	1970
240	0.01754	318.55	80.5	-26.171	-23.182	0.86208	0.198	0.476	1885
245	0.01796	279.02	75.0	-23.823	-20.761	0.87206	0.196	0.491	1798
250	0.01842	240.84	69.4	-21.395	-18.258	0.88217	0.195	0.510	1706
255	0.01894	204.13	64.0	-18.878	-15.651	0.89250	0.195	0.534	1611
260	0.01955	168.60	58.1	-16.240	-12.910	0.90314	0.195	0.564	1503
265	0.02027	134.31	52.4	-13.436	-9.982	0.91430	0.196	0.608	1392
270	0.02118	102.16	46.4	-10.404	-6.796	0.92621	0.197	0.669	1267
275	0.02237	71.43	40.3	-7.004	-3.192	0.93943	0.200	0.780	1136
280	0.02414	43.30	33.3	-2.960	1.153	0.95509	0.206	0.980	977
285	0.02746	19.08	25.6	2.574	7.252	0.97666	0.220	1.583	798
290	0.03698	7.87	16.2	12.189	18.489	1.01571	0.243	2.685	635
295	0.04920	13.94	11.3	20.172	28.554	1.05017	0.225	1.435	642
300	0.05741	21.52	9.2	24.445	34.225	1.06925	0.210	0.923	661
310	0.06903	34.32	7.2	29.791	41.552	1.09330	0.195	0.603	701
320	0.07804	45.04	6.1	33.618	46.914	1.11034	0.186	0.481	734
330	0.08573	54.21	5.3	36.772	51.376	1.12488	0.181	0.417	762
340	0.09264	62.47	4.8	39.555	55.337	1.13791	0.177	0.378	787
350	0.09903	70.06	4.4	42.100	58.971	1.14644	0.174	0.351	809
360	0.10504	77.14	4.1	44.480	62.375	1.15603	0.171	0.331	831
370	0.11076	83.81	3.8	46.738	65.607	1.16489	0.170	0.316	851
380	0.11624	90.15	3.6	48.903	68.706	1.17315	0.168	0.304	870
390	0.12154	96.22	3.4	50.993	71.699	1.18093	0.167	0.295	887
400	0.12668	102.04	3.2	53.024	74.606	1.18829	0.166	0.287	905
410	0.13169	107.67	3.1	55.006	77.440	1.19529	0.165	0.280	921
420	0.13659	113.12	2.9	56.945	80.214	1.20197	0.164	0.275	937
430	0.14138	118.41	2.8	58.850	82.936	1.20838	0.163	0.270	952
440	0.14609	123.57	2.7	60.724	85.613	1.21453	0.163	0.266	967
450	0.15073	128.62	2.6	62.572	88.251	1.22046	0.162	0.262	981
460	0.15530	133.55	2.5	64.397	90.855	1.22618	0.162	0.259	995
470	0.15981	138.39	2.4	66.203	93.429	1.23172	0.161	0.256	1009
480	0.16427	143.14	2.4	67.991	95.976	1.23708	0.161	0.254	1022
490	0.16868	147.81	2.3	69.763	98.500	1.24228	0.160	0.251	1035
500	0.17305	152.42	2.2	71.522	101.003	1.24734	0.160	0.249	1048
510	0.17738	156.96	2.2	73.268	103.487	1.25226	0.160	0.248	1061
520	0.18168	161.44	2.1	75.004	105.955	1.25705	0.160	0.246	1073
530	0.18594	165.87	2.0	76.731	108.407	1.26172	0.160	0.245	1085
540	0.19017	170.25	2.0	78.449	110.847	1.26628	0.160	0.243	1097
550	0.19438	174.59	1.9	80.160	113.275	1.27074	0.159	0.242	1108
560	0.19856	178.88	1.9	81.865	115.692	1.27510	0.159	0.241	1120
570	0.20272	183.14	1.8	83.565	118.100	1.27936	0.159	0.240	1131
580	0.20686	187.37	1.8	85.259	120.499	1.28353	0.159	0.240	1142
590	0.21098	191.56	1.8	86.950	122.892	1.28762	0.159	0.239	1153
600	0.21508	195.72	1.7	88.637	125.277	1.29163	0.160	0.238	1164

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

920 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.137	81.80526	218.51	14.601	175664.02	0.0018125	0.11209	42.920	0.00346	1.57060	5.4594
100	81.67730	217.99	14.564	174844.41	0.0018166	0.11185	42.220	0.00346	1.56957	5.3813
105	80.93384	214.94	14.344	164865.05	0.0018412	0.11041	38.406	0.00345	1.56360	4.9557
110	80.18702	211.85	14.116	156031.28	0.0018672	0.10890	34.970	0.00343	1.55761	4.5729
115	79.43650	208.72	13.882	147532.85	0.0018945	0.10731	31.876	0.00342	1.55161	4.2285
120	78.68194	205.53	13.642	139359.68	0.0019235	0.10566	29.089	0.00340	1.54559	3.9185
125	77.92292	202.30	13.397	131501.88	0.0019542	0.10394	26.579	0.00337	1.53956	3.6394
130	77.15903	199.02	13.147	123949.71	0.0019868	0.10217	24.319	0.00335	1.53350	3.3880
135	76.38978	195.68	12.893	116693.61	0.0020215	0.10036	22.282	0.00332	1.52741	3.1617
140	75.61463	192.29	12.635	109724.21	0.0020586	0.09850	20.447	0.00329	1.52129	2.9581
145	74.83300	188.83	12.375	103032.33	0.0020982	0.09661	18.794	0.00326	1.51514	2.7749
150	74.04424	185.31	12.112	96608.98	0.0021408	0.09467	17.305	0.00322	1.50894	2.6104
155	73.24761	181.72	11.847	90445.34	0.0021866	0.09271	15.962	0.00319	1.50271	2.4629
160	72.44229	178.06	11.582	84532.83	0.0022361	0.09073	14.752	0.00315	1.49642	2.3308
165	71.62738	174.33	11.315	78863.07	0.0022897	0.08872	13.662	0.00310	1.49007	2.2129
170	70.80185	170.52	11.049	73427.90	0.0023480	0.08669	12.678	0.00306	1.48366	2.1080
175	69.96454	166.62	10.783	68219.38	0.0024116	0.08464	11.790	0.00301	1.47718	2.0151
180	69.11415	162.64	10.517	63229.84	0.0024811	0.08257	10.989	0.00296	1.47061	1.9333
185	68.24920	158.57	10.253	58451.86	0.0025576	0.08050	10.266	0.00291	1.46395	1.8620
190	67.36798	154.40	9.990	53878.33	0.0026421	0.07840	9.612	0.00285	1.45719	1.8004
195	66.46857	150.13	9.728	49502.41	0.0027358	0.07630	9.021	0.00279	1.45031	1.7481
200	65.54871	145.74	9.468	45317.66	0.0028404	0.07419	8.487	0.00273	1.44329	1.7047
205	64.60581	141.25	9.209	41318.00	0.0029576	0.07207	8.002	0.00267	1.43613	1.6699
210	63.63681	136.63	8.952	37497.83	0.0030900	0.06993	7.562	0.00260	1.42878	1.6435
215	62.63812	131.88	8.694	33852.08	0.0032405	0.06779	7.162	0.00253	1.42124	1.6256
220	61.60545	127.00	8.437	30376.36	0.0034130	0.06563	6.798	0.00246	1.41347	1.6163
225	60.53366	121.98	8.177	27067.12	0.0036123	0.06346	6.465	0.00238	1.40544	1.6162
230	59.41647	116.82	7.912	23921.94	0.0038452	0.06127	6.160	0.00230	1.39710	1.6259
235	58.23244	112.65	7.439	20891.24	0.0041267	0.05903	5.876	0.00218	1.38830	1.6659
240	56.99895	107.34	7.144	18157.17	0.0044326	0.05679	5.664	0.00209	1.37916	1.7082
245	55.69438	101.79	6.859	15539.67	0.0048275	0.05453	5.449	0.00199	1.36955	1.7679
250	54.30224	95.99	6.547	13078.35	0.0053098	0.05223	5.229	0.00189	1.35934	1.8370
255	52.79994	90.01	6.221	10777.83	0.0059337	0.04988	5.001	0.00177	1.34837	1.9275
260	51.15720	83.62	5.835	8625.32	0.0067414	0.04746	4.761	0.00165	1.33646	2.0357
265	49.32194	76.87	5.437	6624.67	0.0079147	0.04494	4.507	0.00150	1.32323	2.1962
270	47.22151	69.59	4.981	4824.24	0.0096090	0.04227	4.231	0.00134	1.30819	2.4094
275	44.69456	61.79	4.509	3192.68	0.0126313	0.04036	3.920	0.00116	1.29026	2.7290
280	41.41873	52.79	3.901	1793.59	0.0185663	0.03912	3.549	0.00096	1.26726	3.2017
285	36.41696	43.01	3.194	694.69	0.0367935	0.03914	3.048	0.00068	1.23267	4.4370
290	27.04273	35.31	2.461	212.70	0.0760383	0.03672	2.290	0.00051	1.16960	6.0285
295	20.32349	36.00	2.471	283.32	0.0398623	0.02842	1.668	0.00097	1.12576	3.3960
300	17.41912	37.82	2.497	374.92	0.0244185	0.02355	1.715	0.00146	1.10716	2.4204
310	14.44554	41.90	2.530	497.09	0.0143872	0.01980	1.583	0.00227	1.08859	1.7352
320	12.91352	45.78	2.538	577.07	0.0105077	0.01825	1.522	0.00296	1.07810	1.4441
330	11.66507	49.37	2.535	632.41	0.0084499	0.01744	1.489	0.00358	1.07094	1.2818
340	10.79453	52.83	2.528	674.37	0.0071486	0.01697	1.470	0.00416	1.06553	1.1775
350	10.09791	56.17	2.518	707.50	0.0062426	0.01669	1.460	0.00471	1.06122	1.1044
360	9.52018	59.42	2.507	734.41	0.0055709	0.01652	1.456	0.00524	1.05765	1.0502
370	9.02872	62.58	2.496	756.73	0.0050502	0.01641	1.456	0.00575	1.05462	1.0097
380	8.60262	65.67	2.485	775.56	0.0046330	0.01636	1.460	0.00625	1.05200	0.9773
390	8.22768	68.69	2.475	791.63	0.0042903	0.01635	1.465	0.00674	1.04969	0.9509
400	7.89386	71.66	2.465	805.50	0.0040029	0.01637	1.472	0.00723	1.04764	0.9288
410	7.59359	74.57	2.455	817.58	0.0037580	0.01642	1.481	0.00771	1.04580	0.9101
420	7.32143	77.44	2.446	828.14	0.0035465	0.01649	1.491	0.00820	1.04414	0.8941
430	7.07300	80.27	2.438	837.54	0.0033617	0.01657	1.502	0.00868	1.04262	0.8803
440	6.84488	83.06	2.430	845.85	0.0031986	0.01667	1.513	0.00917	1.04123	0.8682
450	6.63431	85.81	2.423	853.27	0.0030534	0.01678	1.525	0.00965	1.03994	0.8575
460	6.43906	88.54	2.416	859.93	0.0029233	0.01690	1.538	0.01014	1.03875	0.8481
470	6.25728	91.24	2.409	865.93	0.0028059	0.01703	1.551	0.01063	1.03764	0.8397
480	6.08745	93.92	2.403	871.35	0.0026993	0.01716	1.565	0.01112	1.03661	0.8322
490	5.92825	96.58	2.396	876.28	0.0026020	0.01730	1.579	0.01161	1.03564	0.8255
500	5.77860	99.22	2.391	880.76	0.0025128	0.01745	1.593	0.01211	1.03473	0.8195
510	5.63755	101.85	2.385	884.86	0.0024307	0.01756	1.607	0.01258	1.03387	0.8156
520	5.50428	104.46	2.379	888.62	0.0023548	0.01773	1.622	0.01309	1.03306	0.8102
530	5.37810	107.07	2.373	892.07	0.0022844	0.01789	1.636	0.01360	1.03230	0.8053
540	5.25838	109.67	2.368	895.25	0.0022188	0.01806	1.651	0.01411	1.03157	0.8010
550	5.14458	112.27	2.362	898.19	0.0021576	0.01823	1.666	0.01463	1.03088	0.7970
560	5.03623	114.86	2.357	900.91	0.0021003	0.01840	1.681	0.01514	1.03022	0.7935
570	4.93290	117.45	2.351	903.43	0.0020464	0.01857	1.696	0.01566	1.02960	0.7903
580	4.83421	120.04	2.346	905.78	0.0019958	0.01874	1.711	0.01618	1.02900	0.7874
590	4.73983	122.63	2.340	907.97	0.0019480	0.01892	1.727	0.01671	1.02843	0.7849
600	4.64946	125.22	2.334	910.01	0.0019028	0.01909	1.742	0.01723	1.02788	0.7826

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

930 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p BTU / LB -R	VELOCITY OF SOUND FT/SEC
* 99.151	0.01222	2147.96	318.4	-83.071	-80.966	0.50267	0.267	0.396	3845
100	0.01224	2131.76	316.2	-82.738	-80.630	0.50605	0.266	0.396	3836
105	0.01236	2037.93	303.6	-80.778	-78.650	0.52536	0.262	0.396	3780
110	0.01247	1946.75	291.4	-78.820	-76.672	0.54377	0.257	0.396	3723
115	0.01259	1858.17	279.6	-76.862	-74.695	0.56135	0.253	0.395	3665
120	0.01271	1772.12	268.1	-74.906	-72.718	0.57817	0.250	0.395	3605
125	0.01283	1688.54	257.0	-72.951	-70.741	0.59431	0.246	0.395	3544
130	0.01296	1607.39	246.3	-70.996	-68.764	0.60982	0.243	0.395	3482
135	0.01309	1528.59	235.9	-69.041	-66.787	0.62474	0.240	0.396	3420
140	0.01322	1452.10	225.9	-67.086	-64.808	0.63913	0.236	0.396	3356
145	0.01336	1377.85	216.2	-65.129	-62.828	0.65303	0.233	0.396	3291
150	0.01350	1305.78	206.9	-63.171	-60.846	0.66647	0.231	0.397	3226
155	0.01365	1235.84	197.8	-61.211	-58.861	0.67948	0.228	0.397	3159
160	0.01380	1167.97	189.1	-59.249	-56.872	0.69211	0.225	0.398	3092
165	0.01396	1102.11	180.6	-57.282	-54.879	0.70438	0.223	0.399	3024
170	0.01412	1038.21	172.5	-55.312	-52.880	0.71631	0.220	0.400	2956
175	0.01429	976.19	164.6	-53.336	-50.875	0.72794	0.218	0.402	2886
180	0.01447	916.02	157.0	-51.353	-48.862	0.73928	0.216	0.403	2816
185	0.01465	857.63	149.6	-49.362	-46.839	0.75036	0.214	0.405	2746
190	0.01484	800.97	142.4	-47.362	-44.806	0.76121	0.212	0.408	2675
195	0.01504	745.99	135.5	-45.351	-42.761	0.77184	0.209	0.411	2603
200	0.01525	692.62	128.8	-43.326	-40.700	0.78227	0.207	0.414	2530
205	0.01547	640.84	122.3	-41.287	-38.622	0.79254	0.205	0.418	2457
210	0.01571	590.58	116.0	-39.228	-36.523	0.80265	0.203	0.422	2382
215	0.01596	541.80	109.8	-37.148	-34.400	0.81265	0.201	0.427	2307
220	0.01623	494.48	103.8	-35.043	-32.249	0.82254	0.199	0.433	2230
225	0.01651	448.58	97.9	-32.908	-30.064	0.83235	0.198	0.440	2152
230	0.01682	404.10	92.1	-30.736	-27.839	0.84212	0.196	0.449	2072
235	0.01716	360.23	86.3	-28.493	-25.537	0.85203	0.199	0.464	1973
240	0.01753	328.06	80.6	-26.204	-23.184	0.86193	0.198	0.475	1888
245	0.01794	280.58	75.2	-23.857	-20.767	0.87190	0.196	0.490	1802
250	0.01840	242.47	69.6	-21.438	-18.269	0.88199	0.195	0.509	1710
255	0.01892	205.82	64.1	-18.928	-15.669	0.89229	0.195	0.533	1615
260	0.01953	170.36	58.3	-16.300	-12.937	0.90290	0.195	0.561	1508
265	0.02024	136.18	52.7	-13.509	-10.023	0.91400	0.195	0.605	1398
270	0.02113	104.12	46.6	-10.498	-6.858	0.92583	0.197	0.663	1275
275	0.02231	73.51	40.7	-7.133	-3.292	0.93892	0.200	0.778	1146
280	0.02401	45.49	33.8	-3.166	0.970	0.95427	0.205	0.955	998
285	0.02709	21.24	26.3	2.135	6.801	0.97490	0.216	1.477	817
290	0.03536	6.40	17.2	11.026	17.116	1.01075	0.241	2.601	648
295	0.04748	13.21	11.8	19.385	27.562	1.04650	0.227	1.526	642
300	0.05589	20.71	9.5	23.918	33.542	1.06662	0.212	0.964	661
310	0.06766	33.59	7.3	29.454	41.105	1.09146	0.196	0.617	700
320	0.07670	44.42	6.2	33.361	46.571	1.10882	0.187	0.488	733
330	0.08438	53.66	5.4	36.560	51.092	1.12274	0.181	0.422	761
340	0.09128	61.98	4.9	39.372	55.091	1.13468	0.177	0.381	786
350	0.09765	69.62	4.5	41.938	58.753	1.14530	0.174	0.353	809
360	0.10363	76.74	4.2	44.333	62.179	1.15495	0.172	0.333	831
370	0.10931	83.45	3.9	46.604	65.428	1.16386	0.170	0.318	851
380	0.11476	89.82	3.6	48.779	68.542	1.17216	0.168	0.306	869
390	0.12002	95.91	3.4	50.878	71.547	1.17997	0.167	0.296	887
400	0.12513	101.76	3.3	52.916	74.465	1.18735	0.166	0.288	905
410	0.13010	107.41	3.1	54.904	77.308	1.19437	0.165	0.281	921
420	0.13495	112.88	3.0	56.850	80.090	1.20108	0.164	0.275	937
430	0.13971	118.20	2.9	58.759	82.819	1.20750	0.163	0.271	952
440	0.14439	123.37	2.7	60.638	85.503	1.21367	0.163	0.266	967
450	0.14898	128.43	2.6	62.490	88.146	1.21961	0.162	0.263	982
460	0.15352	133.38	2.5	64.318	90.756	1.22535	0.162	0.259	996
470	0.15799	138.23	2.5	66.127	93.334	1.23089	0.161	0.256	1009
480	0.16241	143.00	2.4	67.918	95.886	1.23626	0.161	0.254	1023
490	0.16678	147.69	2.3	69.693	98.414	1.24148	0.161	0.252	1036
500	0.17111	152.30	2.2	71.454	100.921	1.24654	0.160	0.250	1049
510	0.17540	156.85	2.2	73.203	103.408	1.25147	0.160	0.248	1061
520	0.17965	161.35	2.1	74.941	105.879	1.25626	0.160	0.246	1073
530	0.18386	165.79	2.1	76.669	108.335	1.26094	0.160	0.245	1085
540	0.18807	170.18	2.0	78.389	110.777	1.26551	0.159	0.244	1097
550	0.19224	174.53	2.0	80.102	113.208	1.26997	0.159	0.242	1109
560	0.19638	178.83	1.9	81.808	115.627	1.27433	0.159	0.241	1120
570	0.20050	183.10	1.9	83.509	118.037	1.27859	0.159	0.241	1131
580	0.20460	187.33	1.8	85.205	120.439	1.28277	0.159	0.240	1143
590	0.20868	191.53	1.8	86.896	122.833	1.28686	0.159	0.239	1153
600	0.21274	195.70	1.8	88.584	125.221	1.29087	0.160	0.238	1164

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

930 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_p$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.151	81.80782	218.57	14.601	175719.72	0.0018119	0.11210	42.934	0.00346	1.57062	5.4607
100	81.68199	218.06	14.564	174126.78	0.0018160	0.11186	42.240	0.00346	1.56961	5.3838
105	80.93875	215.01	14.344	164947.82	0.0018406	0.11042	38.430	0.00345	1.56364	4.9580
110	80.19216	211.92	14.116	156114.45	0.0018665	0.10891	34.993	0.00343	1.55765	4.5751
115	79.44189	208.79	13.882	147616.44	0.0018938	0.10732	31.897	0.00342	1.55165	4.2306
120	78.68758	205.61	13.642	139443.70	0.0019227	0.10567	29.109	0.00347	1.54564	3.9204
125	77.92885	202.38	13.397	131586.33	0.0019533	0.10396	26.598	0.00337	1.53960	3.6411
130	77.16525	199.10	13.147	124034.60	0.0019859	0.10219	24.330	0.00335	1.53354	3.3896
135	76.39632	195.76	12.893	116778.96	0.0020204	0.10038	22.299	0.00332	1.52746	3.1632
140	75.62152	192.37	12.636	109810.04	0.0020574	0.09852	20.463	0.00329	1.52134	2.9595
145	74.84026	188.92	12.375	103118.64	0.0020970	0.09662	18.809	0.00326	1.51519	2.7762
150	74.05198	185.40	12.112	96695.79	0.0021395	0.09469	17.319	0.00322	1.50900	2.6116
155	73.25570	181.82	11.848	90532.67	0.0021852	0.09274	15.975	0.00319	1.50277	2.4639
160	72.45086	178.16	11.582	84620.70	0.0022345	0.09075	14.765	0.00315	1.49648	2.3318
165	71.63646	174.43	11.316	78951.49	0.0022880	0.08874	13.673	0.00310	1.49014	2.2138
170	70.81149	170.63	11.050	73516.89	0.0023460	0.08671	12.689	0.00306	1.48374	2.1088
175	69.97479	166.74	10.784	68308.96	0.0024094	0.08466	11.801	0.00301	1.47726	2.0159
180	69.12508	162.76	10.519	63320.05	0.0024787	0.08260	10.999	0.00296	1.47070	1.9339
185	68.26087	158.69	10.255	58542.72	0.0025549	0.08053	10.275	0.00291	1.46404	1.8625
190	67.38048	154.53	9.992	53969.86	0.0026390	0.07844	9.621	0.00285	1.45729	1.8008
195	66.48199	150.26	9.731	49594.66	0.0027324	0.07634	9.030	0.00280	1.45041	1.7484
200	65.56316	145.89	9.471	45410.65	0.0028364	0.07423	8.495	0.00274	1.44340	1.7048
205	64.62143	141.40	9.213	41411.78	0.0029531	0.07210	8.010	0.00267	1.43624	1.6698
210	63.65376	136.79	8.955	37592.43	0.0030847	0.06997	7.570	0.00261	1.42891	1.6433
215	62.65660	132.05	8.699	33947.54	0.0032343	0.06783	7.170	0.00253	1.42138	1.6252
220	61.62578	127.18	8.442	30472.73	0.0034056	0.06567	6.805	0.00246	1.41363	1.6157
225	60.55599	122.17	8.183	27164.43	0.0036036	0.06350	6.472	0.00238	1.40561	1.6152
230	59.44126	117.02	7.919	24020.20	0.0038345	0.06132	6.167	0.00230	1.39728	1.6246
235	58.26025	112.87	7.445	20987.06	0.0041136	0.05908	5.882	0.00218	1.38850	1.6641
240	57.03027	107.58	7.152	18252.87	0.0044170	0.05685	5.669	0.00210	1.37939	1.7058
245	55.73812	102.04	6.867	15637.02	0.0048065	0.05459	5.456	0.00200	1.36981	1.7645
250	54.34362	96.27	6.557	13176.78	0.0052823	0.05230	5.236	0.00189	1.35964	1.8327
255	52.84873	90.32	6.233	10877.31	0.0058961	0.04996	5.008	0.00178	1.34873	1.9219
260	51.21620	83.97	5.849	8726.22	0.0066855	0.04755	4.770	0.00165	1.33688	2.0273
265	49.39588	77.28	5.457	6726.62	0.0078310	0.04505	4.517	0.00151	1.32376	2.1848
270	47.31847	70.08	5.005	4926.83	0.0094658	0.04240	4.244	0.00135	1.30888	2.3904
275	44.83256	62.38	4.540	3295.44	0.0123409	0.04042	3.937	0.00117	1.29123	2.6995
280	41.64403	53.57	3.949	1894.47	0.0178274	0.03914	3.575	0.00098	1.26883	3.1397
285	36.91346	44.07	3.278	784.13	0.0335154	0.03894	3.096	0.00071	1.23608	4.2268
290	28.27696	35.95	2.519	237.45	0.0723378	0.03719	2.379	0.00051	1.17777	5.9905
295	21.86075	35.96	2.474	278.19	0.0424375	0.02935	1.912	0.00091	1.13051	3.5798
300	17.89284	37.69	2.502	370.50	0.0255727	0.02412	1.741	0.00140	1.11018	2.5051
310	14.78007	41.75	2.536	496.51	0.0147776	0.02007	1.598	0.00220	1.09045	1.7687
320	13.03711	45.63	2.544	579.06	0.0107032	0.01843	1.533	0.00289	1.07950	1.4629
330	11.85047	49.22	2.541	635.93	0.0085700	0.01758	1.498	0.00352	1.07209	1.2943
340	10.95523	52.66	2.533	679.00	0.0072304	0.01708	1.478	0.00409	1.06653	1.1865
350	10.24109	56.03	2.523	712.97	0.0063022	0.01679	1.467	0.00464	1.06210	1.1113
360	9.65015	59.28	2.512	740.54	0.0056163	0.01661	1.463	0.00517	1.05845	1.0557
370	9.14830	62.45	2.500	763.39	0.0050859	0.01649	1.462	0.00567	1.05535	1.0142
380	8.71375	65.54	2.489	782.65	0.0046619	0.01642	1.465	0.00617	1.05268	0.9812
390	8.33178	68.57	2.479	799.08	0.0043141	0.01641	1.470	0.00666	1.05033	0.9542
400	7.99193	71.55	2.468	813.26	0.0040229	0.01643	1.477	0.00714	1.04824	0.9317
410	7.68858	74.47	2.459	825.60	0.0037749	0.01647	1.486	0.00762	1.04637	0.9127
420	7.40993	77.34	2.450	836.43	0.0035610	0.01654	1.495	0.00810	1.04468	0.8964
430	7.15753	80.17	2.441	845.99	0.0033742	0.01662	1.506	0.00858	1.04314	0.8823
440	6.92587	82.96	2.433	854.47	0.0032095	0.01672	1.517	0.00906	1.04172	0.8700
450	6.71211	85.72	2.426	862.05	0.0030631	0.01682	1.529	0.00955	1.04041	0.8592
460	6.51398	88.45	2.419	868.84	0.0029318	0.01694	1.542	0.01003	1.03921	0.8496
470	6.32958	91.16	2.412	874.96	0.0028135	0.01707	1.555	0.01051	1.03808	0.8411
480	6.15734	93.84	2.406	880.50	0.0027061	0.01720	1.568	0.01100	1.03703	0.8335
490	5.99593	96.50	2.399	885.52	0.0026081	0.01734	1.582	0.01149	1.03605	0.8267
500	5.84423	99.14	2.393	890.09	0.0025184	0.01748	1.596	0.01198	1.03513	0.8206
510	5.70128	101.77	2.388	894.27	0.0024357	0.01760	1.610	0.01245	1.03426	0.8167
520	5.56624	104.39	2.382	898.10	0.0023594	0.01776	1.625	0.01295	1.03344	0.8112
530	5.43840	107.00	2.376	901.62	0.0022885	0.01792	1.639	0.01346	1.03266	0.8063
540	5.31713	109.60	2.371	904.86	0.0022226	0.01809	1.654	0.01397	1.03193	0.8018
550	5.20187	112.20	2.365	907.86	0.0021611	0.01826	1.669	0.01448	1.03123	0.7978
560	5.09214	114.79	2.360	910.63	0.0021035	0.01843	1.684	0.01499	1.03056	0.7942
570	4.98751	117.38	2.354	913.21	0.0020494	0.01860	1.699	0.01550	1.02993	0.7910
580	4.88759	119.97	2.349	915.60	0.0019985	0.01877	1.714	0.01602	1.02932	0.7881
590	4.79204	122.56	2.343	917.83	0.0019506	0.01895	1.729	0.01654	1.02874	0.7855
600	4.70055	125.16	2.337	919.92	0.0019052	0.01912	1.744	0.01706	1.02819	0.7832

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

940 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 99.166	0.01222	2148.57	318.4	-83.069	-81.942	0.50269	0.267	0.396	3845
100	0.01224	2132.65	316.3	-82.742	-80.611	0.50600	0.265	0.396	3835
105	0.01235	2038.83	303.6	-80.782	-78.632	0.52532	0.262	0.396	3781
110	0.01247	1947.67	291.4	-78.824	-76.654	0.54372	0.257	0.396	3724
115	0.01259	1859.09	279.6	-76.867	-74.676	0.56130	0.254	0.395	3665
120	0.01271	1773.06	268.2	-74.912	-72.700	0.57813	0.250	0.395	3606
125	0.01283	1689.50	257.1	-72.957	-70.723	0.59426	0.246	0.395	3545
130	0.01296	1608.36	246.4	-71.002	-68.746	0.60977	0.243	0.395	3483
135	0.01309	1529.58	236.0	-69.047	-66.769	0.62469	0.240	0.395	3421
140	0.01322	1453.10	226.0	-67.092	-64.791	0.63908	0.236	0.396	3357
145	0.01336	1378.87	216.3	-65.136	-62.811	0.65297	0.234	0.396	3292
150	0.01350	1306.82	206.9	-63.179	-60.829	0.66641	0.231	0.397	3226
155	0.01365	1236.90	197.9	-61.220	-58.844	0.67943	0.228	0.397	3160
160	0.01380	1169.05	189.1	-59.258	-56.855	0.69205	0.225	0.398	3093
165	0.01396	1103.21	180.7	-57.292	-54.862	0.70432	0.223	0.399	3025
170	0.01412	1039.32	172.5	-55.322	-52.864	0.71625	0.220	0.400	2957
175	0.01429	977.33	164.6	-53.346	-50.859	0.72787	0.218	0.402	2887
180	0.01446	917.18	157.0	-51.364	-48.847	0.73921	0.216	0.403	2816
185	0.01465	858.82	149.6	-49.375	-46.825	0.75029	0.214	0.405	2747
190	0.01484	802.18	142.5	-47.375	-44.793	0.76113	0.212	0.408	2675
195	0.01504	747.22	135.6	-45.365	-42.748	0.77176	0.210	0.410	2604
200	0.01525	693.89	128.9	-43.342	-40.688	0.78219	0.207	0.414	2532
205	0.01547	642.13	122.4	-41.303	-38.610	0.79245	0.205	0.417	2458
210	0.01571	591.90	116.1	-39.246	-36.513	0.80257	0.203	0.422	2384
215	0.01596	543.17	109.9	-37.168	-34.391	0.81255	0.201	0.427	2309
220	0.01622	495.88	103.9	-35.065	-32.241	0.82243	0.200	0.433	2232
225	0.01651	450.02	98.0	-32.931	-30.058	0.83224	0.198	0.440	2155
230	0.01682	405.58	92.2	-30.763	-27.836	0.84200	0.196	0.448	2075
235	0.01716	361.70	86.5	-28.522	-25.536	0.85189	0.199	0.464	1976
240	0.01752	321.56	80.8	-26.237	-23.186	0.86179	0.198	0.475	1891
245	0.01793	282.14	75.3	-23.894	-20.773	0.87174	0.196	0.490	1805
250	0.01839	244.09	69.8	-21.481	-18.280	0.88181	0.195	0.507	1714
255	0.01890	207.51	64.3	-18.977	-15.687	0.89209	0.195	0.531	1619
260	0.01950	172.15	58.5	-16.359	-12.964	0.90266	0.195	0.559	1513
265	0.02021	138.03	52.9	-13.581	-10.063	0.91371	0.195	0.602	1404
270	0.02109	106.07	46.9	-10.590	-6.919	0.92546	0.197	0.658	1282
275	0.02224	75.56	41.0	-7.260	-3.389	0.93842	0.199	0.760	1155
280	0.02389	47.65	34.2	-3.362	0.796	0.95349	0.205	0.932	1003
285	0.02677	23.39	27.0	1.738	6.397	0.97331	0.216	1.390	835
290	0.03400	9.22	18.2	9.971	15.888	1.00629	0.239	2.458	663
295	0.04579	12.58	12.3	18.568	26.539	1.04273	0.228	1.617	643
300	0.05439	19.92	9.8	23.374	32.841	1.06394	0.213	1.007	661
310	0.06631	32.88	7.5	29.111	40.653	1.08960	0.196	0.631	700
320	0.07539	43.80	6.3	33.102	46.225	1.10730	0.187	0.496	733
330	0.08307	53.12	5.6	36.345	50.805	1.12140	0.181	0.427	761
340	0.08995	61.49	5.0	39.187	54.844	1.13346	0.177	0.384	786
350	0.09629	69.18	4.6	41.774	58.535	1.14416	0.174	0.356	809
360	0.10224	76.34	4.2	44.186	61.982	1.15388	0.172	0.335	830
370	0.10789	83.08	3.9	46.469	65.250	1.16283	0.170	0.319	850
380	0.11331	89.48	3.7	48.655	68.378	1.17117	0.168	0.307	869
390	0.11854	95.60	3.5	50.763	71.396	1.17901	0.167	0.297	887
400	0.12360	101.48	3.3	52.808	74.323	1.18642	0.166	0.289	905
410	0.12854	107.15	3.2	54.803	77.176	1.19347	0.165	0.282	921
420	0.13336	112.64	3.0	56.754	79.966	1.20019	0.164	0.276	937
430	0.13808	117.98	2.9	58.668	82.702	1.20663	0.163	0.271	952
440	0.14271	123.18	2.8	60.551	85.392	1.21281	0.163	0.267	967
450	0.14727	128.25	2.7	62.407	88.042	1.21877	0.162	0.263	982
460	0.15177	133.21	2.6	64.239	90.656	1.22452	0.162	0.260	996
470	0.15620	138.08	2.5	66.051	93.240	1.23007	0.161	0.257	1009
480	0.16058	142.86	2.4	67.845	95.796	1.23545	0.161	0.254	1023
490	0.16492	147.56	2.3	69.622	98.328	1.24067	0.161	0.252	1036
500	0.16921	152.19	2.3	71.386	100.838	1.24575	0.160	0.250	1049
510	0.17346	156.75	2.2	73.137	103.330	1.25068	0.160	0.248	1061
520	0.17768	161.26	2.1	74.877	105.804	1.25548	0.160	0.247	1074
530	0.18186	165.71	2.1	76.607	108.262	1.26017	0.160	0.245	1086
540	0.18602	170.11	2.0	78.329	110.708	1.26474	0.160	0.244	1098
550	0.19014	174.46	2.0	80.044	113.141	1.26920	0.159	0.243	1109
560	0.19425	178.78	1.9	81.751	115.563	1.27357	0.159	0.242	1121
570	0.19833	183.05	1.9	83.453	117.975	1.27784	0.159	0.241	1132
580	0.20239	187.30	1.9	85.150	120.379	1.28202	0.159	0.240	1143
590	0.20643	191.51	1.8	86.843	122.775	1.28611	0.159	0.239	1154
600	0.21045	195.69	1.8	88.532	125.164	1.29013	0.160	0.239	1165

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

940 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.166	81.81039	218.62	14.600	175775.42	0.0018114	0.11210	42.949	0.00346	1.57064	5.4620
100	81.68668	218.12	14.564	174209.14	0.0018154	0.11187	42.271	0.00346	1.56964	5.3863
105	80.94366	215.07	14.344	165030.57	0.0018399	0.11044	38.454	0.00345	1.56367	4.9604
110	80.19729	211.99	14.117	156197.61	0.0018657	0.10892	35.015	0.00343	1.55769	4.5773
115	79.44727	208.86	13.883	147700.00	0.0018933	0.10733	31.918	0.00342	1.55170	4.2326
120	78.69322	205.68	13.643	139527.69	0.0019218	0.10568	29.129	0.00340	1.54568	3.9223
125	77.93477	202.46	13.397	131670.75	0.0019524	0.10397	26.617	0.00338	1.53965	3.6429
130	77.17147	199.18	13.148	124119.47	0.0019849	0.10221	24.354	0.00335	1.53359	3.3913
135	76.40286	195.85	12.894	116864.29	0.0020194	0.10039	22.315	0.00332	1.52751	3.1647
140	75.62840	192.46	12.636	109895.84	0.0020563	0.09854	20.476	0.00329	1.52140	2.9609
145	74.84752	189.01	12.376	103204.93	0.0020958	0.09664	18.824	0.00326	1.51525	2.7775
150	74.05956	185.49	12.113	96782.57	0.0021381	0.09472	17.332	0.00322	1.50906	2.6128
155	73.26379	181.91	11.849	90619.97	0.0021837	0.09276	15.989	0.00319	1.50283	2.4650
160	72.45941	178.26	11.583	84708.52	0.0022329	0.09077	14.777	0.00315	1.49655	2.3328
165	71.64553	174.54	11.317	79039.87	0.0022862	0.08876	13.685	0.00310	1.49021	2.2146
170	70.82111	170.74	11.051	73605.84	0.0023441	0.08674	12.700	0.00306	1.48381	2.1096
175	69.98503	166.85	10.785	68398.51	0.0024072	0.08469	11.811	0.00301	1.47734	2.0165
180	69.13599	162.88	10.520	63410.21	0.0024763	0.08263	11.009	0.00296	1.47078	1.9345
185	68.27252	158.82	10.257	58633.53	0.0025522	0.08056	10.285	0.00291	1.46413	1.8630
190	67.39295	154.66	9.994	54061.34	0.0026360	0.07847	9.630	0.00286	1.45738	1.8012
195	66.49538	150.40	9.733	49686.85	0.0027289	0.07637	9.038	0.00280	1.45051	1.7487
200	65.57759	146.03	9.474	45503.58	0.0028324	0.07426	8.503	0.00274	1.44351	1.7050
205	64.63702	141.55	9.216	41505.48	0.0029485	0.07214	8.018	0.00267	1.43636	1.6698
210	63.67067	136.95	8.959	37686.95	0.0030795	0.07001	7.577	0.00261	1.42904	1.6431
215	62.67503	132.22	8.703	34042.92	0.0032282	0.06787	7.177	0.00254	1.42152	1.6248
220	61.64590	127.36	8.447	30569.00	0.0033984	0.06572	6.812	0.00246	1.41378	1.6151
225	60.57824	122.36	8.188	27261.62	0.0035949	0.06355	6.479	0.00239	1.40577	1.6143
230	59.46596	117.23	7.925	24116.34	0.0038239	0.06137	6.173	0.00230	1.39747	1.6234
235	58.28796	113.08	7.452	21082.83	0.0041006	0.05914	5.889	0.00219	1.38871	1.6623
240	57.06144	107.81	7.160	18348.44	0.0044016	0.05691	5.675	0.00210	1.37962	1.7035
245	55.76566	102.30	6.875	15733.99	0.0047859	0.05466	5.462	0.00200	1.37007	1.7612
250	54.38473	96.55	6.567	13275.00	0.0052551	0.05237	5.243	0.00190	1.35994	1.8285
255	52.89712	90.64	6.245	10976.46	0.0058593	0.05004	5.016	0.00178	1.34908	1.9164
260	51.27459	84.32	5.862	8826.79	0.0066311	0.04764	4.779	0.00166	1.33731	2.0191
265	49.46882	77.70	5.476	6828.20	0.0077497	0.04515	4.528	0.00152	1.32428	2.1737
270	47.41362	70.56	5.029	5028.94	0.0093284	0.04252	4.257	0.00136	1.30956	2.3721
275	44.96673	62.96	4.571	3397.61	0.0120680	0.04048	3.954	0.00118	1.29218	2.6715
280	41.85877	54.32	3.995	1994.62	0.0171597	0.03917	3.599	0.00100	1.27033	3.0831
285	37.36185	45.07	3.341	874.02	0.0308387	0.03878	3.139	0.00075	1.23916	4.0503
290	29.41581	36.72	2.586	271.27	0.0669387	0.03750	2.465	0.00052	1.18535	5.8150
295	21.83710	35.96	2.480	274.63	0.0449622	0.03026	1.960	0.00046	1.13554	3.7695
300	18.38523	37.59	2.507	366.26	0.0267835	0.02472	1.769	0.00134	1.11333	2.5942
310	15.08096	41.59	2.541	495.88	0.0151811	0.02035	1.614	0.00214	1.09235	1.8033
320	13.26382	45.48	2.549	581.60	0.0109029	0.01861	1.545	0.00283	1.08092	1.4822
330	12.03777	49.08	2.546	639.42	0.0086919	0.01771	1.508	0.00345	1.07326	1.3069
340	11.11722	52.54	2.538	683.60	0.0073132	0.01720	1.486	0.00403	1.06753	1.1956
350	10.38519	55.89	2.528	718.41	0.0063623	0.01688	1.475	0.00457	1.06299	1.1163
360	9.78081	59.15	2.516	746.64	0.0056620	0.01669	1.469	0.00510	1.05926	1.0613
370	9.26840	62.32	2.505	770.03	0.0051219	0.01656	1.468	0.00560	1.05609	1.0188
380	8.82530	65.42	2.493	789.72	0.0046909	0.01649	1.471	0.00609	1.05336	0.9851
390	8.43621	68.46	2.483	806.52	0.0043380	0.01647	1.475	0.00657	1.05097	0.9575
400	8.09834	71.44	2.472	821.01	0.0040428	0.01649	1.482	0.00706	1.04885	0.9346
410	7.77979	74.36	2.462	833.62	0.0037919	0.01653	1.490	0.00753	1.04694	0.9153
420	7.49861	77.24	2.453	844.67	0.0035755	0.01659	1.500	0.00801	1.04522	0.8987
430	7.24222	80.07	2.445	854.43	0.0033868	0.01667	1.510	0.00849	1.04365	0.8844
440	7.00699	82.87	2.437	863.09	0.0032205	0.01676	1.521	0.00896	1.04222	0.8719
450	6.79003	85.63	2.429	870.82	0.0030727	0.01687	1.533	0.00944	1.04089	0.8609
460	6.58900	88.37	2.422	877.75	0.0029404	0.01698	1.546	0.00992	1.03966	0.8512
470	6.40196	91.07	2.415	884.00	0.0028211	0.01711	1.558	0.01040	1.03852	0.8425
480	6.22731	93.76	2.409	889.64	0.0027129	0.01724	1.572	0.01088	1.03746	0.8348
490	6.06367	96.42	2.402	894.76	0.0026142	0.01738	1.585	0.01137	1.03646	0.8279
500	5.90992	99.07	2.396	899.43	0.0025239	0.01752	1.599	0.01186	1.03553	0.8217
510	5.76505	101.70	2.391	903.69	0.0024407	0.01763	1.613	0.01232	1.03465	0.8161
520	5.62824	104.32	2.385	907.59	0.0023639	0.01779	1.628	0.01282	1.03381	0.8122
530	5.49873	106.93	2.379	911.18	0.0022927	0.01796	1.642	0.01332	1.03303	0.8072
540	5.37590	109.54	2.374	914.48	0.0022264	0.01812	1.657	0.01382	1.03228	0.8027
550	5.25918	112.14	2.368	917.54	0.0021646	0.01829	1.672	0.01433	1.03157	0.7986
560	5.14807	114.73	2.362	920.36	0.0021067	0.01846	1.687	0.01484	1.03090	0.7950
570	5.04213	117.32	2.357	922.99	0.0020524	0.01863	1.702	0.01534	1.03026	0.7917
580	4.94098	119.91	2.351	925.43	0.0020013	0.01880	1.717	0.01586	1.02964	0.7888
590	4.84425	122.50	2.346	927.70	0.0019531	0.01897	1.732	0.01637	1.02906	0.7861
600	4.75165	125.10	2.340	929.83	0.0019076	0.01915	1.747	0.01689	1.02850	0.7836

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

950 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	Cp	VELOCITY OF SOUND FT/SEC
* 99.180	0.01222	2149.18	318.4	-83.063	-80.917	0.51270	0.267	0.396	3845
100	0.01224	2133.54	316.3	-82.746	-80.593	0.50596	0.266	0.396	3837
105	0.01235	2039.73	303.7	-80.787	-78.613	0.52528	0.262	0.396	3781
110	0.01247	1948.58	291.5	-78.829	-76.635	0.54368	0.257	0.395	3724
115	0.01259	1860.02	279.6	-76.872	-74.658	0.56126	0.254	0.395	3666
120	0.01271	1774.00	268.2	-74.917	-72.682	0.57808	0.250	0.395	3606
125	0.01283	1690.45	257.1	-72.962	-70.705	0.59422	0.246	0.395	3546
130	0.01296	1609.33	246.4	-71.008	-68.729	0.60972	0.243	0.395	3484
135	0.01309	1530.57	236.0	-69.054	-66.752	0.62464	0.240	0.395	3421
140	0.01322	1454.10	226.0	-67.099	-64.773	0.63903	0.236	0.396	3357
145	0.01336	1379.89	216.3	-65.144	-62.794	0.65292	0.234	0.396	3293
150	0.01350	1307.86	207.0	-63.187	-60.812	0.66636	0.231	0.397	3227
155	0.01365	1237.95	197.9	-61.228	-58.827	0.67937	0.228	0.397	3161
160	0.01380	1170.12	189.2	-59.266	-56.839	0.69200	0.225	0.398	3094
165	0.01396	1104.30	180.8	-57.301	-54.846	0.70426	0.223	0.399	3026
170	0.01412	1040.43	172.6	-55.332	-52.848	0.71619	0.220	0.400	2958
175	0.01429	978.47	164.7	-53.357	-50.844	0.72781	0.218	0.402	2889
180	0.01446	918.34	157.1	-51.376	-48.832	0.73914	0.216	0.403	2819
185	0.01464	860.00	149.7	-49.387	-46.811	0.75022	0.214	0.405	2748
190	0.01484	803.39	142.6	-47.389	-44.779	0.76106	0.212	0.408	2677
195	0.01504	748.46	135.7	-45.379	-42.734	0.77168	0.210	0.410	2606
200	0.01525	695.15	129.0	-43.357	-40.675	0.78211	0.207	0.413	2533
205	0.01547	643.43	122.5	-41.320	-38.599	0.79237	0.205	0.417	2460
210	0.01570	593.23	116.1	-39.264	-36.502	0.80248	0.203	0.421	2386
215	0.01595	544.53	110.0	-37.188	-34.382	0.81246	0.202	0.427	2311
220	0.01622	497.28	104.0	-35.086	-32.234	0.82233	0.200	0.432	2235
225	0.01650	451.46	98.1	-32.955	-30.052	0.83213	0.198	0.439	2157
230	0.01681	407.06	92.3	-30.789	-27.832	0.84189	0.196	0.448	2077
235	0.01715	363.17	86.6	-28.552	-25.535	0.85176	0.199	0.463	1979
240	0.01752	323.05	80.9	-26.269	-23.188	0.86165	0.198	0.474	1894
245	0.01792	283.70	75.4	-23.931	-20.779	0.87158	0.196	0.489	1808
250	0.01837	245.71	69.9	-21.523	-18.291	0.88164	0.195	0.506	1718
255	0.01889	209.19	64.5	-19.026	-15.704	0.89186	0.195	0.530	1624
260	0.01948	173.91	58.7	-16.417	-12.990	0.90242	0.195	0.557	1518
265	0.02019	139.87	53.2	-13.653	-10.102	0.91342	0.195	0.599	1410
270	0.02105	108.00	47.2	-10.680	-6.977	0.92510	0.197	0.653	1289
275	0.02217	77.59	41.3	-7.383	-3.483	0.93793	0.199	0.750	1164
280	0.02377	49.78	34.7	-3.551	0.631	0.95275	0.204	0.911	1015
285	0.02648	25.53	27.6	1.374	6.031	0.97185	0.214	1.317	852
290	0.03285	10.29	19.1	9.032	14.810	1.00236	0.236	2.291	680
295	0.04415	12.06	12.9	17.725	25.491	1.03890	0.229	1.703	644
300	0.05292	19.17	10.2	22.813	32.122	1.06121	0.214	1.052	661
310	0.06498	32.18	7.7	28.763	40.194	1.08772	0.197	0.647	699
320	0.07408	43.04	6.5	32.834	45.866	1.10575	0.188	0.506	733
330	0.08179	52.58	5.7	36.129	50.517	1.12087	0.182	0.431	768
340	0.08865	61.01	5.1	39.001	54.596	1.13225	0.177	0.388	786
350	0.09496	68.74	4.6	41.610	58.316	1.14303	0.174	0.358	809
360	0.10089	75.94	4.3	44.038	61.786	1.15281	0.172	0.337	830
370	0.10651	82.72	4.0	46.334	65.071	1.16181	0.170	0.321	850
380	0.11189	89.15	3.8	48.530	68.214	1.17019	0.168	0.308	869
390	0.11708	95.30	3.6	50.647	71.244	1.17806	0.167	0.298	887
400	0.12211	101.20	3.4	52.700	74.182	1.18550	0.166	0.290	905
410	0.12701	106.90	3.2	54.701	77.044	1.19257	0.165	0.283	921
420	0.13180	112.41	3.1	56.657	79.842	1.19931	0.164	0.277	937
430	0.13648	117.76	2.9	58.577	82.586	1.20577	0.164	0.272	952
440	0.14108	122.98	2.8	60.464	85.282	1.21197	0.163	0.267	967
450	0.14560	128.07	2.7	62.324	87.938	1.21793	0.162	0.264	982
460	0.15006	133.05	2.6	64.160	90.557	1.22369	0.162	0.260	996
470	0.15445	137.93	2.5	65.975	93.146	1.22926	0.161	0.257	1010
480	0.15880	142.72	2.4	67.772	95.706	1.23465	0.161	0.255	1023
490	0.16309	147.44	2.4	69.552	98.242	1.23988	0.161	0.252	1036
500	0.16735	152.08	2.3	71.318	100.756	1.24496	0.160	0.250	1049
510	0.17156	156.65	2.2	73.071	103.251	1.24990	0.160	0.249	1062
520	0.17574	161.17	2.2	74.813	105.728	1.25471	0.160	0.247	1074
530	0.17989	165.63	2.1	76.546	108.190	1.25940	0.160	0.245	1086
540	0.18400	170.04	2.1	78.269	110.638	1.26397	0.160	0.244	1098
550	0.18809	174.40	2.0	79.985	113.073	1.26844	0.159	0.243	1109
560	0.19216	178.73	2.0	81.694	115.498	1.27281	0.159	0.242	1121
570	0.19620	183.01	1.9	83.398	117.913	1.27708	0.159	0.241	1132
580	0.20023	187.26	1.9	85.096	120.319	1.28127	0.159	0.240	1143
590	0.20423	191.48	1.8	86.790	122.717	1.28537	0.159	0.239	1154
600	0.20821	195.67	1.8	88.480	125.108	1.28939	0.160	0.239	1165

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

950 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.180	81.81295	218.68	14.600	175831.11	0.0018108	0.11211	42.963	0.00346	1.57066	5.4632
100	81.69137	218.18	14.565	174291.48	0.0018147	0.11188	42.297	0.00346	1.56968	5.3889
105	80.94856	215.14	14.344	165113.30	0.0018392	0.11045	38.477	0.00345	1.56371	4.9627
110	80.20243	212.06	14.117	156280.75	0.0018650	0.10893	35.038	0.00343	1.55773	4.5795
115	79.45265	208.93	13.883	147783.56	0.0018923	0.10735	31.939	0.00342	1.55174	4.2346
120	78.69886	205.76	13.643	139611.66	0.0019210	0.10570	29.149	0.00340	1.54573	3.9242
125	77.94069	202.53	13.398	131755.16	0.0019515	0.10399	26.635	0.00338	1.53970	3.6446
130	77.17769	199.26	13.148	124204.32	0.0019839	0.10222	24.371	0.00335	1.53364	3.3929
135	76.40940	195.93	12.894	116949.60	0.0020184	0.10041	22.332	0.00332	1.52756	3.1662
140	75.63528	192.54	12.636	109981.61	0.0020552	0.09856	20.494	0.00329	1.52145	2.9623
145	74.85477	189.10	12.376	103291.19	0.0020945	0.09666	18.838	0.00326	1.51531	2.7788
150	74.06720	185.59	12.114	96869.32	0.0021366	0.09474	17.346	0.00323	1.50912	2.6140
155	73.27187	182.01	11.849	90707.23	0.0021822	0.09278	16.002	0.00319	1.50290	2.4661
160	72.46796	178.37	11.584	84796.32	0.0022313	0.09080	14.789	0.00315	1.49662	2.3338
165	71.65459	174.65	11.318	79128.21	0.0022844	0.08879	13.696	0.00311	1.49028	2.2155
170	70.83073	170.85	11.052	73694.75	0.0023421	0.08676	12.711	0.00306	1.48389	2.1104
175	69.99525	166.97	10.787	68488.81	0.0024050	0.08472	11.821	0.00301	1.47742	2.0172
180	69.14688	163.00	10.522	63500.33	0.0024738	0.08266	11.019	0.00296	1.47086	1.9351
185	68.28415	158.94	10.258	58724.29	0.0025495	0.08059	10.294	0.00291	1.46422	1.8635
190	67.40541	154.79	9.996	54152.77	0.0026329	0.07850	9.639	0.00286	1.45748	1.8016
195	66.50875	150.54	9.735	49778.97	0.0027254	0.07640	9.047	0.00280	1.45062	1.7489
200	65.59199	146.18	9.476	45596.44	0.0028285	0.07430	8.511	0.00274	1.44362	1.7051
205	64.65257	141.70	9.219	41599.11	0.0029440	0.07218	8.025	0.00268	1.43648	1.6698
210	63.68755	137.11	8.963	37781.39	0.0030742	0.07005	7.585	0.00261	1.42917	1.6429
215	62.69342	132.39	8.707	34138.20	0.0032220	0.06791	7.184	0.00254	1.42166	1.6244
220	61.66604	127.54	8.451	30665.16	0.0033911	0.06576	6.819	0.00247	1.41393	1.6144
225	60.60043	122.55	8.194	27358.70	0.0035862	0.06360	6.486	0.00239	1.40594	1.6134
230	59.49057	117.43	7.932	24216.35	0.0038134	0.06142	6.180	0.00231	1.39765	1.6221
235	58.31555	113.29	7.458	21178.51	0.0040878	0.05919	5.895	0.00219	1.38891	1.6605
240	57.09247	108.04	7.168	18443.88	0.0043864	0.05697	5.630	0.00211	1.37985	1.7012
245	55.80100	102.55	6.883	15830.78	0.0047655	0.05472	5.464	0.00201	1.37033	1.7579
250	54.42556	96.83	6.577	13373.00	0.0052283	0.05244	5.249	0.00190	1.36024	1.8244
255	52.94512	90.95	6.257	11075.34	0.0058231	0.05012	5.023	0.00179	1.34943	1.9110
260	51.33238	84.67	5.876	8927.04	0.0065778	0.04773	4.788	0.00167	1.33772	2.0111
265	49.54079	78.10	5.495	6929.44	0.0076709	0.04525	4.538	0.00152	1.32480	2.1629
270	47.50706	71.03	5.052	5130.61	0.0091965	0.04264	4.269	0.00137	1.31023	2.3545
275	45.09733	63.53	4.601	3499.24	0.0118109	0.04055	3.970	0.00120	1.29310	2.6449
280	42.06406	55.05	4.040	2094.13	0.0165541	0.03920	3.622	0.00102	1.27177	3.0311
285	37.77091	46.04	3.407	964.18	0.0286117	0.03866	3.179	0.00078	1.24197	3.8994
290	30.44380	37.56	2.659	313.23	0.0609808	0.03769	2.544	0.00054	1.19222	5.5671
295	22.64969	36.01	2.488	273.18	0.0472947	0.03113	2.010	0.00081	1.14081	3.9587
300	18.89695	37.50	2.512	362.33	0.0280442	0.02533	1.798	0.00127	1.11660	2.6878
310	15.38837	41.45	2.547	495.22	0.0155978	0.02064	1.631	0.00207	1.09429	1.8390
320	13.49818	45.31	2.560	580.98	0.0111716	0.01882	1.557	0.00275	1.08239	1.5078
330	12.22700	48.93	2.551	642.87	0.0088157	0.01785	1.517	0.00338	1.07444	1.3197
340	11.28049	52.40	2.543	688.17	0.0073969	0.01731	1.495	0.00396	1.06855	1.2048
350	10.53021	55.76	2.532	723.83	0.0064230	0.01698	1.482	0.00450	1.06389	1.1253
360	9.91215	59.02	2.521	752.73	0.0057081	0.01678	1.476	0.00502	1.06007	1.0669
370	9.38903	62.20	2.509	776.65	0.0051581	0.01664	1.474	0.00552	1.05684	1.0234
380	8.93726	65.30	2.498	796.78	0.0047201	0.01656	1.476	0.00601	1.05405	0.9890
390	8.54097	68.35	2.487	813.95	0.0043619	0.01654	1.480	0.00649	1.05162	0.9609
400	8.18902	71.33	2.476	828.75	0.0040629	0.01654	1.487	0.00697	1.04945	0.9376
410	7.87323	74.26	2.466	841.62	0.0038089	0.01658	1.495	0.00745	1.04752	0.9179
420	7.58748	77.14	2.457	852.91	0.0035901	0.01664	1.504	0.00792	1.04577	0.9010
430	7.32705	79.98	2.448	862.86	0.0033994	0.01672	1.514	0.00839	1.04417	0.8865
440	7.08824	82.78	2.440	871.70	0.0032315	0.01681	1.525	0.00887	1.04271	0.8738
450	6.86806	85.54	2.432	879.59	0.0030824	0.01691	1.537	0.00934	1.04137	0.8626
460	6.66412	88.28	2.425	886.66	0.0029489	0.01703	1.549	0.00981	1.04012	0.8527
470	6.47443	90.99	2.418	893.02	0.0028287	0.01715	1.562	0.01029	1.03896	0.8440
480	6.29734	93.68	2.412	898.78	0.0027197	0.01728	1.575	0.01077	1.03789	0.8361
490	6.13147	96.35	2.405	904.00	0.0026203	0.01741	1.589	0.01125	1.03688	0.8291
500	5.97565	99.00	2.399	908.76	0.0025294	0.01756	1.603	0.01173	1.03593	0.8229
510	5.82887	101.63	2.393	913.10	0.0024457	0.01767	1.617	0.01219	1.03503	0.8188
520	5.69027	104.25	2.388	917.08	0.0023684	0.01783	1.631	0.01269	1.03419	0.8132
530	5.55909	106.87	2.382	920.73	0.0022968	0.01799	1.645	0.01318	1.03339	0.8081
540	5.43470	109.47	2.376	924.10	0.0022302	0.01815	1.660	0.01368	1.03264	0.8036
550	5.31651	112.07	2.371	927.21	0.0021681	0.01832	1.675	0.01418	1.03192	0.7994
560	5.20401	114.67	2.365	930.10	0.0021099	0.01849	1.689	0.01469	1.03124	0.7958
570	5.09677	117.26	2.360	932.77	0.0020554	0.01866	1.704	0.01519	1.03059	0.7924
580	4.99437	119.85	2.354	935.26	0.0020040	0.01883	1.719	0.01570	1.02997	0.7894
590	4.89648	122.44	2.348	937.57	0.0019557	0.01900	1.734	0.01621	1.02937	0.7868
600	4.80275	125.04	2.343	939.74	0.0019100	0.01918	1.749	0.01672	1.02881	0.7843

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

960 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 99.194	0.01222	2149.80	318.4	-83.066	-80.893	0.50272	0.267	0.396	3846
100	0.01224	2134.42	316.3	-82.750	-80.574	0.50592	0.266	0.396	3838
105	0.01235	2048.63	303.7	-80.791	-78.595	0.52523	0.262	0.396	3782
110	0.01247	1949.43	291.5	-78.833	-76.617	0.54364	0.257	0.395	3725
115	0.01259	1868.95	279.7	-76.877	-74.640	0.56121	0.254	0.395	3666
120	0.01271	1774.94	268.2	-74.922	-72.663	0.57804	0.250	0.395	3607
125	0.01283	1691.41	257.2	-72.968	-70.687	0.59417	0.246	0.395	3546
130	0.01296	1610.30	246.5	-71.014	-68.711	0.60967	0.243	0.395	3485
135	0.01309	1531.55	236.1	-69.060	-66.734	0.62459	0.240	0.395	3422
140	0.01322	1455.11	226.1	-67.106	-64.756	0.63898	0.237	0.396	3358
145	0.01336	1380.91	216.4	-65.151	-62.776	0.65287	0.234	0.396	3294
150	0.01350	1308.89	207.0	-63.195	-60.795	0.66631	0.231	0.397	3228
155	0.01365	1239.01	198.0	-61.236	-58.810	0.67932	0.228	0.397	3162
160	0.01380	1171.19	189.3	-59.275	-56.823	0.69194	0.225	0.398	3095
165	0.01395	1105.39	180.8	-57.311	-54.830	0.70420	0.223	0.399	3027
170	0.01412	1041.55	172.7	-55.342	-52.833	0.71613	0.221	0.400	2959
175	0.01428	979.60	164.8	-53.368	-50.829	0.72774	0.218	0.401	2890
180	0.01446	919.50	157.2	-51.387	-48.817	0.73908	0.216	0.403	2820
185	0.01464	861.18	149.8	-49.399	-46.796	0.75015	0.214	0.405	2750
190	0.01483	804.60	142.7	-47.402	-44.765	0.76099	0.212	0.407	2679
195	0.01503	749.69	135.7	-45.396	-42.721	0.77161	0.210	0.410	2607
200	0.01524	696.41	129.1	-43.373	-40.663	0.78203	0.208	0.413	2535
205	0.01546	644.72	122.6	-41.336	-38.588	0.79228	0.206	0.417	2462
210	0.01570	594.55	116.2	-39.282	-36.492	0.80239	0.204	0.421	2388
215	0.01595	545.88	110.1	-37.207	-34.373	0.81236	0.202	0.426	2313
220	0.01621	498.67	104.1	-35.108	-32.226	0.82223	0.200	0.432	2237
225	0.01650	452.90	98.2	-32.979	-30.046	0.83202	0.198	0.439	2159
230	0.01680	408.54	92.5	-30.815	-27.828	0.84177	0.196	0.447	2080
235	0.01714	364.64	86.7	-28.581	-25.534	0.85164	0.199	0.463	1981
240	0.01751	324.55	81.0	-26.302	-23.190	0.86158	0.198	0.473	1897
245	0.01791	285.25	75.6	-23.968	-20.784	0.87142	0.196	0.488	1812
250	0.01836	247.32	70.1	-21.565	-18.301	0.88146	0.195	0.505	1721
255	0.01887	210.86	64.7	-19.075	-15.720	0.89168	0.195	0.528	1628
260	0.01946	175.66	58.9	-16.474	-13.015	0.90218	0.195	0.555	1523
265	0.02016	141.71	53.4	-13.723	-10.148	0.91314	0.195	0.596	1416
270	0.02101	109.92	47.5	-10.769	-7.035	0.92475	0.196	0.648	1297
275	0.02211	79.61	41.6	-7.584	-3.573	0.93745	0.199	0.741	1172
280	0.02366	51.89	35.1	-3.732	0.475	0.95283	0.203	0.892	1027
285	0.02621	27.64	26.2	1.037	5.697	0.97051	0.213	1.255	869
290	0.03189	11.55	20.0	8.200	13.868	0.99891	0.233	2.124	698
295	0.04257	11.68	13.5	16.863	24.430	1.03503	0.230	1.779	647
300	0.05147	18.47	10.5	22.236	31.386	1.05843	0.215	1.899	661
310	0.06368	31.49	7.9	28.408	39.729	1.08584	0.196	0.662	699
320	0.07282	42.43	6.6	32.567	45.512	1.10422	0.188	0.514	733
330	0.08053	52.04	5.8	35.912	50.227	1.11873	0.182	0.436	760
340	0.08737	60.53	5.2	38.815	54.347	1.13103	0.178	0.391	785
350	0.09367	68.30	4.7	41.445	58.096	1.14190	0.175	0.361	809
360	0.09956	75.55	4.4	43.898	61.588	1.15174	0.172	0.339	830
370	0.10515	82.36	4.1	46.199	64.891	1.16079	0.170	0.322	850
380	0.11050	88.82	3.8	48.406	68.049	1.16922	0.169	0.310	869
390	0.11566	95.00	3.6	50.531	71.092	1.17712	0.167	0.299	887
400	0.12066	100.93	3.4	52.592	74.041	1.18459	0.166	0.291	905
410	0.12552	106.64	3.3	54.599	76.912	1.19168	0.165	0.284	921
420	0.13027	112.16	3.1	56.561	79.718	1.19844	0.164	0.278	937
430	0.13492	117.55	3.0	58.486	82.469	1.20491	0.164	0.273	953
440	0.13948	122.78	2.9	60.378	85.172	1.21113	0.163	0.268	967
450	0.14396	127.89	2.7	62.241	87.833	1.21711	0.162	0.264	982
460	0.14838	132.89	2.6	64.081	90.458	1.22288	0.162	0.261	996
470	0.15274	137.78	2.6	65.899	93.051	1.22845	0.161	0.258	1010
480	0.15705	142.59	2.5	67.698	95.616	1.23385	0.161	0.255	1023
490	0.16131	147.31	2.4	69.481	98.157	1.23909	0.161	0.253	1036
500	0.16552	151.97	2.3	71.250	100.674	1.24418	0.160	0.251	1049
510	0.16970	156.55	2.3	73.005	103.172	1.24912	0.160	0.249	1062
520	0.17384	161.08	2.2	74.750	105.653	1.25394	0.160	0.247	1074
530	0.17795	165.55	2.1	76.484	108.118	1.25864	0.160	0.246	1086
540	0.18203	169.97	2.1	78.209	110.568	1.26322	0.160	0.244	1098
550	0.18609	174.34	2.0	79.927	113.006	1.26769	0.160	0.243	1110
560	0.19012	178.68	2.0	81.637	115.433	1.27206	0.159	0.242	1121
570	0.19412	182.97	1.9	83.342	117.850	1.27634	0.159	0.241	1133
580	0.19811	187.23	1.9	85.042	120.258	1.28053	0.159	0.240	1144
590	0.20207	191.45	1.9	86.737	122.659	1.28463	0.159	0.240	1155
600	0.20602	195.65	1.8	88.428	125.052	1.28865	0.160	0.239	1165

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

960 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.194	81.81551	218.73	14.600	175886.79	0.0018103	0.11211	42.977	0.00346	1.57068	5.4645
100	81.69606	218.25	14.565	174373.80	0.0018141	0.11189	42.323	0.00346	1.56972	5.3914
105	80.95346	215.21	14.344	165196.03	0.0018386	0.11046	38.501	0.00345	1.56375	4.9651
110	80.20756	212.13	14.117	156363.87	0.0018643	0.10894	35.060	0.00343	1.55777	4.5817
115	79.45802	209.00	13.883	147867.09	0.0018915	0.10736	31.961	0.00342	1.55178	4.2367
120	78.70450	205.83	13.643	139695.62	0.0019202	0.10571	29.169	0.00340	1.54577	3.9261
125	77.94660	202.61	13.398	131839.55	0.0019506	0.10400	26.654	0.00338	1.53974	3.6464
130	77.18390	199.34	13.148	124289.15	0.0019829	0.10224	24.389	0.00335	1.53369	3.3945
135	76.41593	196.01	12.894	117034.88	0.0020173	0.10043	22.348	0.00332	1.52761	3.1678
140	75.64216	192.63	12.637	110067.36	0.0020540	0.09857	20.510	0.00329	1.52151	2.9637
145	74.86201	189.19	12.377	103377.42	0.0020933	0.09668	18.853	0.00326	1.51536	2.7801
150	74.07485	185.68	12.114	96956.05	0.0021354	0.09476	17.360	0.00323	1.50918	2.6152
155	73.27995	182.11	11.850	90794.47	0.0021808	0.09280	16.015	0.00319	1.50296	2.4672
160	72.47651	178.47	11.585	84884.09	0.0022297	0.09082	14.802	0.00315	1.49668	2.3347
165	71.66364	174.75	11.319	79216.52	0.0022826	0.08881	13.708	0.00311	1.49035	2.2164
170	70.84033	170.96	11.053	73783.62	0.0023402	0.08679	12.722	0.00306	1.48396	2.1112
175	70.00547	167.08	10.788	68577.47	0.0024028	0.08475	11.832	0.00302	1.47749	2.0179
180	69.15776	163.12	10.523	63590.40	0.0024714	0.08269	11.029	0.00297	1.47095	1.9357
185	68.29577	159.07	10.260	58814.99	0.0025468	0.08061	10.303	0.00291	1.46431	1.8640
190	67.41785	154.92	9.998	54244.14	0.0026299	0.07853	9.648	0.00286	1.45757	1.8020
195	66.52210	150.67	9.738	49871.04	0.0027220	0.07644	9.055	0.00280	1.45072	1.7492
200	65.60636	146.32	9.479	45689.24	0.0028246	0.07433	8.519	0.00274	1.44373	1.7052
205	64.66810	141.85	9.222	41692.67	0.0029395	0.07222	8.033	0.00268	1.43660	1.6698
210	63.70439	137.27	8.966	37875.75	0.0030699	0.07009	7.592	0.00261	1.42930	1.6427
215	62.71176	132.56	8.711	34233.40	0.0032160	0.06796	7.191	0.00254	1.42180	1.6240
220	61.68612	127.71	8.456	30761.23	0.0033839	0.06581	6.826	0.00247	1.41408	1.6138
225	60.62254	122.74	8.200	27455.67	0.0035776	0.06365	6.492	0.00239	1.40611	1.6125
230	59.51509	117.63	7.939	24314.23	0.0038030	0.06147	6.187	0.00231	1.39783	1.6209
235	58.34303	113.51	7.465	21274.18	0.0040751	0.05925	5.902	0.00220	1.38912	1.6568
240	57.12335	108.28	7.176	18539.18	0.0043713	0.05703	5.686	0.00211	1.38008	1.6989
245	55.83616	102.80	6.892	15927.39	0.0047453	0.05479	5.474	0.00201	1.37059	1.7546
250	54.46613	97.11	6.586	13470.79	0.0052020	0.05251	5.256	0.00191	1.36054	1.8203
255	52.99273	91.26	6.269	11173.97	0.0057875	0.05019	5.031	0.00179	1.34978	1.9057
260	51.38959	85.01	5.890	9026.99	0.0065259	0.04782	4.786	0.00168	1.33814	2.0034
265	49.61181	78.51	5.514	7030.32	0.0075943	0.04535	4.548	0.00153	1.32531	2.1525
270	47.59884	71.50	5.075	5231.63	0.0090697	0.04276	4.281	0.00139	1.31088	2.3375
275	45.22456	64.09	4.630	3600.33	0.0115681	0.04861	3.986	0.00121	1.29400	2.6197
280	42.26079	55.76	4.083	2193.02	0.0160021	0.03925	3.644	0.00104	1.27314	2.9831
285	38.14725	46.96	3.470	1054.47	0.0267294	0.03857	3.217	0.00081	1.24456	3.7686
290	31.36194	38.46	2.733	362.11	0.0552190	0.03778	2.618	0.00057	1.19838	5.2979
295	23.49299	36.11	2.499	274.44	0.0492641	0.03194	2.064	0.00076	1.14630	4.1383
300	19.42844	37.44	2.518	358.82	0.0293441	0.02597	1.829	0.00122	1.12001	2.7853
310	15.78249	41.31	2.553	494.55	0.0160276	0.02094	1.647	0.00201	1.09627	1.8758
320	13.73218	45.16	2.565	582.67	0.0113847	0.01901	1.569	0.00269	1.08386	1.5282
330	12.41816	48.79	2.556	646.29	0.0089413	0.01799	1.527	0.00332	1.07563	1.3328
340	11.44506	52.26	2.548	692.71	0.0074816	0.01742	1.503	0.00389	1.06957	1.2142
350	10.67615	55.62	2.537	729.23	0.0064841	0.01707	1.489	0.00443	1.06480	1.1324
360	10.04417	58.89	2.526	758.79	0.0057544	0.01686	1.482	0.00495	1.06088	1.0725
370	9.51018	62.08	2.514	783.25	0.0051944	0.01671	1.480	0.00545	1.05759	1.0281
380	9.04963	65.19	2.502	803.63	0.0047493	0.01663	1.482	0.00594	1.05475	0.9929
390	8.64607	68.23	2.491	821.37	0.0043860	0.01660	1.486	0.00642	1.05226	0.9643
400	8.28796	71.22	2.480	836.48	0.0040829	0.01660	1.492	0.00689	1.05006	0.9405
410	7.96689	74.15	2.470	849.62	0.0038259	0.01664	1.499	0.00736	1.04809	0.9205
420	7.67653	77.04	2.460	861.14	0.0036046	0.01669	1.508	0.00783	1.04631	0.9033
430	7.41205	79.88	2.452	871.30	0.0034119	0.01677	1.518	0.00830	1.04469	0.8886
440	7.16962	82.69	2.443	880.31	0.0032424	0.01686	1.529	0.00877	1.04321	0.8756
450	6.94628	85.46	2.436	888.35	0.0030920	0.01696	1.541	0.00924	1.04184	0.8643
460	6.73932	88.20	2.428	895.56	0.0029574	0.01707	1.553	0.00971	1.04058	0.8543
470	6.54698	90.91	2.421	902.05	0.0028362	0.01719	1.566	0.01018	1.03941	0.8454
480	6.36744	93.60	2.415	907.92	0.0027264	0.01732	1.579	0.01066	1.03831	0.8375
490	6.19932	96.27	2.408	913.24	0.0026264	0.01745	1.592	0.01113	1.03729	0.8304
500	6.04143	98.92	2.402	918.09	0.0025349	0.01759	1.606	0.01161	1.03633	0.8240
510	5.89272	101.56	2.396	922.51	0.0024507	0.01770	1.620	0.01207	1.03542	0.8181
520	5.75233	104.18	2.391	926.57	0.0023730	0.01786	1.634	0.01256	1.03457	0.8142
530	5.61949	106.80	2.385	930.29	0.0023010	0.01802	1.648	0.01305	1.03376	0.8091
540	5.49352	109.41	2.379	933.72	0.0022340	0.01819	1.663	0.01355	1.03300	0.8044
550	5.37385	112.01	2.374	936.89	0.0021715	0.01835	1.677	0.01404	1.03227	0.8003
560	5.25997	114.60	2.368	939.83	0.0021131	0.01852	1.692	0.01454	1.03158	0.7965
570	5.15141	117.20	2.362	942.55	0.0020583	0.01869	1.707	0.01504	1.03092	0.7931
580	5.04778	119.79	2.357	945.09	0.0020068	0.01886	1.722	0.01554	1.03029	0.7901
590	4.94870	122.38	2.351	947.45	0.0019582	0.01903	1.737	0.01605	1.02969	0.7874
600	4.85386	124.98	2.346	949.65	0.0019123	0.01920	1.752	0.01655	1.02912	0.7849

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

970 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	Cp	VELOCITY OF SOUND FT/SEC
* 99.208	0.01222	2150.41	318.4	-83.064	-80.869	0.50273	0.267	0.396	3847
100	0.01224	2135.31	316.4	-82.754	-80.555	0.50588	0.266	0.396	3838
105	0.01235	2041.53	303.8	-80.795	-78.576	0.52519	0.262	0.396	3782
110	0.01247	1950.40	291.6	-78.838	-76.599	0.54359	0.257	0.395	3725
115	0.01258	1861.87	279.7	-76.882	-74.622	0.56117	0.254	0.395	3667
120	0.01270	1775.88	268.3	-74.927	-72.645	0.57799	0.250	0.395	3608
125	0.01283	1692.36	257.2	-72.973	-70.669	0.59412	0.246	0.395	3547
130	0.01296	1611.27	246.5	-71.020	-68.693	0.60963	0.243	0.395	3485
135	0.01309	1532.54	236.1	-69.067	-66.716	0.62454	0.240	0.395	3423
140	0.01322	1456.11	226.1	-67.113	-64.739	0.63893	0.237	0.396	3359
145	0.01336	1381.92	216.5	-65.158	-62.759	0.65282	0.234	0.396	3295
150	0.01350	1309.93	207.1	-63.202	-60.778	0.66625	0.231	0.396	3229
155	0.01364	1240.06	198.1	-61.245	-58.794	0.67926	0.228	0.397	3163
160	0.01380	1172.27	189.3	-59.284	-56.806	0.69188	0.225	0.398	3096
165	0.01395	1106.49	180.9	-57.320	-54.814	0.70414	0.223	0.399	3028
170	0.01411	1042.66	172.7	-55.352	-52.817	0.71607	0.221	0.400	2960
175	0.01428	980.74	164.8	-53.379	-50.813	0.72768	0.218	0.401	2891
180	0.01446	920.65	157.2	-51.399	-48.802	0.73901	0.216	0.403	2821
185	0.01464	862.36	149.9	-49.412	-46.782	0.75008	0.214	0.405	2751
190	0.01483	805.80	142.7	-47.415	-44.751	0.76092	0.212	0.407	2680
195	0.01503	750.92	135.8	-45.408	-42.708	0.77153	0.210	0.410	2609
200	0.01524	697.66	129.1	-43.388	-40.651	0.78195	0.208	0.413	2536
205	0.01546	646.01	122.6	-41.353	-38.576	0.79220	0.206	0.417	2464
210	0.01569	595.88	116.3	-39.300	-36.482	0.80230	0.204	0.421	2390
215	0.01594	547.24	110.2	-37.227	-34.364	0.81227	0.202	0.426	2315
220	0.01621	500.07	104.2	-35.129	-32.218	0.82213	0.200	0.432	2239
225	0.01649	454.33	98.3	-33.002	-30.040	0.83191	0.198	0.439	2162
230	0.01680	410.01	92.6	-30.841	-27.824	0.84165	0.196	0.447	2083
235	0.01713	366.10	86.8	-28.613	-25.532	0.85151	0.199	0.462	1984
240	0.01750	326.04	81.2	-26.334	-23.191	0.86136	0.198	0.473	1900
245	0.01790	286.80	75.7	-24.005	-20.790	0.87127	0.196	0.487	1815
250	0.01835	248.93	70.2	-21.607	-18.311	0.88128	0.195	0.504	1725
255	0.01885	212.53	64.8	-19.123	-15.737	0.89148	0.195	0.527	1632
260	0.01944	177.40	59.1	-16.531	-13.040	0.90195	0.195	0.553	1528
265	0.02013	143.53	53.6	-13.792	-10.177	0.91286	0.195	0.593	1422
270	0.02097	111.82	47.7	-10.857	-7.091	0.92439	0.196	0.644	1304
275	0.02205	81.61	42.0	-7.622	-3.661	0.93698	0.199	0.733	1181
280	0.02356	53.98	35.5	-3.906	0.325	0.95134	0.203	0.875	1039
285	0.02598	29.74	28.8	0.725	5.391	0.96927	0.212	1.202	884
290	0.03108	12.95	20.8	7.464	13.045	0.99587	0.231	1.970	716
295	0.04105	11.45	14.1	15.993	23.367	1.03116	0.231	1.839	650
300	0.05005	17.81	10.9	21.643	30.633	1.05561	0.216	1.147	662
310	0.06241	30.82	8.1	28.048	39.257	1.08394	0.198	0.678	699
320	0.07158	41.83	6.8	32.297	45.155	1.10268	0.189	0.522	732
330	0.07929	51.52	5.9	35.693	49.935	1.11740	0.182	0.441	760
340	0.08613	60.05	5.3	38.627	54.096	1.12983	0.176	0.394	785
350	0.09240	67.87	4.8	41.280	57.875	1.14078	0.175	0.363	808
360	0.09826	75.15	4.4	43.741	61.390	1.15069	0.172	0.341	830
370	0.10382	82.00	4.1	46.063	64.712	1.15979	0.170	0.324	850
380	0.10914	88.50	3.9	48.281	67.884	1.16825	0.169	0.311	869
390	0.11427	94.70	3.7	50.415	70.939	1.17618	0.167	0.300	887
400	0.11923	100.65	3.5	52.483	73.899	1.18368	0.166	0.292	905
410	0.12406	106.39	3.3	54.497	76.780	1.19079	0.165	0.285	921
420	0.12877	111.95	3.1	56.465	79.594	1.19757	0.164	0.278	937
430	0.13338	117.34	3.0	58.394	82.352	1.20406	0.164	0.273	953
440	0.13791	122.59	2.9	60.291	85.062	1.21029	0.163	0.269	968
450	0.14236	127.71	2.8	62.159	87.729	1.21629	0.162	0.265	982
460	0.14674	132.72	2.7	64.002	90.359	1.22207	0.162	0.261	996
470	0.15107	137.63	2.6	65.823	92.957	1.22765	0.161	0.258	1010
480	0.15534	142.45	2.5	67.625	95.527	1.23306	0.161	0.256	1024
490	0.15956	147.19	2.4	69.411	98.071	1.23831	0.161	0.253	1037
500	0.16374	151.86	2.4	71.182	100.592	1.24340	0.160	0.251	1050
510	0.16788	156.45	2.3	72.940	103.094	1.24836	0.160	0.249	1062
520	0.17199	160.99	2.2	74.686	105.578	1.25318	0.160	0.248	1074
530	0.17606	165.47	2.2	76.422	108.045	1.25788	0.160	0.246	1087
540	0.18010	169.90	2.1	78.149	110.499	1.26247	0.160	0.245	1098
550	0.18412	174.28	2.1	79.868	112.940	1.26695	0.160	0.243	1110
560	0.18811	178.63	2.0	81.580	115.369	1.27132	0.159	0.242	1122
570	0.19208	182.93	2.0	83.286	117.788	1.27561	0.159	0.241	1133
580	0.19603	187.20	1.9	84.987	120.198	1.27980	0.159	0.241	1144
590	0.19996	191.43	1.9	86.684	122.601	1.28390	0.159	0.240	1155
600	0.20387	195.63	1.8	88.376	124.996	1.28793	0.160	0.239	1166

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

970 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.208	61.81807	218.79	14.599	175942.47	0.0018098	0.11212	42.991	0.00346	1.57070	5.4658
100	61.70074	218.31	14.565	174456.11	0.0018135	0.11190	42.348	0.00346	1.56976	5.3939
105	60.95836	215.27	14.345	165278.73	0.0018379	0.11047	38.525	0.00345	1.56379	4.9674
110	60.21269	212.19	14.117	156446.98	0.0018636	0.10896	35.083	0.00343	1.55782	4.5839
115	59.46339	209.07	13.883	147950.61	0.0018907	0.10737	31.982	0.00342	1.55183	4.2387
120	58.71013	205.90	13.644	139779.56	0.0019194	0.10572	29.189	0.00340	1.54582	3.9280
125	57.95251	202.69	13.398	131923.92	0.0019497	0.10402	26.673	0.00338	1.53979	3.6482
130	57.19011	199.42	13.149	124373.97	0.0019820	0.10225	24.406	0.00335	1.53374	3.3962
135	56.42246	196.10	12.895	117120.15	0.0020163	0.10044	22.365	0.00332	1.52767	3.1693
140	55.64903	192.72	12.637	110153.09	0.0020529	0.09859	20.525	0.00329	1.52156	2.9651
145	54.86925	189.28	12.377	103463.62	0.0020921	0.09670	18.868	0.00326	1.51542	2.7814
150	54.08248	185.77	12.115	97042.75	0.0021341	0.09478	17.374	0.00323	1.50924	2.6164
155	53.28801	182.21	11.851	90881.68	0.0021793	0.09282	16.026	0.00319	1.50302	2.4683
160	52.48504	178.57	11.586	84971.82	0.0022281	0.09084	14.814	0.00315	1.49675	2.3357
165	51.67268	174.86	11.320	79304.80	0.0022809	0.08884	13.720	0.00311	1.49042	2.2173
170	50.84993	171.07	11.054	73872.46	0.0023382	0.08681	12.733	0.00306	1.48403	2.1120
175	50.01567	167.20	10.789	68666.89	0.0024007	0.08477	11.842	0.00302	1.47757	2.0186
180	49.16863	163.24	10.525	63680.43	0.0024690	0.08272	11.039	0.00297	1.47103	1.9363
185	48.30738	159.19	10.262	58905.65	0.0025441	0.08064	10.313	0.00292	1.46440	1.8645
190	47.43027	155.05	10.000	54335.46	0.0026268	0.07856	9.657	0.00286	1.45767	1.8024
195	46.53543	150.81	9.740	49963.05	0.0027185	0.07647	9.064	0.00280	1.45082	1.7494
200	45.62070	146.46	9.482	45781.97	0.0028207	0.07437	8.527	0.00274	1.44384	1.7053
205	44.68359	142.00	9.225	41786.16	0.0029350	0.07225	8.041	0.00268	1.43672	1.6698
210	43.72119	137.43	8.970	37970.02	0.0030638	0.07013	7.600	0.00261	1.42942	1.6425
215	42.73006	132.72	8.715	34328.50	0.0032099	0.06800	7.198	0.00254	1.42194	1.6236
220	41.70614	127.89	8.461	30857.20	0.0033766	0.06585	6.833	0.00247	1.41423	1.6132
225	40.64459	122.93	8.206	27552.53	0.0035691	0.06369	6.499	0.00239	1.40627	1.6117
230	39.53952	117.83	7.946	24411.99	0.0037927	0.06152	6.193	0.00231	1.39802	1.6196
235	38.37040	113.72	7.471	21369.61	0.0040624	0.05938	5.908	0.00220	1.38932	1.6570
240	37.15409	108.51	7.184	18634.36	0.0043564	0.05709	5.691	0.00211	1.38031	1.6966
245	35.87112	103.05	6.900	16023.83	0.0047254	0.05485	5.480	0.00202	1.37085	1.7514
250	34.50643	97.39	6.596	13568.37	0.0051768	0.05258	5.263	0.00191	1.36083	1.8163
255	33.03997	91.56	6.281	11272.34	0.0057525	0.05027	5.039	0.00180	1.35012	1.9005
260	31.44624	85.36	5.903	9126.63	0.0064752	0.04790	4.805	0.00168	1.33855	1.9957
265	29.68193	78.91	5.532	7130.87	0.0075199	0.04545	4.558	0.00154	1.32581	2.1423
270	27.68904	71.96	5.097	5332.64	0.0089476	0.04288	4.294	0.00140	1.31153	2.3212
275	25.34861	64.64	4.658	3700.92	0.0113386	0.04068	4.002	0.00122	1.29488	2.5956
280	22.44970	56.46	4.124	2291.32	0.0154962	0.03929	3.666	0.00106	1.27446	2.9386
285	18.49593	47.84	3.529	1144.81	0.0251164	0.03850	3.252	0.00083	1.24697	3.6537
290	12.18002	39.39	2.807	416.69	0.0500115	0.03780	2.685	0.00060	1.20389	5.0368
295	24.35844	36.28	2.515	279.02	0.0506939	0.03266	2.120	0.00073	1.15195	4.2974
300	19.97987	37.40	2.526	355.90	0.0306673	0.02662	1.861	0.00116	1.12355	2.8863
310	16.02345	41.19	2.559	493.88	0.0164701	0.02124	1.665	0.00195	1.09830	1.9138
320	13.96955	45.03	2.571	584.33	0.0116821	0.01928	1.582	0.00263	1.08535	1.5491
330	12.61129	48.66	2.562	649.69	0.0090686	0.01814	1.537	0.00326	1.07684	1.3461
340	11.61893	52.13	2.553	697.23	0.0075672	0.01754	1.511	0.00383	1.07060	1.2236
350	10.82302	55.49	2.542	734.68	0.0065458	0.01717	1.497	0.00437	1.06571	1.1396
360	10.17689	58.76	2.530	764.84	0.0058010	0.01695	1.489	0.00488	1.06171	1.0782
370	9.63187	61.95	2.518	789.84	0.0052309	0.01679	1.486	0.00538	1.05834	1.0328
380	9.16242	65.07	2.506	810.86	0.0047787	0.01670	1.487	0.00586	1.05544	0.9968
390	8.75150	68.12	2.495	828.77	0.0044101	0.01666	1.491	0.00634	1.05291	0.9677
400	8.38718	71.11	2.484	844.20	0.0041031	0.01666	1.497	0.00681	1.05067	0.9435
410	8.06077	74.05	2.474	857.61	0.0038429	0.01669	1.504	0.00728	1.04867	0.9231
420	7.76577	76.94	2.464	869.36	0.0036192	0.01674	1.513	0.00774	1.04686	0.9057
430	7.49719	79.79	2.455	879.72	0.0034245	0.01682	1.523	0.00821	1.04521	0.8906
440	7.25112	82.60	2.447	888.91	0.0032534	0.01690	1.533	0.00867	1.04371	0.8775
450	7.02444	85.37	2.439	897.11	0.0031016	0.01700	1.545	0.00914	1.04232	0.8660
460	6.81462	88.12	2.431	904.46	0.0029659	0.01711	1.557	0.00961	1.04104	0.8559
470	6.61958	90.83	2.424	911.08	0.0028438	0.01723	1.569	0.01008	1.03985	0.8468
480	6.43768	93.52	2.418	917.06	0.0027332	0.01736	1.582	0.01055	1.03874	0.8388
490	6.26723	96.20	2.411	922.48	0.0026325	0.01749	1.595	0.01102	1.03770	0.8316
500	6.10726	98.85	2.405	927.42	0.0025404	0.01763	1.609	0.01149	1.03673	0.8251
510	5.95662	101.49	2.399	931.93	0.0024557	0.01773	1.623	0.01195	1.03581	0.8210
520	5.81443	104.12	2.393	936.06	0.0023775	0.01789	1.637	0.01243	1.03495	0.8152
530	5.67991	106.73	2.388	939.85	0.0023051	0.01806	1.651	0.01292	1.03413	0.8100
540	5.55237	109.34	2.382	943.35	0.0022378	0.01822	1.666	0.01341	1.03335	0.8053
550	5.43122	111.94	2.376	946.58	0.0021750	0.01838	1.680	0.01390	1.03262	0.8011
560	5.31595	114.54	2.371	949.57	0.0021163	0.01855	1.695	0.01440	1.03192	0.7973
570	5.20607	117.14	2.365	952.34	0.0020613	0.01872	1.710	0.01489	1.03125	0.7938
580	5.10119	119.73	2.360	954.92	0.0020095	0.01889	1.724	0.01539	1.03062	0.7908
590	5.00094	122.33	2.354	957.33	0.0019608	0.01906	1.739	0.01589	1.03001	0.7880
600	4.90498	124.92	2.348	959.57	0.0019147	0.01923	1.754	0.01639	1.02943	0.7855

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

980 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 99.222	0.01222	2151.02	318.4	-83.063	-80.845	0.50275	0.267	0.396	3847
100	0.01224	2136.19	316.4	-82.758	-80.537	0.50584	0.266	0.396	3839
105	0.01235	2042.43	303.8	-80.799	-78.558	0.52515	0.262	0.396	3783
110	0.01247	1951.31	291.6	-78.843	-76.580	0.54355	0.257	0.395	3726
115	0.01258	1862.80	279.8	-76.887	-74.603	0.56112	0.254	0.395	3668
120	0.01270	1776.82	268.3	-74.933	-72.627	0.57795	0.250	0.395	3608
125	0.01283	1693.32	257.3	-72.979	-70.651	0.59408	0.246	0.395	3548
130	0.01295	1612.24	246.6	-71.026	-68.675	0.60958	0.243	0.395	3486
135	0.01308	1533.52	236.2	-69.073	-66.699	0.62450	0.240	0.395	3423
140	0.01322	1457.11	226.2	-67.120	-64.721	0.63888	0.237	0.396	3360
145	0.01336	1382.94	216.5	-65.166	-62.742	0.65277	0.234	0.396	3295
150	0.01350	1310.96	207.2	-63.213	-60.761	0.66620	0.231	0.396	3230
155	0.01364	1241.11	198.1	-61.253	-58.777	0.67921	0.228	0.397	3164
160	0.01379	1173.34	189.4	-59.293	-56.790	0.69183	0.225	0.398	3097
165	0.01395	1107.58	180.9	-57.330	-54.798	0.70408	0.223	0.399	3029
170	0.01411	1043.77	172.6	-55.362	-52.801	0.71600	0.221	0.400	2961
175	0.01428	981.87	164.9	-53.389	-50.798	0.72762	0.218	0.401	2892
180	0.01446	921.81	157.3	-51.410	-48.787	0.73895	0.216	0.403	2823
185	0.01464	863.54	149.9	-49.424	-46.768	0.75001	0.214	0.405	2752
190	0.01483	807.01	142.8	-47.428	-44.738	0.76084	0.212	0.407	2682
195	0.01503	752.16	135.9	-45.422	-42.695	0.77146	0.210	0.410	2610
200	0.01524	698.94	129.2	-43.403	-40.638	0.78187	0.208	0.413	2538
205	0.01546	647.30	122.7	-41.370	-38.565	0.79212	0.206	0.417	2465
210	0.01569	597.20	116.4	-39.318	-36.471	0.80221	0.204	0.421	2392
215	0.01594	548.60	110.3	-37.247	-34.355	0.81217	0.202	0.426	2317
220	0.01620	501.46	104.3	-35.150	-32.211	0.82203	0.200	0.432	2241
225	0.01648	455.76	98.4	-33.026	-30.034	0.83180	0.198	0.438	2164
230	0.01679	411.48	92.7	-30.867	-27.820	0.84153	0.196	0.446	2085
235	0.01712	367.57	86.9	-28.638	-25.531	0.85138	0.199	0.461	1987
240	0.01749	327.52	81.3	-26.366	-23.193	0.86122	0.198	0.472	1903
245	0.01789	288.34	75.9	-24.041	-20.795	0.87111	0.196	0.486	1818
250	0.01833	250.53	70.4	-21.648	-18.321	0.88111	0.195	0.503	1729
255	0.01884	214.19	65.0	-19.171	-15.753	0.89128	0.195	0.525	1637
260	0.01942	179.14	59.3	-16.588	-13.065	0.90172	0.195	0.551	1533
265	0.02010	145.35	53.9	-13.861	-10.214	0.91258	0.195	0.591	1428
270	0.02093	113.71	48.8	-10.943	-7.145	0.92405	0.196	0.639	1310
275	0.02199	83.59	42.3	-7.737	-3.746	0.93652	0.198	0.725	1190
280	0.02346	56.04	35.9	-4.074	0.183	0.95068	0.202	0.859	1053
285	0.02576	31.82	29.3	0.433	5.107	0.96810	0.210	1.155	899
290	0.03039	14.46	21.6	6.808	12.322	0.99318	0.228	1.833	733
295	0.03963	11.39	14.8	15.124	22.315	1.02735	0.231	1.878	655
300	0.04866	17.21	11.3	21.034	29.864	1.05274	0.217	1.196	662
310	0.06116	30.17	8.3	27.681	38.779	1.08202	0.199	0.695	699
320	0.07037	41.24	6.9	32.025	44.795	1.10114	0.189	0.531	732
330	0.07809	51.00	6.0	35.472	49.642	1.11607	0.183	0.446	760
340	0.08490	59.58	5.4	38.438	53.845	1.12862	0.178	0.398	785
350	0.09115	67.45	4.9	41.113	57.654	1.13966	0.175	0.366	808
360	0.09699	74.77	4.5	43.591	61.192	1.14963	0.172	0.343	830
370	0.10252	81.65	4.2	45.927	64.532	1.15878	0.171	0.326	850
380	0.10781	88.18	3.9	48.155	67.719	1.16729	0.169	0.312	869
390	0.11290	94.40	3.7	50.299	70.787	1.17525	0.168	0.302	887
400	0.11783	100.36	3.5	52.375	73.758	1.18278	0.166	0.293	905
410	0.12263	106.14	3.3	54.395	76.648	1.18991	0.165	0.285	921
420	0.12730	111.72	3.2	56.368	79.470	1.19671	0.165	0.279	937
430	0.13188	117.13	3.1	58.303	82.236	1.20322	0.164	0.274	953
440	0.13637	122.40	2.9	60.204	84.952	1.20946	0.163	0.269	968
450	0.14079	127.54	2.8	62.076	87.625	1.21547	0.162	0.265	982
460	0.14514	132.56	2.7	63.922	90.260	1.22126	0.162	0.262	996
470	0.14943	137.49	2.6	65.747	92.863	1.22686	0.161	0.259	1010
480	0.15366	142.32	2.5	67.552	95.437	1.23228	0.161	0.256	1024
490	0.15785	147.07	2.5	69.341	97.985	1.23754	0.161	0.254	1037
500	0.16199	151.75	2.4	71.114	100.511	1.24264	0.160	0.251	1050
510	0.16610	156.35	2.3	72.874	103.016	1.24760	0.160	0.250	1062
520	0.17017	160.90	2.3	74.622	105.502	1.25243	0.160	0.248	1075
530	0.17421	165.39	2.2	76.361	107.973	1.25713	0.160	0.246	1087
540	0.17821	169.83	2.1	78.089	110.429	1.26172	0.160	0.245	1099
550	0.18220	174.23	2.1	79.810	112.873	1.26621	0.160	0.244	1111
560	0.18615	178.58	2.0	81.523	115.304	1.27059	0.159	0.243	1122
570	0.19009	182.89	2.0	83.231	117.726	1.27488	0.159	0.242	1133
580	0.19400	187.16	1.9	84.933	120.138	1.27907	0.159	0.241	1144
590	0.19790	191.41	1.9	86.631	122.543	1.28318	0.159	0.240	1155
600	0.20177	195.62	1.9	88.324	124.940	1.28721	0.160	0.239	1166

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

980 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_p$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.222	81.82063	218.84	14.599	175998.15	0.0018092	0.11212	43.005	0.00346	1.57072	5.4671
100	81.70542	218.38	14.565	174538.41	0.0018129	0.11191	42.374	0.00346	1.56980	5.3965
105	80.96326	215.34	14.345	165361.42	0.0018373	0.11048	38.549	0.00345	1.56383	4.9698
110	80.21781	212.26	14.118	156530.07	0.0018629	0.10897	35.105	0.00344	1.55786	4.5861
115	79.46876	209.14	13.884	148034.11	0.0018900	0.10739	32.003	0.00342	1.55187	4.2407
120	78.71576	205.98	13.644	139863.48	0.0019186	0.10574	29.208	0.00340	1.54586	3.9299
125	77.95842	202.76	13.399	132008.27	0.0019489	0.10403	26.691	0.00338	1.53984	3.6499
130	77.19631	199.50	13.149	124458.76	0.0019810	0.10227	24.424	0.00335	1.53379	3.3978
135	76.42898	196.18	12.895	117205.39	0.0020153	0.10046	22.381	0.00332	1.52772	3.1708
140	75.65589	192.80	12.638	110238.80	0.0020518	0.09861	20.541	0.00329	1.52162	2.9665
145	74.87649	189.37	12.378	103549.81	0.0020909	0.09672	18.882	0.00326	1.51548	2.7827
150	74.09012	185.87	12.115	97129.42	0.0021328	0.09480	17.388	0.00323	1.50930	2.6176
155	73.29607	182.30	11.851	90968.86	0.0021778	0.09284	16.041	0.00319	1.50309	2.4694
160	72.49357	178.67	11.586	85059.52	0.0022265	0.09086	14.826	0.00315	1.49682	2.3367
165	71.68171	174.96	11.321	79393.04	0.0022791	0.08886	13.731	0.00311	1.49049	2.2182
170	70.85952	171.18	11.055	73961.26	0.0023363	0.08684	12.744	0.00306	1.48411	2.1128
175	70.02586	167.31	10.790	68756.27	0.0023985	0.08480	11.853	0.00302	1.47765	2.0193
180	69.17949	163.36	10.526	63770.41	0.0024666	0.08274	11.048	0.00297	1.47112	1.9369
185	68.31897	159.32	10.263	58996.26	0.0025414	0.08067	10.322	0.00292	1.46449	1.8650
190	67.44267	155.18	10.002	54426.73	0.0026238	0.07859	9.666	0.00286	1.45776	1.8027
195	66.54873	150.95	9.742	50055.00	0.0027151	0.07650	9.072	0.00280	1.45092	1.7497
200	65.63502	146.61	9.484	45874.63	0.0028168	0.07440	8.535	0.00274	1.44395	1.7055
205	64.69906	142.15	9.228	41879.57	0.0029305	0.07229	8.049	0.00268	1.43683	1.6698
210	63.73795	137.58	8.973	38064.22	0.0030587	0.07017	7.607	0.00262	1.42955	1.6424
215	62.74831	132.89	8.720	34423.52	0.0032039	0.06804	7.206	0.00255	1.42207	1.6233
220	61.72611	128.07	8.466	30953.07	0.0033697	0.06590	6.840	0.00247	1.41438	1.6126
225	60.66657	123.12	8.211	27649.27	0.0035606	0.06374	6.506	0.00240	1.40644	1.6108
230	59.56387	118.03	7.952	24509.62	0.0037825	0.06157	6.200	0.00232	1.39820	1.6184
235	58.39766	112.93	7.478	21465.04	0.0040499	0.05936	5.915	0.00220	1.38952	1.6554
240	57.18469	108.74	7.192	18729.41	0.0043416	0.05714	5.697	0.00212	1.38054	1.6943
245	55.90589	103.30	6.908	16120.11	0.0047058	0.05491	5.486	0.00202	1.37110	1.7483
250	54.54647	97.66	6.605	13665.75	0.0051505	0.05265	5.269	0.00192	1.36112	1.8124
255	53.08684	91.87	6.293	11370.47	0.0057182	0.05035	5.046	0.00181	1.35046	1.8954
260	51.50234	85.70	5.917	9225.97	0.0064256	0.04799	4.813	0.00169	1.33895	1.9883
265	49.75117	79.30	5.551	7231.09	0.0074475	0.04555	4.568	0.00155	1.32631	2.1323
270	47.77771	72.42	5.119	5433.03	0.0088300	0.04299	4.306	0.00141	1.31216	2.3054
275	45.46968	65.18	4.686	3801.03	0.0111210	0.04075	4.017	0.00124	1.29574	2.5726
280	42.63151	57.13	4.163	2389.07	0.0150304	0.03934	3.687	0.00107	1.27574	2.8971
285	38.82095	48.70	3.586	1235.12	0.0237189	0.03846	3.285	0.00086	1.24921	3.5521
290	32.91087	40.32	2.880	475.89	0.0454601	0.03778	2.746	0.00063	1.20882	4.7968
295	25.23489	36.51	2.535	287.50	0.0514408	0.03328	2.178	0.00070	1.15769	4.4245
300	20.55110	37.39	2.534	353.75	0.0319922	0.02729	1.895	0.00111	1.12723	2.9900
310	16.35141	41.07	2.565	493.25	0.0169247	0.02156	1.682	0.00190	1.10038	1.9529
320	14.21033	44.89	2.577	585.97	0.0116233	0.01940	1.594	0.00257	1.08686	1.5704
330	12.80640	48.53	2.567	653.06	0.0091977	0.01828	1.547	0.00320	1.07806	1.3596
340	11.77812	52.00	2.556	701.73	0.0076536	0.01765	1.520	0.00377	1.07164	1.2332
350	10.97081	55.36	2.547	739.95	0.0066080	0.01727	1.504	0.00430	1.06663	1.1469
360	10.31029	58.64	2.535	770.87	0.0058480	0.01703	1.496	0.00482	1.06253	1.0840
370	9.75408	61.83	2.523	796.41	0.0052676	0.01687	1.492	0.00531	1.05909	1.0375
380	9.27562	64.96	2.510	817.88	0.0048082	0.01677	1.493	0.00579	1.05614	1.0008
390	8.85727	68.01	2.499	836.17	0.0044343	0.01673	1.496	0.00626	1.05356	0.9711
400	8.48666	71.01	2.488	851.91	0.0041232	0.01672	1.502	0.00673	1.05128	0.9464
410	8.15487	73.95	2.477	865.59	0.0038599	0.01675	1.509	0.00719	1.04924	0.9257
420	7.85519	76.85	2.468	877.58	0.0036338	0.01680	1.517	0.00766	1.04741	0.9080
430	7.58249	79.70	2.458	888.14	0.0034371	0.01687	1.527	0.00812	1.04574	0.8927
440	7.33276	82.51	2.450	897.51	0.0032644	0.01695	1.537	0.00858	1.04421	0.8794
450	7.10280	85.29	2.442	905.87	0.0031113	0.01705	1.548	0.00904	1.04280	0.8677
460	6.89001	88.03	2.435	913.36	0.0029744	0.01715	1.560	0.00951	1.04150	0.8574
470	6.69228	90.75	2.428	920.10	0.0028514	0.01727	1.573	0.00997	1.04029	0.8483
480	6.50783	93.45	2.421	926.19	0.0027400	0.01740	1.586	0.01044	1.03917	0.8401
490	6.33520	96.12	2.414	931.72	0.0026386	0.01753	1.599	0.01091	1.03812	0.8328
500	6.17313	98.78	2.408	936.75	0.0025458	0.01766	1.612	0.01138	1.03713	0.8263
510	6.02056	101.42	2.402	941.34	0.0024606	0.01777	1.626	0.01183	1.03620	0.8221
520	5.87656	104.05	2.396	945.55	0.0023820	0.01793	1.640	0.01231	1.03532	0.8162
530	5.74035	106.67	2.391	949.41	0.0023092	0.01809	1.654	0.01279	1.03450	0.8109
540	5.61124	109.28	2.385	952.97	0.0022415	0.01825	1.668	0.01328	1.03371	0.8061
550	5.48861	111.88	2.379	956.26	0.0021785	0.01842	1.683	0.01377	1.03297	0.8019
560	5.37194	114.48	2.374	959.31	0.0021195	0.01858	1.698	0.01426	1.03226	0.7980
570	5.26075	117.08	2.368	962.13	0.0020642	0.01875	1.712	0.01475	1.03158	0.7946
580	5.15462	119.67	2.362	964.76	0.0020122	0.01892	1.727	0.01524	1.03094	0.7914
590	5.05316	122.27	2.357	967.21	0.0019633	0.01909	1.742	0.01574	1.03032	0.7886
600	4.95610	124.86	2.351	969.50	0.0019171	0.01926	1.757	0.01623	1.02974	0.7861

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

990 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 99.236	0.01222	2151.64	318.4	-83.061	-86.821	0.50276	0.267	0.396	3848
100	0.01224	2137.08	316.5	-82.762	-86.518	0.50560	0.266	0.396	3839
105	0.01235	2043.32	303.9	-80.804	-78.540	0.52511	0.262	0.396	3784
110	0.01247	1952.22	291.6	-78.847	-76.562	0.54351	0.258	0.395	3727
115	0.01258	1863.72	279.8	-76.892	-74.585	0.56108	0.254	0.395	3668
120	0.01270	1777.76	268.4	-74.938	-72.609	0.57790	0.250	0.395	3609
125	0.01283	1694.27	257.3	-72.985	-70.633	0.59403	0.246	0.395	3549
130	0.01295	1613.21	246.6	-71.032	-68.657	0.60953	0.243	0.395	3487
135	0.01308	1534.50	236.2	-69.079	-66.681	0.62445	0.240	0.395	3424
140	0.01322	1458.11	226.2	-67.126	-64.704	0.63883	0.237	0.396	3361
145	0.01335	1383.96	216.6	-65.173	-62.725	0.65272	0.234	0.396	3296
150	0.01350	1312.00	207.2	-63.219	-60.744	0.66615	0.231	0.396	3231
155	0.01364	1242.17	198.2	-61.261	-58.760	0.67915	0.228	0.397	3165
160	0.01379	1174.41	189.4	-59.302	-56.773	0.69177	0.226	0.398	3098
165	0.01395	1108.67	181.0	-57.339	-54.782	0.70402	0.223	0.399	3030
170	0.01411	1044.88	172.9	-55.372	-52.785	0.71594	0.221	0.400	2962
175	0.01428	983.00	165.0	-53.400	-50.783	0.72755	0.218	0.401	2893
180	0.01445	922.97	157.4	-51.422	-48.772	0.73888	0.216	0.403	2824
185	0.01463	864.72	150.0	-49.436	-46.753	0.74995	0.214	0.405	2754
190	0.01482	808.21	142.9	-47.442	-44.724	0.76077	0.212	0.407	2683
195	0.01502	753.39	136.0	-45.436	-42.682	0.77138	0.210	0.410	2612
200	0.01523	700.19	129.3	-43.419	-40.626	0.78179	0.208	0.413	2540
205	0.01545	648.59	122.8	-41.386	-38.553	0.79203	0.206	0.416	2467
210	0.01569	598.52	116.5	-39.336	-36.461	0.81212	0.204	0.421	2393
215	0.01593	549.95	110.4	-37.266	-34.345	0.81208	0.202	0.426	2319
220	0.01620	502.85	104.4	-35.172	-32.203	0.82193	0.200	0.431	2243
225	0.01648	457.19	98.6	-33.049	-30.028	0.83170	0.198	0.438	2167
230	0.01678	412.95	92.8	-30.892	-27.816	0.84141	0.196	0.446	2088
235	0.01712	369.03	87.1	-28.667	-25.529	0.85125	0.199	0.461	1989
240	0.01748	329.01	81.5	-26.398	-23.194	0.86108	0.198	0.472	1906
245	0.01788	289.88	76.0	-24.077	-20.800	0.87095	0.196	0.485	1821
250	0.01832	252.13	70.5	-21.689	-18.331	0.88093	0.195	0.502	1732
255	0.01882	215.84	65.2	-19.219	-15.768	0.89108	0.195	0.524	1641
260	0.01940	180.87	59.5	-16.644	-13.089	0.90149	0.195	0.549	1537
265	0.02007	147.15	54.1	-13.929	-10.249	0.91230	0.195	0.588	1434
270	0.02089	115.60	48.2	-11.028	-7.198	0.92371	0.196	0.635	1317
275	0.02194	85.56	42.6	-7.849	-3.828	0.93608	0.198	0.717	1198
280	0.02336	58.08	36.3	-4.236	0.046	0.95003	0.202	0.844	1061
285	0.02556	33.67	29.8	0.158	4.844	0.96701	0.209	1.114	914
290	0.02979	16.05	22.4	6.220	11.682	0.99078	0.226	1.714	751
295	0.03830	11.50	15.4	14.270	21.291	1.02363	0.231	1.893	661
300	0.04730	16.68	11.7	20.411	29.082	1.04984	0.218	1.245	664
310	0.05993	29.53	8.6	27.308	38.295	1.08010	0.200	0.712	699
320	0.06918	40.65	7.1	31.749	44.431	1.09960	0.190	0.539	732
330	0.07690	50.48	6.1	35.249	49.347	1.11474	0.183	0.451	759
340	0.08371	59.11	5.5	38.248	53.593	1.12742	0.178	0.401	785
350	0.08993	67.03	5.0	40.946	57.432	1.13855	0.175	0.368	808
360	0.09575	74.38	4.6	43.441	60.993	1.14859	0.173	0.345	830
370	0.10125	81.30	4.3	45.791	64.351	1.15779	0.171	0.327	850
380	0.10650	87.85	4.0	48.029	67.554	1.16633	0.169	0.314	869
390	0.11157	94.11	3.8	50.182	70.634	1.17433	0.168	0.303	887
400	0.11646	100.11	3.6	52.266	73.616	1.18188	0.166	0.294	905
410	0.12122	105.98	3.4	54.292	76.515	1.18904	0.165	0.286	921
420	0.12587	111.49	3.2	56.272	79.346	1.19586	0.165	0.280	937
430	0.13041	116.92	3.1	58.211	82.119	1.20238	0.164	0.275	953
440	0.13487	122.21	3.0	60.117	84.841	1.20864	0.163	0.270	968
450	0.13925	127.36	2.9	61.993	87.520	1.21466	0.163	0.266	982
460	0.14356	132.40	2.8	63.843	90.161	1.22047	0.162	0.262	997
470	0.14782	137.34	2.7	65.671	92.769	1.22608	0.162	0.259	1011
480	0.15202	142.19	2.6	67.479	95.347	1.23151	0.161	0.256	1024
490	0.15617	146.95	2.5	69.270	97.900	1.23677	0.161	0.254	1037
500	0.16028	151.64	2.4	71.046	100.429	1.24188	0.160	0.252	1050
510	0.16435	156.26	2.3	72.808	102.937	1.24684	0.160	0.250	1063
520	0.16839	160.82	2.3	74.558	105.427	1.25168	0.160	0.248	1075
530	0.17239	165.32	2.2	76.298	107.901	1.25639	0.160	0.247	1087
540	0.17636	169.77	2.2	78.029	110.360	1.26099	0.160	0.245	1099
550	0.18031	174.17	2.1	79.751	112.806	1.26548	0.160	0.244	1111
560	0.18423	178.53	2.1	81.466	115.240	1.26986	0.159	0.243	1122
570	0.18813	182.85	2.0	83.175	117.664	1.27415	0.159	0.242	1134
580	0.19201	187.13	2.0	84.879	120.078	1.27835	0.159	0.241	1145
590	0.19587	191.38	1.9	86.577	122.485	1.28246	0.159	0.240	1156
600	0.19971	195.60	1.9	88.272	124.883	1.28650	0.159	0.240	1167

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

990 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)/V_P$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.236	81.82319	216.90	14.598	176053.82	0.0018087	0.11213	43.020	0.00346	1.57074	5.4683
100	81.71010	218.44	14.565	174620.70	0.0018123	0.11192	42.399	0.00346	1.56983	5.3990
105	80.96816	215.41	14.345	165444.13	0.0018366	0.11049	38.573	0.00345	1.56387	4.9722
110	80.22294	212.33	14.118	156613.14	0.0018622	0.10898	35.126	0.00344	1.55790	4.5883
115	79.47413	209.21	13.884	148117.60	0.0018892	0.10740	32.024	0.00342	1.55191	4.2428
120	78.72139	206.05	13.644	139947.38	0.0019177	0.10575	29.223	0.00340	1.54591	3.9318
125	77.96432	202.84	13.399	132092.60	0.0019480	0.10404	26.710	0.00338	1.53989	3.6517
130	77.20251	199.58	13.149	124543.52	0.0019801	0.10229	24.441	0.00335	1.53384	3.3994
135	76.43550	196.26	12.895	117290.61	0.0020142	0.10048	22.398	0.00333	1.52777	3.1723
140	75.66275	192.89	12.638	110324.48	0.0020507	0.09863	20.556	0.00330	1.52167	2.9679
145	74.88371	189.46	12.378	103635.96	0.0020896	0.09674	18.897	0.00326	1.51554	2.7840
150	74.09774	185.96	12.116	97216.07	0.0021314	0.09482	17.402	0.00323	1.50936	2.6188
155	73.30413	182.40	11.852	91056.00	0.0021764	0.09286	16.054	0.00319	1.50315	2.4705
160	72.50209	178.77	11.587	85147.19	0.0022249	0.09089	14.839	0.00315	1.49688	2.3377
165	71.69074	175.07	11.322	79481.24	0.0022773	0.08889	13.743	0.00311	1.49056	2.2191
170	70.86909	171.29	11.056	74050.02	0.0023343	0.08686	12.755	0.00307	1.48418	2.1136
175	70.03604	167.42	10.792	68845.61	0.0023964	0.08483	11.863	0.00302	1.47773	2.0200
180	69.19033	163.46	10.528	63860.35	0.0024642	0.08277	11.058	0.00297	1.47120	1.9375
185	68.33054	159.44	10.265	59086.83	0.0025387	0.08070	10.332	0.00292	1.46458	1.8655
190	67.45505	155.31	10.004	54517.94	0.0026208	0.07863	9.675	0.00286	1.45786	1.8031
195	66.56202	151.08	9.744	50146.89	0.0027117	0.07654	9.081	0.00281	1.45102	1.7500
200	65.64932	146.75	9.487	45967.23	0.0028129	0.07444	8.543	0.00275	1.44406	1.7056
205	64.71449	142.30	9.231	41972.92	0.0029261	0.07233	8.056	0.00268	1.43695	1.6698
210	63.75468	137.74	8.977	38158.34	0.0030535	0.07021	7.615	0.00262	1.42968	1.6422
215	62.76651	133.06	8.724	34518.45	0.0031979	0.06808	7.213	0.00255	1.42221	1.6229
220	61.74603	128.25	8.471	31048.84	0.0033627	0.06594	6.847	0.00248	1.41453	1.6120
225	60.68847	123.30	8.217	27745.91	0.0035522	0.06379	6.513	0.00240	1.40660	1.6099
230	59.58813	118.23	7.959	24607.13	0.0037724	0.06162	6.207	0.00232	1.39838	1.6172
235	58.42681	114.15	7.484	21560.38	0.0040375	0.05941	5.922	0.00221	1.38972	1.6537
240	57.21516	108.97	7.199	18824.33	0.0043271	0.05720	5.702	0.00212	1.38076	1.6921
245	55.94048	103.55	5.916	16216.22	0.0046864	0.05497	5.492	0.00203	1.37136	1.7451
250	54.58626	97.94	5.615	13762.92	0.0051253	0.05272	5.276	0.00192	1.36142	1.8085
255	53.13335	92.17	5.304	11468.35	0.0056845	0.05042	5.053	0.00181	1.35088	1.8904
260	51.55789	86.03	5.930	9325.02	0.0063771	0.04808	4.822	0.00170	1.33936	1.9810
265	49.81954	79.69	5.569	7330.99	0.0073771	0.04565	4.578	0.00156	1.32680	2.1226
270	47.86493	72.87	5.140	5533.03	0.0087168	0.04311	4.318	0.00142	1.31278	2.2901
275	45.58791	65.71	4.713	3900.67	0.0109144	0.04081	4.032	0.00125	1.29658	2.5506
280	42.90677	57.79	4.200	2486.33	0.0145996	0.03940	3.707	0.00109	1.27697	2.8584
285	39.12550	49.52	3.639	1325.37	0.0224951	0.03643	3.317	0.00088	1.25132	3.4611
290	33.56721	41.25	2.950	538.80	0.0415428	0.03773	2.803	0.00066	1.21326	4.5818
295	26.10949	36.81	2.561	300.36	0.0514329	0.03382	2.238	0.00068	1.16344	4.5110
300	21.14148	37.40	2.543	352.58	0.0332908	0.02796	1.930	0.00106	1.13104	3.0950
310	16.58649	40.96	2.571	492.69	0.0173911	0.02188	1.701	0.00184	1.10251	1.9932
320	14.45458	44.76	2.583	587.60	0.0120498	0.01960	1.607	0.00251	1.08840	1.5922
330	13.00349	48.40	2.572	656.43	0.0093284	0.01863	1.557	0.00314	1.07929	1.3733
340	11.94662	51.87	2.564	706.21	0.0077409	0.01777	1.528	0.00371	1.07269	1.2429
350	11.11954	55.24	2.552	745.29	0.0066706	0.01737	1.511	0.00424	1.06755	1.1542
360	10.44439	58.52	2.540	776.88	0.0058952	0.01712	1.502	0.00475	1.06336	1.0898
370	9.87682	61.72	2.527	802.97	0.0053045	0.01694	1.498	0.00524	1.05985	1.0423
380	9.38924	64.84	2.515	824.89	0.0048378	0.01684	1.498	0.00572	1.05684	1.0048
390	8.96336	67.90	2.503	843.55	0.0044585	0.01679	1.501	0.00619	1.05421	0.9745
400	8.58642	70.91	2.491	859.61	0.0041434	0.01678	1.506	0.00665	1.05190	0.9494
410	8.24919	73.85	2.481	873.57	0.0038770	0.01680	1.513	0.00711	1.04982	0.9283
420	7.94479	76.75	2.471	885.79	0.0036484	0.01685	1.522	0.00757	1.04796	0.9103
430	7.66794	79.61	2.462	896.56	0.0034497	0.01691	1.531	0.00803	1.04626	0.8948
440	7.41452	82.42	2.453	906.11	0.0032754	0.01700	1.541	0.00849	1.04471	0.8813
450	7.18126	85.20	2.445	914.63	0.0031209	0.01709	1.552	0.00895	1.04328	0.8695
460	6.96549	87.95	2.438	922.26	0.0029829	0.01720	1.564	0.00941	1.04196	0.8590
470	6.76505	90.68	2.431	929.13	0.0028589	0.01731	1.576	0.00987	1.04074	0.8497
480	6.57813	93.37	2.424	935.33	0.0027467	0.01744	1.589	0.01033	1.03960	0.8414
490	6.40322	96.05	2.417	940.96	0.0026446	0.01757	1.602	0.01080	1.03853	0.8340
500	6.23906	98.71	2.411	946.08	0.0025513	0.01770	1.615	0.01127	1.03753	0.8274
510	6.08454	101.35	2.405	950.76	0.0024656	0.01780	1.629	0.01171	1.03659	0.8231
520	5.93873	103.98	2.399	955.04	0.0023865	0.01796	1.643	0.01219	1.03570	0.8172
530	5.80083	106.60	2.393	958.93	0.0023133	0.01812	1.657	0.01267	1.03486	0.8118
540	5.67013	109.21	2.388	962.60	0.0022453	0.01828	1.671	0.01315	1.03407	0.8070
550	5.54602	111.82	2.382	965.95	0.0021819	0.01845	1.686	0.01363	1.03331	0.8027
560	5.42794	114.42	2.376	969.05	0.0021227	0.01861	1.700	0.01412	1.03260	0.7988
570	5.31543	117.02	2.371	971.92	0.0020671	0.01878	1.715	0.01461	1.03191	0.7953
580	5.20805	119.61	2.365	974.63	0.0020150	0.01895	1.730	0.01509	1.03126	0.7921
590	5.10543	122.21	2.360	977.09	0.0019659	0.01912	1.745	0.01559	1.03064	0.7893
600	5.00722	124.81	2.354	979.42	0.0019194	0.01929	1.759	0.01608	1.03005	0.7867

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

1000 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 99.250	0.01222	2152.25	318.4	-83.060	-84.797	0.50278	0.267	0.396	3848
100	0.01224	2137.96	316.5	-82.766	-80.500	0.50576	0.266	0.396	3840
105	0.01235	2044.22	303.9	-80.804	-78.521	0.52507	0.262	0.396	3784
110	0.01246	1953.13	291.7	-78.852	-76.544	0.54346	0.258	0.395	3727
115	0.01258	1864.65	279.9	-76.897	-74.567	0.56104	0.254	0.395	3669
120	0.01270	1778.69	268.4	-74.943	-72.591	0.57786	0.250	0.395	3610
125	0.01283	1695.22	257.4	-72.990	-70.615	0.59399	0.246	0.395	3549
130	0.01295	1614.17	246.7	-71.038	-68.640	0.60948	0.243	0.395	3488
135	0.01308	1535.49	236.3	-69.086	-66.663	0.62440	0.240	0.395	3425
140	0.01322	1459.11	226.3	-67.133	-64.686	0.63878	0.237	0.396	3361
145	0.01335	1384.98	216.6	-65.180	-62.708	0.65266	0.234	0.396	3297
150	0.01349	1313.03	207.3	-63.226	-60.727	0.66609	0.231	0.396	3232
155	0.01364	1243.22	198.2	-61.269	-58.744	0.67910	0.228	0.397	3166
160	0.01379	1175.48	189.5	-59.310	-56.757	0.69171	0.226	0.398	3099
165	0.01395	1109.76	181.1	-57.348	-54.766	0.70396	0.223	0.399	3031
170	0.01411	1046.00	172.9	-55.382	-52.770	0.71588	0.221	0.400	2963
175	0.01428	984.13	165.0	-53.411	-50.767	0.72749	0.218	0.401	2894
180	0.01445	924.12	157.4	-51.433	-48.757	0.73881	0.216	0.403	2825
185	0.01463	865.90	150.1	-49.448	-46.739	0.74988	0.214	0.405	2755
190	0.01482	809.41	143.0	-47.455	-44.710	0.76070	0.212	0.407	2684
195	0.01502	754.62	136.1	-45.450	-42.669	0.77131	0.210	0.410	2613
200	0.01523	701.45	129.4	-43.434	-40.614	0.78171	0.208	0.413	2541
205	0.01545	649.87	122.9	-41.403	-38.542	0.79195	0.206	0.416	2469
210	0.01568	599.84	116.6	-39.354	-36.450	0.80203	0.204	0.420	2395
215	0.01593	551.30	110.5	-37.285	-34.336	0.81198	0.202	0.425	2321
220	0.01619	504.23	104.5	-35.193	-32.195	0.82183	0.200	0.431	2246
225	0.01647	458.61	98.7	-33.072	-30.022	0.83159	0.198	0.438	2169
230	0.01678	414.42	92.9	-30.918	-27.812	0.84130	0.196	0.446	2091
235	0.01711	370.49	87.2	-28.696	-25.528	0.85112	0.199	0.460	1992
240	0.01747	330.49	81.6	-26.430	-23.195	0.86094	0.198	0.471	1909
245	0.01787	291.42	76.1	-24.113	-20.805	0.87080	0.196	0.484	1825
250	0.01831	253.72	70.7	-21.731	-18.340	0.88076	0.195	0.501	1736
255	0.01880	217.49	65.4	-19.266	-15.784	0.89088	0.195	0.523	1645
260	0.01937	182.59	59.7	-16.700	-13.112	0.90126	0.194	0.547	1542
265	0.02005	148.95	54.3	-13.996	-10.284	0.91203	0.195	0.585	1440
270	0.02085	117.47	48.5	-11.112	-7.250	0.92337	0.196	0.631	1324
275	0.02186	87.52	42.9	-7.959	-3.908	0.93564	0.198	0.710	1206
280	0.02327	60.10	36.7	-4.393	-0.085	0.94941	0.201	0.830	1071
285	0.02537	35.92	30.3	-0.101	4.598	0.96598	0.208	1.078	928
290	0.02927	17.70	23.1	5.669	11.110	0.98862	0.224	1.610	768
295	0.03708	11.79	16.1	13.442	28.308	1.02006	0.230	1.885	668
300	0.04598	16.21	12.2	19.776	28.289	1.04691	0.219	1.293	666
310	0.05872	28.90	8.8	26.930	37.804	1.07816	0.200	0.730	699
320	0.06802	40.08	7.2	31.470	44.065	1.09806	0.190	0.548	732
330	0.07574	49.97	6.2	35.024	49.050	1.11341	0.183	0.457	759
340	0.08253	58.65	5.6	38.056	53.339	1.12622	0.179	0.405	785
350	0.08874	66.61	5.1	40.778	57.210	1.13744	0.175	0.371	808
360	0.09453	74.00	4.7	43.291	60.794	1.14754	0.173	0.347	830
370	0.10000	80.95	4.3	45.654	64.171	1.15679	0.171	0.329	850
380	0.10523	87.54	4.0	47.903	67.389	1.16538	0.169	0.315	869
390	0.11026	93.82	3.8	50.065	70.482	1.17341	0.168	0.304	887
400	0.11512	99.85	3.6	52.157	73.474	1.18099	0.167	0.295	905
410	0.11985	105.65	3.4	54.190	76.383	1.18817	0.166	0.287	921
420	0.12446	111.27	3.3	56.175	79.222	1.19501	0.165	0.281	938
430	0.12897	116.72	3.1	58.120	82.002	1.20155	0.164	0.275	953
440	0.13340	122.02	3.0	60.030	84.731	1.20783	0.163	0.271	968
450	0.13774	127.19	2.9	61.910	87.416	1.21386	0.163	0.266	983
460	0.14202	132.25	2.8	63.763	90.062	1.21968	0.162	0.263	997
470	0.14624	137.20	2.7	65.595	92.675	1.22530	0.162	0.260	1011
480	0.15041	142.06	2.6	67.406	95.258	1.23074	0.161	0.257	1024
490	0.15453	146.83	2.5	69.200	97.814	1.23601	0.161	0.254	1037
500	0.15860	151.53	2.4	70.978	100.347	1.24112	0.160	0.252	1050
510	0.16264	156.16	2.4	72.742	102.859	1.24610	0.160	0.250	1063
520	0.16664	160.73	2.3	74.495	105.352	1.25094	0.160	0.248	1075
530	0.17061	165.24	2.2	76.236	107.829	1.25566	0.160	0.247	1088
540	0.17455	169.70	2.2	77.969	110.291	1.26026	0.160	0.245	1100
550	0.17846	174.11	2.1	79.693	112.739	1.26475	0.160	0.244	1111
560	0.18235	178.48	2.1	81.409	115.176	1.26914	0.159	0.243	1123
570	0.18622	182.81	2.0	83.123	117.602	1.27344	0.159	0.242	1134
580	0.19006	187.10	2.0	84.824	120.018	1.27764	0.159	0.241	1145
590	0.19389	191.36	1.9	86.524	122.427	1.28175	0.159	0.240	1156
600	0.19769	195.59	1.9	88.228	124.827	1.28579	0.159	0.240	1167

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1000 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV)$_P$ BTU/LB	V(DP/DU)$_V$ PSIA-CU FT/BTU	-V(DP/DV)$_T$ PSIA	(DV/DT)$_P$/V 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.250	81.82575	218.95	14.598	176109.48	0.0018081	0.11214	43.034	0.00346	1.57076	5.4696
100	81.71478	218.50	14.566	174702.97	0.0018117	0.11193	42.425	0.00346	1.56987	5.4016
105	80.97305	215.47	14.345	165526.76	0.0018359	0.11050	38.597	0.00345	1.56391	4.9745
110	80.22806	212.40	14.118	156696.21	0.0018615	0.10899	35.150	0.00344	1.55794	4.5904
115	79.47949	209.29	13.884	148201.06	0.0018884	0.10741	32.045	0.00342	1.55195	4.2448
120	78.72701	206.12	13.644	140031.27	0.0019169	0.10576	29.244	0.00340	1.54595	3.9337
125	77.97022	202.92	13.399	132176.91	0.0019471	0.10406	26.729	0.00338	1.53993	3.6534
130	77.20871	199.66	13.150	124628.27	0.0019791	0.10230	24.459	0.00335	1.53389	3.4011
135	76.44201	196.34	12.896	117375.80	0.0020132	0.10049	22.414	0.00333	1.52782	3.1738
140	75.66961	192.97	12.639	110410.14	0.0020495	0.09865	20.572	0.00330	1.52172	2.9693
145	74.89094	189.54	12.379	103722.09	0.0020884	0.09676	18.912	0.00326	1.51559	2.7853
150	74.10536	186.05	12.117	97302.68	0.0021301	0.09484	17.415	0.00323	1.50942	2.6210
155	73.31217	182.50	11.853	91143.12	0.0021749	0.09289	16.067	0.00319	1.50321	2.4716
160	72.51060	178.87	11.588	85234.82	0.0022233	0.09091	14.851	0.00315	1.49695	2.3387
165	71.69975	175.17	11.323	79569.41	0.0022756	0.08891	13.755	0.00311	1.49063	2.2200
170	70.87866	171.39	11.057	74138.75	0.0023324	0.08689	12.766	0.00307	1.48426	2.1144
175	70.04621	167.54	10.793	68934.91	0.0023942	0.08485	11.874	0.00302	1.47781	2.0207
180	69.20116	163.60	10.529	63950.24	0.0024618	0.08280	11.068	0.00297	1.47128	1.9381
185	68.34209	159.57	10.267	59177.34	0.0025360	0.08073	10.341	0.00292	1.46467	1.8660
190	67.46741	155.44	10.006	54609.11	0.0026178	0.07866	9.684	0.00287	1.45795	1.8035
195	66.57528	151.22	9.747	50238.72	0.0027083	0.07657	9.089	0.00281	1.45113	1.7503
200	65.66359	146.89	9.489	46059.77	0.0028090	0.07447	8.552	0.00275	1.44417	1.7058
205	64.72990	142.45	9.234	42066.19	0.0029217	0.07236	8.064	0.00269	1.43707	1.6697
210	63.77137	137.90	8.980	38252.38	0.0030484	0.07025	7.622	0.00262	1.42988	1.6420
215	62.78467	133.22	8.728	34613.29	0.0031920	0.06812	7.220	0.00255	1.42235	1.6226
220	61.76589	128.42	8.476	31144.51	0.0033557	0.06598	6.854	0.00248	1.41468	1.6115
225	60.71031	123.49	8.223	27842.43	0.0035439	0.06384	6.520	0.00240	1.40676	1.6091
230	59.61230	118.43	7.966	24704.52	0.0037623	0.06167	6.213	0.00232	1.39856	1.6160
235	58.45185	114.36	7.490	21655.65	0.0040252	0.05946	5.928	0.00221	1.38992	1.6520
240	57.24548	109.20	7.207	18919.14	0.0043126	0.05726	5.708	0.00212	1.38098	1.6899
245	55.97489	103.80	6.924	16312.16	0.0046672	0.05504	5.498	0.00203	1.37161	1.7421
250	54.62580	98.21	6.624	13859.90	0.0051005	0.05279	5.283	0.00193	1.36171	1.8046
255	53.17950	92.47	6.316	11565.99	0.0056513	0.05050	5.061	0.00182	1.35114	1.8654
260	51.61292	86.37	5.943	9423.79	0.0063298	0.04816	4.830	0.00171	1.33976	1.9739
265	49.88709	80.08	5.586	7430.57	0.0073086	0.04574	4.586	0.00157	1.32729	2.1131
270	47.95075	73.31	5.161	5632.65	0.0086075	0.04322	4.329	0.00143	1.31340	2.2753
275	45.70347	66.23	4.739	3999.87	0.0107181	0.04088	4.047	0.00126	1.29740	2.5296
280	42.97600	58.44	4.237	2583.05	0.0142802	0.03946	3.727	0.00111	1.27816	2.8220
285	39.41214	50.32	3.690	1415.51	0.0214140	0.03842	3.346	0.00090	1.25330	3.3792
290	34.16037	42.17	3.017	604.71	0.0381845	0.03768	2.855	0.00069	1.21728	4.3909
295	26.96927	37.19	2.593	317.91	0.0506917	0.03426	2.298	0.00067	1.16911	4.5528
300	21.74985	37.45	2.554	352.62	0.0345287	0.02862	1.967	0.00102	1.13497	3.1998
310	17.02880	40.86	2.578	492.21	0.0178680	0.02222	1.720	0.00179	1.10468	2.0345
320	14.70234	44.64	2.589	589.22	0.0122800	0.01980	1.620	0.00246	1.08996	1.6144
330	13.20259	48.28	2.578	659.79	0.0094607	0.01858	1.567	0.00308	1.08054	1.3872
340	12.11645	51.74	2.569	710.67	0.0078291	0.01789	1.537	0.00365	1.07375	1.2527
350	11.26921	55.11	2.557	750.61	0.0067337	0.01747	1.519	0.00418	1.06848	1.1616
360	10.57917	58.40	2.544	782.87	0.0059426	0.01721	1.509	0.00469	1.06420	1.0956
370	10.00008	61.62	2.532	809.52	0.0053415	0.01702	1.505	0.00517	1.06061	1.0471
380	9.50327	64.73	2.519	831.89	0.0048674	0.01691	1.504	0.00565	1.05754	1.0088
390	9.06978	67.80	2.507	850.93	0.0044828	0.01686	1.507	0.00612	1.05487	0.9779
400	8.68644	70.80	2.495	867.31	0.0041637	0.01684	1.511	0.00658	1.05251	0.9524
410	8.34373	73.76	2.485	881.54	0.0038941	0.01686	1.518	0.00704	1.05040	0.9310
420	8.03457	76.66	2.475	894.00	0.0036630	0.01690	1.526	0.00749	1.04851	0.9127
430	7.75354	79.52	2.465	904.97	0.0034623	0.01696	1.535	0.00795	1.04678	0.8969
440	7.49842	82.34	2.457	914.71	0.0032863	0.01704	1.545	0.00840	1.04521	0.8832
450	7.25983	85.12	2.449	923.38	0.0031305	0.01714	1.556	0.00886	1.04376	0.8712
460	7.04106	87.87	2.441	931.16	0.0029914	0.01724	1.568	0.00931	1.04242	0.8606
470	6.83790	90.60	2.434	938.15	0.0028665	0.01735	1.580	0.00977	1.04118	0.8512
480	6.64849	93.30	2.427	944.47	0.0027535	0.01748	1.592	0.01023	1.04003	0.8428
490	6.47130	95.98	2.420	950.23	0.0026507	0.01760	1.605	0.01069	1.03895	0.8353
500	6.30502	98.64	2.414	955.41	0.0025568	0.01774	1.619	0.01116	1.03793	0.8285
510	6.14855	101.28	2.408	960.17	0.0024705	0.01784	1.632	0.01160	1.03698	0.8242
520	6.00093	103.92	2.402	964.53	0.0023910	0.01800	1.646	0.01207	1.03608	0.8182
530	5.86133	106.54	2.396	968.54	0.0023174	0.01815	1.660	0.01255	1.03523	0.8128
540	5.72905	109.15	2.391	972.23	0.0022491	0.01831	1.674	0.01302	1.03443	0.8079
550	5.60344	111.75	2.385	975.64	0.0021854	0.01848	1.689	0.01350	1.03366	0.8035
560	5.48396	114.36	2.379	978.79	0.0021259	0.01864	1.703	0.01398	1.03294	0.7995
570	5.37012	116.96	2.374	981.72	0.0020701	0.01881	1.718	0.01447	1.03225	0.7960
580	5.26149	119.55	2.368	984.44	0.0020177	0.01898	1.732	0.01495	1.03159	0.7928
590	5.15768	122.15	2.362	986.98	0.0019683	0.01915	1.747	0.01544	1.03096	0.7899
600	5.05834	124.75	2.357	989.35	0.0019217	0.01932	1.762	0.01593	1.03036	0.7873

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

1010 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 99.264	0.01222	2152.86	318.4	-83.058	-80.772	0.50279	0.267	0.396	3849
100	0.01224	2138.84	316.5	-82.770	-80.481	0.50572	0.266	0.396	3841
105	0.01235	2045.12	303.9	-80.812	-78.503	0.52502	0.262	0.396	3785
110	0.01246	1954.05	291.7	-78.856	-76.525	0.54342	0.258	0.395	3726
115	0.01258	1865.57	279.9	-76.902	-74.549	0.56099	0.254	0.395	3670
120	0.01270	1779.63	268.5	-74.948	-72.573	0.57781	0.250	0.395	3610
125	0.01282	1696.18	257.4	-72.996	-70.597	0.59394	0.246	0.395	3550
130	0.01295	1615.14	246.7	-71.044	-68.622	0.60944	0.243	0.395	3488
135	0.01308	1536.47	236.4	-69.092	-66.646	0.62435	0.240	0.395	3426
140	0.01321	1460.11	226.3	-67.140	-64.669	0.63873	0.237	0.395	3362
145	0.01335	1385.99	216.7	-65.187	-62.690	0.65261	0.234	0.396	3298
150	0.01349	1314.07	207.3	-63.233	-60.710	0.66604	0.231	0.396	3233
155	0.01364	1244.27	198.3	-61.278	-58.727	0.67904	0.228	0.397	3167
160	0.01379	1176.55	189.6	-59.319	-56.740	0.69166	0.226	0.398	3100
165	0.01395	1110.85	181.1	-57.358	-54.750	0.70391	0.223	0.399	3032
170	0.01411	1047.11	173.0	-55.392	-52.754	0.71582	0.221	0.400	2964
175	0.01427	985.27	165.1	-53.421	-50.752	0.72743	0.218	0.401	2896
180	0.01445	925.27	157.5	-51.445	-48.743	0.73875	0.216	0.403	2826
185	0.01463	867.08	150.1	-49.461	-46.725	0.74981	0.214	0.405	2756
190	0.01482	810.62	143.0	-47.468	-44.696	0.76063	0.212	0.407	2686
195	0.01502	755.84	136.1	-45.465	-42.656	0.77123	0.210	0.409	2615
200	0.01523	702.71	129.5	-43.449	-40.601	0.78164	0.208	0.412	2543
205	0.01545	651.16	123.0	-41.419	-38.530	0.79187	0.206	0.416	2470
210	0.01568	601.15	116.7	-39.372	-36.440	0.80194	0.204	0.420	2397
215	0.01592	552.65	110.6	-37.305	-34.327	0.81189	0.202	0.425	2323
220	0.01618	505.62	104.6	-35.214	-32.187	0.82173	0.200	0.431	2248
225	0.01647	460.03	98.8	-33.095	-30.016	0.83148	0.198	0.437	2171
230	0.01677	415.86	93.1	-30.944	-27.807	0.84118	0.196	0.445	2093
235	0.01710	371.94	87.3	-28.724	-25.526	0.85099	0.199	0.460	1995
240	0.01746	331.97	81.7	-26.462	-23.197	0.86080	0.198	0.470	1913
245	0.01785	292.95	76.3	-24.149	-20.810	0.87065	0.196	0.484	1828
250	0.01829	255.31	70.8	-21.771	-18.349	0.88059	0.195	0.500	1740
255	0.01879	219.13	65.5	-19.313	-15.799	0.89069	0.195	0.521	1649
260	0.01935	184.30	59.8	-16.755	-13.135	0.90107	0.194	0.545	1547
265	0.02002	150.74	54.5	-14.063	-10.319	0.91176	0.195	0.583	1445
270	0.02082	119.33	48.7	-11.194	-7.301	0.92304	0.196	0.627	1331
275	0.02183	89.46	43.2	-8.067	-3.985	0.93521	0.198	0.703	1214
280	0.02318	62.11	37.1	-4.546	-0.210	0.94881	0.201	0.817	1081
285	0.02520	37.94	30.8	-0.347	4.366	0.96501	0.208	1.045	941
290	0.02882	19.40	23.8	5.206	10.596	0.98666	0.222	1.520	784
295	0.03597	12.24	16.8	12.648	19.375	1.01667	0.230	1.856	677
300	0.04469	15.83	12.6	19.130	27.489	1.04396	0.220	1.338	668
310	0.05754	28.30	9.0	26.545	37.307	1.07621	0.201	0.748	699
320	0.06687	39.51	7.4	31.188	43.695	1.09651	0.191	0.557	732
330	0.07460	49.33	6.4	34.796	48.747	1.11207	0.184	0.464	760
340	0.08138	58.20	5.7	37.864	53.085	1.12503	0.179	0.409	785
350	0.08757	66.19	5.1	40.609	56.986	1.13634	0.176	0.374	808
360	0.09333	73.62	4.7	43.140	60.595	1.14650	0.173	0.349	830
370	0.09878	80.61	4.4	45.516	63.990	1.15581	0.171	0.331	850
380	0.10397	87.22	4.1	47.777	67.223	1.16443	0.169	0.316	869
390	0.10897	93.53	3.9	49.948	70.329	1.17250	0.168	0.305	887
400	0.11381	99.58	3.7	52.047	73.332	1.18010	0.167	0.296	905
410	0.11850	105.41	3.5	54.087	76.251	1.18731	0.166	0.288	922
420	0.12308	111.05	3.3	56.078	79.098	1.19417	0.165	0.282	938
430	0.12756	116.51	3.2	58.028	81.885	1.20073	0.164	0.276	953
440	0.13195	121.83	3.0	59.942	84.621	1.20702	0.163	0.271	968
450	0.13627	127.02	2.9	61.826	87.312	1.21307	0.163	0.267	983
460	0.14051	132.09	2.8	63.684	89.964	1.21890	0.162	0.263	997
470	0.14470	137.06	2.7	65.518	92.581	1.22452	0.162	0.260	1011
480	0.14883	141.93	2.6	67.333	95.168	1.22997	0.161	0.257	1024
490	0.15292	146.72	2.5	69.129	97.729	1.23525	0.161	0.255	1038
500	0.15696	151.43	2.5	70.910	100.265	1.24038	0.161	0.253	1051
510	0.16096	156.07	2.4	72.677	102.781	1.24536	0.160	0.251	1063
520	0.16493	160.65	2.3	74.431	105.277	1.25020	0.160	0.249	1076
530	0.16887	165.17	2.3	76.175	107.757	1.25493	0.160	0.247	1088
540	0.17277	169.64	2.2	77.909	110.221	1.25953	0.160	0.246	1100
550	0.17665	174.06	2.2	79.634	112.672	1.26403	0.160	0.244	1112
560	0.18051	178.44	2.1	81.352	115.111	1.26843	0.159	0.243	1123
570	0.18434	182.77	2.1	83.064	117.540	1.27272	0.159	0.242	1135
580	0.18815	187.07	2.0	84.770	119.958	1.27693	0.159	0.241	1146
590	0.19194	191.34	2.0	86.471	122.369	1.28105	0.159	0.241	1157
600	0.19571	195.57	1.9	88.168	124.771	1.28509	0.159	0.240	1168

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1010 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/ DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.264	81.82831	219.01	14.598	176165.14	0.0018076	0.11214	43.048	0.00346	1.57078	5.4709
100	81.71946	218.57	14.566	174785.23	0.0018111	0.11194	42.450	0.00345	1.56991	5.4041
105	80.97794	215.54	14.346	165609.41	0.0018353	0.11051	38.621	0.00345	1.56395	4.9769
110	80.23318	212.47	14.118	156779.25	0.0018608	0.10900	35.173	0.00344	1.55798	4.5926
115	79.48486	209.36	13.884	148284.52	0.0018877	0.10742	32.086	0.00342	1.55200	4.2469
120	78.73263	206.20	13.645	140115.13	0.0019161	0.10578	29.268	0.00340	1.54600	3.9356
125	77.97612	202.99	13.400	132261.20	0.0019462	0.10407	26.747	0.00338	1.53998	3.6552
130	77.21490	199.74	13.150	124713.00	0.0019782	0.10232	24.477	0.00335	1.53394	3.4027
135	76.44852	196.43	12.896	117460.98	0.0020122	0.10051	22.431	0.00333	1.52787	3.1754
140	75.67646	193.06	12.639	110495.77	0.0020484	0.09866	20.587	0.00330	1.52178	2.9707
145	74.89816	189.63	12.379	103808.20	0.0020872	0.09678	18.926	0.00326	1.51565	2.7866
150	74.11297	186.15	12.117	97389.27	0.0021288	0.09486	17.429	0.00323	1.50948	2.6212
155	73.32021	182.59	11.853	91230.21	0.0021735	0.09291	16.080	0.00319	1.50327	2.4727
160	72.51910	178.97	11.589	85322.43	0.0022217	0.09093	14.863	0.00315	1.49702	2.3397
165	71.70876	175.27	11.324	79657.55	0.0022738	0.08893	13.766	0.00311	1.49070	2.2209
170	70.88821	171.50	11.059	74227.43	0.0023304	0.08691	12.777	0.00307	1.48433	2.1152
175	70.05636	167.65	10.794	69024.16	0.0023921	0.08488	11.884	0.00302	1.47789	2.0214
180	69.21197	163.72	10.530	64040.09	0.0024594	0.08283	11.078	0.00297	1.47137	1.9388
185	68.35364	159.69	10.268	59267.80	0.0025334	0.08076	10.350	0.00292	1.46476	1.8665
190	67.47976	155.57	10.008	54700.20	0.0026148	0.07869	9.693	0.00287	1.45805	1.8039
195	66.58852	151.36	9.749	50330.50	0.0027049	0.07660	9.098	0.00281	1.45123	1.7505
200	65.67783	147.04	9.492	46152.24	0.0028052	0.07451	8.560	0.00275	1.44428	1.7059
205	64.74527	142.60	9.237	42159.39	0.0029173	0.07240	8.072	0.00269	1.43718	1.6697
210	63.78802	138.06	8.984	38346.34	0.0030433	0.07029	7.629	0.00262	1.42993	1.6419
215	62.80279	133.39	8.732	34708.05	0.0031860	0.06816	7.227	0.00255	1.42249	1.6222
220	61.78569	128.60	8.480	31240.08	0.0033487	0.06603	6.861	0.00248	1.41483	1.6109
225	60.73208	123.68	8.228	27938.85	0.0035356	0.06388	6.526	0.00241	1.40693	1.6082
230	59.63639	118.63	7.972	24801.78	0.0037523	0.06172	6.220	0.00233	1.39874	1.6149
235	58.47879	114.57	7.497	21750.84	0.0040130	0.05952	5.935	0.00221	1.39012	1.6504
240	57.27567	109.43	7.215	19013.82	0.0042983	0.05732	5.713	0.00213	1.38121	1.6877
245	56.00911	104.04	6.932	16407.95	0.0046483	0.05510	5.504	0.00203	1.37186	1.7390
250	54.66509	98.48	5.634	13956.69	0.0050760	0.05286	5.289	0.00193	1.36199	1.8008
255	53.22531	92.77	5.327	11663.41	0.0056187	0.05057	5.068	0.00182	1.35147	1.8805
260	51.66743	86.70	5.956	9522.29	0.0062834	0.04824	4.839	0.00171	1.34015	1.9669
265	49.95383	80.47	5.604	7529.85	0.0072418	0.04584	4.597	0.00157	1.32777	2.1039
270	48.03521	73.75	5.182	5731.90	0.0085019	0.04333	4.341	0.00144	1.31400	2.2610
275	45.81648	66.75	4.765	4098.63	0.0105312	0.04095	4.061	0.00127	1.29820	2.5094
280	43.13964	59.07	4.272	2679.31	0.0136289	0.03952	3.746	0.00112	1.27930	2.7880
285	39.68300	51.10	3.739	1585.52	0.0204519	0.03842	3.375	0.00093	1.25518	3.3049
290	34.69995	43.06	3.081	673.03	0.0353028	0.03763	2.903	0.00071	1.22095	4.2220
295	27.80268	37.63	2.630	340.31	0.0493216	0.03462	2.358	0.00067	1.17463	4.5515
300	22.37437	37.53	2.567	354.12	0.0356665	0.02927	2.006	0.00098	1.13902	3.3025
310	17.37844	40.77	2.584	491.87	0.0183543	0.02256	1.739	0.00173	1.10690	2.0767
320	14.95364	44.53	2.595	590.85	0.0125140	0.02001	1.633	0.00240	1.09154	1.6371
330	13.40568	48.12	2.588	661.26	0.0096417	0.01874	1.578	0.00301	1.08181	1.4060
340	12.28761	51.62	2.574	715.12	0.0079180	0.01801	1.546	0.00359	1.07482	1.2627
350	11.41981	54.99	2.562	755.91	0.0067973	0.01757	1.527	0.00412	1.06941	1.1691
360	10.71465	58.28	2.549	788.86	0.0059904	0.01730	1.516	0.00462	1.06504	1.1015
370	10.12388	61.49	2.536	816.05	0.0053787	0.01710	1.511	0.00511	1.06138	1.0519
380	9.61772	64.62	2.523	838.84	0.0048972	0.01698	1.510	0.00558	1.05825	1.0129
390	9.17653	67.69	2.511	858.29	0.0045071	0.01692	1.512	0.00604	1.05553	0.9814
400	8.78672	70.70	2.499	875.00	0.0041839	0.01690	1.516	0.00650	1.05313	0.9554
410	8.43849	73.66	2.488	889.50	0.0039112	0.01692	1.523	0.00696	1.05099	0.9336
420	8.12453	76.57	2.478	902.20	0.0036776	0.01695	1.530	0.00741	1.04906	0.9150
430	7.83929	79.43	2.469	913.38	0.0034749	0.01701	1.539	0.00786	1.04731	0.8990
440	7.57843	82.25	2.460	923.30	0.0032973	0.01709	1.549	0.00832	1.04571	0.8851
450	7.33850	85.04	2.452	932.14	0.0031401	0.01718	1.560	0.00877	1.04424	0.8729
460	7.11672	87.80	2.444	940.05	0.0029999	0.01728	1.571	0.00922	1.04289	0.8621
470	6.91082	90.52	2.437	947.17	0.0028740	0.01739	1.583	0.00967	1.04163	0.8526
480	6.71892	93.23	2.430	953.61	0.0027602	0.01751	1.596	0.01013	1.04046	0.8441
490	6.53943	95.91	2.423	959.44	0.0026567	0.01764	1.609	0.01059	1.03936	0.8365
500	6.37104	98.57	2.417	964.75	0.0025622	0.01777	1.622	0.01105	1.03833	0.8297
510	6.21261	101.22	2.411	969.59	0.0024754	0.01787	1.635	0.01148	1.03737	0.8253
520	6.06316	103.85	2.405	974.03	0.0023955	0.01803	1.649	0.01195	1.03646	0.8192
530	5.92186	106.47	2.399	978.11	0.0023215	0.01819	1.663	0.01242	1.03560	0.8137
540	5.78798	109.09	2.393	981.86	0.0022529	0.01835	1.677	0.01290	1.03479	0.8087
550	5.66088	111.69	2.388	985.33	0.0021888	0.01851	1.691	0.01337	1.03401	0.8043
560	5.54000	114.30	2.382	988.54	0.0021290	0.01867	1.706	0.01385	1.03328	0.8003
570	5.42483	116.90	2.377	991.52	0.0020730	0.01884	1.720	0.01433	1.03258	0.7967
580	5.31494	119.50	2.371	994.29	0.0020204	0.01901	1.735	0.01481	1.03191	0.7934
590	5.20994	122.09	2.365	996.87	0.0019708	0.01917	1.750	0.01529	1.03127	0.7905
600	5.10947	124.69	2.360	999.28	0.0019241	0.01934	1.764	0.01578	1.03067	0.7879

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

1020 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	Cp BTU / LB -R	VELOCITY OF SOUND FT/SEC
* 99.278	0.01222	2153.48	318.4	-83.056	-80.748	0.50281	0.267	0.396	3849
100	0.01224	2139.73	316.6	-82.774	-80.463	0.50568	0.266	0.396	3841
105	0.01235	2046.01	304.0	-80.816	-78.484	0.52498	0.262	0.396	3786
110	0.01246	1954.96	291.8	-78.861	-76.507	0.54338	0.258	0.395	3729
115	0.01258	1866.49	280.0	-76.907	-74.531	0.56095	0.254	0.395	3670
120	0.01270	1780.57	268.5	-74.954	-72.555	0.57777	0.250	0.395	3611
125	0.01282	1697.13	257.5	-73.001	-70.579	0.59389	0.246	0.395	3551
130	0.01295	1616.11	246.8	-71.051	-68.604	0.60939	0.243	0.395	3489
135	0.01308	1537.45	236.4	-69.098	-66.628	0.62430	0.240	0.395	3427
140	0.01321	1461.11	226.4	-67.147	-64.651	0.63868	0.237	0.395	3363
145	0.01335	1387.01	216.7	-65.195	-62.673	0.65256	0.234	0.396	3299
150	0.01349	1315.10	207.4	-63.241	-60.693	0.66599	0.231	0.396	3234
155	0.01364	1245.32	198.3	-61.286	-58.710	0.67899	0.228	0.397	3168
160	0.01379	1177.62	189.6	-59.328	-56.724	0.69160	0.226	0.398	3101
165	0.01394	1111.94	181.2	-57.367	-54.733	0.70385	0.223	0.398	3033
170	0.01410	1048.21	173.0	-55.402	-52.738	0.71576	0.221	0.400	2965
175	0.01427	986.40	165.2	-53.432	-50.736	0.72736	0.218	0.401	2897
180	0.01445	926.43	157.6	-51.456	-48.728	0.73868	0.216	0.403	2827
185	0.01463	868.25	150.2	-49.473	-46.710	0.74974	0.214	0.404	2758
190	0.01482	811.82	143.1	-47.481	-44.682	0.76056	0.212	0.407	2687
195	0.01501	757.07	136.2	-45.479	-42.643	0.77115	0.210	0.409	2616
200	0.01522	703.96	129.5	-43.464	-40.589	0.78156	0.208	0.412	2544
205	0.01544	652.44	123.1	-41.435	-38.519	0.79178	0.206	0.416	2472
210	0.01567	602.47	116.8	-39.390	-36.429	0.80185	0.204	0.420	2399
215	0.01592	554.00	110.7	-37.324	-34.318	0.81179	0.202	0.425	2325
220	0.01618	507.00	104.7	-35.235	-32.179	0.82162	0.200	0.430	2250
225	0.01646	461.46	98.9	-33.118	-30.010	0.83137	0.198	0.437	2174
230	0.01676	417.34	93.2	-30.969	-27.803	0.84106	0.196	0.445	2096
235	0.01709	373.60	87.6	-28.753	-25.524	0.85087	0.199	0.459	1997
240	0.01745	333.45	81.9	-26.494	-23.198	0.86066	0.198	0.470	1916
245	0.01784	294.48	76.4	-24.184	-20.814	0.87049	0.196	0.483	1831
250	0.01828	256.90	71.0	-21.811	-18.359	0.88041	0.195	0.499	1743
255	0.01877	220.77	65.7	-19.359	-15.814	0.89049	0.195	0.520	1653
260	0.01933	186.01	60.8	-16.810	-13.158	0.90081	0.194	0.543	1551
265	0.01999	152.52	54.8	-14.128	-10.352	0.91149	0.195	0.580	1451
270	0.02078	121.18	49.0	-11.276	-7.350	0.92272	0.196	0.623	1337
275	0.02177	91.38	43.5	-8.173	-4.061	0.93479	0.198	0.696	1222
280	0.02310	64.09	37.4	-4.693	-0.331	0.94823	0.201	0.805	1091
285	0.02504	39.94	31.3	-0.580	4.149	0.96408	0.207	1.016	954
290	0.02841	21.12	24.4	4.763	10.130	0.98487	0.221	1.442	800
295	0.03496	12.85	17.4	11.695	16.499	1.01348	0.228	1.811	687
300	0.04345	15.53	13.1	18.477	26.685	1.04188	0.221	1.388	671
310	0.05638	27.72	9.3	26.154	36.804	1.07425	0.202	0.767	699
320	0.06575	38.96	7.6	30.903	43.323	1.09497	0.191	0.566	732
330	0.07348	48.82	6.5	34.567	48.445	1.11074	0.184	0.470	760
340	0.08026	57.75	5.8	37.671	52.829	1.12383	0.179	0.412	785
350	0.08642	65.78	5.2	40.440	56.763	1.13524	0.176	0.377	808
360	0.09216	73.25	4.8	42.988	60.395	1.14547	0.173	0.351	830
370	0.09758	80.27	4.5	45.378	63.809	1.15483	0.171	0.332	850
380	0.10275	86.91	4.2	47.651	67.057	1.16349	0.169	0.318	869
390	0.10772	93.25	3.9	49.831	70.176	1.17159	0.168	0.306	887
400	0.11252	99.32	3.7	51.938	73.190	1.17922	0.167	0.297	905
410	0.11719	105.17	3.5	53.984	76.118	1.18645	0.166	0.289	922
420	0.12173	110.83	3.4	55.981	78.974	1.19334	0.165	0.282	938
430	0.12618	116.31	3.2	57.936	81.769	1.19991	0.164	0.277	953
440	0.13054	121.65	3.1	59.855	84.511	1.20622	0.163	0.272	968
450	0.13482	126.85	3.0	61.743	87.208	1.21228	0.163	0.268	983
460	0.13903	131.94	2.9	63.604	89.865	1.21812	0.162	0.264	997
470	0.14319	136.92	2.8	65.442	92.487	1.22376	0.162	0.261	1011
480	0.14729	141.80	2.7	67.259	95.079	1.22921	0.161	0.258	1025
490	0.15134	146.60	2.6	69.059	97.643	1.23450	0.161	0.255	1038
500	0.15535	151.32	2.5	70.842	100.184	1.23963	0.161	0.253	1051
510	0.15932	155.98	2.4	72.611	102.702	1.24462	0.160	0.251	1064
520	0.16325	160.56	2.4	74.367	105.202	1.24948	0.160	0.249	1076
530	0.16716	165.10	2.3	76.113	107.685	1.25420	0.160	0.247	1088
540	0.17103	169.57	2.2	77.849	110.152	1.25882	0.160	0.246	1100
550	0.17488	174.01	2.2	79.576	112.606	1.26332	0.160	0.245	1112
560	0.17870	178.39	2.1	81.295	115.047	1.26772	0.159	0.244	1124
570	0.18250	182.74	2.1	83.006	117.478	1.27202	0.159	0.243	1135
580	0.18628	187.05	2.0	84.716	119.899	1.27623	0.159	0.242	1146
590	0.19003	191.32	2.0	86.418	122.311	1.28035	0.159	0.241	1157
600	0.19378	195.56	1.9	88.116	124.715	1.28440	0.159	0.240	1168

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1020 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.278	81.83086	219.06	14.597	176220.79	0.0018071	0.11215	43.062	0.00346	1.57080	5.4722
100	81.72413	218.63	14.566	174867.47	0.0018104	0.11195	42.476	0.00346	1.56995	5.4066
105	80.98283	215.60	14.346	165692.04	0.0018346	0.11052	38.645	0.00345	1.56399	4.9792
110	80.23829	212.54	14.118	156862.28	0.0018601	0.10901	35.195	0.00344	1.55802	4.5948
115	79.49021	209.43	13.885	148367.95	0.0018869	0.10744	32.087	0.00342	1.55204	4.2489
120	78.73825	206.27	13.645	140198.98	0.0019153	0.10579	29.288	0.00340	1.54604	3.9375
125	77.98201	203.07	13.400	132345.48	0.0019453	0.10409	26.766	0.00338	1.54003	3.6570
130	77.22109	199.82	13.150	124797.71	0.0019772	0.10233	24.494	0.00335	1.53399	3.4044
135	76.45503	196.51	12.897	117546.13	0.0020111	0.10053	22.447	0.00333	1.52792	3.1769
140	75.68331	193.15	12.640	110581.38	0.0020473	0.09868	20.603	0.00330	1.52183	2.9721
145	74.90537	189.72	12.380	103894.28	0.0020860	0.09680	18.941	0.00327	1.51571	2.7879
150	74.12058	186.24	12.118	97475.84	0.0021274	0.09488	17.443	0.00323	1.50954	2.6224
155	73.32825	182.69	11.854	91317.27	0.0021720	0.09293	16.093	0.00319	1.50334	2.4738
160	72.52760	179.07	11.590	85410.00	0.0022201	0.09095	14.876	0.00315	1.49708	2.3407
165	71.71776	175.38	11.325	79745.65	0.0022721	0.08896	13.778	0.00311	1.49077	2.2218
170	70.89776	171.61	11.060	74316.06	0.0023285	0.08694	12.788	0.00307	1.48441	2.1160
175	70.06651	167.77	10.795	69113.38	0.0023899	0.08491	11.894	0.00302	1.47797	2.0221
180	69.22277	163.84	10.532	64129.89	0.0024571	0.08286	11.088	0.00297	1.47145	1.9394
185	68.36516	159.82	10.270	59358.22	0.0025307	0.08079	10.360	0.00292	1.46485	1.8670
190	67.49209	155.70	10.009	54791.25	0.0026116	0.07872	9.702	0.00287	1.45814	1.8043
195	66.60174	151.49	9.751	50422.21	0.0027016	0.07663	9.107	0.00281	1.45133	1.7508
200	65.69205	147.18	9.495	46244.65	0.0028014	0.07454	8.568	0.00275	1.44439	1.7061
205	64.76061	142.75	9.240	42252.52	0.0029129	0.07244	8.080	0.00269	1.43730	1.6698
210	63.80464	138.22	8.987	38440.23	0.0030383	0.07033	7.637	0.00262	1.43005	1.6417
215	62.82086	133.56	8.736	34802.71	0.0031802	0.06820	7.234	0.00256	1.42262	1.6219
220	61.80544	128.77	8.485	31335.56	0.0033418	0.06607	6.868	0.00248	1.41498	1.6103
225	60.75379	123.86	8.234	28035.16	0.0035274	0.06393	6.533	0.00241	1.40709	1.6074
230	59.66039	118.83	7.979	24898.93	0.0037424	0.06177	6.226	0.00233	1.39892	1.6137
235	58.50563	114.78	7.503	21845.95	0.0040010	0.05957	5.941	0.00222	1.39032	1.6487
240	57.30573	109.65	7.223	19108.38	0.0042841	0.05738	5.719	0.00213	1.38143	1.6855
245	56.04316	104.29	5.939	16503.57	0.0046296	0.05516	5.510	0.00204	1.37211	1.7360
250	54.70413	98.75	6.643	14053.28	0.0050518	0.05292	5.296	0.00194	1.36228	1.7971
255	53.27877	93.07	6.338	11760.59	0.0055866	0.05065	5.075	0.00183	1.35188	1.8757
260	51.72144	87.03	5.968	9620.51	0.0062380	0.04833	4.847	0.00172	1.34054	1.9601
265	50.01978	80.85	5.621	7626.83	0.0071768	0.04593	4.607	0.00158	1.32825	2.0949
270	48.11837	74.18	5.202	5830.78	0.0083999	0.04345	4.352	0.00145	1.31460	2.2472
275	45.92708	67.25	4.790	4196.99	0.0103530	0.04102	4.075	0.00128	1.29898	2.4901
280	43.29815	59.69	4.306	2775.17	0.0134814	0.03958	3.765	0.00114	1.28042	2.7556
285	39.93984	51.85	3.786	1595.38	0.0195869	0.03843	3.402	0.00095	1.25696	3.2370
290	35.19392	43.94	3.143	743.33	0.0328189	0.03758	2.947	0.00074	1.22432	4.0722
295	28.60077	38.14	2.671	367.52	0.0474806	0.03491	2.417	0.00067	1.17993	4.5132
300	23.01254	37.64	2.581	357.35	0.0366617	0.02989	2.046	0.00094	1.14317	3.4005
310	17.73544	40.69	2.592	491.69	0.0188486	0.02291	1.759	0.00168	1.10918	2.1208
320	15.20852	44.41	2.601	592.50	0.0127519	0.02022	1.647	0.00235	1.09315	1.6602
330	13.60945	48.00	2.594	664.45	0.0097807	0.01890	1.588	0.00296	1.08309	1.4206
340	12.46011	51.50	2.579	719.56	0.0080077	0.01813	1.554	0.00353	1.07590	1.2728
350	11.57136	54.88	2.567	761.21	0.0068613	0.01767	1.534	0.00406	1.07036	1.1767
360	10.85082	58.17	2.554	794.83	0.0060384	0.01738	1.523	0.00456	1.06588	1.1075
370	10.24820	61.38	2.541	822.58	0.0054161	0.01718	1.517	0.00504	1.06215	1.0567
380	9.73257	64.52	2.527	845.85	0.0049271	0.01705	1.516	0.00551	1.05896	1.0170
390	9.28361	67.59	2.515	865.65	0.0045316	0.01699	1.517	0.00597	1.05619	0.9849
400	8.88728	70.60	2.503	882.68	0.0042042	0.01696	1.521	0.00643	1.05375	0.9584
410	8.53346	73.56	2.492	897.46	0.0039283	0.01697	1.527	0.00688	1.05157	0.9363
420	8.21467	76.46	2.482	910.40	0.0036922	0.01701	1.535	0.00733	1.04961	0.9174
430	7.92520	79.34	2.472	921.79	0.0034875	0.01706	1.544	0.00778	1.04784	0.9011
440	7.66058	82.17	2.463	931.89	0.0033083	0.01714	1.553	0.00823	1.04621	0.8870
450	7.41728	84.96	2.455	940.89	0.0031497	0.01723	1.564	0.00868	1.04472	0.8746
460	7.19247	87.72	2.447	948.95	0.0030084	0.01733	1.575	0.00913	1.04335	0.8637
470	6.98382	90.45	2.440	956.20	0.0028815	0.01744	1.587	0.00958	1.04207	0.8540
480	6.78941	93.15	2.433	962.74	0.0027669	0.01755	1.599	0.01003	1.04089	0.8454
490	6.60762	95.84	2.426	968.68	0.0026628	0.01766	1.612	0.01048	1.03978	0.8377
500	6.43710	98.50	2.420	974.08	0.0025676	0.01781	1.625	0.01094	1.03874	0.8308
510	6.27670	101.15	2.414	979.01	0.0024804	0.01791	1.639	0.01137	1.03776	0.8254
520	6.12543	103.79	2.408	983.53	0.0024000	0.01806	1.652	0.01184	1.03684	0.8202
530	5.98242	106.41	2.402	987.68	0.0023256	0.01822	1.666	0.01231	1.03597	0.8146
540	5.84694	109.03	2.396	991.50	0.0022565	0.01838	1.680	0.01278	1.03514	0.8096
550	5.71834	111.63	2.391	995.02	0.0021922	0.01854	1.694	0.01325	1.03436	0.8051
560	5.59605	114.24	2.385	998.29	0.0021322	0.01870	1.709	0.01372	1.03362	0.8010
570	5.47955	116.84	2.379	1001.32	0.0020759	0.01887	1.723	0.01420	1.03291	0.7974
580	5.36840	119.44	2.374	1004.14	0.0020231	0.01903	1.738	0.01467	1.03224	0.7941
590	5.26221	122.04	2.368	1006.77	0.0019734	0.01920	1.752	0.01515	1.03159	0.7911
600	5.16061	124.64	2.362	1009.22	0.0019264	0.01937	1.767	0.01563	1.03098	0.7885

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

1030 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 99.293	0.01222	2154.09	318.4	-83.055	-80.724	0.50282	0.267	0.396	3849
100	0.01224	2140.61	316.6	-82.778	-80.444	0.50564	0.266	0.396	3842
105	0.01235	2046.91	304.0	-80.821	-78.466	0.52494	0.262	0.396	3786
110	0.01246	1955.87	291.8	-78.865	-76.489	0.54334	0.258	0.395	3729
115	0.01258	1867.42	280.0	-76.912	-74.512	0.56098	0.254	0.395	3671
120	0.01270	1781.51	268.6	-74.959	-72.537	0.57772	0.250	0.395	3612
125	0.01282	1698.08	257.5	-73.007	-70.561	0.59385	0.246	0.395	3551
130	0.01295	1617.08	246.8	-71.056	-68.586	0.60934	0.243	0.395	3490
135	0.01308	1538.44	236.5	-69.105	-66.610	0.62425	0.240	0.395	3427
140	0.01321	1462.11	226.4	-67.154	-64.634	0.63863	0.237	0.395	3364
145	0.01335	1388.02	216.8	-65.202	-62.656	0.65251	0.234	0.396	3300
150	0.01349	1316.13	207.4	-63.249	-60.676	0.66593	0.231	0.396	3234
155	0.01364	1246.37	198.4	-61.294	-58.693	0.67893	0.228	0.397	3168
160	0.01379	1178.69	189.7	-59.337	-56.707	0.69154	0.226	0.397	3102
165	0.01394	1113.03	181.3	-57.376	-54.717	0.70379	0.223	0.398	3034
170	0.01410	1049.32	173.1	-55.412	-52.722	0.71570	0.221	0.400	2966
175	0.01427	987.53	165.2	-53.443	-50.721	0.72730	0.218	0.401	2898
180	0.01444	927.58	157.6	-51.468	-48.713	0.73862	0.216	0.402	2829
185	0.01462	869.43	150.3	-49.485	-46.696	0.74967	0.214	0.404	2759
190	0.01481	813.02	143.2	-47.494	-44.669	0.76048	0.212	0.407	2688
195	0.01501	758.30	136.3	-45.493	-42.630	0.77108	0.210	0.409	2618
200	0.01522	705.21	129.6	-43.479	-40.577	0.78148	0.208	0.412	2546
205	0.01544	653.72	123.2	-41.452	-38.507	0.79170	0.206	0.416	2474
210	0.01567	603.78	116.9	-39.407	-36.419	0.80177	0.204	0.420	2401
215	0.01591	555.35	110.8	-37.343	-34.308	0.81170	0.202	0.424	2327
220	0.01617	508.38	104.8	-35.256	-32.171	0.82152	0.200	0.430	2252
225	0.01645	462.87	99.0	-33.142	-30.003	0.83126	0.198	0.437	2176
230	0.01675	418.88	93.3	-30.994	-27.799	0.84095	0.196	0.444	2098
235	0.01708	376.85	87.5	-28.781	-25.522	0.85074	0.199	0.459	2000
240	0.01744	336.92	82.0	-26.525	-23.199	0.86052	0.198	0.469	1919
245	0.01783	296.00	76.5	-24.220	-20.819	0.87034	0.196	0.482	1834
250	0.01827	258.48	71.1	-21.851	-18.367	0.88024	0.195	0.498	1747
255	0.01876	222.40	65.9	-19.406	-15.828	0.89030	0.195	0.519	1657
260	0.01931	187.71	60.2	-16.864	-13.180	0.90058	0.194	0.541	1556
265	0.01997	154.29	55.0	-14.193	-10.385	0.91123	0.195	0.578	1457
270	0.02075	123.01	49.2	-11.356	-7.399	0.92239	0.196	0.619	1344
275	0.02172	93.30	43.7	-8.277	-4.134	0.93438	0.197	0.698	1229
280	0.02301	66.06	37.8	-4.837	-0.448	0.94766	0.200	0.793	1101
285	0.02489	41.93	31.7	-0.803	3.943	0.96320	0.206	0.989	966
290	0.02805	22.87	25.0	4.355	9.705	0.98323	0.219	1.374	815
295	0.03486	13.60	18.1	11.188	17.685	1.01050	0.227	1.755	698
300	0.04226	15.32	13.6	17.021	25.862	1.03806	0.221	1.416	674
310	0.05525	27.17	9.5	25.757	36.295	1.07227	0.202	0.786	699
320	0.06465	38.42	7.7	30.616	42.947	1.09341	0.191	0.576	732
330	0.07238	48.32	6.6	34.336	48.142	1.10941	0.184	0.475	759
340	0.07915	57.31	5.9	37.476	52.573	1.12265	0.180	0.416	784
350	0.08530	65.36	5.3	40.269	56.538	1.13414	0.176	0.379	808
360	0.09101	72.86	4.9	42.836	60.194	1.14444	0.173	0.353	830
370	0.09640	79.93	4.5	45.240	63.627	1.15385	0.171	0.334	850
380	0.10155	86.60	4.2	47.524	66.891	1.16256	0.170	0.319	869
390	0.10648	92.96	4.0	49.713	70.023	1.17069	0.168	0.307	887
400	0.11126	99.06	3.8	51.828	73.048	1.17835	0.167	0.298	905
410	0.11589	104.93	3.6	53.882	75.986	1.18561	0.166	0.290	922
420	0.12041	110.61	3.4	55.884	78.850	1.19251	0.165	0.283	938
430	0.12482	116.11	3.3	57.844	81.652	1.19910	0.164	0.277	953
440	0.12915	121.46	3.1	59.768	84.401	1.20542	0.163	0.272	969
450	0.13340	126.68	3.0	61.660	87.103	1.21149	0.163	0.268	983
460	0.13758	131.78	2.9	63.525	89.766	1.21735	0.162	0.264	998
470	0.14171	136.78	2.8	65.366	92.393	1.22300	0.162	0.261	1011
480	0.14577	141.67	2.7	67.186	94.989	1.22846	0.161	0.258	1025
490	0.14979	146.49	2.6	68.988	97.558	1.23376	0.161	0.256	1038
500	0.15377	151.22	2.5	70.774	100.102	1.23890	0.161	0.253	1051
510	0.15771	155.88	2.5	72.545	102.624	1.24389	0.160	0.251	1064
520	0.16161	160.48	2.4	74.304	105.127	1.24875	0.160	0.249	1076
530	0.16548	165.02	2.3	76.051	107.613	1.25349	0.160	0.248	1089
540	0.16932	169.51	2.3	77.788	110.083	1.25811	0.160	0.246	1101
550	0.17314	173.95	2.2	79.517	112.539	1.26261	0.160	0.245	1112
560	0.17693	178.35	2.2	81.238	114.983	1.26702	0.159	0.244	1124
570	0.18069	182.70	2.1	82.953	117.416	1.27132	0.159	0.243	1135
580	0.18444	187.02	2.1	84.661	119.839	1.27554	0.159	0.242	1146
590	0.18817	191.30	2.0	86.365	122.253	1.27966	0.159	0.241	1158
600	0.19187	195.55	2.0	88.064	124.660	1.28371	0.159	0.240	1168

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1030 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.293	81.83342	219.12	14.597	176276.43	0.0018065	0.11215	43.077	0.00346	1.57082	5.4734
100	81.72880	218.69	14.566	174949.73	0.0018098	0.11196	42.501	0.00346	1.56998	5.4092
105	80.98771	215.67	14.346	165774.66	0.0018340	0.11053	38.669	0.00345	1.56403	4.9816
110	80.24341	212.61	14.119	156945.29	0.0018594	0.10903	35.218	0.00344	1.55806	4.5970
115	79.49557	209.50	13.885	148451.37	0.0018862	0.10745	32.109	0.00342	1.55208	4.2510
120	78.74386	206.35	13.645	140282.82	0.0019145	0.10581	29.306	0.00340	1.54609	3.9394
125	77.98790	203.15	13.400	132429.73	0.0019445	0.10410	26.785	0.00338	1.54007	3.6587
130	77.22728	199.90	13.151	124882.40	0.0019763	0.10235	24.512	0.00335	1.53404	3.4060
135	76.46153	196.59	12.897	117631.26	0.0020101	0.10054	22.464	0.00333	1.52798	3.1784
140	75.69015	193.23	12.640	110666.97	0.0020462	0.09870	20.619	0.00330	1.52189	2.9735
145	74.91257	189.81	12.380	103980.33	0.0020848	0.09681	18.956	0.00327	1.51576	2.7892
150	74.12818	186.33	12.118	97562.37	0.0021261	0.09490	17.457	0.00323	1.50960	2.6236
155	73.33627	182.79	11.855	91404.30	0.0021706	0.09295	16.106	0.00319	1.50340	2.4749
160	72.53608	179.17	11.590	85497.54	0.0022185	0.09098	14.888	0.00316	1.49715	2.3417
165	71.72675	175.48	11.325	79833.72	0.0022704	0.08898	13.790	0.00311	1.49084	2.2228
170	70.90729	171.72	11.061	74404.69	0.0023266	0.08696	12.799	0.00307	1.48448	2.1168
175	70.07664	167.88	10.796	69202.56	0.0023878	0.08493	11.905	0.00302	1.47804	2.0228
180	69.23356	163.95	10.533	64219.65	0.0024547	0.08288	11.098	0.00297	1.47153	1.9400
185	68.37667	159.94	10.271	59448.59	0.0025281	0.08082	10.369	0.00292	1.46493	1.8675
190	67.50440	155.83	10.011	54882.25	0.0026089	0.07875	9.711	0.00287	1.45824	1.8047
195	66.61494	151.63	9.753	50513.67	0.0026982	0.07667	9.115	0.00281	1.45143	1.7511
200	65.70624	147.32	9.497	46336.99	0.0027976	0.07458	8.576	0.00275	1.44449	1.7062
205	64.77592	142.90	9.243	42345.58	0.0029085	0.07247	8.088	0.00269	1.43742	1.6698
210	63.82122	138.37	8.991	38534.03	0.0030333	0.07036	7.644	0.00263	1.43018	1.6416
215	62.83889	133.72	8.740	34897.29	0.0031743	0.06825	7.242	0.00256	1.42276	1.6215
220	61.82514	128.95	8.490	31430.94	0.0033349	0.06612	6.875	0.00249	1.41513	1.6098
225	60.77542	124.05	8.239	28131.36	0.0035193	0.06398	6.540	0.00241	1.40725	1.6066
230	59.68431	119.03	7.985	24995.96	0.0037326	0.06182	6.233	0.00233	1.39910	1.6126
235	58.53235	114.99	7.509	21940.98	0.0039690	0.05962	5.948	0.00222	1.39052	1.6471
240	57.33565	109.88	7.230	19202.62	0.0042701	0.05743	5.724	0.00213	1.38165	1.6834
245	56.07703	104.53	6.947	16599.04	0.0046111	0.05522	5.515	0.00204	1.37236	1.7330
250	54.74294	99.02	6.652	14149.69	0.0050281	0.05299	5.302	0.00194	1.36258	1.7934
255	53.31590	93.37	6.349	11857.56	0.0055551	0.05072	5.083	0.00183	1.35213	1.8789
260	51.77496	87.36	5.981	9718.47	0.0061937	0.04841	4.855	0.00173	1.34093	1.9534
265	50.08497	81.22	5.638	7727.52	0.0071134	0.04603	4.616	0.00159	1.32872	2.0861
270	48.20027	74.61	5.222	5929.32	0.0083012	0.04355	4.363	0.00146	1.31518	2.2338
275	46.03538	67.75	4.815	4294.94	0.0101627	0.04109	4.089	0.00129	1.29975	2.4715
280	43.45180	60.29	4.339	2870.53	0.0131569	0.03964	3.783	0.00115	1.28150	2.7252
285	40.18415	52.58	3.831	1685.09	0.0186108	0.03844	3.428	0.00097	1.25866	3.1748
290	35.64884	44.80	3.202	815.25	0.0306654	0.03754	2.989	0.00077	1.22742	3.9387
295	29.35768	38.70	2.715	399.36	0.0453394	0.03514	2.474	0.00068	1.18496	4.4465
300	23.66114	37.80	2.598	362.57	0.0374722	0.03049	2.088	0.00091	1.14739	3.4914
310	18.09984	40.63	2.599	491.73	0.0193487	0.02327	1.779	0.00164	1.11150	2.1640
320	15.46702	44.31	2.608	594.18	0.0129933	0.02044	1.661	0.00230	1.09478	1.6638
330	13.81532	47.89	2.599	667.62	0.0099214	0.01905	1.599	0.00290	1.08438	1.4355
340	12.63394	51.39	2.585	724.00	0.0080982	0.01826	1.563	0.00347	1.07698	1.2829
350	11.72384	54.76	2.572	766.49	0.0069257	0.01778	1.542	0.00400	1.07131	1.1843
360	10.98769	58.05	2.559	800.80	0.0060866	0.01747	1.530	0.00450	1.06673	1.1135
370	10.37305	61.27	2.545	829.09	0.0054536	0.01726	1.523	0.00498	1.06292	1.0616
380	9.84784	64.41	2.532	852.83	0.0049571	0.01713	1.521	0.00545	1.05967	1.0211
390	9.39102	67.49	2.519	873.01	0.0045560	0.01705	1.523	0.00591	1.05685	0.9884
400	8.98809	70.51	2.507	890.36	0.0042246	0.01702	1.526	0.00636	1.05437	0.9615
410	8.62866	73.47	2.496	905.42	0.0039454	0.01703	1.532	0.00681	1.05216	0.9389
420	8.30500	76.39	2.486	918.59	0.0037068	0.01706	1.539	0.00725	1.05017	0.9198
430	8.01125	79.26	2.476	930.19	0.0035081	0.01711	1.548	0.00770	1.04836	0.9033
440	7.74284	82.09	2.467	940.48	0.0033192	0.01718	1.557	0.00815	1.04672	0.8889
450	7.49617	84.88	2.458	949.64	0.0031593	0.01727	1.568	0.00859	1.04521	0.8764
460	7.26831	87.64	2.451	957.84	0.0030169	0.01737	1.579	0.00904	1.04381	0.8653
470	7.05690	90.37	2.443	965.22	0.0028891	0.01748	1.591	0.00949	1.04252	0.8555
480	6.85996	93.08	2.436	971.88	0.0027736	0.01759	1.603	0.00993	1.04132	0.8468
490	6.67586	95.77	2.429	977.92	0.0026688	0.01772	1.615	0.01038	1.04019	0.8389
500	6.50321	98.43	2.423	983.42	0.0025731	0.01785	1.628	0.01084	1.03914	0.8319
510	6.34083	101.08	2.417	988.43	0.0024853	0.01794	1.642	0.01126	1.03815	0.8275
520	6.18772	103.72	2.411	993.03	0.0024044	0.01818	1.655	0.01173	1.03722	0.8212
530	6.04301	106.35	2.405	997.25	0.0023296	0.01825	1.669	0.01219	1.03634	0.8155
540	5.90593	108.96	2.399	1001.13	0.0022603	0.01841	1.683	0.01266	1.03550	0.8105
550	5.77582	111.57	2.393	1004.72	0.0021957	0.01857	1.697	0.01313	1.03471	0.8059
560	5.65211	114.18	2.388	1008.04	0.0021353	0.01873	1.711	0.01359	1.03396	0.8018
570	5.53428	116.78	2.382	1011.12	0.0020788	0.01890	1.726	0.01407	1.03324	0.7981
580	5.42187	119.38	2.377	1013.99	0.0020258	0.01906	1.740	0.01454	1.03256	0.7948
590	5.31448	121.98	2.371	1016.66	0.0019759	0.01923	1.755	0.01501	1.03191	0.7918
600	5.21174	124.58	2.365	1019.16	0.0019287	0.01940	1.770	0.01549	1.03129	0.7891

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

1040 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	C_P	VELOCITY OF SOUND FT/SEC
* 99.307	0.01222	2154.70	318.5	-83.053	-80.700	0.50284	0.267	0.396	3850
100	0.01223	2141.50	316.7	-82.782	-80.426	0.50559	0.266	0.396	3842
105	0.01235	2047.81	304.1	-80.825	-78.447	0.52490	0.262	0.396	3787
110	0.01246	1956.77	291.9	-78.870	-76.470	0.54329	0.258	0.395	3730
115	0.01258	1868.34	280.1	-76.916	-74.494	0.56086	0.254	0.395	3672
120	0.01270	1782.45	268.6	-74.964	-72.519	0.57768	0.250	0.395	3612
125	0.01282	1699.03	257.6	-73.013	-70.543	0.59380	0.246	0.395	3552
130	0.01295	1618.04	246.8	-71.062	-68.568	0.60929	0.243	0.395	3491
135	0.01308	1539.42	236.5	-69.111	-66.593	0.62420	0.240	0.395	3428
140	0.01321	1463.10	226.5	-67.160	-64.616	0.63858	0.237	0.395	3365
145	0.01335	1389.04	216.8	-65.209	-62.639	0.65246	0.234	0.396	3300
150	0.01349	1317.16	207.5	-63.256	-60.659	0.66588	0.231	0.396	3235
155	0.01363	1247.42	198.5	-61.302	-58.676	0.67888	0.228	0.397	3169
160	0.01378	1179.76	189.7	-59.346	-56.691	0.69149	0.226	0.397	3103
165	0.01394	1114.11	181.3	-57.386	-54.701	0.70373	0.223	0.398	3035
170	0.01410	1050.43	173.2	-55.422	-52.706	0.71564	0.221	0.399	2968
175	0.01427	988.66	165.3	-53.453	-50.706	0.72724	0.218	0.401	2899
180	0.01444	928.73	157.7	-51.479	-48.698	0.73855	0.216	0.402	2830
185	0.01462	870.60	150.4	-49.497	-46.681	0.74960	0.214	0.404	2760
190	0.01481	814.22	143.3	-47.507	-44.655	0.76041	0.212	0.406	2690
195	0.01501	759.52	136.4	-45.507	-42.616	0.77100	0.210	0.409	2619
200	0.01522	706.47	129.7	-43.495	-40.564	0.78140	0.208	0.412	2548
205	0.01543	655.01	123.3	-41.469	-38.496	0.79162	0.206	0.415	2475
210	0.01566	605.09	117.0	-39.425	-36.408	0.80168	0.204	0.420	2403
215	0.01591	556.69	110.9	-37.363	-34.299	0.81161	0.202	0.424	2329
220	0.01617	509.76	104.9	-35.277	-32.163	0.82143	0.200	0.430	2254
225	0.01645	464.29	99.1	-33.164	-29.997	0.83116	0.198	0.436	2178
230	0.01675	420.26	93.4	-31.020	-27.794	0.84083	0.196	0.444	2101
235	0.01708	376.30	87.6	-28.809	-25.520	0.85061	0.199	0.458	2003
240	0.01743	336.39	82.1	-26.556	-23.199	0.86039	0.198	0.469	1921
245	0.01782	297.53	76.7	-24.255	-20.823	0.87019	0.196	0.481	1837
250	0.01825	260.05	71.3	-21.891	-18.376	0.88007	0.195	0.497	1750
255	0.01874	224.03	66.0	-19.452	-15.843	0.89011	0.195	0.517	1661
260	0.01929	189.40	60.4	-16.917	-13.202	0.90036	0.194	0.539	1560
265	0.01994	156.05	55.2	-14.258	-10.417	0.91097	0.195	0.575	1462
270	0.02071	124.84	49.5	-11.435	-7.446	0.92208	0.195	0.616	1350
275	0.02167	95.20	44.0	-8.373	-4.205	0.93397	0.197	0.684	1237
280	0.02294	68.02	38.1	-4.977	-0.560	0.94710	0.200	0.782	1110
285	0.02474	43.91	32.1	-1.016	3.749	0.96235	0.205	0.965	978
290	0.02772	24.63	25.6	3.976	9.315	0.98170	0.218	1.314	830
295	0.03326	14.48	18.8	10.527	16.931	1.00773	0.225	1.692	709
300	0.04112	15.22	14.1	17.164	25.084	1.03515	0.221	1.446	679
310	0.05414	26.64	9.8	25.355	35.761	1.07028	0.203	0.805	700
320	0.06358	37.89	7.9	30.325	42.568	1.09186	0.192	0.585	732
330	0.07131	47.83	6.8	34.104	47.836	1.10808	0.185	0.481	759
340	0.07807	56.87	6.0	37.281	52.315	1.12146	0.180	0.420	784
350	0.08419	64.98	5.4	40.099	56.313	1.13305	0.176	0.382	808
360	0.08989	72.52	4.9	42.683	59.993	1.14342	0.174	0.355	830
370	0.09525	79.59	4.6	45.101	63.445	1.15288	0.171	0.336	850
380	0.10037	86.29	4.3	47.396	66.725	1.16163	0.170	0.321	869
390	0.10528	92.68	4.0	49.595	69.870	1.16980	0.168	0.309	888
400	0.11002	98.80	3.8	51.718	72.906	1.17748	0.167	0.299	905
410	0.11463	104.70	3.6	53.778	75.853	1.18476	0.166	0.291	922
420	0.11911	110.39	3.4	55.787	78.726	1.19168	0.165	0.284	938
430	0.12350	115.91	3.3	57.752	81.535	1.19830	0.164	0.278	954
440	0.12779	121.28	3.2	59.681	84.291	1.20463	0.164	0.273	969
450	0.13201	126.52	3.0	61.577	86.999	1.21072	0.163	0.269	983
460	0.13616	131.63	2.9	63.445	89.667	1.21658	0.162	0.265	998
470	0.14025	136.64	2.8	65.290	92.299	1.22224	0.162	0.262	1012
480	0.14429	141.55	2.7	67.113	94.900	1.22772	0.161	0.259	1025
490	0.14828	146.37	2.6	68.917	97.472	1.23302	0.161	0.256	1039
500	0.15222	151.12	2.6	70.705	100.020	1.23817	0.161	0.254	1051
510	0.15613	155.79	2.5	72.479	102.546	1.24317	0.160	0.252	1064
520	0.16000	160.40	2.4	74.240	105.052	1.24804	0.160	0.250	1077
530	0.16384	164.95	2.3	75.989	107.541	1.25278	0.160	0.248	1089
540	0.16765	169.45	2.3	77.728	110.014	1.25740	0.160	0.247	1101
550	0.17143	173.90	2.2	79.459	112.473	1.26191	0.160	0.245	1113
560	0.17519	178.30	2.2	81.181	114.919	1.26632	0.159	0.244	1124
570	0.17892	182.67	2.1	82.897	117.354	1.27063	0.159	0.243	1136
580	0.18264	186.99	2.1	84.607	119.779	1.27485	0.159	0.242	1147
590	0.18633	191.28	2.0	86.311	122.195	1.27898	0.159	0.241	1158
600	0.19001	195.54	2.0	88.012	124.604	1.28302	0.159	0.240	1169

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1040 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.307	81.83598	219.17	14.597	176332.07	0.0018060	0.11216	43.091	0.00346	1.57085	5.4747
100	81.73347	218.76	14.567	175031.92	0.0018092	0.11197	42.527	0.00346	1.57002	5.4117
105	80.99268	215.74	14.346	165857.26	0.0018333	0.11054	38.693	0.00345	1.56407	4.9840
110	80.24852	212.67	14.119	157028.29	0.0018587	0.10904	35.240	0.00344	1.55810	4.5992
115	79.50092	209.57	13.885	148534.77	0.0018854	0.10746	32.130	0.00342	1.55213	4.2530
120	78.74947	206.42	13.645	140366.63	0.0019137	0.10582	29.328	0.00340	1.54613	3.9413
125	77.99379	203.22	13.401	132513.97	0.0019436	0.10412	26.804	0.00338	1.54012	3.6605
130	77.23346	199.97	13.151	124967.07	0.0019753	0.10236	24.529	0.00336	1.53409	3.4076
135	76.46803	196.67	12.897	117716.37	0.0020091	0.10056	22.480	0.00333	1.52803	3.1799
140	75.69699	193.32	12.640	110752.53	0.0020451	0.09872	20.634	0.00330	1.52194	2.9749
145	74.91978	189.90	12.381	104066.36	0.0020836	0.09683	18.970	0.00327	1.51582	2.7905
150	74.13578	186.42	12.119	97648.88	0.0021248	0.09492	17.471	0.00323	1.50966	2.6246
155	73.34429	182.88	11.855	91491.30	0.0021691	0.09297	16.119	0.00320	1.50346	2.4760
160	72.54456	179.27	11.591	85585.05	0.0022169	0.09100	14.900	0.00316	1.49722	2.3427
165	71.73573	175.59	11.326	79921.75	0.0022686	0.08900	13.801	0.00311	1.49091	2.2237
170	70.91682	171.83	11.062	74493.27	0.0023247	0.08699	12.810	0.00307	1.48455	2.1176
175	70.08676	167.99	10.798	69291.69	0.0023857	0.08496	11.915	0.00302	1.47812	2.0235
180	69.24433	164.07	10.535	64309.37	0.0024523	0.08291	11.108	0.00298	1.47162	1.9406
185	68.38816	160.06	10.273	59538.90	0.0025254	0.08085	10.379	0.00292	1.46502	1.8680
190	67.51669	155.96	10.013	54973.20	0.0026059	0.07878	9.720	0.00287	1.45833	1.8051
195	66.62812	151.76	9.755	50605.47	0.0026949	0.07670	9.124	0.00281	1.45153	1.7514
200	65.72041	147.46	9.500	46429.27	0.0027938	0.07461	8.584	0.00276	1.44460	1.7064
205	64.79128	143.05	9.246	42438.57	0.0029042	0.07251	8.095	0.00269	1.43753	1.6698
210	63.83776	138.53	8.994	38627.76	0.0030283	0.07040	7.652	0.00263	1.43031	1.6414
215	62.85688	133.89	8.744	34991.79	0.0031685	0.06829	7.249	0.00256	1.42289	1.6212
220	61.84478	129.12	8.495	31526.23	0.0033281	0.06616	6.882	0.00249	1.41527	1.6092
225	60.79708	124.23	8.245	28227.46	0.0035112	0.06402	6.547	0.00241	1.40741	1.6058
230	59.70815	119.22	7.992	25092.86	0.0037229	0.06187	6.240	0.00233	1.39927	1.6114
235	58.55898	115.20	7.516	22035.93	0.0039771	0.05968	5.954	0.00222	1.39072	1.6456
240	57.36545	110.11	7.238	19297.15	0.0042562	0.05749	5.729	0.00214	1.38187	1.6813
245	56.11072	104.77	5.955	16694.36	0.0045929	0.05529	5.521	0.00205	1.37261	1.7301
250	54.78151	99.29	6.661	14245.91	0.0050046	0.05306	5.309	0.00195	1.36285	1.7898
255	53.36078	93.66	6.360	11954.30	0.0055240	0.05080	5.090	0.00184	1.35246	1.8663
260	51.82800	87.68	5.994	9816.17	0.0061502	0.04849	4.863	0.00174	1.34131	1.9469
265	50.14941	81.60	5.654	7825.93	0.0070516	0.04612	4.626	0.00160	1.32918	2.0775
270	48.28097	75.04	5.242	6027.52	0.0082058	0.04366	4.374	0.00147	1.31576	2.2208
275	46.14149	68.25	4.839	4392.51	0.0100200	0.04116	4.103	0.00130	1.30051	2.4536
280	43.60097	60.88	4.371	2965.52	0.0128519	0.03971	3.801	0.00116	1.28255	2.6963
285	40.41716	53.29	3.874	1774.62	0.0181045	0.03847	3.453	0.00099	1.26028	3.1174
290	36.07009	45.64	3.258	888.49	0.0287874	0.03750	3.029	0.00079	1.23030	3.8194
295	30.07047	39.31	2.763	435.55	0.0430528	0.03533	2.528	0.00069	1.18972	4.3604
300	24.31635	37.99	2.617	370.05	0.0380621	0.03184	2.130	0.00088	1.15167	3.5726
310	18.47160	40.57	2.607	492.01	0.0198526	0.02363	1.800	0.00159	1.11388	2.2088
320	15.72915	44.21	2.614	595.91	0.0132378	0.02066	1.675	0.00224	1.09644	1.7077
330	14.02332	47.76	2.605	670.83	0.0100636	0.01921	1.610	0.00265	1.08569	1.4505
340	12.80911	51.28	2.590	728.44	0.0081893	0.01838	1.572	0.00342	1.07808	1.2932
350	11.87726	54.65	2.577	771.77	0.0069905	0.01788	1.550	0.00394	1.07226	1.1920
360	11.12524	57.94	2.564	806.75	0.0061351	0.01756	1.536	0.00444	1.06758	1.1195
370	10.49843	61.16	2.550	835.60	0.0054912	0.01734	1.530	0.00492	1.06370	1.0665
380	9.96352	64.31	2.536	859.79	0.0049871	0.01720	1.527	0.00538	1.06039	1.0252
390	9.49875	67.39	2.523	880.36	0.0045805	0.01712	1.528	0.00584	1.05752	0.9919
400	9.08917	70.41	2.511	898.03	0.0042449	0.01708	1.531	0.00629	1.05499	0.9645
410	8.72406	73.38	2.500	913.37	0.0039626	0.01708	1.537	0.00673	1.05274	0.9416
420	8.39549	76.30	2.489	926.78	0.0037214	0.01711	1.544	0.00718	1.05072	0.9221
430	8.09744	79.17	2.479	938.60	0.0035127	0.01716	1.552	0.00762	1.04889	0.9054
440	7.82523	82.00	2.470	949.06	0.0033302	0.01723	1.561	0.00806	1.04722	0.8908
450	7.57516	84.80	2.462	958.39	0.0031689	0.01732	1.572	0.00851	1.04569	0.8781
460	7.34424	87.57	2.454	966.73	0.0030254	0.01741	1.583	0.00895	1.04428	0.8669
470	7.13005	90.30	2.446	974.24	0.0028966	0.01752	1.594	0.00939	1.04297	0.8569
480	6.93058	93.01	2.439	981.02	0.0027803	0.01763	1.606	0.00984	1.04175	0.8481
490	6.74415	95.70	2.432	987.16	0.0026748	0.01776	1.619	0.01028	1.04061	0.8402
500	6.56936	98.37	2.426	992.75	0.0025785	0.01788	1.632	0.01073	1.03954	0.8331
510	6.40500	101.02	2.420	997.86	0.0024902	0.01798	1.645	0.01116	1.03854	0.8265
520	6.25005	103.66	2.414	1002.53	0.0024089	0.01813	1.658	0.01162	1.03760	0.8202
530	6.10361	106.29	2.408	1006.82	0.0023337	0.01829	1.672	0.01208	1.03671	0.8165
540	5.96493	108.90	2.402	1010.77	0.0022640	0.01844	1.686	0.01254	1.03586	0.8113
550	5.83332	111.51	2.396	1014.42	0.0021991	0.01860	1.700	0.01300	1.03506	0.8067
560	5.70819	114.12	2.391	1017.80	0.0021385	0.01876	1.714	0.01347	1.03430	0.8025
570	5.58902	116.72	2.385	1020.93	0.0020817	0.01893	1.728	0.01394	1.03358	0.7988
580	5.47534	119.32	2.379	1023.85	0.0020285	0.01909	1.743	0.01441	1.03289	0.7954
590	5.36676	121.93	2.374	1026.57	0.0019783	0.01926	1.757	0.01488	1.03223	0.7924
600	5.26288	124.53	2.368	1029.11	0.0019311	0.01943	1.772	0.01535	1.03160	0.7897

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

1050 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	C_P	VELOCITY OF SOUND FT/SEC
* 99.323	0.01222	2155.28	318.5	-83.051	-80.675	0.50286	0.267	0.396	3850
100	0.01223	2142.38	316.7	-82.786	-80.407	0.50555	0.266	0.396	3843
105	0.01235	2048.70	304.1	-80.629	-78.429	0.52486	0.262	0.395	3787
110	0.01246	1957.68	291.9	-78.875	-76.452	0.54325	0.258	0.395	3730
115	0.01258	1869.26	280.1	-76.921	-74.476	0.56082	0.254	0.395	3672
120	0.01270	1783.38	268.7	-74.969	-72.500	0.57763	0.250	0.395	3613
125	0.01282	1699.98	257.6	-73.018	-70.525	0.59375	0.246	0.395	3553
130	0.01295	1619.01	246.9	-71.068	-68.551	0.60925	0.243	0.395	3491
135	0.01308	1540.40	236.6	-69.118	-66.575	0.62415	0.240	0.395	3429
140	0.01321	1464.10	226.5	-67.167	-64.599	0.63853	0.237	0.395	3366
145	0.01335	1390.05	216.9	-65.216	-62.621	0.65241	0.234	0.396	3301
150	0.01349	1318.19	207.5	-63.264	-60.642	0.66583	0.231	0.396	3236
155	0.01363	1248.47	198.5	-61.310	-58.660	0.67882	0.228	0.397	3170
160	0.01378	1180.83	189.8	-59.354	-56.674	0.69143	0.226	0.397	3104
165	0.01394	1115.20	181.4	-57.395	-54.685	0.70367	0.223	0.398	3036
170	0.01410	1051.54	173.2	-55.432	-52.691	0.71558	0.221	0.399	2969
175	0.01427	989.78	165.4	-53.464	-50.690	0.72718	0.218	0.401	2900
180	0.01444	929.88	157.8	-51.490	-48.683	0.73849	0.216	0.402	2831
185	0.01462	871.78	150.4	-49.509	-46.667	0.74953	0.214	0.404	2761
190	0.01481	815.41	143.3	-47.520	-44.641	0.76034	0.212	0.406	2691
195	0.01501	760.74	136.5	-45.521	-42.603	0.77093	0.210	0.409	2620
200	0.01521	707.72	129.8	-43.510	-40.552	0.78132	0.208	0.412	2549
205	0.01543	656.28	123.3	-41.484	-38.484	0.79153	0.206	0.415	2477
210	0.01566	606.40	117.1	-39.443	-36.398	0.80159	0.204	0.419	2404
215	0.01590	558.03	111.0	-37.382	-34.289	0.81151	0.202	0.424	2331
220	0.01616	511.14	105.0	-35.298	-32.155	0.82133	0.200	0.429	2256
225	0.01644	465.70	99.2	-33.187	-29.998	0.83105	0.198	0.436	2181
230	0.01674	421.71	93.5	-31.045	-27.790	0.84072	0.196	0.443	2104
235	0.01707	377.75	87.8	-28.837	-25.518	0.85049	0.199	0.458	2005
240	0.01742	337.86	82.3	-26.588	-23.200	0.86025	0.198	0.468	1924
245	0.01781	299.04	76.8	-24.290	-20.827	0.87004	0.196	0.480	1841
250	0.01824	261.62	71.4	-21.931	-18.384	0.87990	0.195	0.496	1754
255	0.01872	225.65	66.2	-19.497	-15.857	0.88992	0.195	0.516	1665
260	0.01928	191.09	60.5	-16.971	-13.223	0.90014	0.194	0.537	1565
265	0.01992	157.81	55.4	-14.321	-10.449	0.91071	0.195	0.573	1467
270	0.02068	126.66	49.7	-11.513	-7.492	0.92176	0.195	0.612	1356
275	0.02162	97.08	44.3	-8.479	-4.274	0.93357	0.197	0.678	1244
280	0.02286	69.95	38.5	-5.113	-0.668	0.94657	0.200	0.772	1128
285	0.02461	45.87	32.5	-1.221	3.564	0.96154	0.205	0.943	998
290	0.02743	26.41	26.1	3.623	8.956	0.98029	0.216	1.261	844
295	0.03253	15.48	19.4	9.911	16.237	1.00517	0.224	1.628	721
300	0.04884	15.22	14.6	16.512	24.297	1.03227	0.221	1.468	684
310	0.05305	26.13	10.8	24.947	35.261	1.06629	0.203	0.825	701
320	0.06252	37.37	8.1	30.031	42.187	1.09030	0.192	0.595	732
330	0.07026	47.35	6.9	33.869	47.530	1.10676	0.185	0.487	759
340	0.07701	56.44	6.1	37.084	52.057	1.12028	0.180	0.424	784
350	0.08311	64.58	5.5	39.927	56.087	1.13196	0.176	0.385	808
360	0.08878	72.15	5.0	42.530	59.792	1.14240	0.174	0.358	830
370	0.09412	79.26	4.7	44.962	63.263	1.15191	0.172	0.338	850
380	0.39921	85.99	4.3	47.269	66.558	1.16070	0.170	0.322	869
390	0.10409	92.40	4.1	49.477	69.716	1.16891	0.168	0.310	888
400	0.10881	98.55	3.9	51.608	72.764	1.17662	0.167	0.300	905
410	0.11338	104.46	3.7	53.675	75.720	1.18392	0.166	0.292	922
420	0.11784	110.18	3.5	55.690	78.602	1.19087	0.165	0.285	938
430	0.12219	115.72	3.3	57.660	81.419	1.19749	0.164	0.279	954
440	0.12646	121.10	3.2	59.593	84.181	1.20384	0.164	0.274	969
450	0.13065	126.35	3.1	61.493	86.895	1.20995	0.163	0.269	984
460	0.13477	131.48	3.0	63.366	89.568	1.21582	0.162	0.265	998
470	0.13883	136.50	2.9	65.213	92.205	1.22149	0.162	0.262	1012
480	0.14283	141.43	2.8	67.039	94.810	1.22698	0.161	0.259	1025
490	0.14679	146.26	2.7	68.847	97.387	1.23229	0.161	0.256	1039
500	0.15070	151.02	2.6	70.637	99.939	1.23744	0.161	0.254	1052
510	0.15458	155.70	2.5	72.413	102.468	1.24245	0.160	0.252	1065
520	0.15842	160.32	2.4	74.176	104.978	1.24733	0.160	0.250	1077
530	0.16223	164.89	2.4	75.927	107.469	1.25207	0.160	0.248	1089
540	0.16600	169.39	2.3	77.668	109.945	1.25670	0.160	0.247	1101
550	0.16976	173.85	2.3	79.400	112.406	1.26122	0.160	0.245	1113
560	0.17348	178.26	2.2	81.124	114.855	1.26563	0.159	0.244	1125
570	0.17719	182.63	2.1	82.841	117.292	1.26994	0.159	0.243	1136
580	0.18087	186.97	2.1	84.553	119.719	1.27416	0.159	0.242	1147
590	0.18453	191.27	2.1	86.258	122.138	1.27830	0.159	0.241	1158
600	0.18818	195.53	2.0	87.959	124.548	1.28235	0.159	0.241	1169

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1050 PSIA ISOBAR

TEMPERATURE	DENSITY	$V(\partial H/\partial V)_P$	$V(\partial P/\partial U)_V$	$-V(\partial P/\partial V)_T$	$(\partial V/\partial T)_P/V$	THERMAL CONDUCTIVITY	VISCOSITY	THERMAL DIFFUSIVITY	DIELECTRIC CONSTANT	PRANDTL NUMBER
DEG. R	LB/CU FT	BTU/LB	PSIA-CU FT/BTU	PSIA	1/DEG. R	BTU/FT-HR-R	LB/FT-SEC x 10^5	SQ FT/HR		
* 99.323	81.83827	219.23	14.596	176384.37	0.0018054	0.11216	43.104	0.00346	1.57086	5.4758
100	81.73814	218.82	14.567	175114.12	0.0018086	0.11198	42.553	0.00346	1.57006	5.4143
105	80.99748	215.80	14.346	165939.85	0.0018327	0.11055	38.717	0.00345	1.56411	4.9863
110	80.25363	212.74	14.119	157111.27	0.0018580	0.10905	35.263	0.00344	1.55814	4.6014
115	79.50628	209.64	13.885	148618.16	0.0018847	0.10747	32.151	0.00342	1.55217	4.2550
120	78.75508	206.49	13.646	140450.43	0.0019129	0.10583	29.348	0.00340	1.54618	3.9432
125	77.99967	203.30	13.401	132598.18	0.0019427	0.10413	26.822	0.00338	1.54017	3.6623
130	77.23964	200.05	13.151	125051.71	0.0019744	0.10238	24.547	0.00336	1.53413	3.4093
135	76.47452	196.76	12.898	117801.46	0.0020080	0.10058	22.497	0.00333	1.52808	3.1815
140	75.70382	193.40	12.641	110838.07	0.0020440	0.09873	20.650	0.00330	1.52199	2.9763
145	74.92697	189.99	12.381	104152.36	0.0020823	0.09685	18.985	0.00327	1.51588	2.7918
150	74.14336	186.52	12.119	97735.36	0.0021235	0.09494	17.485	0.00323	1.50972	2.6268
155	73.35231	182.98	11.856	91578.27	0.0021677	0.09299	16.132	0.00320	1.50353	2.4771
160	72.55304	179.37	11.592	85672.52	0.0022154	0.09102	14.913	0.00316	1.49728	2.3437
165	71.74470	175.69	11.327	80009.75	0.0022669	0.08903	13.813	0.00312	1.49098	2.2246
170	70.92633	171.94	11.063	74581.60	0.0023228	0.08702	12.821	0.00307	1.48463	2.1184
175	70.09687	168.11	10.799	69380.78	0.0023836	0.08499	11.926	0.00303	1.47820	2.0242
180	69.25509	164.19	10.536	64399.04	0.0024500	0.08294	11.118	0.00298	1.47170	1.9412
185	68.39964	160.19	10.275	59629.18	0.0025228	0.08088	10.388	0.00293	1.46511	1.8685
190	67.52896	156.09	10.015	55064.10	0.0026029	0.07881	9.728	0.00287	1.45842	1.8055
195	66.64127	151.90	9.758	50697.01	0.0026916	0.07673	9.132	0.00282	1.45163	1.7516
200	65.73455	147.60	9.502	46521.49	0.0027900	0.07464	8.592	0.00276	1.44471	1.7065
205	64.80646	143.20	9.249	42531.49	0.0028999	0.07255	8.103	0.00270	1.43765	1.6698
210	63.85427	138.69	8.998	38721.41	0.0030233	0.07044	7.659	0.00263	1.43043	1.6413
215	62.87482	134.05	8.748	35086.28	0.0031627	0.06833	7.256	0.00256	1.42303	1.6209
220	61.86437	129.30	8.499	31621.42	0.0033213	0.06620	6.889	0.00249	1.41542	1.6087
225	60.81850	124.42	8.250	28323.45	0.0035031	0.06407	6.553	0.00242	1.40757	1.6050
230	59.73190	119.42	7.998	25189.65	0.0037132	0.06192	6.246	0.00234	1.39945	1.6103
235	58.58550	115.40	7.522	22130.80	0.0039653	0.05973	5.961	0.00223	1.39092	1.6440
240	57.39511	110.33	7.245	19391.36	0.0042424	0.05755	5.735	0.00214	1.38209	1.6792
245	56.14425	105.02	6.963	16789.53	0.0045748	0.05535	5.527	0.00205	1.37286	1.7271
250	54.81985	99.55	6.670	14341.96	0.0049815	0.05313	5.315	0.00195	1.36313	1.7862
255	53.40518	93.95	6.371	12050.83	0.0054935	0.05087	5.097	0.00185	1.35278	1.8616
260	51.88056	88.00	6.006	9913.62	0.0061077	0.04857	4.871	0.00174	1.34170	1.9405
265	50.21314	81.97	5.671	7924.05	0.0069913	0.04621	4.635	0.00161	1.32964	2.0691
270	48.36049	75.45	5.261	6125.39	0.0081133	0.04377	4.385	0.00148	1.31633	2.2082
275	46.24550	68.73	4.863	4489.71	0.0098642	0.04123	4.116	0.00132	1.30124	2.4364
280	43.74596	61.46	4.402	3060.14	0.0125648	0.03977	3.818	0.00118	1.28357	2.6668
285	40.63998	53.98	3.915	1863.98	0.0174610	0.03850	3.477	0.00101	1.26183	3.0644
290	36.46212	46.46	3.312	962.84	0.0271381	0.03748	3.066	0.00082	1.23298	3.7121
295	30.73862	39.95	2.811	475.75	0.0407408	0.03547	2.581	0.00071	1.19420	4.2630
300	24.97388	38.23	2.638	380.01	0.0384037	0.03155	2.174	0.00086	1.15598	3.6415
310	18.85066	40.53	2.615	492.61	0.0203577	0.02401	1.822	0.00154	1.11630	2.2542
320	15.99493	44.12	2.621	597.69	0.0134854	0.02089	1.689	0.00219	1.09812	1.7321
330	14.23344	47.67	2.611	673.98	0.0102072	0.01937	1.621	0.00280	1.08701	1.4657
340	12.98563	51.17	2.595	732.88	0.0082811	0.01850	1.581	0.00336	1.07918	1.3036
350	12.03163	54.54	2.583	777.05	0.0070556	0.01799	1.558	0.00388	1.07322	1.1997
360	11.26349	57.83	2.569	812.70	0.0061838	0.01765	1.543	0.00438	1.06844	1.1256
370	10.62433	61.05	2.554	842.18	0.0055289	0.01742	1.536	0.00486	1.06448	1.0715
380	10.07960	64.20	2.541	866.75	0.0050172	0.01727	1.533	0.00532	1.06110	1.0293
390	9.60681	67.29	2.527	887.70	0.0046051	0.01718	1.533	0.00577	1.05818	0.9954
400	9.19052	70.32	2.515	905.70	0.0042653	0.01714	1.536	0.00622	1.05561	0.9676
410	8.81968	73.29	2.503	921.32	0.0039798	0.01714	1.541	0.00666	1.05333	0.9443
420	8.48617	76.21	2.493	934.97	0.0037361	0.01717	1.548	0.00710	1.05128	0.9245
430	8.18379	79.09	2.483	947.00	0.0035253	0.01721	1.556	0.00754	1.04942	0.9075
440	7.90775	81.92	2.474	957.65	0.0033411	0.01728	1.566	0.00798	1.04773	0.8928
450	7.65425	84.72	2.465	967.14	0.0031785	0.01736	1.576	0.00842	1.04617	0.8798
460	7.42025	87.49	2.457	975.63	0.0030338	0.01745	1.586	0.00886	1.04474	0.8685
470	7.20327	90.23	2.449	983.25	0.0029041	0.01756	1.598	0.00930	1.04341	0.8584
480	7.00125	92.94	2.442	990.16	0.0027870	0.01767	1.610	0.00974	1.04218	0.8494
490	6.81249	95.63	2.435	996.41	0.0026808	0.01779	1.622	0.01019	1.04103	0.8414
500	6.63555	98.30	2.429	1002.09	0.0025839	0.01792	1.635	0.01063	1.03995	0.8342
510	6.46921	100.96	2.423	1007.28	0.0024951	0.01881	1.648	0.01105	1.03893	0.8296
520	6.31241	103.60	2.417	1012.03	0.0024133	0.01816	1.661	0.01151	1.03798	0.8232
530	6.16425	106.22	2.411	1016.40	0.0023378	0.01832	1.675	0.01197	1.03707	0.8174
540	6.02395	108.84	2.405	1020.41	0.0022677	0.01848	1.689	0.01243	1.03622	0.8122
550	5.89083	111.46	2.399	1024.12	0.0022025	0.01863	1.703	0.01289	1.03541	0.8075
560	5.76428	114.06	2.394	1027.56	0.0021416	0.01879	1.717	0.01335	1.03464	0.8033
570	5.64377	116.67	2.388	1030.75	0.0020846	0.01896	1.731	0.01381	1.03391	0.7995
580	5.52883	119.27	2.382	1033.71	0.0020312	0.01912	1.745	0.01428	1.03321	0.7961
590	5.41904	121.87	2.377	1036.47	0.0019808	0.01929	1.760	0.01474	1.03254	0.7930
600	5.31402	124.47	2.371	1039.06	0.0019334	0.01945	1.775	0.01521	1.03191	0.7902

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

1100 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 99.393	0.01222	2158.35	318.5	-83.043	-80.555	0.50294	0.267	0.396	3852
100	0.01223	2146.79	316.9	-82.805	-80.314	0.50535	0.266	0.396	3846
105	0.01234	2053.18	304.3	-80.850	-78.336	0.52465	0.262	0.395	3790
110	0.01246	1962.23	292.1	-78.897	-76.360	0.54304	0.258	0.395	3734
115	0.01257	1873.87	280.3	-76.946	-74.385	0.56060	0.254	0.395	3676
120	0.01269	1788.06	268.9	-74.995	-72.410	0.57741	0.250	0.395	3617
125	0.01282	1704.74	257.8	-73.046	-70.436	0.59352	0.247	0.395	3556
130	0.01294	1623.84	247.1	-71.097	-68.461	0.60901	0.243	0.395	3495
135	0.01307	1545.31	236.8	-69.149	-66.487	0.62391	0.240	0.395	3433
140	0.01320	1469.08	226.8	-67.201	-64.512	0.63828	0.237	0.395	3370
145	0.01334	1395.12	217.1	-65.252	-62.535	0.65215	0.234	0.395	3305
150	0.01348	1323.35	207.8	-63.303	-60.557	0.66556	0.231	0.396	3241
155	0.01363	1253.71	198.8	-61.351	-58.576	0.67855	0.228	0.396	3175
160	0.01377	1186.16	190.1	-59.398	-56.592	0.69115	0.226	0.397	3109
165	0.01393	1120.63	181.7	-57.442	-54.604	0.70338	0.223	0.398	3042
170	0.01409	1057.07	173.6	-55.482	-52.612	0.71528	0.221	0.399	2974
175	0.01426	995.42	165.7	-53.517	-50.613	0.72686	0.219	0.400	2906
180	0.01443	935.62	158.1	-51.547	-48.608	0.73816	0.216	0.402	2837
185	0.01461	877.63	150.8	-49.570	-46.595	0.74919	0.214	0.404	2768
190	0.01480	821.39	143.7	-47.585	-44.571	0.75999	0.212	0.406	2698
195	0.01499	766.85	136.8	-45.591	-42.537	0.77056	0.210	0.408	2628
200	0.01520	713.95	130.2	-43.585	-40.489	0.78093	0.208	0.411	2557
205	0.01541	662.66	123.8	-41.565	-38.426	0.79112	0.206	0.414	2486
210	0.01564	612.93	117.5	-39.530	-36.345	0.80115	0.204	0.418	2413
215	0.01588	564.72	111.4	-37.477	-34.242	0.81105	0.202	0.423	2341
220	0.01614	518.00	105.5	-35.402	-32.114	0.82083	0.200	0.428	2267
225	0.01641	472.74	99.8	-33.301	-29.958	0.83052	0.198	0.434	2192
230	0.01671	428.94	94.1	-31.170	-27.766	0.84015	0.196	0.441	2116
235	0.01703	384.97	88.3	-28.976	-25.507	0.84987	0.199	0.455	2018
240	0.01738	345.16	82.9	-26.742	-23.202	0.85957	0.198	0.469	1939
245	0.01776	306.58	77.5	-24.463	-20.845	0.86929	0.197	0.477	1856
250	0.01818	269.41	72.2	-22.127	-18.424	0.87907	0.195	0.491	1771
255	0.01865	233.66	67.0	-19.721	-15.922	0.88898	0.195	0.510	1685
260	0.01918	199.42	61.4	-17.231	-13.324	0.89907	0.194	0.529	1597
265	0.01979	166.48	56.4	-14.630	-10.598	0.90946	0.194	0.562	1494
270	0.02052	135.61	50.8	-11.888	-7.709	0.92026	0.195	0.596	1386
275	0.02140	106.35	45.6	-8.953	-4.595	0.93168	0.196	0.652	1280
280	0.02251	79.43	40.0	-5.745	-1.159	0.94406	0.198	0.729	1163
285	0.02402	55.44	34.5	-2.134	2.758	0.95793	0.202	0.854	1043
290	0.02625	35.33	28.6	2.146	7.493	0.97439	0.211	1.068	909
295	0.02987	21.63	22.3	7.408	13.492	0.99489	0.217	1.336	785
300	0.03553	16.79	17.2	13.447	20.684	1.01907	0.220	1.458	718
310	0.04796	24.09	11.4	22.834	32.604	1.05821	0.206	0.923	707
320	0.05754	34.99	9.0	28.520	40.240	1.08248	0.194	0.646	734
330	0.06529	45.07	7.6	32.672	45.971	1.10013	0.187	0.517	760
340	0.07199	54.21	6.6	36.081	50.746	1.11439	0.181	0.446	785
350	0.07802	62.69	5.9	39.057	54.949	1.12658	0.177	0.399	808
360	0.08358	70.41	5.4	41.755	58.779	1.13737	0.175	0.369	830
370	0.08880	77.66	5.0	44.261	62.349	1.14715	0.172	0.346	850
380	0.09375	84.52	4.7	46.627	65.724	1.15616	0.170	0.329	870
390	0.09850	91.05	4.4	48.884	68.948	1.16453	0.169	0.316	888
400	0.10308	97.31	4.1	51.055	72.052	1.17239	0.168	0.305	906
410	0.10752	103.33	3.9	53.157	75.057	1.17981	0.167	0.296	923
420	0.11183	109.13	3.7	55.202	77.980	1.18686	0.166	0.289	939
430	0.11604	114.76	3.5	57.199	80.835	1.19357	0.165	0.282	955
440	0.12016	120.23	3.4	59.155	83.631	1.20000	0.164	0.277	970
450	0.12420	125.56	3.3	61.076	86.375	1.20617	0.163	0.272	985
460	0.12818	130.76	3.1	62.967	89.075	1.21210	0.163	0.268	999
470	0.13209	135.84	3.0	64.831	91.737	1.21783	0.162	0.264	1013
480	0.13595	140.83	2.9	66.672	94.364	1.22336	0.162	0.261	1027
490	0.13976	145.72	2.8	68.493	96.962	1.22872	0.161	0.258	1040
500	0.14353	150.54	2.7	70.297	99.532	1.23391	0.161	0.256	1053
510	0.14726	155.28	2.7	72.084	102.079	1.23895	0.160	0.254	1066
520	0.15095	159.95	2.6	73.857	104.604	1.24386	0.160	0.252	1079
530	0.15461	164.56	2.5	75.618	107.111	1.24863	0.160	0.250	1091
540	0.15824	169.11	2.4	77.368	109.600	1.25328	0.160	0.248	1103
550	0.16185	173.61	2.4	79.108	112.075	1.25782	0.160	0.247	1115
560	0.16543	178.07	2.3	80.839	114.536	1.26226	0.160	0.245	1127
570	0.16899	182.48	2.3	82.563	116.984	1.26659	0.159	0.244	1138
580	0.17252	186.85	2.2	84.281	119.422	1.27083	0.159	0.243	1149
590	0.17604	191.19	2.2	85.992	121.850	1.27498	0.159	0.242	1161
600	0.17954	195.50	2.1	87.699	124.270	1.27905	0.159	0.242	1172

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1100 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.393	81.85109	219.50	14.594	176663.12	0.0018028	0.11219	43.175	0.00346	1.57097	5.4822
100	81.76146	219.14	14.568	175524.93	0.0018056	0.11202	42.681	0.00346	1.57025	5.4270
105	81.02186	216.13	14.348	166352.58	0.0018294	0.11061	38.838	0.00345	1.56430	4.9981
110	80.27914	213.09	14.120	157525.95	0.0018545	0.10911	35.376	0.00344	1.55835	4.6124
115	79.53299	210.00	13.887	149034.83	0.0018809	0.10754	32.257	0.00342	1.55238	4.2653
120	78.78308	206.86	13.647	140869.14	0.0019088	0.10590	29.447	0.00340	1.54640	3.9527
125	78.02905	203.68	13.402	133018.98	0.0019383	0.10421	26.916	0.00338	1.54040	3.6711
130	77.27048	200.45	13.153	125474.64	0.0019697	0.10246	24.635	0.00336	1.53438	3.4175
135	76.50693	197.17	12.900	118226.57	0.0020029	0.10066	22.580	0.00333	1.52833	3.1891
140	75.73791	193.83	12.643	111265.42	0.0020384	0.09882	20.728	0.00330	1.52226	2.9834
145	74.96288	190.43	12.384	104582.01	0.0020763	0.09695	19.059	0.00327	1.51616	2.7984
150	74.18122	186.98	12.122	98167.36	0.0021169	0.09504	17.554	0.00324	1.51002	2.6320
155	73.39227	183.46	11.859	92012.69	0.0021605	0.09310	16.198	0.00320	1.50384	2.4826
160	72.59528	179.87	11.596	86109.43	0.0022075	0.09113	14.974	0.00316	1.49761	2.3488
165	71.78942	176.21	11.332	80449.22	0.0022583	0.08915	13.871	0.00312	1.49133	2.2291
170	70.97376	172.48	11.068	75023.93	0.0023133	0.08714	12.876	0.00308	1.48499	2.1225
175	70.14724	168.67	10.805	69825.65	0.0023731	0.08512	11.978	0.00303	1.47859	2.0278
180	69.30870	164.78	10.543	64846.74	0.0024383	0.08308	11.167	0.00298	1.47211	1.9443
185	68.45680	160.81	10.283	60079.82	0.0025098	0.08103	10.435	0.00293	1.46555	1.8711
190	67.59005	156.74	10.025	55517.79	0.0025883	0.07897	9.773	0.00288	1.45889	1.8075
195	66.70674	152.57	9.769	51153.87	0.0026751	0.07690	9.175	0.00282	1.45213	1.7531
200	65.80489	148.31	9.515	46981.64	0.0027713	0.07482	8.633	0.00277	1.44525	1.7073
205	64.88227	143.94	9.264	42995.06	0.0028786	0.07273	8.142	0.00271	1.43823	1.6699
210	63.93628	139.47	9.015	39188.53	0.0029988	0.07063	7.697	0.00264	1.43105	1.6406
215	62.96389	134.87	8.768	35556.98	0.0031343	0.06853	7.292	0.00257	1.42370	1.6193
220	61.96154	130.16	8.523	32095.98	0.0032880	0.06642	6.923	0.00250	1.41615	1.6060
225	60.92506	125.33	8.277	28801.83	0.0034637	0.06430	6.587	0.00243	1.40837	1.6011
230	59.84946	120.39	8.030	25671.85	0.0036661	0.06217	6.279	0.00235	1.40033	1.6049
235	58.71662	115.44	7.552	22603.99	0.0039079	0.05999	5.993	0.00225	1.39189	1.6364
240	57.54152	111.44	7.283	19860.76	0.0041755	0.05783	5.761	0.00216	1.38317	1.6689
245	56.30937	106.21	7.000	17263.17	0.0044877	0.05565	5.556	0.00207	1.37407	1.7131
250	55.00817	100.87	6.714	14819.56	0.0048704	0.05346	5.347	0.00198	1.36451	1.7689
255	53.62290	95.39	6.423	12530.42	0.0053478	0.05123	5.132	0.00187	1.35437	1.8396
260	52.13666	89.59	6.067	10397.22	0.0059075	0.04897	4.911	0.00177	1.34355	1.9104
265	50.52155	83.77	5.750	8410.69	0.0067103	0.04667	4.680	0.00164	1.33186	2.0296
270	48.74186	77.48	5.353	6610.08	0.0076914	0.04429	4.438	0.00152	1.31906	2.1502
275	46.73729	71.06	4.976	4979.55	0.0091746	0.04188	4.180	0.00137	1.30474	2.3470
280	44.41603	64.20	4.547	3527.77	0.0113491	0.04012	3.899	0.00124	1.28829	2.5493
285	41.62946	57.21	4.104	2306.05	0.0149357	0.03874	3.586	0.00109	1.26873	2.8480
290	38.09348	50.25	3.551	1345.72	0.0212452	0.03750	3.225	0.00092	1.24419	3.3048
295	33.47913	43.42	3.060	724.03	0.0307730	0.03588	2.808	0.00080	1.21266	3.7644
300	28.14366	40.02	2.784	472.57	0.0364355	0.03339	2.396	0.00081	1.17689	3.7665
310	20.84663	40.54	2.663	502.24	0.0227728	0.02595	1.939	0.00135	1.12915	2.4833
320	17.37859	43.76	2.656	608.14	0.0147517	0.02206	1.765	0.00197	1.10691	1.8591
330	15.31608	47.21	2.641	690.32	0.0109433	0.02020	1.678	0.00255	1.09383	1.5449
340	13.89042	50.65	2.629	753.02	0.0087967	0.01917	1.628	0.00310	1.08485	1.3625
350	12.81756	54.04	2.609	803.48	0.0073861	0.01852	1.598	0.00362	1.07813	1.2396
360	11.96506	57.33	2.593	842.43	0.0064300	0.01812	1.579	0.00411	1.07261	1.1567
370	11.26168	60.56	2.578	874.57	0.0057194	0.01783	1.568	0.00457	1.06843	1.0967
380	10.66614	63.72	2.563	901.50	0.0051688	0.01764	1.562	0.00502	1.06474	1.0503
390	10.15194	66.82	2.548	924.37	0.0047284	0.01752	1.560	0.00546	1.06155	1.0133
400	9.70113	69.87	2.535	944.01	0.0043675	0.01745	1.562	0.00590	1.05876	0.9830
410	9.30097	72.85	2.522	961.03	0.0040657	0.01743	1.565	0.00633	1.05630	0.9578
420	8.94216	75.79	2.511	975.90	0.0038092	0.01743	1.571	0.00675	1.05408	0.9365
430	8.61769	78.69	2.500	988.99	0.0035883	0.01747	1.578	0.00718	1.05209	0.9182
440	8.32213	81.54	2.491	1000.57	0.0033957	0.01752	1.586	0.00760	1.05027	0.9024
450	8.05123	84.35	2.481	1010.88	0.0032263	0.01759	1.595	0.00803	1.04861	0.8886
460	7.80159	87.13	2.473	1020.11	0.0030759	0.01767	1.605	0.00845	1.04708	0.8764
470	7.57046	89.88	2.465	1028.40	0.0029414	0.01777	1.616	0.00888	1.04566	0.8657
480	7.35555	92.60	2.458	1035.88	0.0028203	0.01787	1.627	0.00930	1.04435	0.8561
490	7.15498	95.30	2.451	1042.66	0.0027107	0.01798	1.639	0.00973	1.04312	0.8476
500	6.96717	97.98	2.444	1048.82	0.0026108	0.01810	1.651	0.01016	1.04197	0.8399
510	6.79078	100.64	2.438	1054.44	0.0025194	0.01819	1.664	0.01056	1.04089	0.8330
520	6.62465	103.29	2.431	1059.59	0.0024354	0.01833	1.677	0.01100	1.03988	0.8268
530	6.46780	105.93	2.425	1064.32	0.0023579	0.01848	1.690	0.01144	1.03892	0.8220
540	6.31937	108.55	2.419	1068.67	0.0022861	0.01864	1.703	0.01188	1.03802	0.8165
550	6.17863	111.17	2.414	1072.69	0.0022194	0.01879	1.717	0.01233	1.03716	0.8115
560	6.04492	113.78	2.408	1076.41	0.0021572	0.01895	1.731	0.01277	1.03635	0.8071
570	5.91765	116.39	2.402	1079.86	0.0020990	0.01911	1.745	0.01322	1.03557	0.8030
580	5.79634	118.99	2.397	1083.07	0.0020444	0.01927	1.759	0.01366	1.03484	0.7994
590	5.68051	121.60	2.391	1086.07	0.0019932	0.01943	1.773	0.01411	1.03413	0.7961
600	5.56976	124.21	2.385	1088.87	0.0019449	0.01959	1.787	0.01456	1.03346	0.7932

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

1150 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	c_v BTU / LB -R	c_p BTU / LB -R	VELOCITY OF SOUND FT/SEC
* 99.463	0.01222	2161.41	318.5	-83.035	-80.434	0.50301	0.267	0.396	3855
100	0.01223	2151.20	317.1	-82.825	-80.221	0.50514	0.266	0.396	3849
105	0.01234	2057.65	304.5	-80.872	-78.244	0.52444	0.262	0.395	3793
110	0.01245	1966.76	292.3	-78.920	-76.268	0.54282	0.258	0.395	3737
115	0.01257	1878.48	280.5	-76.970	-74.293	0.56038	0.254	0.395	3679
120	0.01269	1792.74	269.1	-75.021	-72.319	0.57718	0.250	0.395	3620
125	0.01281	1709.48	258.1	-73.074	-70.346	0.59329	0.247	0.395	3560
130	0.01294	1628.66	247.4	-71.127	-68.372	0.60877	0.243	0.395	3499
135	0.01307	1550.20	237.1	-69.181	-66.399	0.62367	0.240	0.395	3437
140	0.01320	1474.06	227.1	-67.235	-64.424	0.63803	0.237	0.395	3374
145	0.01333	1400.17	217.4	-65.288	-62.449	0.65189	0.234	0.395	3310
150	0.01347	1328.48	208.1	-63.341	-60.471	0.66530	0.231	0.396	3245
155	0.01362	1258.94	199.1	-61.392	-58.492	0.67828	0.229	0.396	3180
160	0.01377	1191.47	190.4	-59.441	-56.509	0.69087	0.226	0.397	3113
165	0.01392	1126.04	182.0	-57.488	-54.523	0.70309	0.223	0.398	3047
170	0.01408	1062.56	173.9	-55.531	-52.532	0.71497	0.221	0.399	2979
175	0.01425	1001.03	166.0	-53.570	-50.536	0.72655	0.219	0.400	2911
180	0.01442	941.34	158.5	-51.603	-48.533	0.73783	0.217	0.401	2843
185	0.01460	883.46	151.1	-49.630	-46.522	0.74886	0.214	0.403	2774
190	0.01478	827.34	144.1	-47.649	-44.502	0.75963	0.212	0.405	2705
195	0.01498	772.92	137.2	-45.660	-42.470	0.77019	0.210	0.407	2635
200	0.01518	720.16	130.6	-43.659	-40.426	0.78054	0.208	0.410	2565
205	0.01539	669.01	124.2	-41.646	-38.367	0.79071	0.206	0.413	2494
210	0.01562	619.42	118.0	-39.617	-36.291	0.80072	0.204	0.417	2422
215	0.01586	571.37	111.9	-37.571	-34.194	0.81059	0.202	0.422	2350
220	0.01611	524.81	106.0	-35.504	-32.072	0.82034	0.200	0.427	2278
225	0.01639	479.73	100.3	-33.413	-29.923	0.83000	0.198	0.432	2204
230	0.01668	436.11	94.7	-31.293	-27.741	0.83958	0.196	0.439	2129
235	0.01699	392.13	88.9	-29.112	-25.493	0.84925	0.199	0.453	2031
240	0.01734	352.39	83.6	-26.893	-23.201	0.85898	0.198	0.463	1953
245	0.01771	314.03	78.1	-24.631	-20.860	0.86886	0.197	0.473	1871
250	0.01812	277.09	72.9	-22.317	-18.458	0.87826	0.195	0.487	1788
255	0.01856	241.58	67.8	-19.937	-15.982	0.88807	0.195	0.505	1704
260	0.01909	207.61	62.3	-17.480	-13.415	0.89804	0.194	0.522	1608
265	0.01968	174.97	57.4	-14.924	-10.733	0.90826	0.194	0.552	1519
270	0.02037	144.36	51.9	-12.241	-7.904	0.91883	0.194	0.582	1415
275	0.02119	115.36	46.8	-9.391	-4.878	0.92994	0.195	0.630	1313
280	0.02222	88.59	41.5	-6.311	-1.580	0.94182	0.197	0.694	1202
285	0.02355	64.71	36.2	-2.912	2.103	0.95486	0.200	0.792	1090
290	0.02541	44.19	30.7	0.990	6.401	0.96980	0.208	0.946	965
295	0.02819	28.67	24.8	5.587	11.589	0.98753	0.212	1.135	846
300	0.03242	28.65	19.8	10.910	17.814	1.00845	0.216	1.322	765
310	0.04352	23.04	13.0	20.647	29.914	1.04816	0.208	1.007	719
320	0.05305	33.05	10.0	26.943	38.240	1.07463	0.196	0.698	738
330	0.06078	43.05	8.3	31.435	44.378	1.09353	0.188	0.548	762
340	0.06743	52.26	7.2	35.051	49.411	1.10856	0.183	0.467	786
350	0.07338	60.78	6.4	38.170	53.796	1.12129	0.179	0.416	810
360	0.07884	68.76	5.8	40.968	57.758	1.13245	0.175	0.380	831
370	0.08395	76.15	5.4	43.551	61.428	1.14251	0.173	0.355	851
380	0.08879	83.13	5.0	45.977	64.885	1.15173	0.171	0.337	871
390	0.09341	89.78	4.7	48.284	68.177	1.16028	0.170	0.322	889
400	0.09787	96.13	4.4	50.498	71.338	1.16828	0.168	0.310	907
410	0.10217	102.25	4.2	52.635	74.393	1.17583	0.167	0.301	924
420	0.10636	108.15	3.9	54.711	77.359	1.18297	0.166	0.293	940
430	0.11043	113.86	3.8	56.735	80.252	1.18978	0.165	0.286	956
440	0.11442	119.40	3.6	58.715	83.081	1.19629	0.164	0.280	971
450	0.11833	124.80	3.5	60.657	85.856	1.20252	0.164	0.275	986
460	0.12217	130.07	3.3	62.567	88.584	1.20852	0.163	0.271	1000
470	0.12595	135.22	3.2	64.448	91.270	1.21429	0.162	0.267	1015
480	0.12968	140.27	3.1	66.305	93.920	1.21987	0.162	0.263	1028
490	0.13336	145.22	3.0	68.140	96.538	1.22527	0.161	0.260	1042
500	0.13699	150.09	2.9	69.955	99.127	1.23050	0.161	0.258	1055
510	0.14058	154.88	2.8	71.754	101.691	1.23558	0.161	0.255	1068
520	0.14414	159.60	2.7	73.538	104.233	1.24052	0.160	0.253	1080
530	0.14767	164.26	2.6	75.308	106.754	1.24532	0.160	0.251	1093
540	0.15117	168.85	2.6	77.067	109.258	1.25000	0.160	0.249	1105
550	0.15464	173.40	2.5	78.815	111.745	1.25456	0.160	0.248	1117
560	0.15808	177.90	2.4	80.554	114.218	1.25902	0.160	0.247	1129
570	0.16151	182.35	2.4	82.285	116.678	1.26337	0.159	0.245	1140
580	0.16491	186.77	2.3	84.009	119.126	1.26763	0.159	0.244	1152
590	0.16829	191.14	2.3	85.726	121.564	1.27180	0.159	0.243	1163
600	0.17166	195.48	2.2	87.439	123.993	1.27588	0.159	0.242	1174

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1150 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.463	81.86390	219.78	14.592	176941.65	0.0018001	0.11222	43.247	0.00346	1.57107	5.4887
100	81.78472	219.46	14.569	175935.40	0.0018025	0.11207	42.809	0.00346	1.57043	5.4397
105	81.04619	216.46	14.349	166764.94	0.0018262	0.11066	38.958	0.00345	1.56450	5.0108
110	80.30459	213.43	14.122	157940.25	0.0018510	0.10916	35.489	0.00344	1.55855	4.6234
115	79.55964	210.35	13.888	149451.09	0.0018772	0.10760	32.363	0.00343	1.55259	4.2755
120	78.81101	207.23	13.648	141287.41	0.0019048	0.10597	29.547	0.00341	1.54662	3.9622
125	78.05833	204.06	13.404	133439.31	0.0019340	0.10428	27.010	0.00338	1.54063	3.6808
130	77.30122	200.85	13.155	125897.06	0.0019650	0.10254	24.723	0.00336	1.53462	3.4258
135	76.53924	197.58	12.902	118651.14	0.0019979	0.10074	22.663	0.00333	1.52859	3.1967
140	75.77189	194.26	12.645	111692.18	0.0020329	0.09891	20.806	0.00331	1.52253	2.9905
145	74.99865	190.88	12.386	105011.02	0.0020704	0.09704	19.132	0.00327	1.51644	2.8049
150	74.21893	187.44	12.125	98598.68	0.0021104	0.09514	17.623	0.00324	1.51031	2.6388
155	73.43207	183.94	11.863	92446.38	0.0021535	0.09320	16.263	0.00320	1.50415	2.4882
160	72.63734	180.37	11.599	86545.56	0.0021998	0.09125	15.036	0.00317	1.49794	2.3538
165	71.83393	176.73	11.336	80887.86	0.0022498	0.08927	13.930	0.00313	1.49168	2.2337
170	71.02093	173.02	11.073	75465.14	0.0023039	0.08727	12.932	0.00308	1.48536	2.1266
175	70.19733	169.24	10.811	70269.53	0.0023627	0.08525	12.030	0.00304	1.47898	2.0314
180	69.36198	165.37	10.550	65293.37	0.0024268	0.08322	11.217	0.00299	1.47252	1.9474
185	68.51359	161.42	10.291	60529.28	0.0024970	0.08118	10.482	0.00294	1.46599	1.8737
190	67.65071	157.38	10.034	55970.19	0.0025740	0.07912	9.818	0.00289	1.45936	1.8096
195	66.77168	153.25	9.779	51609.32	0.0026589	0.07706	9.217	0.00283	1.45263	1.7546
200	65.87462	149.01	9.527	47440.24	0.0027530	0.07499	8.674	0.00277	1.44578	1.7082
205	64.95737	144.68	9.278	43456.92	0.0028577	0.07291	8.181	0.00271	1.43880	1.6701
210	64.01743	140.24	9.031	39653.77	0.0029749	0.07083	7.734	0.00265	1.43167	1.6400
215	63.05191	135.69	8.787	36025.69	0.0031066	0.06873	7.328	0.00259	1.42437	1.6178
220	62.05744	131.02	8.545	32568.23	0.0032557	0.06663	6.958	0.00252	1.41687	1.6036
225	61.03005	126.24	8.304	29277.67	0.0034257	0.06453	6.621	0.00244	1.40916	1.5974
230	59.96506	121.35	8.061	26151.22	0.0036207	0.06241	6.312	0.00237	1.40119	1.5998
235	58.84530	117.46	7.582	23075.26	0.0038529	0.06025	6.025	0.00226	1.39285	1.6292
240	57.68489	112.54	7.319	20327.53	0.0041116	0.05811	5.787	0.00218	1.38424	1.6590
245	56.47051	107.39	7.037	17733.39	0.0044053	0.05595	5.584	0.00209	1.37526	1.6997
250	55.19116	102.15	6.757	15293.08	0.0047664	0.05378	5.376	0.00200	1.36585	1.7527
255	53.83332	96.76	6.473	13005.23	0.0052127	0.05158	5.166	0.00190	1.35591	1.8189
260	52.38236	91.13	6.126	10875.19	0.0057260	0.04936	4.949	0.00181	1.34534	1.8832
265	50.81445	85.50	5.824	8891.14	0.0064592	0.04710	4.724	0.00168	1.33398	1.9940
270	49.09912	79.42	5.438	7087.73	0.0073260	0.04478	4.489	0.00157	1.32162	2.0995
275	47.18649	73.25	5.079	5443.66	0.0086036	0.04238	4.240	0.00142	1.30796	2.2781
280	45.01164	66.73	4.676	3987.74	0.0104014	0.04048	3.973	0.00130	1.29250	2.4521
285	42.46308	60.13	4.265	2747.58	0.0131677	0.03904	3.681	0.00116	1.27456	2.6876
290	39.35606	53.64	3.751	1738.95	0.0176426	0.03769	3.354	0.00101	1.25292	3.0318
295	35.47779	46.92	3.289	1024.14	0.0241866	0.03613	2.987	0.00898	1.22625	3.3767
300	30.84702	42.57	2.970	637.05	0.0310480	0.03433	2.603	0.00884	1.19492	3.6074
310	22.97932	40.96	2.728	529.40	0.0245829	0.02788	2.070	0.00120	1.14295	2.6919
320	18.85046	43.60	2.697	622.92	0.0160098	0.02331	1.848	0.00177	1.11638	1.9917
330	16.45173	46.87	2.673	708.18	0.0116953	0.02108	1.739	0.00234	1.10102	1.6281
340	14.82985	50.24	2.657	775.30	0.0092674	0.01985	1.678	0.00287	1.09076	1.4199
350	13.62721	53.58	2.642	828.30	0.0077591	0.01909	1.640	0.00337	1.08320	1.2853
360	12.66368	56.89	2.618	872.32	0.0066794	0.01859	1.616	0.00386	1.07729	1.1887
370	11.91193	60.11	2.601	907.09	0.0059117	0.01824	1.601	0.00431	1.07248	1.1226
380	11.26268	63.28	2.585	936.26	0.0053214	0.01801	1.592	0.00475	1.06844	1.0718
390	10.70500	66.40	2.569	961.84	0.0048523	0.01786	1.588	0.00518	1.06498	1.0315
400	10.21611	69.45	2.555	982.31	0.0044699	0.01776	1.587	0.00560	1.06196	0.9988
410	9.78744	72.45	2.542	1000.75	0.0041516	0.01772	1.590	0.00602	1.05930	0.9716
420	9.40242	75.41	2.529	1016.84	0.0038822	0.01770	1.594	0.00643	1.05692	0.9486
430	9.05511	78.31	2.518	1030.99	0.0036518	0.01772	1.599	0.00684	1.05478	0.9291
440	8.73944	81.18	2.508	1043.52	0.0034581	0.01776	1.607	0.00726	1.05284	0.9121
450	8.45067	84.00	2.498	1054.66	0.0032738	0.01782	1.615	0.00767	1.05106	0.8974
460	8.18500	86.79	2.489	1064.63	0.0031177	0.01789	1.624	0.00808	1.04943	0.8844
470	7.93938	89.55	2.481	1073.58	0.0029784	0.01797	1.634	0.00849	1.04792	0.8730
480	7.71131	92.29	2.473	1081.65	0.0028533	0.01807	1.645	0.00890	1.04652	0.8628
490	7.49870	95.00	2.466	1088.97	0.0027402	0.01818	1.656	0.00931	1.04522	0.8538
500	7.29982	97.68	2.459	1095.61	0.0026374	0.01829	1.668	0.00972	1.04401	0.8457
510	7.11320	100.35	2.452	1101.68	0.0025434	0.01836	1.680	0.01011	1.04286	0.8404
520	6.93760	103.00	2.446	1107.23	0.0024572	0.01858	1.692	0.01054	1.04179	0.8332
530	6.77193	105.64	2.440	1112.33	0.0023778	0.01865	1.705	0.01096	1.04078	0.8267
540	6.61527	108.27	2.434	1117.02	0.0023043	0.01868	1.718	0.01139	1.03982	0.8208
550	6.46681	110.90	2.428	1121.35	0.0022361	0.01895	1.731	0.01182	1.03892	0.8156
560	6.32584	113.51	2.422	1125.36	0.0021725	0.01910	1.744	0.01224	1.03806	0.8108
570	6.19175	116.12	2.417	1129.08	0.0021132	0.01926	1.758	0.01267	1.03724	0.8065
580	6.06399	118.73	2.411	1132.55	0.0020576	0.01941	1.772	0.01310	1.03646	0.8027
590	5.94206	121.34	2.405	1135.77	0.0020054	0.01957	1.786	0.01354	1.03572	0.7992
600	5.82553	123.95	2.400	1138.79	0.0019562	0.01973	1.800	0.01397	1.03501	0.7961

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1200 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	Cp	VELOCITY OF SOUND FT/SEC
* 99.533	0.01221	2164.47	318.5	-83.027	-80.313	0.50309	0.267	0.396	3857
100	0.01222	2155.60	317.3	-82.845	-80.129	0.50494	0.266	0.395	3852
105	0.01233	2062.12	304.8	-80.893	-78.152	0.52423	0.262	0.395	3796
110	0.01245	1971.30	292.6	-78.943	-76.176	0.54261	0.258	0.395	3740
115	0.01256	1883.08	280.8	-76.994	-74.202	0.56016	0.254	0.395	3682
120	0.01268	1797.40	269.4	-75.047	-72.229	0.57696	0.250	0.395	3623
125	0.01281	1714.22	258.3	-73.101	-70.256	0.59307	0.247	0.395	3563
130	0.01293	1633.47	247.6	-71.156	-68.283	0.60854	0.243	0.394	3502
135	0.01306	1555.09	237.3	-69.212	-66.310	0.62343	0.240	0.395	3440
140	0.01319	1479.02	227.3	-67.268	-64.337	0.63778	0.237	0.395	3377
145	0.01333	1405.22	217.7	-65.324	-62.362	0.65164	0.234	0.395	3314
150	0.01347	1333.61	208.4	-63.379	-60.386	0.66504	0.231	0.395	3249
155	0.01361	1264.15	199.4	-61.432	-58.408	0.67801	0.229	0.396	3184
160	0.01376	1196.78	190.7	-59.484	-56.427	0.69059	0.226	0.396	3118
165	0.01391	1131.44	182.3	-57.534	-54.442	0.70280	0.224	0.397	3052
170	0.01407	1068.07	174.2	-55.583	-52.453	0.71467	0.221	0.398	2985
175	0.01424	1006.62	166.3	-53.622	-50.459	0.72624	0.219	0.399	2917
180	0.01441	947.04	158.8	-51.659	-48.458	0.73751	0.217	0.401	2849
185	0.01458	889.28	151.5	-49.690	-46.449	0.74852	0.215	0.403	2780
190	0.01477	833.27	144.4	-47.713	-44.432	0.75928	0.212	0.405	2712
195	0.01496	778.97	137.6	-45.728	-42.404	0.76982	0.210	0.407	2642
200	0.01516	726.34	131.0	-43.733	-40.363	0.78015	0.208	0.409	2572
205	0.01538	675.32	124.6	-41.725	-38.308	0.79031	0.206	0.413	2502
210	0.01560	625.88	118.4	-39.703	-36.236	0.80029	0.204	0.416	2431
215	0.01584	577.97	112.4	-37.664	-34.144	0.81014	0.202	0.420	2360
220	0.01609	531.57	106.5	-35.605	-32.030	0.81986	0.200	0.425	2288
225	0.01636	486.66	100.8	-33.523	-29.888	0.82948	0.198	0.431	2215
230	0.01664	443.22	95.2	-31.413	-27.715	0.83903	0.196	0.437	2141
235	0.01696	399.25	89.5	-29.245	-25.477	0.84865	0.199	0.450	2044
240	0.01729	359.56	84.2	-27.041	-23.198	0.85825	0.198	0.460	1967
245	0.01766	321.40	78.8	-24.796	-20.872	0.86784	0.197	0.470	1886
250	0.01806	284.69	73.6	-22.502	-18.489	0.87747	0.196	0.483	1805
255	0.01851	249.38	68.6	-20.147	-16.035	0.88719	0.195	0.499	1722
260	0.01900	215.67	63.1	-17.721	-13.498	0.89704	0.194	0.515	1629
265	0.01957	183.31	58.4	-15.205	-10.856	0.90711	0.194	0.543	1543
270	0.02023	152.91	53.0	-12.575	-8.080	0.91748	0.194	0.569	1441
275	0.02101	124.14	48.0	-9.798	-5.131	0.92831	0.195	0.612	1344
280	0.02195	97.50	42.8	-6.826	-1.948	0.93978	0.196	0.666	1238
285	0.02316	73.70	37.7	-3.592	1.554	0.95217	0.198	0.745	1133
290	0.02476	52.90	32.5	0.035	5.537	0.96682	0.205	0.863	1015
295	0.02702	36.55	26.9	4.161	10.184	0.98191	0.208	1.000	901
300	0.03030	26.02	22.1	6.912	15.644	1.00025	0.212	1.171	817
310	0.03976	23.21	14.7	18.479	27.314	1.03853	0.208	1.056	738
320	0.04902	31.63	11.1	25.317	36.210	1.06681	0.198	0.749	745
330	0.05670	41.32	9.1	30.161	42.759	1.08697	0.190	0.580	765
340	0.06328	50.55	7.8	33.996	48.058	1.10280	0.184	0.488	789
350	0.06915	59.14	6.9	37.263	52.628	1.11686	0.180	0.431	811
360	0.07453	67.15	6.3	40.170	56.731	1.12762	0.176	0.393	833
370	0.07952	74.74	5.7	42.832	60.503	1.13796	0.174	0.365	852
380	0.08425	81.83	5.3	45.322	64.043	1.14741	0.172	0.344	872
390	0.08876	88.57	5.0	47.680	67.404	1.15614	0.170	0.328	898
400	0.09310	95.03	4.7	49.937	70.624	1.16429	0.169	0.316	908
410	0.09729	101.23	4.4	52.111	73.729	1.17195	0.167	0.305	925
420	0.10135	107.21	4.2	54.218	76.739	1.17921	0.166	0.297	941
430	0.10531	113.00	4.0	56.269	79.670	1.18611	0.165	0.290	957
440	0.10918	118.62	3.8	58.273	82.533	1.19269	0.165	0.283	972
450	0.11296	124.09	3.6	60.237	85.338	1.19899	0.164	0.278	987
460	0.11668	129.43	3.5	62.166	88.093	1.20505	0.163	0.273	1002
470	0.12034	134.64	3.4	64.065	90.805	1.21088	0.163	0.269	1016
480	0.12394	139.74	3.3	65.937	93.477	1.21651	0.162	0.265	1030
490	0.12749	144.75	3.1	67.786	96.116	1.22195	0.162	0.262	1043
500	0.13100	149.67	3.0	69.614	98.724	1.22722	0.161	0.259	1057
510	0.13447	154.51	2.9	71.424	101.306	1.23233	0.161	0.257	1070
520	0.13791	159.28	2.9	73.219	103.863	1.23729	0.160	0.255	1082
530	0.14131	163.98	2.8	74.999	106.399	1.24213	0.160	0.253	1095
540	0.14468	168.63	2.7	76.767	108.917	1.24683	0.160	0.251	1107
550	0.14803	173.22	2.6	78.523	111.417	1.25142	0.160	0.249	1119
560	0.15135	177.75	2.6	80.269	113.902	1.25589	0.160	0.248	1131
570	0.15465	182.25	2.5	82.007	116.373	1.26027	0.159	0.246	1142
580	0.15793	186.70	2.4	83.737	118.831	1.26454	0.159	0.245	1154
590	0.16119	191.11	2.4	85.461	121.279	1.26873	0.159	0.244	1165
600	0.16444	195.49	2.3	87.178	123.718	1.27283	0.159	0.243	1176

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1200 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.533	81.87669	220.05	14.590	177219.97	0.0017974	0.11225	43.319	0.00347	1.57117	5.4951
100	81.80794	219.78	14.570	176345.53	0.0017995	0.11212	42.937	0.00347	1.57062	5.4525
105	81.07046	216.79	14.350	167176.94	0.0018229	0.11071	39.078	0.00346	1.56469	5.0219
110	80.32998	213.77	14.123	158354.16	0.0018475	0.10922	35.602	0.00344	1.55876	4.6345
115	79.58623	210.73	13.889	149866.95	0.0018735	0.10766	32.469	0.00343	1.55281	4.2858
120	78.83886	207.60	13.650	141705.25	0.0019008	0.10604	29.647	0.00341	1.54684	3.9718
125	78.08754	204.44	13.405	133859.17	0.0019297	0.10435	27.104	0.00339	1.54086	3.6889
130	77.33188	201.24	13.156	126318.99	0.0019603	0.10261	24.812	0.00336	1.53487	3.4340
135	76.57144	197.99	12.903	119075.17	0.0019929	0.10083	22.746	0.00334	1.52884	3.2044
140	75.80575	194.68	12.647	112118.37	0.0020275	0.09900	20.884	0.00331	1.52280	2.9976
145	75.03430	191.32	12.388	105439.42	0.0020645	0.09714	19.206	0.00328	1.51672	2.8115
150	74.25650	187.90	12.128	99029.34	0.0021040	0.09524	17.693	0.00324	1.51061	2.6441
155	73.47171	184.42	11.866	92879.36	0.0021464	0.09331	16.329	0.00321	1.50446	2.4937
160	72.67921	180.87	11.603	86980.91	0.0021921	0.09136	15.098	0.00317	1.49827	2.3589
165	71.87823	177.25	11.340	81325.65	0.0022413	0.08938	13.988	0.00313	1.49202	2.2383
170	71.06787	173.56	11.078	75905.45	0.0022946	0.08739	12.987	0.00309	1.48573	2.1307
175	70.24714	169.80	10.817	70712.42	0.0023525	0.08538	12.083	0.00304	1.47936	2.0351
180	69.41493	165.96	10.557	65738.92	0.0024155	0.08336	11.267	0.00300	1.47293	1.9506
185	68.57000	162.03	10.299	60977.59	0.0024843	0.08132	10.529	0.00295	1.46642	1.8763
190	67.71093	158.02	10.043	56421.33	0.0025599	0.07928	9.863	0.00289	1.45982	1.8117
195	66.83612	153.91	9.790	52063.39	0.0026431	0.07722	9.260	0.00284	1.45312	1.7562
200	65.94375	149.71	9.540	47897.33	0.0027351	0.07516	8.714	0.00278	1.44630	1.7092
205	65.03175	145.41	9.292	43917.13	0.0028373	0.07309	8.220	0.00272	1.43936	1.6704
210	64.09773	141.01	9.048	40117.17	0.0029515	0.07102	7.771	0.00266	1.43227	1.6398
215	63.13891	136.49	8.807	36492.38	0.0030797	0.06893	7.364	0.00260	1.42502	1.6165
220	62.15210	131.87	8.567	33038.26	0.0032244	0.06685	6.993	0.00253	1.41758	1.6013
225	61.13353	127.14	8.330	29751.03	0.0033888	0.06475	6.654	0.00246	1.40993	1.5940
230	60.07879	122.30	8.091	26627.86	0.0035770	0.06265	6.345	0.00238	1.40204	1.5949
235	58.97166	118.47	7.612	23544.65	0.0038000	0.06051	6.057	0.00228	1.39379	1.6224
240	57.82535	113.62	7.354	20791.83	0.0040504	0.05838	5.813	0.00219	1.38528	1.6495
245	56.62789	108.54	7.072	18200.42	0.0043273	0.05624	5.612	0.00211	1.37642	1.6871
250	55.36917	103.41	6.798	15762.79	0.0046689	0.05410	5.408	0.00202	1.36716	1.7375
255	54.03701	98.15	6.521	13475.68	0.0050870	0.05193	5.199	0.00192	1.35740	1.7996
260	52.61863	92.62	6.182	11348.03	0.0055604	0.04974	4.986	0.00184	1.34706	1.8584
265	51.09359	87.17	5.893	9365.98	0.0062330	0.04752	4.765	0.00171	1.33600	1.9617
270	49.43558	81.27	5.518	7559.10	0.0070057	0.04525	4.536	0.00161	1.32404	2.0547
275	47.60615	75.33	5.175	5910.06	0.0081213	0.04292	4.296	0.00147	1.31094	2.2046
280	45.54928	69.07	4.791	4441.20	0.0096377	0.04084	4.040	0.00135	1.29630	2.3708
285	43.18640	62.82	4.407	3182.83	0.0118525	0.03938	3.765	0.00122	1.27963	2.5627
290	40.38858	56.72	3.922	2136.68	0.0152161	0.03797	3.463	0.00109	1.26008	2.8341
295	37.01460	50.22	3.491	1352.79	0.0199097	0.03641	3.132	0.00098	1.23677	3.0962
300	33.00797	45.46	3.166	858.88	0.0257638	0.03487	2.781	0.00090	1.20948	3.3630
310	25.15195	41.85	2.812	583.67	0.0252232	0.02958	2.212	0.00111	1.15715	2.8420
320	20.39931	43.67	2.744	645.15	0.0171527	0.02461	1.938	0.00161	1.12625	2.1232
330	17.63792	46.66	2.709	728.87	0.0124383	0.02200	1.805	0.00215	1.10856	1.7139
340	15.80272	49.94	2.688	798.90	0.0097813	0.02056	1.730	0.00266	1.09691	1.4795
350	14.46131	53.23	2.669	855.27	0.0081048	0.01967	1.683	0.00315	1.08844	1.3290
360	13.41823	56.49	2.651	901.09	0.0069601	0.01909	1.654	0.00362	1.08189	1.2256
370	12.57474	59.73	2.626	939.88	0.0061046	0.01867	1.635	0.00407	1.07661	1.1491
380	11.86897	62.90	2.608	971.20	0.0054742	0.01839	1.623	0.00450	1.07221	1.0937
390	11.26575	66.01	2.591	997.83	0.0049762	0.01820	1.616	0.00492	1.06846	1.0501
400	10.74126	69.08	2.575	1020.71	0.0045721	0.01808	1.614	0.00533	1.06520	1.0147
410	10.27892	72.09	2.561	1040.54	0.0042372	0.01801	1.614	0.00574	1.06234	0.9855
420	9.86678	75.06	2.548	1057.85	0.0039549	0.01798	1.617	0.00614	1.05979	0.9609
430	9.49593	77.97	2.536	1073.08	0.0037133	0.01798	1.621	0.00654	1.05750	0.9400
440	9.15958	80.85	2.525	1086.54	0.0035040	0.01800	1.627	0.00694	1.05542	0.9219
450	8.85246	83.68	2.515	1098.52	0.0033209	0.01805	1.635	0.00734	1.05353	0.9063
460	8.57037	86.48	2.506	1109.22	0.0031591	0.01811	1.643	0.00773	1.05180	0.8925
470	8.30995	89.25	2.497	1118.84	0.0030151	0.01818	1.652	0.00813	1.05020	0.8803
480	8.06844	91.99	2.489	1127.51	0.0028859	0.01827	1.662	0.00853	1.04871	0.8696
490	7.84356	94.71	2.481	1135.37	0.0027694	0.01837	1.673	0.00893	1.04733	0.8600
500	7.63343	97.40	2.474	1142.50	0.0026636	0.01847	1.684	0.00933	1.04605	0.8514
510	7.43642	100.08	2.468	1149.01	0.0025672	0.01854	1.696	0.00970	1.04484	0.8438
520	7.25120	102.73	2.461	1154.97	0.0024787	0.01868	1.707	0.01011	1.04371	0.8382
530	7.07659	105.38	2.455	1160.44	0.0023974	0.01881	1.720	0.01052	1.04264	0.8313
540	6.91158	108.01	2.449	1165.47	0.0023222	0.01896	1.732	0.01094	1.04163	0.8251
550	6.75532	110.64	2.443	1170.12	0.0022525	0.01910	1.745	0.01135	1.04068	0.8196
560	6.60702	113.26	2.437	1174.43	0.0021876	0.01925	1.758	0.01176	1.03977	0.8145
570	6.46603	115.87	2.431	1178.42	0.0021271	0.01940	1.771	0.01218	1.03891	0.8100
580	6.33175	118.48	2.426	1182.14	0.0020705	0.01956	1.785	0.01259	1.03810	0.8060
590	6.20367	121.09	2.420	1185.60	0.0020174	0.01971	1.798	0.01301	1.03731	0.8023
600	6.08131	123.70	2.414	1188.84	0.0019674	0.01987	1.812	0.01343	1.03657	0.7990

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1250 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	C_P	VELOCITY OF SOUND FT/SEC
* 99.603	0.01221	2167.53	318.6	-83.019	-80.193	0.50316	0.267	0.395	3859
100	0.01222	2160.00	317.5	-82.864	-80.036	0.50474	0.266	0.395	3855
105	0.01233	2066.58	305.0	-80.914	-78.059	0.52402	0.262	0.395	3799
110	0.01244	1975.82	292.8	-78.965	-76.085	0.54240	0.258	0.395	3743
115	0.01256	1887.67	281.0	-77.018	-74.111	0.55994	0.254	0.395	3685
120	0.01268	1802.06	269.6	-75.073	-72.138	0.57674	0.250	0.394	3627
125	0.01280	1718.95	258.5	-73.129	-70.166	0.59284	0.247	0.394	3567
130	0.01293	1638.27	247.9	-71.186	-68.194	0.60830	0.244	0.394	3506
135	0.01305	1559.96	237.5	-69.243	-66.222	0.62319	0.240	0.394	3444
140	0.01319	1483.98	227.6	-67.301	-64.249	0.63753	0.237	0.395	3381
145	0.01332	1410.25	217.9	-65.359	-62.276	0.65138	0.234	0.395	3318
150	0.01346	1338.73	208.6	-63.416	-60.301	0.66477	0.231	0.395	3254
155	0.01360	1269.35	199.6	-61.472	-58.324	0.67774	0.229	0.396	3189
160	0.01375	1202.07	191.0	-59.527	-56.344	0.69031	0.226	0.396	3123
165	0.01390	1136.82	182.6	-57.579	-54.361	0.70251	0.224	0.397	3057
170	0.01406	1073.55	174.5	-55.628	-52.373	0.71438	0.221	0.398	2990
175	0.01423	1012.20	166.7	-53.674	-50.381	0.72593	0.219	0.399	2923
180	0.01440	952.72	159.1	-51.714	-48.382	0.73719	0.217	0.400	2855
185	0.01457	895.06	151.8	-49.749	-46.376	0.74818	0.215	0.402	2787
190	0.01476	839.17	144.8	-47.777	-44.361	0.75893	0.213	0.404	2718
195	0.01495	784.99	138.0	-45.796	-42.336	0.76946	0.210	0.406	2649
200	0.01515	732.48	131.4	-43.806	-40.299	0.77977	0.208	0.409	2580
205	0.01536	681.60	125.0	-41.803	-38.248	0.78990	0.206	0.412	2510
210	0.01558	632.29	118.8	-39.787	-36.181	0.79987	0.204	0.415	2440
215	0.01582	584.53	112.8	-37.755	-34.094	0.80969	0.202	0.419	2369
220	0.01607	538.29	107.0	-35.704	-31.986	0.81938	0.200	0.424	2298
225	0.01633	493.54	101.3	-33.631	-29.852	0.82897	0.198	0.429	2226
230	0.01661	450.27	95.8	-31.532	-27.687	0.83848	0.196	0.436	2153
235	0.01692	408.33	90.0	-29.377	-25.460	0.84806	0.199	0.448	2056
240	0.01725	368.68	84.8	-27.186	-23.193	0.85760	0.198	0.458	1981
245	0.01761	328.71	79.4	-24.957	-20.881	0.86714	0.197	0.466	1900
250	0.01800	292.19	74.3	-22.682	-18.515	0.87670	0.196	0.479	1821
255	0.01844	257.07	69.3	-20.351	-16.083	0.88633	0.195	0.494	1740
260	0.01892	223.60	63.9	-17.954	-13.574	0.89607	0.194	0.509	1649
265	0.01947	191.50	59.3	-15.474	-10.967	0.90600	0.194	0.535	1566
270	0.02010	161.29	53.9	-12.892	-8.240	0.91620	0.194	0.558	1467
275	0.02084	132.73	49.1	-10.180	-5.358	0.92678	0.194	0.596	1373
280	0.02172	106.19	44.0	-7.300	-2.273	0.93789	0.195	0.642	1271
285	0.02282	82.46	39.1	-4.198	1.083	0.94977	0.197	0.707	1171
290	0.02423	61.46	34.2	-0.782	4.627	0.96279	0.203	0.802	1060
295	0.02614	44.38	28.8	3.039	9.090	0.97736	0.206	0.905	952
300	0.02879	32.25	24.2	7.321	13.985	0.99381	0.208	1.047	867
310	0.03670	24.68	16.5	16.434	24.928	1.02969	0.208	1.060	764
320	0.04545	30.84	12.2	23.667	34.187	1.05912	0.199	0.794	755
330	0.05300	39.96	9.9	28.858	41.125	1.08048	0.191	0.612	770
340	0.05950	49.06	8.5	32.920	46.692	1.09711	0.185	0.511	792
350	0.06528	57.68	7.5	36.340	51.451	1.11092	0.181	0.447	814
360	0.07057	65.75	6.7	39.359	55.693	1.12288	0.177	0.405	835
370	0.07547	73.45	6.1	42.106	59.575	1.13352	0.174	0.374	854
380	0.08010	80.62	5.7	44.660	63.200	1.14318	0.172	0.352	873
390	0.08450	87.45	5.3	47.071	66.631	1.15218	0.171	0.335	892
400	0.08873	93.99	5.0	49.372	69.909	1.16060	0.169	0.321	909
410	0.09281	100.28	4.7	51.584	73.065	1.16849	0.168	0.310	926
420	0.09676	106.34	4.4	53.723	76.119	1.17595	0.167	0.301	943
430	0.10060	112.20	4.2	55.802	79.089	1.18254	0.166	0.293	959
440	0.10436	117.89	4.0	57.831	81.986	1.18928	0.165	0.287	974
450	0.10803	123.43	3.8	59.816	84.822	1.19557	0.164	0.281	989
460	0.11164	128.82	3.7	61.764	87.605	1.20169	0.163	0.276	1004
470	0.11518	134.09	3.6	63.680	90.341	1.20757	0.163	0.271	1018
480	0.11867	139.26	3.4	65.568	93.036	1.21325	0.162	0.268	1032
490	0.12211	144.32	3.3	67.431	95.695	1.21873	0.162	0.264	1045
500	0.12550	149.29	3.2	69.273	98.322	1.22404	0.161	0.261	1058
510	0.12886	154.18	3.1	71.095	100.921	1.22918	0.161	0.259	1072
520	0.13218	158.99	3.0	72.900	103.495	1.23418	0.161	0.256	1084
530	0.13547	163.74	2.9	74.690	106.046	1.23904	0.160	0.254	1097
540	0.13873	168.43	2.8	76.466	108.577	1.24377	0.160	0.252	1109
550	0.14196	173.06	2.8	78.231	111.090	1.24838	0.160	0.250	1121
560	0.14517	177.64	2.7	79.985	113.587	1.25288	0.160	0.249	1133
570	0.14836	182.17	2.6	81.729	116.069	1.25728	0.159	0.248	1145
580	0.15152	186.66	2.6	83.466	118.539	1.26157	0.159	0.246	1156
590	0.15467	191.11	2.5	85.195	120.996	1.26577	0.159	0.245	1168
600	0.15780	195.52	2.5	86.918	123.444	1.26989	0.159	0.244	1179

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1250 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.603	81.88945	220.33	14.588	177498.08	0.0017947	0.11228	43.390	0.00347	1.57128	5.5015
100	81.83111	220.10	14.571	176755.33	0.0017965	0.11217	43.066	0.00347	1.57081	5.4653
105	81.09468	217.12	14.351	167586.59	0.0018197	0.11076	39.199	0.00346	1.56489	5.0337
110	80.35532	214.11	14.124	158767.68	0.0018441	0.10928	35.715	0.00344	1.55896	4.6455
115	79.61275	211.06	13.890	150282.39	0.0018698	0.10772	32.576	0.00343	1.55302	4.2961
120	78.86664	207.96	13.651	142122.65	0.0018968	0.10610	29.747	0.00341	1.54707	3.9813
125	78.11667	204.82	13.407	134278.56	0.0019254	0.10442	27.198	0.00339	1.54110	3.6978
130	77.36244	201.64	13.158	126740.41	0.0019557	0.10269	24.900	0.00337	1.53511	3.4423
135	76.60354	198.40	12.905	119498.67	0.0019879	0.10091	22.829	0.00334	1.52910	3.2121
140	75.83950	195.11	12.649	112543.99	0.0020221	0.09909	20.963	0.00331	1.52306	3.0047
145	75.06982	191.76	12.391	105867.20	0.0020586	0.09723	19.280	0.00328	1.51700	2.8181
150	74.29392	188.36	12.131	99459.33	0.0020976	0.09534	17.763	0.00325	1.51090	2.6502
155	73.51118	184.89	11.869	93311.62	0.0021395	0.09342	16.394	0.00321	1.50477	2.4993
160	72.72090	181.37	11.607	87415.50	0.0021845	0.09147	15.160	0.00317	1.49859	2.3640
165	71.92232	177.77	11.345	81762.62	0.0022330	0.08950	14.047	0.00313	1.49237	2.2429
170	71.11456	174.10	11.083	76344.86	0.0022855	0.08751	13.042	0.00309	1.48609	2.1348
175	70.29667	170.36	10.822	71154.34	0.0023424	0.08551	12.135	0.00305	1.47975	2.0388
180	69.46757	166.54	10.563	66183.43	0.0024043	0.08349	11.316	0.00300	1.47334	1.9537
185	68.62604	162.64	10.306	61424.75	0.0024719	0.08147	10.577	0.00295	1.46685	1.8790
190	67.77072	158.65	10.052	56871.23	0.0025460	0.07943	9.908	0.00290	1.46028	1.8139
195	66.90006	154.58	9.800	52516.10	0.0026275	0.07738	9.303	0.00285	1.45361	1.7578
200	66.01230	150.41	9.552	48352.93	0.0027175	0.07533	8.755	0.00279	1.44683	1.7102
205	65.10545	146.14	9.306	44375.70	0.0028174	0.07327	8.259	0.00273	1.43992	1.6708
210	64.17721	141.77	9.064	40578.79	0.0029287	0.07120	7.809	0.00267	1.43288	1.6392
215	63.22494	137.29	8.825	36957.18	0.0030535	0.06913	7.400	0.00261	1.42567	1.6153
220	62.24557	132.71	8.589	33506.11	0.0031940	0.06706	7.027	0.00254	1.41829	1.5991
225	61.23555	128.02	8.355	30222.00	0.0033532	0.06497	6.688	0.00247	1.41070	1.5907
230	60.19071	123.23	8.121	27101.84	0.0035348	0.06288	6.377	0.00240	1.40288	1.5904
235	59.09580	118.47	7.641	24012.20	0.0037491	0.06076	6.089	0.00230	1.39471	1.6159
240	57.96304	114.66	7.388	21253.83	0.0039916	0.05865	5.836	0.00221	1.38630	1.6403
245	56.78171	109.66	7.107	18664.48	0.0042533	0.05653	5.639	0.00213	1.37756	1.6752
250	55.54252	104.64	6.839	16228.99	0.0045778	0.05441	5.437	0.00205	1.36843	1.7231
255	54.23447	99.48	6.566	13942.13	0.0049697	0.05226	5.232	0.00195	1.35884	1.7815
260	52.84629	94.08	6.236	11816.18	0.0054085	0.05011	5.022	0.00186	1.34871	1.8358
265	51.36042	88.78	5.959	9835.69	0.0060279	0.04792	4.806	0.00174	1.33793	1.9320
270	49.75389	83.04	5.593	8024.86	0.0067220	0.04570	4.582	0.00165	1.32633	2.0148
275	47.99554	77.31	5.264	6370.51	0.0077074	0.04343	4.349	0.00152	1.31372	2.1480
280	46.04045	71.28	4.895	4889.18	0.0090054	0.04120	4.103	0.00139	1.29979	2.3011
285	43.82729	65.32	4.534	3614.12	0.0108307	0.03974	3.841	0.00128	1.28414	2.4618
290	41.26441	59.55	4.071	2536.18	0.0134668	0.03829	3.559	0.00116	1.26618	2.6831
295	38.25428	53.29	3.669	1697.91	0.0169900	0.03673	3.254	0.00106	1.24530	2.8877
300	34.73374	48.39	3.351	1120.25	0.0216386	0.03527	2.932	0.00097	1.22118	3.1340
310	27.25023	43.21	2.917	672.65	0.0245257	0.03091	2.358	0.00107	1.17097	2.9099
320	22.00321	43.99	2.799	678.56	0.0180456	0.02591	2.035	0.00148	1.13661	2.2446
330	18.86930	46.62	2.748	753.96	0.0131381	0.02296	1.874	0.00199	1.11642	1.8001
340	16.80704	49.74	2.721	824.63	0.0102664	0.02129	1.784	0.00248	1.10327	1.5405
350	15.31761	52.96	2.698	883.45	0.0084483	0.02027	1.729	0.00296	1.09384	1.3738
360	14.17079	56.18	2.678	931.80	0.0072150	0.01960	1.693	0.00341	1.08661	1.2602
370	13.24965	59.40	2.658	973.17	0.0062964	0.01911	1.669	0.00386	1.08083	1.1761
380	12.48464	62.56	2.631	1006.47	0.0056264	0.01878	1.654	0.00427	1.07605	1.1160
390	11.83391	65.67	2.613	1034.88	0.0050994	0.01856	1.645	0.00468	1.07199	1.0689
400	11.27035	68.74	2.596	1059.31	0.0046737	0.01840	1.640	0.00508	1.06849	1.0309
410	10.77521	71.76	2.581	1080.50	0.0043223	0.01831	1.639	0.00548	1.06541	0.9995
420	10.33507	74.73	2.567	1099.01	0.0040270	0.01826	1.640	0.00587	1.06268	0.9733
430	9.93998	77.66	2.554	1115.29	0.0037750	0.01824	1.643	0.00626	1.06024	0.9510
440	9.58240	80.54	2.542	1129.69	0.0035575	0.01825	1.648	0.00665	1.05803	0.9318
450	9.25648	83.38	2.532	1142.49	0.0033675	0.01828	1.655	0.00703	1.05602	0.9152
460	8.95761	86.19	2.522	1153.94	0.0032001	0.01833	1.662	0.00742	1.05418	0.9006
470	8.68208	88.97	2.513	1164.22	0.0030513	0.01839	1.671	0.00780	1.05248	0.8877
480	8.42687	91.72	2.505	1173.49	0.0029181	0.01847	1.680	0.00819	1.05091	0.8763
490	8.18951	94.44	2.497	1181.88	0.0027982	0.01856	1.690	0.00858	1.04946	0.8662
500	7.96793	97.14	2.490	1189.51	0.0026895	0.01866	1.700	0.00896	1.04810	0.8571
510	7.76038	99.82	2.483	1196.47	0.0025905	0.01872	1.711	0.00933	1.04683	0.8512
520	7.56540	102.48	2.476	1202.83	0.0025000	0.01885	1.723	0.00972	1.04563	0.8432
530	7.38173	105.13	2.470	1208.67	0.0024167	0.01898	1.735	0.01012	1.04451	0.8359
540	7.20828	107.77	2.464	1214.05	0.0023399	0.01912	1.747	0.01052	1.04345	0.8294
550	7.04411	110.39	2.458	1219.02	0.0022687	0.01926	1.759	0.01092	1.04244	0.8235
560	6.88840	113.01	2.452	1223.62	0.0022026	0.01941	1.772	0.01132	1.04149	0.8183
570	6.74044	115.63	2.446	1227.89	0.0021409	0.31955	1.785	0.01172	1.04059	0.8135
580	6.59960	118.24	2.441	1231.87	0.0020832	0.01970	1.798	0.01212	1.03973	0.8092
590	6.46530	120.85	2.435	1235.57	0.0020292	0.01986	1.811	0.01252	1.03891	0.8053
600	6.33705	123.46	2.429	1239.04	0.0019784	0.02001	1.825	0.01293	1.03813	0.8019

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1300 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	C_P	VELOCITY OF SOUND FT/SEC
* 99.673	0.01221	2170.59	318.6	-83.011	-80.072	0.50324	0.267	0.395	3861
100	0.01222	2164.39	317.8	-82.884	-79.943	0.50453	0.266	0.395	3858
105	0.01233	2071.03	305.2	-80.935	-77.967	0.52381	0.262	0.395	3802
110	0.01244	1980.34	293.0	-78.987	-75.993	0.54218	0.258	0.395	3746
115	0.01256	1892.25	281.2	-77.042	-74.019	0.55973	0.254	0.395	3689
120	0.01268	1806.71	269.8	-75.099	-72.047	0.57651	0.250	0.394	3630
125	0.01280	1723.67	258.8	-73.156	-70.076	0.59261	0.247	0.394	3570
130	0.01292	1643.06	248.1	-71.215	-68.105	0.60807	0.244	0.394	3510
135	0.01305	1564.83	237.8	-69.274	-66.133	0.62295	0.240	0.394	3448
140	0.01318	1488.92	227.8	-67.334	-64.162	0.63729	0.237	0.394	3385
145	0.01331	1415.27	218.2	-65.394	-62.189	0.65113	0.234	0.395	3322
150	0.01345	1343.83	208.9	-63.454	-60.215	0.66451	0.232	0.395	3258
155	0.01360	1274.54	199.9	-61.512	-58.240	0.67747	0.229	0.395	3193
160	0.01374	1207.34	191.2	-59.570	-56.261	0.69003	0.226	0.396	3128
165	0.01390	1142.19	182.9	-57.624	-54.279	0.70222	0.224	0.397	3062
170	0.01405	1079.01	174.8	-55.677	-52.294	0.71408	0.222	0.398	2995
175	0.01422	1017.76	167.0	-53.725	-50.303	0.72562	0.219	0.399	2928
180	0.01438	958.39	159.5	-51.769	-48.306	0.73687	0.217	0.400	2861
185	0.01456	900.83	152.2	-49.808	-46.303	0.74785	0.215	0.402	2793
190	0.01474	845.05	145.2	-47.840	-44.291	0.75859	0.213	0.403	2725
195	0.01493	790.99	138.4	-45.863	-42.269	0.76909	0.211	0.406	2656
200	0.01513	738.60	131.8	-43.878	-40.235	0.77939	0.209	0.408	2587
205	0.01534	687.84	125.4	-41.881	-38.188	0.78950	0.206	0.411	2518
210	0.01555	638.68	119.3	-39.871	-36.125	0.79945	0.204	0.414	2449
215	0.01580	591.06	113.3	-37.846	-34.044	0.80924	0.202	0.418	2379
220	0.01604	544.96	107.5	-35.803	-31.941	0.81891	0.200	0.423	2308
225	0.01630	500.37	101.9	-33.739	-29.814	0.82847	0.198	0.428	2237
230	0.01658	457.26	96.3	-31.649	-27.657	0.83794	0.196	0.434	2165
235	0.01689	413.35	90.6	-29.506	-25.441	0.84747	0.199	0.446	2069
240	0.01721	373.74	85.4	-27.329	-23.185	0.85697	0.198	0.455	1995
245	0.01756	335.94	80.0	-25.115	-20.887	0.86645	0.197	0.463	1914
250	0.01795	299.61	75.0	-22.858	-18.537	0.87594	0.196	0.475	1836
255	0.01837	264.67	70.0	-20.549	-16.126	0.88549	0.195	0.490	1757
260	0.01884	231.41	64.7	-18.179	-13.642	0.89514	0.194	0.503	1668
265	0.01937	199.56	60.2	-15.733	-11.069	0.90494	0.194	0.528	1587
270	0.01998	169.52	54.9	-13.194	-8.385	0.91498	0.194	0.548	1491
275	0.02068	141.14	50.2	-10.540	-5.562	0.92533	0.194	0.582	1401
280	0.02151	114.69	45.2	-7.739	-2.562	0.93615	0.195	0.621	1302
285	0.02252	91.02	40.5	-4.748	0.673	0.94760	0.196	0.677	1207
290	0.02379	69.86	35.7	-1.499	4.229	0.95996	0.202	0.755	1100
295	0.02545	52.25	30.6	2.077	8.204	0.97355	0.203	0.836	998
300	0.02767	38.96	26.1	6.019	12.679	0.98859	0.205	0.951	914
310	0.03427	27.38	18.3	14.587	22.837	1.02189	0.206	1.028	795
320	0.04232	20.78	13.5	22.026	32.214	1.05168	0.199	0.828	769
330	0.04966	39.00	10.8	27.537	39.491	1.07409	0.192	0.643	778
340	0.05606	47.84	9.2	31.826	45.320	1.09150	0.186	0.533	796
350	0.06175	56.40	8.0	35.464	50.269	1.10586	0.182	0.464	817
360	0.06694	64.51	7.2	38.538	54.652	1.11821	0.178	0.418	837
370	0.07175	72.16	6.5	41.371	58.642	1.12915	0.175	0.384	856
380	0.07628	79.51	6.0	43.993	62.356	1.13906	0.173	0.360	875
390	0.08059	86.41	5.6	46.459	65.858	1.14816	0.171	0.341	893
400	0.08471	93.03	5.2	48.804	69.196	1.15661	0.170	0.327	911
410	0.08868	99.39	4.9	51.054	72.402	1.16452	0.168	0.315	928
420	0.09253	105.52	4.7	53.226	75.500	1.17199	0.167	0.305	944
430	0.09627	111.45	4.4	55.333	78.509	1.17907	0.166	0.297	960
440	0.09992	117.21	4.2	57.387	81.441	1.18581	0.165	0.290	975
450	0.10349	122.81	4.1	59.394	84.307	1.19225	0.164	0.284	991
460	0.10699	128.26	3.9	61.362	87.118	1.19843	0.164	0.278	1005
470	0.11043	133.59	3.7	63.296	89.879	1.20437	0.163	0.274	1020
480	0.11381	138.80	3.6	65.200	92.597	1.21009	0.162	0.270	1033
490	0.11714	143.92	3.5	67.077	95.277	1.21562	0.162	0.266	1047
500	0.12043	148.94	3.4	68.931	97.923	1.22096	0.161	0.263	1060
510	0.12369	153.87	3.3	70.765	100.539	1.22614	0.161	0.260	1074
520	0.12690	158.73	3.2	72.581	103.129	1.23117	0.161	0.258	1086
530	0.13008	163.52	3.1	74.380	105.695	1.23606	0.160	0.255	1099
540	0.13324	168.25	3.0	76.166	108.240	1.24082	0.160	0.253	1111
550	0.13637	172.92	2.9	77.938	110.765	1.24545	0.160	0.252	1123
560	0.13947	177.54	2.8	79.700	113.274	1.24997	0.160	0.250	1135
570	0.14255	182.11	2.8	81.451	115.767	1.25438	0.159	0.249	1147
580	0.14561	186.64	2.7	83.194	118.247	1.25870	0.159	0.247	1159
590	0.14866	191.13	2.6	84.929	120.715	1.26292	0.159	0.246	1170
600	0.15168	195.58	2.6	86.658	123.171	1.26704	0.159	0.245	1181

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1300 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_p$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.673	81.90220	220.61	14.586	177775.97	0.0017921	0.11230	43.462	0.00347	1.57138	5.5080
100	81.85424	220.41	14.572	177164.79	0.0017936	0.11222	43.195	0.00347	1.57099	5.4781
105	81.11885	217.45	14.352	167999.87	0.0018165	0.11082	39.320	0.00346	1.56548	5.0457
110	80.38060	214.45	14.125	159180.83	0.0018407	0.10934	35.828	0.00345	1.55916	4.6566
115	79.63920	211.41	13.891	150697.43	0.0018661	0.10779	32.682	0.00343	1.55323	4.3064
120	78.89435	208.33	13.652	142539.61	0.0018929	0.10617	29.847	0.00341	1.54729	3.9909
125	78.14572	205.20	13.408	134697.49	0.0019212	0.10449	27.292	0.00339	1.54133	3.7067
130	77.39292	202.03	13.159	127161.34	0.0019511	0.10277	24.989	0.00337	1.53535	3.4506
135	76.63554	198.81	12.907	119921.64	0.0019829	0.10099	22.913	0.00334	1.52935	3.2198
140	75.87314	195.53	12.651	112969.04	0.0020167	0.09918	21.041	0.00331	1.52333	3.0119
145	75.10521	192.20	12.393	106294.37	0.0020528	0.09732	19.354	0.00328	1.51728	2.8247
150	74.33119	188.82	12.133	99888.67	0.0020913	0.09544	17.832	0.00325	1.51120	2.6563
155	73.55049	185.37	11.872	93743.18	0.0021326	0.09352	16.460	0.00322	1.50508	2.5049
160	72.76241	181.86	11.610	87849.32	0.0021771	0.09158	15.223	0.00318	1.49892	2.3691
165	71.96620	178.28	11.349	82198.77	0.0022248	0.08962	14.106	0.00314	1.49271	2.2475
170	71.16102	174.64	11.088	76783.39	0.0022764	0.08764	13.098	0.00310	1.48645	2.1390
175	70.34594	170.92	10.828	71595.31	0.0023324	0.08564	12.188	0.00305	1.48013	2.0425
180	69.51990	167.12	10.570	66626.89	0.0023933	0.08363	11.366	0.00301	1.47374	1.9570
185	68.68172	163.25	10.314	61870.78	0.0024597	0.08161	10.624	0.00296	1.46728	1.8817
190	67.83009	159.28	10.061	57319.89	0.0025323	0.07958	9.953	0.00291	1.46074	1.8161
195	66.96351	155.24	9.810	52967.47	0.0026122	0.07754	9.346	0.00286	1.45409	1.7594
200	66.08028	151.10	9.563	48807.08	0.0027003	0.07550	8.796	0.00280	1.44735	1.7113
205	65.17847	146.86	9.320	44832.68	0.0027979	0.07345	8.298	0.00274	1.44048	1.6712
210	64.25589	142.52	9.080	41038.66	0.0029065	0.07139	7.846	0.00268	1.43347	1.6389
215	63.31000	138.08	8.844	37419.90	0.0030279	0.06933	7.435	0.00262	1.42631	1.6143
220	62.33789	133.54	8.611	33971.84	0.0031644	0.06726	7.062	0.00255	1.41898	1.5971
225	61.33617	128.89	8.380	30690.64	0.0033187	0.06519	6.721	0.00248	1.41145	1.5876
230	60.30098	124.16	8.150	27573.26	0.0034942	0.06312	6.410	0.00241	1.40370	1.5860
235	59.21780	120.45	7.669	24477.94	0.0037001	0.06101	6.121	0.00231	1.39562	1.6098
240	58.09811	115.72	7.422	21713.67	0.0039352	0.05891	5.853	0.00223	1.38730	1.6313
245	56.93217	110.80	7.140	19125.78	0.0041829	0.05682	5.666	0.00215	1.37867	1.6638
250	55.71150	105.84	6.878	16691.92	0.0044903	0.05471	5.466	0.00207	1.36967	1.7094
255	54.42615	100.78	6.610	14404.90	0.0048598	0.05259	5.263	0.00197	1.36024	1.7644
260	53.06609	95.50	6.288	12280.00	0.0052688	0.05046	5.056	0.00189	1.35031	1.8150
265	51.61615	90.34	6.021	10300.66	0.0058407	0.04831	4.844	0.00177	1.33978	1.9047
270	50.05622	84.75	5.664	8465.54	0.0064686	0.04613	4.626	0.00168	1.32851	1.9789
275	48.36075	79.20	5.347	6825.66	0.0073474	0.04392	4.399	0.00156	1.31633	2.0984
280	46.49333	73.36	4.991	5332.29	0.0084719	0.04164	4.162	0.00144	1.30301	2.2360
285	44.40407	67.66	4.650	4041.77	0.0100103	0.04010	3.911	0.00133	1.28821	2.3780
290	42.02678	62.17	4.204	2936.07	0.0121424	0.03864	3.645	0.00122	1.27150	2.5631
295	39.29136	56.15	3.827	2053.04	0.0148895	0.03709	3.360	0.00113	1.25247	2.7271
300	36.14333	51.25	3.528	1408.08	0.0185658	0.03565	3.062	0.00104	1.23080	2.9418
310	29.17953	44.97	3.035	799.00	0.0228697	0.03189	2.499	0.00106	1.18378	2.9018
320	23.62951	44.60	2.863	727.24	0.0185598	0.02715	2.138	0.00139	1.14719	2.3458
330	20.13706	46.74	2.793	785.30	0.0137542	0.02393	1.948	0.00185	1.12456	1.8839
340	17.83954	49.67	2.757	853.43	0.0107281	0.02205	1.841	0.00232	1.10984	1.6017
350	16.19451	52.78	2.728	913.39	0.0087836	0.02088	1.776	0.00278	1.09939	1.4193
360	14.93866	55.95	2.705	963.62	0.0074656	0.02012	1.733	0.00322	1.09145	1.2952
370	13.93737	59.10	2.678	1005.75	0.0065022	0.01956	1.705	0.00365	1.08515	1.2055
380	13.10924	62.27	2.655	1042.26	0.0057767	0.01918	1.686	0.00407	1.07995	1.1386
390	12.40913	65.38	2.635	1072.30	0.0052213	0.01891	1.674	0.00447	1.07558	1.0879
400	11.80509	68.44	2.617	1098.21	0.0047743	0.01873	1.667	0.00486	1.07181	1.0472
410	11.27609	71.46	2.601	1120.70	0.0044064	0.01861	1.664	0.00524	1.06852	1.0137
420	10.80711	74.44	2.586	1140.38	0.0040983	0.01854	1.664	0.00562	1.06561	0.9858
430	10.38712	77.37	2.572	1157.69	0.0038361	0.01850	1.666	0.00600	1.06301	0.9621
440	10.00777	80.26	2.560	1173.00	0.0036102	0.01849	1.670	0.00638	1.06066	0.9417
450	9.66262	83.11	2.549	1186.63	0.0034135	0.01851	1.675	0.00675	1.05853	0.9241
460	9.34660	85.93	2.538	1198.81	0.0032405	0.01855	1.682	0.00713	1.05658	0.9087
470	9.05566	88.71	2.529	1209.75	0.0030870	0.01860	1.689	0.00750	1.05478	0.8951
480	8.78651	91.46	2.520	1219.61	0.0029499	0.01867	1.698	0.00788	1.05313	0.8831
490	8.53646	94.19	2.512	1228.54	0.0028266	0.01875	1.707	0.00825	1.05159	0.8724
500	8.30325	96.89	2.505	1236.66	0.0027150	0.01885	1.717	0.00863	1.05016	0.8629
510	8.08501	99.58	2.498	1244.06	0.0026136	0.01899	1.727	0.00898	1.04882	0.8566
520	7.88015	102.24	2.491	1250.83	0.0025209	0.01902	1.738	0.00936	1.04756	0.8481
530	7.68730	104.89	2.485	1257.05	0.0024357	0.01915	1.750	0.00975	1.04638	0.8405
540	7.50530	107.53	2.479	1262.78	0.0023572	0.01928	1.762	0.01013	1.04526	0.8337
550	7.33315	110.16	2.473	1268.06	0.0022846	0.01942	1.774	0.01052	1.04421	0.8275
560	7.16996	112.79	2.467	1272.96	0.0022172	0.01956	1.786	0.01091	1.04321	0.8220
570	7.01496	115.40	2.461	1277.51	0.0021544	0.01970	1.798	0.01130	1.04226	0.8170
580	6.86748	118.02	2.456	1281.74	0.0020958	0.01985	1.811	0.01169	1.04136	0.8125
590	6.72692	120.63	2.450	1285.69	0.0020408	0.02000	1.824	0.01208	1.04050	0.8084
600	6.59275	123.24	2.444	1289.38	0.0019892	0.02015	1.837	0.01247	1.03969	0.8047

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

1350 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	C_P BTU / LB -R	VELOCITY OF SOUND FT/SEC
* 99.743	0.01221	2173.64	318.6	-83.003	-79.952	0.50332	0.267	0.395	3863
100	0.01221	2168.78	318.0	-82.903	-79.850	0.50433	0.266	0.395	3860
105	0.01232	2075.48	305.4	-80.955	-77.875	0.52361	0.262	0.395	3805
110	0.01244	1984.85	293.2	-79.013	-75.901	0.54197	0.258	0.395	3749
115	0.01255	1896.83	281.4	-77.066	-73.928	0.55951	0.254	0.394	3692
120	0.01267	1811.36	270.0	-75.124	-71.957	0.57629	0.251	0.394	3633
125	0.01279	1728.38	259.0	-73.183	-69.986	0.59238	0.247	0.394	3574
130	0.01292	1647.85	248.3	-71.244	-68.015	0.60784	0.244	0.394	3513
135	0.01304	1569.69	238.0	-69.305	-66.045	0.62271	0.241	0.394	3452
140	0.01317	1493.85	228.1	-67.367	-64.074	0.63704	0.237	0.394	3389
145	0.01331	1420.29	218.5	-65.429	-62.103	0.65088	0.235	0.394	3326
150	0.01345	1348.93	209.2	-63.491	-60.130	0.66425	0.232	0.395	3262
155	0.01359	1279.72	200.2	-61.552	-58.155	0.67720	0.229	0.395	3198
160	0.01374	1212.61	191.5	-59.612	-56.178	0.68975	0.227	0.396	3132
165	0.01389	1147.54	183.2	-57.670	-54.198	0.70194	0.224	0.396	3067
170	0.01404	1084.45	175.1	-55.725	-52.214	0.71378	0.222	0.397	3000
175	0.01421	1023.30	167.3	-53.776	-50.225	0.72531	0.219	0.398	2934
180	0.01437	964.03	159.8	-51.824	-48.231	0.73655	0.217	0.400	2867
185	0.01455	906.58	152.5	-49.866	-46.229	0.74752	0.215	0.401	2799
190	0.01473	850.91	145.5	-47.902	-44.220	0.75824	0.213	0.403	2731
195	0.01492	796.96	138.7	-45.930	-42.201	0.76873	0.211	0.405	2663
200	0.01512	744.69	132.2	-43.949	-40.170	0.77902	0.209	0.407	2595
205	0.01533	694.06	125.8	-41.958	-38.127	0.78911	0.207	0.410	2526
210	0.01554	645.02	119.7	-39.954	-36.069	0.79903	0.205	0.413	2457
215	0.01577	597.54	113.8	-37.936	-33.992	0.80880	0.202	0.417	2388
220	0.01602	551.59	108.0	-35.900	-31.896	0.81844	0.200	0.421	2318
225	0.01628	507.15	102.4	-33.844	-29.775	0.82797	0.198	0.426	2248
230	0.01655	464.20	96.9	-31.765	-27.627	0.83741	0.196	0.432	2177
235	0.01685	420.34	91.1	-29.632	-25.419	0.84698	0.199	0.444	2081
240	0.01717	380.75	86.0	-27.469	-23.176	0.85635	0.198	0.453	2008
245	0.01752	343.11	80.6	-25.269	-20.890	0.86577	0.197	0.461	1928
250	0.01790	306.96	75.6	-23.030	-18.556	0.87520	0.196	0.472	1852
255	0.01831	272.18	70.7	-20.741	-16.164	0.88468	0.195	0.485	1773
260	0.01877	239.12	65.5	-18.396	-13.704	0.89423	0.194	0.498	1687
265	0.01928	207.50	61.0	-15.982	-11.162	0.90392	0.193	0.521	1609
270	0.01986	177.61	55.8	-13.483	-8.517	0.91380	0.193	0.539	1515
275	0.02053	149.39	51.2	-10.880	-5.748	0.92397	0.194	0.570	1427
280	0.02132	123.02	46.3	-8.149	-2.821	0.93451	0.194	0.604	1331
285	0.02226	99.40	41.7	-5.252	0.312	0.94560	0.195	0.652	1241
290	0.02342	78.11	37.0	-2.139	3.715	0.95744	0.201	0.718	1138
295	0.02489	60.09	32.1	1.244	7.465	0.97025	0.202	0.783	1040
300	0.02679	45.92	27.9	4.923	11.621	0.98422	0.203	0.878	958
310	0.03237	31.08	20.0	12.962	21.053	1.01514	0.205	0.978	830
320	0.03962	31.50	14.6	20.429	30.334	1.04462	0.200	0.847	787
330	0.04667	38.49	11.7	26.210	37.876	1.06784	0.193	0.670	787
340	0.05292	46.91	9.9	30.720	43.950	1.08599	0.187	0.554	802
350	0.05851	55.34	8.6	34.458	49.086	1.10089	0.182	0.480	821
360	0.06361	63.42	7.7	37.788	53.610	1.11364	0.179	0.430	841
370	0.06833	71.10	7.0	40.629	57.710	1.12488	0.176	0.394	859
380	0.07277	78.43	6.4	43.322	61.513	1.13582	0.174	0.366	876
390	0.07698	85.46	5.9	45.842	65.085	1.14438	0.172	0.348	895
400	0.08100	92.14	5.5	48.233	68.483	1.15291	0.170	0.332	913
410	0.08488	98.57	5.2	50.522	71.740	1.16095	0.169	0.320	930
420	0.08863	104.77	4.9	52.727	74.883	1.16853	0.168	0.309	946
430	0.09228	110.76	4.7	54.863	77.931	1.17578	0.167	0.300	962
440	0.09583	116.58	4.5	56.942	80.897	1.18252	0.166	0.293	977
450	0.09930	122.23	4.3	58.972	83.795	1.18903	0.165	0.287	993
460	0.10270	127.74	4.1	60.960	86.633	1.19527	0.164	0.281	1007
470	0.10604	133.13	3.9	62.911	89.419	1.20126	0.163	0.276	1021
480	0.10932	138.39	3.8	64.831	92.159	1.20703	0.163	0.272	1035
490	0.11256	143.55	3.6	66.722	94.860	1.21260	0.162	0.268	1049
500	0.11575	148.62	3.5	68.590	97.525	1.21798	0.162	0.265	1062
510	0.11890	153.60	3.4	70.435	100.159	1.22320	0.161	0.262	1076
520	0.12202	158.50	3.3	72.262	102.765	1.22826	0.161	0.259	1088
530	0.12511	163.34	3.2	74.071	105.346	1.23317	0.160	0.257	1101
540	0.12816	168.10	3.1	75.865	107.904	1.23795	0.160	0.255	1114
550	0.13119	172.82	3.0	77.646	110.442	1.24261	0.160	0.253	1126
560	0.13420	177.47	3.0	79.415	112.963	1.24715	0.160	0.251	1138
570	0.13718	182.08	2.9	81.174	115.467	1.25159	0.159	0.250	1150
580	0.14015	186.64	2.8	82.923	117.957	1.25592	0.159	0.248	1161
590	0.14309	191.17	2.7	84.664	120.435	1.26015	0.159	0.247	1173
600	0.14602	195.65	2.7	86.397	122.900	1.26430	0.159	0.246	1184

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1350 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$(\partial H/\partial V)_P$ BTU/LB	$(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.743	81.31493	220.88	14.584	178053.65	0.0017894	0.11233	43.534	0.00347	1.57148	5.5144
100	81.07732	220.73	14.573	177573.92	0.0017906	0.11226	43.323	0.00347	1.57118	5.4909
105	81.14296	217.76	14.353	169410.81	0.0018134	0.11087	39.441	0.00346	1.56527	5.0576
110	80.40581	214.79	14.126	159593.60	0.0018373	0.10939	35.962	0.00345	1.55936	4.6677
115	79.66559	211.76	13.893	151112.67	0.0018624	0.10785	32.789	0.00343	1.55344	4.3167
120	78.92199	208.69	13.654	142956.15	0.0018889	0.10624	29.947	0.00341	1.54751	4.0005
125	78.17469	205.58	13.409	135115.95	0.0019169	0.10457	27.386	0.00339	1.54156	3.7157
130	77.42330	202.42	13.161	127581.74	0.0019465	0.10284	25.077	0.00337	1.53559	3.4589
135	76.66745	199.22	12.909	120344.08	0.0019780	0.10107	22.996	0.00335	1.52960	3.2275
140	75.90666	195.96	12.653	113393.52	0.0020114	0.09926	21.120	0.00332	1.52359	3.0190
145	75.14047	192.64	12.395	106720.94	0.0020470	0.09741	19.428	0.00329	1.51756	2.8313
150	74.36833	189.27	12.136	100317.36	0.0020851	0.09553	17.902	0.00326	1.51149	2.6624
155	73.58964	185.85	11.875	94174.04	0.0021259	0.09362	16.526	0.00322	1.50538	2.5105
160	72.80373	182.35	11.614	88282.40	0.0021695	0.09169	15.285	0.00318	1.49924	2.3743
165	72.00987	178.80	11.353	82634.10	0.0022166	0.08973	14.165	0.00314	1.49305	2.2522
170	71.20724	175.17	11.093	77221.04	0.0022675	0.08776	13.154	0.00310	1.48681	2.1432
175	70.39493	171.47	10.834	72035.33	0.0023226	0.08577	12.241	0.00306	1.48051	2.0462
180	69.57191	167.70	10.576	67069.34	0.0023824	0.08377	11.416	0.00301	1.47414	1.9602
185	68.73705	163.85	10.321	62315.70	0.0024476	0.08175	10.671	0.00297	1.46771	1.8845
190	67.88906	159.91	10.069	57767.36	0.0025189	0.07973	9.998	0.00292	1.46119	1.8184
195	67.02648	155.89	9.820	53417.53	0.0025972	0.07770	9.388	0.00286	1.45458	1.7611
200	66.14770	151.78	9.575	49259.79	0.0026834	0.07566	8.837	0.00281	1.44786	1.7124
205	65.25064	147.57	9.333	45288.10	0.0027787	0.07362	8.337	0.00275	1.44103	1.6717
210	64.33379	143.27	9.096	41496.82	0.0028847	0.07157	7.883	0.00269	1.43406	1.6387
215	63.39413	138.87	8.862	37880.82	0.0030033	0.06952	7.471	0.00263	1.42695	1.6133
220	62.42908	134.36	8.632	34435.52	0.0031357	0.06747	7.096	0.00257	1.41967	1.5953
225	61.43542	129.76	8.404	31157.01	0.0032853	0.06541	6.754	0.00250	1.41220	1.5847
230	60.40942	125.07	8.178	28042.13	0.0034553	0.06335	6.442	0.00243	1.40451	1.5819
235	59.33775	121.43	7.697	24941.92	0.0036530	0.06126	6.153	0.00233	1.39651	1.6040
240	58.23065	116.75	7.454	22171.47	0.0038809	0.05918	5.889	0.00224	1.38828	1.6233
245	57.07944	111.90	7.173	19584.49	0.0041159	0.05710	5.692	0.00217	1.37976	1.6530
250	55.87637	107.03	6.916	17151.79	0.0044083	0.05501	5.495	0.00209	1.37089	1.6966
255	54.61243	102.05	6.652	14864.25	0.0047565	0.05291	5.294	0.00200	1.36161	1.7483
260	53.27862	96.89	6.339	12739.82	0.0051395	0.05081	5.090	0.00192	1.35186	1.7959
265	51.86183	91.85	6.080	10761.27	0.0056689	0.04869	4.882	0.00180	1.34156	1.8794
270	50.34433	86.40	5.732	8941.58	0.0062405	0.04655	4.668	0.00171	1.33059	1.9463
275	48.70501	81.02	5.426	7276.02	0.0070304	0.04438	4.447	0.00160	1.31880	2.0545
280	46.91414	75.34	5.078	5771.17	0.0080142	0.04217	4.217	0.00149	1.30600	2.1735
285	44.92947	69.87	4.756	4466.07	0.0093359	0.04047	3.976	0.00138	1.29192	2.3070
290	42.70316	64.63	4.324	3335.61	0.0111918	0.03901	3.722	0.00127	1.27624	2.4648
295	40.18291	58.83	3.969	2414.49	0.0133104	0.03746	3.455	0.00119	1.25865	2.5994
300	37.32459	53.97	3.674	1713.88	0.0162587	0.03603	3.175	0.00110	1.23890	2.7837
310	30.89654	46.99	3.162	960.35	0.0208246	0.03262	2.633	0.00100	1.19526	2.8430
320	25.23887	45.48	2.937	794.94	0.0186230	0.02829	2.244	0.00132	1.15772	2.4186
330	21.42889	47.05	2.843	824.85	0.0142443	0.02490	2.025	0.00173	1.13289	1.9622
340	18.89559	49.71	2.795	886.34	0.0111498	0.02282	1.901	0.00218	1.11659	1.6621
350	17.08978	52.70	2.760	945.69	0.0091037	0.02151	1.825	0.00262	1.10597	1.4649
360	15.72057	55.79	2.733	996.95	0.0077086	0.02065	1.775	0.00305	1.09639	1.3305
370	14.63550	58.89	2.704	1040.61	0.0066908	0.02002	1.742	0.00347	1.08954	1.2338
380	13.74208	62.00	2.670	1077.85	0.0059097	0.01957	1.719	0.00389	1.08392	1.1585
390	12.99101	65.12	2.658	1110.25	0.0053413	0.01928	1.704	0.00427	1.07921	1.1071
400	12.34518	68.18	2.638	1137.51	0.0048733	0.01906	1.695	0.00465	1.07518	1.0636
410	11.78128	71.20	2.621	1161.65	0.0044894	0.01891	1.690	0.00502	1.07166	1.0280
420	11.28268	74.18	2.605	1182.43	0.0041685	0.01882	1.688	0.00539	1.06856	0.9983
430	10.83715	77.12	2.591	1200.34	0.0038963	0.01876	1.688	0.00576	1.06580	0.9732
440	10.43552	80.01	2.578	1216.55	0.0036623	0.01874	1.691	0.00613	1.06331	0.9517
450	10.07073	82.87	2.566	1230.97	0.0034585	0.01875	1.695	0.00649	1.06105	0.9331
460	9.73723	85.69	2.555	1243.87	0.0032803	0.01877	1.701	0.00686	1.05899	0.9168
470	9.43360	88.47	2.545	1255.46	0.0031222	0.01882	1.708	0.00722	1.05709	0.9025
480	9.14728	91.23	2.536	1265.91	0.0029812	0.01888	1.716	0.00759	1.05535	0.8899
490	8.88433	93.96	2.528	1275.37	0.0028545	0.01895	1.724	0.00795	1.05373	0.8786
500	8.63933	96.67	2.521	1283.97	0.0027402	0.01903	1.734	0.00832	1.05222	0.8686
510	8.41025	99.35	2.513	1291.82	0.0026362	0.01907	1.744	0.00866	1.05081	0.8620
520	8.19537	102.02	2.507	1299.00	0.0025414	0.01919	1.754	0.00903	1.04949	0.8531
530	7.99324	104.67	2.500	1305.59	0.0024544	0.01931	1.765	0.00941	1.04825	0.8451
540	7.80261	107.32	2.494	1311.66	0.0023743	0.01944	1.776	0.00978	1.04708	0.8379
550	7.62239	109.95	2.488	1317.26	0.0023003	0.01958	1.788	0.01015	1.04598	0.8315
560	7.45164	112.57	2.482	1322.46	0.0022316	0.01971	1.800	0.01053	1.04493	0.8257
570	7.28954	115.19	2.476	1327.28	0.0021677	0.01985	1.812	0.01091	1.04394	0.8204
580	7.13538	117.83	2.471	1331.77	0.0021081	0.02000	1.824	0.01128	1.04300	0.8157
590	6.98850	120.41	2.465	1335.96	0.0020523	0.02014	1.837	0.01166	1.04210	0.8114
600	6.84836	123.02	2.459	1339.88	0.0019999	0.02029	1.850	0.01204	1.04125	0.8075

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

1400 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 99.814	0.01221	2176.69	318.6	-82.995	-79.831	0.50339	0.267	0.395	3865
100	0.01221	2173.15	314.2	-82.923	-79.757	0.50413	0.267	0.395	3863
105	0.01232	2079.93	305.6	-80.976	-77.782	0.52340	0.262	0.395	3808
110	0.01243	1989.36	293.4	-79.032	-75.809	0.54176	0.258	0.395	3752
115	0.01255	1901.40	281.7	-77.090	-73.837	0.55929	0.254	0.394	3695
120	0.01267	1816.00	270.3	-75.149	-71.866	0.57607	0.251	0.394	3637
125	0.01279	1733.09	259.2	-73.211	-69.896	0.59215	0.247	0.394	3577
130	0.01291	1652.62	248.6	-71.273	-67.926	0.60761	0.244	0.394	3517
135	0.01304	1574.54	238.3	-69.336	-65.956	0.62247	0.241	0.394	3455
140	0.01317	1498.78	228.3	-67.400	-63.986	0.63680	0.238	0.394	3393
145	0.01330	1425.29	218.7	-65.464	-62.016	0.65063	0.235	0.394	3330
150	0.01344	1354.01	209.4	-63.529	-60.044	0.66399	0.232	0.394	3266
155	0.01358	1284.88	200.5	-61.592	-58.071	0.67693	0.229	0.395	3202
160	0.01373	1217.86	191.8	-59.654	-56.095	0.68948	0.227	0.395	3137
165	0.01388	1152.88	183.5	-57.714	-54.116	0.70165	0.224	0.396	3072
170	0.01403	1089.88	175.4	-55.772	-52.134	0.71349	0.222	0.397	3006
175	0.01420	1028.83	167.6	-53.827	-50.147	0.72501	0.220	0.398	2939
180	0.01436	969.65	160.1	-51.879	-48.154	0.73624	0.217	0.399	2872
185	0.01454	912.31	152.9	-49.924	-46.155	0.74719	0.215	0.401	2805
190	0.01472	856.74	145.9	-47.964	-44.148	0.75790	0.213	0.402	2738
195	0.01491	802.91	139.1	-45.996	-42.132	0.76838	0.211	0.404	2670
200	0.01510	750.75	132.6	-44.020	-40.105	0.77864	0.209	0.407	2602
205	0.01531	700.25	126.2	-42.034	-38.066	0.78872	0.207	0.409	2534
210	0.01553	651.34	120.1	-40.036	-36.011	0.79862	0.205	0.412	2466
215	0.01575	603.99	114.2	-38.024	-33.940	0.80837	0.203	0.416	2397
220	0.01600	558.18	108.4	-35.995	-31.849	0.81798	0.200	0.420	2328
225	0.01625	513.89	102.9	-33.948	-29.735	0.82748	0.198	0.425	2258
230	0.01652	471.09	97.4	-31.879	-27.594	0.83688	0.196	0.430	2188
235	0.01682	427.28	91.6	-29.757	-25.397	0.84633	0.200	0.442	2093
240	0.01713	387.72	86.6	-27.606	-23.164	0.85573	0.198	0.451	2021
245	0.01748	350.22	81.2	-25.421	-20.890	0.86511	0.197	0.458	1942
250	0.01785	314.23	76.3	-23.198	-18.572	0.87448	0.196	0.469	1867
255	0.01825	279.60	71.4	-20.929	-16.198	0.88388	0.195	0.481	1790
260	0.01870	246.72	66.2	-18.608	-13.761	0.89335	0.194	0.493	1705
265	0.01919	215.32	61.8	-16.223	-11.247	0.90292	0.193	0.514	1629
270	0.01976	185.57	56.7	-13.760	-8.638	0.91267	0.193	0.531	1537
275	0.02040	157.49	52.1	-11.204	-5.917	0.92266	0.193	0.559	1452
280	0.02114	131.19	47.3	-8.535	-3.055	0.93298	0.194	0.588	1359
285	0.02202	107.62	42.9	-5.719	-0.010	0.94375	0.194	0.631	1272
290	0.02309	86.22	38.3	-2.717	3.266	0.95515	0.200	0.687	1173
295	0.02441	67.86	33.6	0.508	6.836	0.96735	0.200	0.741	1079
310	0.03086	35.54	21.6	11.546	19.547	1.00934	0.203	0.924	866
320	0.03732	33.00	16.1	18.910	28.586	1.03804	0.200	0.851	808
330	0.04480	38.48	12.7	24.892	36.298	1.06179	0.193	0.693	799
340	0.05008	46.30	10.6	29.669	42.591	1.08059	0.188	0.574	810
350	0.05555	54.50	9.2	33.504	47.906	1.09600	0.183	0.495	826
360	0.06055	62.50	8.2	36.872	52.569	1.10915	0.180	0.442	844
370	0.06517	70.18	7.4	39.881	56.779	1.12069	0.177	0.404	862
380	0.06953	77.54	6.8	42.646	60.670	1.13107	0.174	0.374	879
390	0.07364	84.57	6.3	45.222	64.312	1.14053	0.172	0.355	898
400	0.07758	91.34	5.9	47.660	67.772	1.14930	0.171	0.338	915
410	0.08136	97.82	5.5	49.988	71.081	1.15747	0.169	0.324	932
420	0.08502	104.07	5.2	52.227	74.268	1.16515	0.168	0.313	948
430	0.08857	110.13	4.9	54.393	77.355	1.17241	0.167	0.304	964
440	0.09203	116.00	4.7	56.497	80.356	1.17931	0.166	0.296	979
450	0.09541	121.71	4.5	58.549	83.284	1.18589	0.165	0.290	995
460	0.09872	127.27	4.3	60.557	86.150	1.19219	0.164	0.284	1009
470	0.10197	132.70	4.1	62.526	88.961	1.19824	0.164	0.279	1023
480	0.10516	138.02	4.0	64.462	91.724	1.20405	0.163	0.274	1037
490	0.10831	143.22	3.8	66.368	94.446	1.20967	0.162	0.270	1051
500	0.11141	148.34	3.7	68.248	97.130	1.21509	0.162	0.267	1065
510	0.11447	153.36	3.6	70.106	99.781	1.22034	0.161	0.264	1078
520	0.11749	158.31	3.5	71.943	102.403	1.22543	0.161	0.261	1091
530	0.12049	163.18	3.3	73.762	104.998	1.23037	0.160	0.258	1103
540	0.12345	167.99	3.3	75.566	107.570	1.23518	0.160	0.256	1116
550	0.12639	172.73	3.2	77.355	110.121	1.23986	0.160	0.254	1128
560	0.12931	177.43	3.1	79.131	112.654	1.24442	0.160	0.252	1140
570	0.13220	182.07	3.0	80.896	115.169	1.24888	0.159	0.251	1152
580	0.13508	186.67	2.9	82.652	117.669	1.25322	0.159	0.249	1164
590	0.13793	191.23	2.9	84.399	120.156	1.25748	0.159	0.248	1175
600	0.14077	195.75	2.8	86.137	122.631	1.26163	0.159	0.247	1187

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1400 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.814	81.92764	221.16	14.582	178331.12	0.0017869	0.11236	43.606	0.00347	1.57158	5.5208
100	81.90035	221.05	14.574	177982.71	0.0017875	0.11231	43.453	0.00347	1.57136	5.5037
105	81.16703	218.11	14.354	168821.39	0.0018102	0.11092	39.562	0.00346	1.56547	5.1695
110	80.43098	215.13	14.127	160005.93	0.0018339	0.10945	36.056	0.00345	1.55956	4.8788
115	79.69192	212.12	13.894	151526.33	0.0018588	0.10791	32.896	0.00343	1.55365	4.6271
120	78.94956	209.06	13.655	143372.26	0.0018853	0.10630	30.048	0.00342	1.54773	4.4102
125	78.20358	205.96	13.411	135533.97	0.0019127	0.10464	27.481	0.00340	1.54179	4.2246
130	77.45360	202.82	13.162	128001.72	0.0019421	0.10292	25.166	0.00337	1.53583	4.0672
135	76.69925	199.62	12.910	120766.00	0.0019731	0.10116	23.080	0.00335	1.52986	3.9353
140	75.94008	196.38	12.655	113817.45	0.0020061	0.09935	21.199	0.00332	1.52386	3.8262
145	75.17562	193.08	12.399	107146.90	0.0020413	0.09751	19.502	0.00329	1.51783	3.8380
150	74.40533	189.73	12.138	100745.41	0.0020789	0.09563	17.972	0.00326	1.51178	3.6685
155	73.62863	186.32	11.878	94604.20	0.0021191	0.09373	16.592	0.00322	1.50569	3.5162
160	72.84487	182.85	11.617	88714.73	0.0021622	0.09180	15.347	0.00319	1.49956	3.3794
165	72.05334	179.31	11.357	83068.64	0.0022086	0.08985	14.224	0.00315	1.49339	3.2569
170	71.25323	175.70	11.097	77657.83	0.0022587	0.08788	13.209	0.00311	1.48716	3.1474
175	70.44366	172.03	10.839	72474.41	0.0023129	0.08590	12.293	0.00306	1.48089	3.0499
180	69.62363	168.28	10.583	67510.77	0.0023717	0.08390	11.466	0.00302	1.47454	2.9635
185	68.79203	164.45	10.329	62759.63	0.0024357	0.08189	10.719	0.00297	1.46813	2.8873
190	67.94762	160.54	10.078	58213.63	0.0025057	0.07988	10.043	0.00292	1.46164	2.8206
195	67.08899	156.54	9.830	53866.29	0.0025824	0.07786	9.431	0.00287	1.45505	2.7629
200	66.21457	152.46	9.586	49711.09	0.0026668	0.07583	8.877	0.00282	1.44837	2.7136
205	65.32256	148.29	9.347	45741.98	0.0027600	0.07379	8.376	0.00276	1.44157	2.6723
210	64.41093	144.02	9.111	41953.30	0.0028635	0.07176	7.920	0.00270	1.43465	2.6386
215	63.47736	139.65	8.879	38339.90	0.0029787	0.06972	7.507	0.00264	1.42758	2.6124
220	62.51919	135.18	8.652	34897.18	0.0031077	0.06767	7.131	0.00258	1.42035	2.5936
225	61.53336	130.62	8.428	31621.18	0.0032529	0.06562	6.788	0.00251	1.41293	2.5820
230	60.51634	125.97	8.206	28508.71	0.0034170	0.06357	6.474	0.00244	1.40531	2.5780
235	59.45573	122.39	7.724	25404.16	0.0036075	0.06150	6.185	0.00234	1.39739	2.5985
240	58.36078	117.77	7.445	22627.36	0.0038286	0.05943	5.920	0.00226	1.38925	2.6168
245	57.22367	112.99	7.205	20040.78	0.0040519	0.05737	5.716	0.00219	1.38082	2.6426
250	56.03735	108.19	6.953	17605.81	0.0043306	0.05530	5.522	0.00211	1.37207	2.6843
255	54.79367	103.29	6.693	15320.44	0.0046593	0.05323	5.324	0.00202	1.36294	2.7331
260	53.48446	98.24	6.389	13195.93	0.0050195	0.05115	5.123	0.00194	1.35336	2.7782
265	52.09836	93.32	6.136	11217.82	0.0055107	0.04906	4.914	0.00183	1.34328	2.8558
270	50.61971	88.03	5.795	9393.34	0.0060339	0.04696	4.708	0.00175	1.33257	2.9167
275	49.03092	82.77	5.500	7722.63	0.0067497	0.04483	4.493	0.00164	1.32114	3.0154
280	47.30758	77.23	5.160	6206.24	0.0076164	0.04268	4.263	0.00153	1.30880	3.1185
285	45.41271	71.97	4.854	4887.30	0.0087678	0.04083	4.037	0.00142	1.29534	3.2458
290	43.31210	66.95	4.434	3734.34	0.0102606	0.03938	3.795	0.00132	1.28052	3.3824
295	40.96535	61.35	4.396	2780.05	0.0120804	0.03785	3.539	0.00125	1.26409	3.4950
300	38.33732	56.57	3.813	2032.23	0.0144874	0.03642	3.275	0.00116	1.24587	3.6533
310	32.40219	49.15	3.291	1151.61	0.0187975	0.03322	2.756	0.00111	1.20538	3.7597
320	26.79259	46.63	3.020	884.24	0.0182532	0.02929	2.351	0.00128	1.16795	3.4595
330	22.72348	47.54	2.899	874.64	0.0145715	0.02585	2.106	0.00164	1.14133	3.0314
340	19.36917	49.88	2.837	924.48	0.0115143	0.02360	1.963	0.00206	1.12348	2.7231
350	16.70056	52.70	2.795	981.01	0.0094010	0.02215	1.875	0.00248	1.11087	2.5108
360	16.51493	55.70	2.763	1032.22	0.0079400	0.02119	1.818	0.00290	1.10142	2.3658
370	15.34344	58.75	2.731	1076.82	0.0068739	0.02049	1.779	0.00331	1.09400	2.2621
380	14.38330	61.81	2.695	1115.29	0.0060559	0.01999	1.753	0.00371	1.08795	2.1818
390	13.57990	64.91	2.681	1148.47	0.0054629	0.01965	1.735	0.00408	1.08290	2.1270
400	12.89024	67.97	2.660	1177.36	0.0049704	0.01940	1.723	0.00445	1.07858	2.0801
410	12.29252	70.98	2.641	1202.23	0.0045709	0.01922	1.716	0.00482	1.07484	2.0424
420	11.76154	73.96	2.624	1224.05	0.0042376	0.01911	1.712	0.00518	1.07154	2.0109
430	11.28989	76.89	2.609	1243.31	0.0039554	0.01903	1.711	0.00554	1.06861	1.9844
440	10.86551	79.79	2.595	1260.37	0.0037134	0.01899	1.712	0.00590	1.06597	1.9617
450	10.48068	82.65	2.583	1275.57	0.0035034	0.01898	1.716	0.00626	1.06359	1.9421
460	10.12937	85.47	2.572	1289.17	0.0033194	0.01900	1.722	0.00661	1.06141	1.9250
470	9.80679	88.26	2.562	1301.39	0.0031567	0.01903	1.727	0.00697	1.05942	1.9099
480	9.50907	91.02	2.552	1312.42	0.0030119	0.01908	1.734	0.00732	1.05758	1.8966
490	9.23304	93.75	2.544	1322.43	0.0028820	0.01914	1.742	0.00767	1.05588	1.8848
500	8.97608	96.46	2.536	1331.48	0.0027644	0.01922	1.750	0.00803	1.05429	1.8742
510	8.73603	99.15	2.529	1339.76	0.0026585	0.01935	1.760	0.00838	1.05282	1.8674
520	8.51103	101.82	2.522	1347.34	0.0025616	0.01936	1.770	0.00872	1.05143	1.8581
530	8.29951	104.47	2.515	1354.33	0.0024728	0.01948	1.780	0.00909	1.05013	1.8497
540	8.10015	107.11	2.509	1360.71	0.0023911	0.01961	1.791	0.00945	1.04891	1.8422
550	7.91179	109.74	2.503	1366.64	0.0023157	0.01973	1.802	0.00981	1.04775	1.8354
560	7.73341	112.36	2.497	1372.13	0.0022458	0.01987	1.814	0.01018	1.04666	1.8293
570	7.56416	114.98	2.492	1377.22	0.0021808	0.02000	1.825	0.01055	1.04562	1.8238
580	7.40325	117.59	2.486	1381.97	0.0021202	0.02014	1.838	0.01091	1.04464	1.8189
590	7.25002	120.20	2.480	1386.41	0.0020635	0.02028	1.850	0.01128	1.04370	1.8144
600	7.10385	122.81	2.475	1390.56	0.0020103	0.02043	1.862	0.01165	1.04281	1.8104

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

1450 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 99.884	0.01220	2179.74	318.7	-82.987	-79.710	0.50347	0.267	0.395	3868
100	0.01221	2177.54	318.4	-82.942	-79.664	0.50393	0.267	0.395	3866
105	0.01232	2084.36	305.8	-80.997	-77.690	0.52319	0.262	0.395	3811
110	0.01243	1993.86	293.6	-79.054	-75.717	0.54155	0.258	0.394	3755
115	0.01254	1905.97	281.9	-77.114	-73.745	0.55908	0.254	0.394	3698
120	0.01266	1820.63	270.5	-75.175	-71.775	0.57585	0.251	0.394	3640
125	0.01278	1737.79	259.5	-73.238	-69.806	0.59193	0.247	0.394	3581
130	0.01291	1657.39	248.8	-71.302	-67.837	0.60737	0.244	0.394	3520
135	0.01303	1579.38	238.5	-69.367	-65.868	0.62223	0.241	0.394	3459
140	0.01316	1503.70	228.6	-67.433	-63.899	0.63655	0.238	0.394	3397
145	0.01330	1430.28	219.0	-65.499	-61.929	0.65037	0.235	0.394	3334
150	0.01343	1359.08	209.7	-63.565	-59.959	0.66373	0.232	0.394	3271
155	0.01357	1290.04	200.7	-61.631	-57.986	0.67667	0.229	0.395	3207
160	0.01372	1223.10	192.1	-59.696	-56.012	0.68920	0.227	0.395	3142
165	0.01387	1158.20	183.8	-57.759	-54.035	0.70137	0.224	0.396	3077
170	0.01403	1095.30	175.7	-55.820	-52.054	0.71320	0.222	0.397	3011
175	0.01419	1034.34	167.9	-53.878	-50.069	0.72471	0.220	0.397	2945
180	0.01435	975.26	160.4	-51.932	-48.078	0.73592	0.217	0.399	2878
185	0.01453	918.02	153.2	-49.981	-46.081	0.74687	0.215	0.400	2811
190	0.01470	862.56	146.2	-48.025	-44.077	0.75756	0.213	0.402	2744
195	0.01489	808.83	139.5	-46.062	-42.064	0.76802	0.211	0.404	2677
200	0.01509	756.79	133.0	-44.091	-40.040	0.77827	0.209	0.406	2609
205	0.01529	706.40	126.6	-42.110	-38.004	0.78833	0.207	0.408	2542
210	0.01551	657.62	120.6	-40.118	-35.954	0.79821	0.205	0.411	2474
215	0.01573	610.41	114.6	-38.112	-33.887	0.80793	0.203	0.415	2406
220	0.01597	564.73	108.9	-36.091	-31.802	0.81752	0.201	0.419	2337
225	0.01623	520.58	103.4	-34.051	-29.694	0.82699	0.198	0.423	2269
230	0.01650	477.93	97.9	-31.990	-27.561	0.83636	0.196	0.429	2200
235	0.01679	436.18	92.2	-29.880	-25.373	0.84577	0.200	0.440	2105
240	0.01710	394.63	87.2	-27.741	-23.150	0.85513	0.198	0.449	2034
245	0.01743	357.27	81.8	-25.569	-20.888	0.86446	0.197	0.455	1955
250	0.01780	321.44	76.9	-23.362	-18.584	0.87377	0.196	0.465	1882
255	0.01819	286.95	72.0	-21.112	-16.227	0.88310	0.195	0.477	1805
260	0.01863	254.24	67.0	-18.813	-13.811	0.89249	0.194	0.489	1723
265	0.01911	223.03	62.6	-16.455	-11.324	0.90196	0.193	0.508	1648
270	0.01965	193.41	57.5	-14.026	-8.749	0.91159	0.193	0.523	1559
275	0.02027	165.46	53.0	-11.512	-6.071	0.92142	0.193	0.549	1476
280	0.02097	139.23	48.2	-8.898	-3.267	0.93152	0.193	0.574	1385
285	0.02181	115.69	44.0	-6.153	-0.298	0.94203	0.194	0.613	1302
290	0.02280	94.28	39.5	-3.248	2.873	0.95306	0.199	0.661	1205
295	0.02400	75.57	34.9	-0.153	6.292	0.96474	0.199	0.707	1115
300	0.02550	60.16	30.9	3.149	9.995	0.97719	0.200	0.773	1038
310	0.02966	40.55	23.2	10.311	18.274	1.00433	0.201	0.872	902
320	0.03538	35.26	17.5	17.491	26.992	1.03201	0.199	0.842	831
330	0.04163	38.99	13.8	23.600	34.777	1.05598	0.194	0.710	813
340	0.04750	46.03	11.4	28.499	41.253	1.07532	0.189	0.592	818
350	0.05284	53.90	9.9	32.546	46.735	1.09122	0.184	0.511	832
360	0.05774	61.77	8.7	36.031	51.534	1.10475	0.180	0.454	849
370	0.06227	69.41	7.9	39.132	55.851	1.11658	0.177	0.413	866
380	0.06653	76.77	7.2	41.967	59.829	1.12720	0.175	0.382	882
390	0.07055	83.83	6.6	44.601	63.544	1.13685	0.173	0.361	901
400	0.07440	90.61	6.2	47.085	67.062	1.14576	0.171	0.343	917
410	0.07810	97.14	5.8	49.453	70.424	1.15486	0.170	0.329	934
420	0.08168	103.44	5.5	51.726	73.656	1.16185	0.168	0.318	950
430	0.08514	109.55	5.2	53.921	76.781	1.16921	0.167	0.308	966
440	0.08851	115.47	4.9	56.051	79.817	1.17619	0.166	0.300	982
450	0.09181	121.23	4.7	58.126	82.776	1.18284	0.165	0.292	997
460	0.09503	126.84	4.5	60.154	85.670	1.18920	0.165	0.286	1011
470	0.09819	132.32	4.3	62.141	88.506	1.19530	0.164	0.281	1026
480	0.10130	137.68	4.1	64.093	91.292	1.20116	0.163	0.276	1040
490	0.10436	142.93	4.0	66.013	94.033	1.20682	0.162	0.272	1053
500	0.10737	148.09	3.8	67.907	96.736	1.21228	0.162	0.268	1067
510	0.11035	153.15	3.7	69.776	99.405	1.21756	0.161	0.265	1080
520	0.11329	158.14	3.6	71.624	102.042	1.22268	0.161	0.262	1093
530	0.11620	163.05	3.5	73.454	104.653	1.22765	0.160	0.260	1106
540	0.11908	167.89	3.4	75.266	107.238	1.23249	0.160	0.257	1118
550	0.12193	172.68	3.3	77.063	109.802	1.23719	0.160	0.255	1131
560	0.12476	177.41	3.2	78.847	112.346	1.24178	0.160	0.253	1143
570	0.12757	182.09	3.1	80.619	114.872	1.24625	0.159	0.252	1155
580	0.13036	186.72	3.1	82.381	117.383	1.25061	0.159	0.250	1166
590	0.13313	191.31	3.0	84.133	119.879	1.25488	0.159	0.249	1178
600	0.13588	195.87	2.9	85.873	122.363	1.25905	0.159	0.248	1189

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

145C PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.884	81.34033	221.43	14.580	178608.39	0.0017842	0.11239	43.677	0.00347	1.57169	5.5273
100	81.92333	221.36	14.575	178391.17	0.0017847	0.11236	43.582	0.00347	1.57155	5.5166
105	81.19104	218.43	14.355	169231.61	0.0018071	0.11097	39.683	0.00346	1.56566	5.0815
110	80.45608	215.47	14.128	160418.81	0.0018305	0.10951	36.170	0.00345	1.55977	4.6900
115	79.71819	212.47	13.895	151940.14	0.0018552	0.10797	33.003	0.00344	1.55386	4.3374
120	78.97706	209.42	13.656	143787.94	0.0018812	0.10637	30.148	0.00342	1.54795	4.0198
125	78.23239	206.34	13.412	135951.52	0.0019086	0.10471	27.575	0.00340	1.54202	3.7336
130	77.48381	203.21	13.164	128421.19	0.0019376	0.10300	25.255	0.00338	1.53607	3.4756
135	76.73096	200.03	12.912	121187.40	0.0019683	0.10124	23.164	0.00335	1.53011	3.2430
140	75.97339	196.80	12.657	114240.81	0.0020009	0.09944	21.278	0.00332	1.52412	3.0334
145	75.21064	193.52	12.400	107572.28	0.0020356	0.09760	19.577	0.00329	1.51811	2.8446
150	74.44219	190.18	12.141	101172.82	0.0020727	0.09573	18.042	0.00326	1.51207	2.6747
155	73.66747	186.79	11.881	95033.69	0.0021124	0.09383	16.658	0.00323	1.50599	2.5218
160	72.88584	183.34	11.621	89146.32	0.0021549	0.09191	15.410	0.00319	1.49988	2.3846
165	72.09661	179.82	11.361	83502.38	0.0022006	0.08996	14.283	0.00315	1.49372	2.2616
170	71.29899	176.23	11.102	78093.76	0.0022499	0.08800	13.265	0.00311	1.48752	2.1517
175	70.49213	172.58	10.844	72912.58	0.0023033	0.08603	12.346	0.00307	1.48126	2.0537
180	69.67504	168.85	10.589	67951.21	0.0023611	0.08404	11.516	0.00303	1.47494	1.9668
185	68.84666	165.05	10.336	63202.28	0.0024240	0.08204	10.766	0.00298	1.46855	1.8901
190	68.00578	161.16	10.086	58658.74	0.0024927	0.08003	10.088	0.00293	1.46208	1.8230
195	67.15103	157.19	9.840	54313.79	0.0025679	0.07801	9.474	0.00288	1.45553	1.7647
200	66.28090	153.14	9.598	50161.02	0.0026505	0.07599	8.918	0.00282	1.44888	1.7149
205	65.39365	148.99	9.360	46194.35	0.0027417	0.07397	8.415	0.00277	1.44211	1.6729
210	64.48733	144.75	9.126	42408.14	0.0028427	0.07194	7.958	0.00271	1.43523	1.6386
215	63.55970	140.42	8.897	38797.20	0.0029558	0.06991	7.543	0.00265	1.42820	1.6117
220	62.60824	135.99	8.672	35356.69	0.0030805	0.06787	7.165	0.00259	1.42102	1.5920
225	61.63003	131.46	8.452	32083.23	0.0032214	0.06584	6.821	0.00252	1.41366	1.5795
230	60.62172	126.86	8.233	28972.89	0.0033803	0.06380	6.506	0.00245	1.40610	1.5743
235	59.57181	123.35	7.751	25864.71	0.0035636	0.06174	6.216	0.00236	1.39826	1.5932
240	58.48860	118.77	7.515	23061.45	0.0037781	0.05969	5.951	0.00227	1.39020	1.6106
245	57.36502	114.06	7.236	20494.80	0.0039908	0.05764	5.743	0.00221	1.38187	1.6327
250	56.19467	109.33	6.989	18063.13	0.0042568	0.05559	5.550	0.00213	1.37323	1.6727
255	54.97018	104.52	6.732	15773.67	0.0045676	0.05354	5.354	0.00204	1.36423	1.7187
260	53.68409	99.57	6.437	13648.58	0.0049078	0.05148	5.156	0.00196	1.35482	1.7617
265	52.32650	94.75	6.189	11670.59	0.0053642	0.04942	4.954	0.00186	1.34493	1.8339
270	50.88360	89.55	5.856	9841.26	0.0058456	0.04735	4.748	0.00178	1.33448	1.8895
275	49.34060	84.46	5.570	8164.05	0.0064980	0.04528	4.536	0.00167	1.32336	1.9801
280	47.67748	79.05	5.235	6638.05	0.0072662	0.04316	4.319	0.00158	1.31144	2.0694
285	45.86066	73.97	4.946	5305.66	0.0082837	0.04118	4.093	0.00147	1.29851	2.1924
290	43.86666	69.15	4.536	4132.16	0.0095647	0.03974	3.859	0.00137	1.28442	2.3122
295	41.66317	63.74	4.212	3148.38	0.0110946	0.03824	3.617	0.00130	1.26896	2.4079
300	39.22217	59.03	3.940	2359.60	0.0130946	0.03682	3.366	0.00121	1.25199	2.5444
310	33.71968	51.38	3.417	1367.25	0.0169746	0.03374	2.868	0.00115	1.21429	2.6694
320	28.26076	48.01	3.107	996.38	0.0175478	0.03015	2.457	0.00127	1.17767	2.4710
330	24.02182	48.23	2.959	936.54	0.0147121	0.02677	2.189	0.00157	1.14975	2.3885
340	21.05303	50.18	2.881	969.00	0.0118053	0.02438	2.028	0.00195	1.13046	1.7741
350	18.92345	52.61	2.831	1020.01	0.0096677	0.02280	1.928	0.00236	1.11677	1.5540
360	17.31981	55.70	2.794	1069.89	0.0081561	0.02174	1.862	0.00276	1.10653	1.4007
370	16.05996	58.67	2.759	1114.69	0.0070466	0.02097	1.818	0.00316	1.09853	1.2904
380	15.03144	61.69	2.721	1153.94	0.0061973	0.02040	1.787	0.00355	1.09203	1.2053
390	14.17377	64.75	2.706	1188.25	0.0055776	0.02002	1.766	0.00391	1.08663	1.1466
400	13.44059	67.79	2.678	1217.87	0.0050584	0.01973	1.751	0.00428	1.08203	1.0955
410	12.80349	70.79	2.661	1243.73	0.0046502	0.01953	1.742	0.00463	1.07814	1.0567
420	12.24346	73.76	2.644	1266.52	0.0043051	0.01939	1.736	0.00499	1.07454	1.0235
430	11.74513	76.70	2.628	1286.66	0.0040133	0.01930	1.734	0.00534	1.07144	0.9956
440	11.29755	79.59	2.613	1304.53	0.0037635	0.01925	1.734	0.00569	1.06865	0.9717
450	10.89232	82.45	2.600	1320.47	0.0035470	0.01922	1.736	0.00603	1.06614	0.9511
460	10.52291	85.27	2.589	1334.75	0.0033577	0.01922	1.740	0.00638	1.06385	0.9331
470	10.18413	88.07	2.578	1347.58	0.0031906	0.01925	1.745	0.00673	1.06175	0.9173
480	9.87179	90.83	2.569	1359.16	0.0030420	0.01929	1.752	0.00707	1.05982	0.9034
490	9.58250	93.56	2.560	1369.66	0.0029089	0.01934	1.759	0.00742	1.05803	0.8910
500	9.31345	96.27	2.552	1379.20	0.0027890	0.01941	1.767	0.00776	1.05637	0.8800
510	9.06228	98.96	2.544	1387.91	0.0026803	0.01943	1.776	0.00808	1.05482	0.8727
520	8.82704	101.63	2.537	1395.89	0.0025814	0.01954	1.785	0.00844	1.05338	0.8630
530	8.60605	104.28	2.531	1403.21	0.0024908	0.01965	1.795	0.00879	1.05202	0.8542
540	8.39788	106.92	2.525	1409.96	0.0024076	0.01977	1.805	0.00914	1.05074	0.8464
550	8.20130	109.55	2.519	1416.20	0.0023308	0.01989	1.816	0.00950	1.04953	0.8393
560	8.01524	112.17	2.513	1421.98	0.0022597	0.02002	1.827	0.00985	1.04839	0.8330
570	7.83876	114.79	2.507	1427.36	0.0021937	0.02015	1.839	0.01021	1.04731	0.8272
580	7.67107	117.40	2.501	1432.36	0.0021321	0.02029	1.851	0.01057	1.04628	0.8220
590	7.51143	120.01	2.496	1437.04	0.0020746	0.02043	1.863	0.01092	1.04530	0.8174
600	7.35921	122.62	2.490	1441.42	0.0020206	0.02057	1.875	0.01128	1.04437	0.8131

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

1500 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 99.954	0.01220	2182.78	318.7	-82.979	-79.590	0.50354	0.267	0.395	3470
100	0.01220	2181.91	319.6	-82.961	-79.572	0.50373	0.267	0.395	3863
105	0.01231	2088.79	306.0	-81.018	-77.598	0.52299	0.262	0.395	3814
110	0.01243	1998.35	293.9	-79.175	-75.625	0.54134	0.258	0.394	3763
115	0.01254	1910.52	282.1	-77.137	-73.654	0.55886	0.255	0.394	3712
120	0.01266	1825.25	270.7	-75.200	-71.684	0.57563	0.251	0.394	3643
125	0.01278	1742.48	259.7	-73.265	-69.715	0.59170	0.247	0.394	3584
130	0.01290	1662.15	249.1	-71.330	-67.747	0.60714	0.244	0.394	3524
135	0.01303	1584.21	238.8	-69.398	-65.779	0.62200	0.241	0.394	3463
140	0.01316	1508.60	228.8	-67.465	-63.811	0.63631	0.238	0.394	3401
145	0.01329	1435.26	219.2	-65.534	-61.842	0.65012	0.235	0.394	3338
150	0.01343	1364.14	210.0	-63.602	-59.873	0.66348	0.232	0.394	3275
155	0.01357	1295.18	201.0	-61.670	-57.902	0.67640	0.229	0.394	3211
160	0.01371	1228.32	192.4	-59.737	-55.929	0.68893	0.227	0.395	3146
165	0.01386	1163.51	184.0	-57.803	-53.953	0.70109	0.224	0.395	3081
170	0.01402	1100.70	176.0	-55.867	-51.974	0.71291	0.222	0.396	3016
175	0.01418	1039.83	168.2	-53.929	-49.990	0.72440	0.220	0.397	2950
180	0.01434	980.85	160.8	-51.985	-48.002	0.73561	0.218	0.398	2884
185	0.01451	923.70	153.5	-50.038	-46.007	0.74654	0.215	0.400	2817
190	0.01469	868.35	146.6	-48.086	-44.005	0.75722	0.213	0.401	2751
195	0.01488	814.73	139.8	-46.127	-41.995	0.76767	0.211	0.403	2684
200	0.01507	762.80	133.3	-44.160	-39.974	0.77790	0.209	0.405	2617
205	0.01528	712.53	127.0	-42.185	-37.942	0.78794	0.207	0.408	2550
210	0.01549	663.87	121.0	-40.198	-35.896	0.79780	0.205	0.411	2482
215	0.01571	616.79	115.1	-38.198	-33.834	0.80751	0.203	0.414	2415
220	0.01595	571.24	109.4	-36.184	-31.754	0.81707	0.201	0.418	2347
225	0.01620	527.22	103.8	-34.152	-29.653	0.82651	0.199	0.422	2279
230	0.01647	484.72	98.5	-32.100	-27.526	0.83585	0.196	0.427	2211
235	0.01675	443.03	92.7	-30.003	-25.347	0.84522	0.200	0.438	2116
240	0.01706	401.50	87.8	-27.873	-23.135	0.85454	0.198	0.447	2046
245	0.01739	364.27	82.4	-25.715	-20.884	0.86382	0.197	0.453	1969
250	0.01775	328.58	77.5	-23.523	-18.593	0.87307	0.196	0.462	1896
255	0.01813	294.22	72.7	-21.290	-16.253	0.88234	0.195	0.474	1821
260	0.01856	261.67	67.7	-19.012	-13.857	0.89165	0.194	0.485	1741
265	0.01903	230.65	63.4	-16.680	-11.394	0.90103	0.193	0.503	1667
270	0.01956	201.14	58.4	-14.282	-8.850	0.91054	0.193	0.517	1580
275	0.02015	173.31	53.9	-11.807	-6.211	0.92023	0.193	0.540	1499
280	0.02082	147.14	49.2	-9.243	-3.468	0.93014	0.193	0.562	1409
285	0.02161	123.63	45.0	-6.560	-0.558	0.94041	0.193	0.597	1330
290	0.02253	102.05	40.7	-3.738	2.521	0.95112	0.198	0.640	1236
295	0.02364	83.19	36.2	-0.753	5.815	0.96238	0.198	0.679	1149
300	0.02500	67.33	32.3	2.409	9.352	0.97427	0.199	0.735	1074
310	0.02867	45.94	24.7	9.225	17.189	0.99996	0.200	0.826	937
320	0.03376	30.17	18.8	16.184	25.559	1.02653	0.199	0.825	857
330	0.03954	40.02	14.8	22.347	33.330	1.05046	0.194	0.720	829
340	0.04517	46.12	12.3	27.399	39.945	1.07022	0.189	0.608	829
350	0.05037	53.56	10.5	31.589	45.579	1.08655	0.185	0.525	840
360	0.05515	61.24	9.3	35.188	50.506	1.10044	0.181	0.466	855
370	0.05958	68.79	8.3	38.379	54.928	1.11256	0.178	0.423	870
380	0.06375	76.12	7.6	41.285	58.993	1.12341	0.175	0.390	886
390	0.06769	83.29	7.0	43.977	62.780	1.13325	0.173	0.368	904
400	0.07146	90.01	6.5	46.509	66.357	1.14231	0.172	0.348	920
410	0.07508	96.54	6.1	48.917	69.770	1.15074	0.170	0.334	937
420	0.07857	102.88	5.7	51.224	73.046	1.15864	0.169	0.322	953
430	0.08195	109.03	5.4	53.449	76.211	1.16608	0.168	0.311	969
440	0.08524	115.00	5.1	55.605	79.281	1.17314	0.167	0.303	984
450	0.08845	120.80	4.9	57.702	82.271	1.17986	0.166	0.295	999
460	0.09159	126.46	4.7	59.751	85.192	1.18628	0.165	0.289	1014
470	0.09467	131.98	4.5	61.756	88.053	1.19243	0.164	0.283	1029
480	0.09770	137.38	4.3	63.724	90.861	1.19835	0.163	0.278	1042
490	0.10068	142.68	4.2	65.659	93.624	1.20404	0.163	0.274	1056
500	0.10361	147.87	4.0	67.566	96.345	1.20954	0.162	0.270	1069
510	0.10651	152.98	3.9	69.447	99.031	1.21486	0.161	0.267	1082
520	0.10937	158.00	3.8	71.306	101.684	1.22001	0.161	0.264	1095
530	0.11220	162.95	3.6	73.145	104.309	1.22501	0.161	0.261	1108
540	0.11500	167.83	3.5	74.966	106.908	1.22987	0.160	0.259	1121
550	0.11777	172.65	3.4	76.772	109.485	1.23460	0.160	0.257	1133
560	0.12052	177.42	3.3	78.563	112.040	1.23920	0.159	0.255	1145
570	0.12325	182.13	3.3	80.342	114.577	1.24369	0.159	0.253	1157
580	0.12596	186.80	3.2	82.110	117.098	1.24808	0.159	0.251	1169
590	0.12866	191.42	3.1	83.869	119.604	1.25236	0.159	0.250	1181
600	0.13133	196.01	3.0	85.618	122.096	1.25655	0.159	0.249	1192

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1500 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 99.954	81.95301	221.71	14.578	178885.44	0.0017816	0.11242	43.749	0.00347	1.57179	5.5337
100	81.94627	221.68	14.576	178799.31	0.0017818	0.11240	43.711	0.00347	1.57173	5.5295
105	81.21501	218.76	14.356	169641.49	0.0018039	0.11102	39.805	0.00346	1.56565	5.0935
110	80.48113	215.81	14.129	160829.66	0.0018272	0.10956	36.284	0.00345	1.55997	4.7011
115	79.74439	212.82	13.896	152353.59	0.0018515	0.10803	33.110	0.00344	1.55467	4.3478
120	79.00449	209.79	13.657	144203.20	0.0018773	0.10643	30.249	0.00342	1.54816	4.0295
125	78.26112	206.72	13.414	136368.63	0.0019044	0.10478	27.673	0.00340	1.54224	3.7426
130	77.51394	203.60	13.165	128840.17	0.0019331	0.10307	25.344	0.00338	1.53631	3.4840
135	76.76257	200.43	12.914	121608.29	0.0019635	0.10132	23.243	0.00335	1.53036	3.2508
140	76.00658	197.22	12.659	114663.63	0.0019957	0.09952	21.357	0.00333	1.52438	3.0406
145	75.24553	193.96	12.402	107997.06	0.0020300	0.09769	19.651	0.00330	1.51838	2.8513
150	74.47891	190.64	12.144	101599.60	0.0020666	0.09583	18.113	0.00327	1.51235	2.6808
155	73.70615	187.26	11.884	95462.49	0.0021057	0.09393	16.725	0.00327	1.50629	2.5275
160	72.92663	183.83	11.624	89577.19	0.0021477	0.09202	15.472	0.00320	1.50020	2.3898
165	72.13968	180.33	11.365	83935.34	0.0021927	0.09008	14.342	0.00316	1.49406	2.2664
170	71.34453	176.76	11.107	78528.85	0.0022413	0.08812	13.321	0.00312	1.48787	2.1560
175	70.54034	173.13	10.850	73349.83	0.0022938	0.08615	12.399	0.00308	1.48163	2.0575
180	69.72617	169.42	10.595	68390.66	0.0023506	0.08417	11.566	0.00303	1.47534	1.9702
185	68.90098	165.64	10.343	63643.97	0.0024125	0.08218	10.814	0.00298	1.46897	1.8930
190	68.06355	161.78	10.095	59102.69	0.0024796	0.08018	10.133	0.00294	1.46253	1.8254
195	67.21263	157.84	9.850	54760.04	0.0025536	0.07817	9.517	0.00289	1.45600	1.7666
200	66.34671	153.81	9.609	50609.59	0.0026345	0.07616	8.959	0.00283	1.44938	1.7162
205	65.46412	149.70	9.372	46645.25	0.0027237	0.07414	8.454	0.00278	1.44265	1.6736
210	64.56300	145.49	9.141	42861.37	0.0028223	0.07212	7.995	0.00272	1.43580	1.6387
215	63.64119	141.19	8.914	39252.74	0.0029318	0.07010	7.578	0.00266	1.42882	1.6110
220	62.69627	136.79	8.692	35814.68	0.0030540	0.06807	7.199	0.00260	1.42168	1.5905
225	61.72547	132.30	8.475	32543.15	0.0031908	0.06605	6.854	0.00253	1.41438	1.5771
230	60.72560	127.74	8.263	29434.80	0.0033448	0.06402	6.538	0.00247	1.40688	1.5709
235	59.68607	124.29	7.777	26323.59	0.0035212	0.06198	6.248	0.00237	1.39911	1.5882
240	58.61421	119.76	7.544	23533.82	0.0037294	0.05994	5.982	0.00229	1.39113	1.6044
245	57.50362	115.12	7.267	20946.68	0.0039324	0.05791	5.738	0.00222	1.38289	1.6233
250	56.34852	110.46	7.024	18514.94	0.0041867	0.05588	5.517	0.00214	1.37436	1.6616
255	55.14225	105.71	6.779	16224.16	0.0044809	0.05384	5.313	0.00206	1.36549	1.7049
260	53.87793	100.87	6.483	14097.99	0.0048034	0.05181	5.127	0.00198	1.35623	1.7464
265	52.54693	96.14	6.239	12119.82	0.0052262	0.04977	4.958	0.00188	1.34653	1.8134
270	51.13708	91.06	5.914	10285.51	0.0056731	0.04773	4.786	0.00181	1.33631	1.8645
275	49.63581	86.09	5.637	8602.40	0.0062712	0.04568	4.579	0.00170	1.32548	1.9481
280	48.02677	80.80	5.305	7066.82	0.0069554	0.04362	4.367	0.00162	1.31394	2.0254
285	46.27863	75.89	5.031	5721.35	0.0078647	0.04154	4.147	0.00150	1.30148	2.1453
290	44.37643	71.24	4.630	4520.81	0.0089784	0.04011	3.921	0.00141	1.28801	2.2515
295	42.29350	66.00	4.319	3518.33	0.0102859	0.03862	3.684	0.00135	1.27337	2.3339
300	40.00739	61.38	4.056	2693.58	0.0119739	0.03721	3.449	0.00127	1.25743	2.4524
310	34.87809	53.61	3.537	1602.43	0.0154033	0.03422	2.971	0.00119	1.22216	2.5814
320	29.62522	49.57	3.199	1130.89	0.0166382	0.03090	2.559	0.00126	1.18675	2.4590
330	25.28899	49.09	3.024	1012.10	0.0146623	0.02763	2.273	0.00152	1.15805	2.1317
340	22.13899	50.62	2.929	1021.03	0.0120098	0.02514	2.094	0.00147	1.13749	1.8229
350	19.65437	53.02	2.870	1063.44	0.0098963	0.02345	1.982	0.00225	1.12274	1.5962
360	18.13298	55.77	2.826	1110.42	0.0083530	0.02230	1.908	0.00264	1.11171	1.4348
370	16.78370	58.66	2.788	1154.55	0.0072094	0.02145	1.857	0.00302	1.10312	1.3184
380	15.68559	61.62	2.748	1194.65	0.0063327	0.02083	1.822	0.00340	1.09616	1.2287
390	14.77250	64.65	2.731	1229.14	0.0056882	0.02040	1.797	0.00376	1.09040	1.1662
400	13.99428	67.66	2.701	1259.63	0.0051497	0.02008	1.780	0.00412	1.08550	1.1120
410	13.31984	70.64	2.682	1285.86	0.0047274	0.01985	1.768	0.00446	1.08127	1.0711
420	12.72815	73.60	2.663	1309.53	0.0043708	0.01969	1.761	0.00481	1.07757	1.0362
430	12.20265	76.53	2.646	1330.45	0.0040694	0.01957	1.757	0.00515	1.07429	1.0068
440	11.73147	79.42	2.631	1349.08	0.0038124	0.01950	1.756	0.00549	1.07135	0.9817
450	11.30551	82.28	2.618	1365.72	0.0035897	0.01946	1.757	0.00583	1.06870	0.9600
460	10.91771	85.10	2.606	1380.64	0.0033952	0.01945	1.760	0.00617	1.06630	0.9412
470	10.56249	87.89	2.595	1394.06	0.0032238	0.01946	1.764	0.00650	1.06409	0.9247
480	10.23535	90.65	2.585	1406.18	0.0030715	0.01949	1.770	0.00684	1.06207	0.9101
490	9.93263	93.39	2.576	1417.17	0.0029353	0.01954	1.776	0.00718	1.06019	0.8972
500	9.65134	96.10	2.568	1427.17	0.0028127	0.01960	1.784	0.00751	1.05846	0.8857
510	9.38895	98.78	2.560	1436.29	0.0027017	0.01961	1.792	0.00783	1.05684	0.8781
520	9.14337	101.45	2.553	1444.65	0.0026009	0.01971	1.801	0.00817	1.05532	0.8679
530	8.91281	104.11	2.546	1452.34	0.0025085	0.01982	1.810	0.00851	1.05390	0.8588
540	8.69575	106.75	2.540	1459.42	0.0024237	0.01993	1.820	0.00886	1.05257	0.8506
550	8.49088	109.37	2.534	1465.97	0.0023456	0.02005	1.831	0.00920	1.05131	0.8432
560	8.29707	111.99	2.528	1472.04	0.0022734	0.02017	1.841	0.00955	1.05012	0.8366
570	8.11333	114.61	2.523	1477.69	0.0022063	0.02030	1.852	0.00990	1.04899	0.8306
580	7.93879	117.22	2.517	1482.95	0.0021438	0.02043	1.864	0.01024	1.04792	0.8252
590	7.77271	119.82	2.512	1487.86	0.0020854	0.02057	1.876	0.01059	1.04690	0.8203
600	7.61440	122.43	2.506	1492.47	0.0020307	0.02071	1.888	0.01094	1.04593	0.8159

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1600 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	C_P BTU / LB -R	VELOCITY OF SOUND FT/SEC
* 100.094	0.01220	2188.86	318.7	-82.963	-79.349	0.50370	0.267	0.395	3874
105	0.01231	2097.64	306.4	-81.059	-77.413	0.52258	0.263	0.394	3820
110	0.01242	2007.32	294.3	-79.120	-75.441	0.54092	0.259	0.394	3765
115	0.01253	1919.62	282.5	-77.184	-73.471	0.55843	0.255	0.394	3708
120	0.01265	1834.48	271.2	-75.250	-71.503	0.57519	0.251	0.394	3650
125	0.01277	1751.84	260.2	-73.318	-69.535	0.59125	0.248	0.393	3591
130	0.01289	1671.65	249.5	-71.387	-67.568	0.60668	0.244	0.393	3531
135	0.01302	1593.85	239.3	-69.458	-65.602	0.62152	0.241	0.393	3470
140	0.01315	1518.39	229.3	-67.530	-63.635	0.63582	0.238	0.393	3409
145	0.01328	1445.20	219.7	-65.602	-61.669	0.64963	0.235	0.393	3346
150	0.01341	1374.23	210.5	-63.675	-59.701	0.66297	0.232	0.394	3283
155	0.01355	1305.42	201.6	-61.748	-57.732	0.67588	0.230	0.394	3220
160	0.01370	1238.73	192.9	-59.820	-55.762	0.68839	0.227	0.394	3156
165	0.01385	1174.09	184.6	-57.891	-53.789	0.70053	0.225	0.395	3091
170	0.01400	1111.45	176.6	-55.960	-51.813	0.71233	0.222	0.396	3026
175	0.01416	1050.76	168.9	-54.027	-49.833	0.72381	0.220	0.396	2961
180	0.01432	991.97	161.4	-52.091	-47.848	0.73499	0.218	0.397	2895
185	0.01449	935.02	154.2	-50.151	-45.858	0.74590	0.216	0.399	2829
190	0.01467	879.86	147.3	-48.206	-43.861	0.75655	0.214	0.400	2763
195	0.01485	826.45	140.6	-46.256	-41.856	0.76697	0.212	0.402	2697
200	0.01504	774.75	134.1	-44.298	-39.841	0.77717	0.209	0.404	2631
205	0.01524	724.70	127.8	-42.332	-37.816	0.78718	0.207	0.406	2565
210	0.01545	676.27	121.8	-40.356	-35.778	0.79700	0.205	0.409	2498
215	0.01567	629.43	115.9	-38.369	-33.725	0.80666	0.203	0.412	2432
220	0.01591	584.14	110.3	-36.368	-31.655	0.81618	0.201	0.416	2366
225	0.01615	540.39	104.8	-34.351	-29.566	0.82556	0.199	0.420	2299
230	0.01641	498.15	99.5	-32.316	-27.454	0.83484	0.196	0.424	2233
235	0.01669	454.63	93.7	-30.236	-25.291	0.84414	0.200	0.434	2139
240	0.01699	415.12	88.9	-28.132	-23.098	0.85338	0.199	0.443	2070
245	0.01731	378.11	83.5	-25.998	-20.869	0.86257	0.197	0.448	1994
250	0.01765	342.68	78.7	-23.834	-18.604	0.87172	0.196	0.457	1924
255	0.01803	308.57	74.0	-21.635	-16.294	0.88087	0.195	0.467	1851
260	0.01843	276.28	69.1	-19.396	-13.934	0.89003	0.194	0.477	1775
265	0.01888	245.60	64.8	-17.109	-11.516	0.89925	0.193	0.492	1703
270	0.01937	216.29	59.9	-14.767	-9.027	0.90855	0.193	0.504	1619
275	0.01992	188.67	55.7	-12.362	-6.458	0.91798	0.192	0.524	1543
280	0.02055	162.64	50.9	-9.884	-3.796	0.92757	0.192	0.541	1455
285	0.02126	139.14	47.8	-7.307	-1.009	0.93744	0.192	0.570	1382
290	0.02208	117.44	42.8	-4.621	1.920	0.94763	0.197	0.605	1293
295	0.02304	98.19	38.5	-1.810	5.016	0.95821	0.197	0.634	1212
300	0.02418	81.62	34.7	1.131	8.295	0.96923	0.197	0.677	1140
310	0.02716	57.48	27.4	7.397	15.443	0.99266	0.198	0.750	1005
320	0.03122	45.59	21.4	13.898	23.149	1.01712	0.197	0.777	912
330	0.03611	43.62	17.0	20.004	30.703	1.04038	0.194	0.722	867
340	0.04118	47.43	14.8	25.258	37.459	1.06056	0.190	0.629	854
350	0.04604	53.69	11.9	29.693	43.332	1.07759	0.186	0.549	857
360	0.05057	60.79	10.4	33.505	48.488	1.09212	0.182	0.487	868
370	0.05481	68.05	9.3	36.871	53.108	1.10478	0.179	0.441	881
380	0.05880	75.24	8.4	39.919	57.339	1.11607	0.176	0.406	895
390	0.06257	82.28	7.8	42.725	61.266	1.12627	0.174	0.381	913
400	0.06618	89.10	7.2	45.356	64.962	1.13564	0.172	0.359	927
410	0.06963	95.69	6.7	47.844	68.474	1.14431	0.171	0.344	944
420	0.07297	102.08	6.3	50.219	71.838	1.15242	0.170	0.330	959
430	0.07620	108.18	5.9	52.504	75.080	1.16005	0.168	0.319	974
440	0.07934	114.22	5.6	54.712	78.218	1.16727	0.167	0.309	989
450	0.08240	120.10	5.4	56.856	81.269	1.17412	0.166	0.301	1004
460	0.08539	125.83	5.1	58.945	84.245	1.18066	0.165	0.294	1019
470	0.08832	131.43	4.9	60.987	87.155	1.18692	0.164	0.288	1033
480	0.09120	136.91	4.7	62.987	90.009	1.19293	0.164	0.283	1047
490	0.09403	142.28	4.5	64.952	92.812	1.19871	0.163	0.278	1061
500	0.09682	147.55	4.4	66.885	95.571	1.20428	0.162	0.274	1074
510	0.09957	152.72	4.2	68.790	98.291	1.20967	0.162	0.270	1087
520	0.10228	157.82	4.1	70.671	100.975	1.21488	0.161	0.267	1101
530	0.10497	162.84	3.9	72.530	103.629	1.21994	0.161	0.264	1113
540	0.10762	167.79	3.8	74.369	106.255	1.22485	0.160	0.261	1126
550	0.11025	172.68	3.7	76.191	108.856	1.22962	0.160	0.259	1139
560	0.11286	177.51	3.6	77.997	111.435	1.23427	0.159	0.257	1151
570	0.11544	182.29	3.5	79.790	113.993	1.23879	0.159	0.255	1163
580	0.11801	187.02	3.4	81.570	116.534	1.24321	0.159	0.253	1175
590	0.12056	191.70	3.3	83.340	119.058	1.24753	0.159	0.252	1187
600	0.12309	196.35	3.3	85.100	121.568	1.25175	0.159	0.250	1198

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1600 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 100.094	81.37830	222.25	14.574	173438.92	0.0017763	0.11247	43.893	0.00348	1.57199	5.5467
105	81.26278	219.41	14.358	170463.21	0.0017977	0.11113	43.046	0.00347	1.56624	5.1179
110	80.93106	216.48	14.131	167651.84	0.0018205	0.10967	36.513	0.00346	1.56037	4.7235
115	79.79660	213.52	13.898	153179.23	0.0018445	0.10815	33.325	0.00344	1.55449	4.3686
120	79.15914	210.51	13.661	145032.46	0.0018697	0.10657	30.451	0.00342	1.54860	4.0449
125	78.31836	207.47	13.416	137201.50	0.0018962	0.10492	27.850	0.00341	1.54270	3.7606
130	77.57393	204.38	13.169	129676.70	0.0019243	0.10322	25.523	0.00338	1.53679	3.5007
135	76.42550	201.24	12.917	122448.53	0.0019543	0.10148	23.416	0.00336	1.53085	3.2664
140	76.07266	198.06	12.663	115507.63	0.0019864	0.09969	21.515	0.00333	1.52490	3.0551
145	75.31497	194.83	12.406	108844.87	0.0020189	0.09787	19.803	0.00330	1.51893	2.8647
150	74.55194	191.54	12.149	102451.29	0.0022546	0.09602	18.253	0.00327	1.51293	2.6932
155	73.78305	188.20	11.890	96318.09	0.0020927	0.09414	16.857	0.00324	1.50690	2.5389
160	73.00770	184.80	11.631	90436.76	0.0021335	0.09223	15.597	0.00320	1.50083	2.4003
165	72.22524	181.34	11.373	84798.94	0.0021772	0.09031	14.460	0.00317	1.49473	2.2759
170	71.43494	177.82	11.115	79396.53	0.0022243	0.08836	13.433	0.00313	1.48858	2.1646
175	70.63601	174.22	10.860	74221.65	0.0022752	0.08640	12.505	0.00309	1.48238	2.0652
180	69.82754	170.56	10.607	69266.66	0.0023302	0.08444	11.667	0.00304	1.47612	1.9769
185	69.00856	166.83	10.357	64524.21	0.0023893	0.08246	10.909	0.00300	1.46980	1.8989
190	68.17796	163.01	10.111	59987.21	0.0024544	0.08047	10.223	0.00295	1.46341	1.8302
195	67.33449	159.12	9.868	55648.87	0.0025257	0.07848	9.603	0.00290	1.45693	1.7704
200	66.47678	155.15	9.630	51502.74	0.0026034	0.07648	9.041	0.00285	1.45037	1.7189
205	65.60328	151.09	9.397	47542.73	0.0026888	0.07448	8.532	0.00279	1.44371	1.6753
210	64.71224	146.94	9.169	43763.14	0.0027829	0.07248	8.074	0.00274	1.43693	1.6391
215	63.80168	142.70	8.947	40158.72	0.0028872	0.07047	7.659	0.00268	1.43003	1.6100
220	62.86938	138.37	8.731	36724.72	0.0030030	0.06847	7.286	0.00262	1.42299	1.5879
225	61.91281	133.95	8.519	33456.99	0.0031323	0.06646	6.920	0.00256	1.41578	1.5727
230	60.92909	129.46	8.311	30352.05	0.0032771	0.06446	6.602	0.00249	1.40840	1.5644
235	59.90938	126.15	7.828	27236.43	0.0034406	0.06244	6.310	0.00240	1.40078	1.5790
240	58.85913	121.71	7.600	24433.83	0.0036366	0.06043	6.043	0.00232	1.39295	1.5933
245	57.77304	117.19	7.326	21844.51	0.0038228	0.05843	5.817	0.00226	1.38489	1.6056
250	56.64649	112.66	7.092	19411.54	0.0040561	0.05643	5.629	0.00218	1.37656	1.6410
255	55.47408	108.05	6.842	17117.54	0.0043207	0.05443	5.439	0.00211	1.36793	1.6795
260	54.24977	103.40	6.574	14987.89	0.0046136	0.05244	5.248	0.00203	1.35895	1.7186
265	52.96697	98.83	6.334	13008.50	0.0049828	0.05045	5.354	0.00193	1.34959	1.7760
270	51.61634	93.96	6.023	11164.09	0.0053677	0.04846	4.853	0.00186	1.33978	1.8200
275	50.18855	89.22	5.761	9469.14	0.0058774	0.04647	4.653	0.00177	1.32946	1.8923
280	48.67277	84.13	5.434	7916.13	0.0064275	0.04449	4.456	0.00169	1.31857	1.9498
285	47.04040	79.50	5.187	6545.43	0.0071736	0.04248	4.247	0.00158	1.30690	2.0528
290	45.28884	75.18	4.801	5316.51	0.0080420	0.04082	4.034	0.00149	1.29446	2.1511
295	43.39836	70.22	4.514	4261.35	0.0090352	0.03938	3.817	0.00143	1.28112	2.2138
300	41.35416	65.79	4.262	3375.23	0.0102857	0.03799	3.595	0.00136	1.26681	2.3053
310	36.82238	57.99	3.760	2116.65	0.0129401	0.03512	3.153	0.00127	1.23545	2.4246
320	32.02799	53.02	3.349	1460.22	0.0146474	0.03215	2.751	0.00129	1.20286	2.3921
330	27.69106	51.29	3.165	1207.92	0.0140725	0.02916	2.441	0.00146	1.17389	2.1752
340	24.24281	51.84	3.332	1151.76	0.0121324	0.02661	2.231	0.00174	1.15145	1.8999
350	21.72227	53.73	2.953	1166.38	0.0102146	0.02474	2.094	0.00208	1.13479	1.6721
360	19.77390	56.15	2.895	1201.98	0.0086750	0.02341	2.002	0.00243	1.12223	1.4994
370	18.24651	58.83	2.848	1241.62	0.0074943	0.02242	1.939	0.00279	1.11244	1.3726
380	17.00775	61.65	2.805	1279.62	0.0065790	0.02169	1.894	0.00314	1.10455	1.2749
390	15.98163	64.53	2.783	1314.98	0.0058937	0.02117	1.862	0.00348	1.09804	1.2052
400	15.11133	67.53	2.749	1346.41	0.0053206	0.02077	1.839	0.00383	1.09254	1.1450
410	14.36094	70.46	2.732	1374.17	0.0048611	0.02049	1.823	0.00415	1.08781	1.1013
420	13.70485	73.42	2.702	1398.97	0.0044889	0.02027	1.812	0.00449	1.08369	1.0602
430	13.12362	76.29	2.684	1419.65	0.0041779	0.02012	1.805	0.00481	1.08004	1.0290
440	12.60416	79.17	2.668	1439.59	0.0039063	0.02002	1.801	0.00514	1.07680	1.0016
450	12.13585	82.01	2.653	1457.46	0.0036718	0.01995	1.799	0.00546	1.07387	0.9779
460	11.71055	84.83	2.640	1473.53	0.0034674	0.01991	1.800	0.00578	1.07122	0.9574
470	11.32184	87.62	2.628	1488.03	0.0032877	0.01990	1.802	0.00610	1.06881	0.9394
480	10.96456	90.37	2.618	1501.15	0.0031284	0.01991	1.806	0.00642	1.06659	0.9236
490	10.63456	93.10	2.608	1513.06	0.0029862	0.01993	1.811	0.00674	1.06454	0.9095
500	10.32839	95.81	2.600	1523.92	0.0028585	0.01998	1.818	0.00706	1.06264	0.8970
510	10.04323	98.49	2.592	1533.84	0.0027431	0.01997	1.825	0.00736	1.06088	0.8856
520	9.77668	101.15	2.585	1542.94	0.0026383	0.02006	1.832	0.00769	1.05923	0.8776
530	9.52674	103.80	2.578	1551.31	0.0025427	0.02016	1.841	0.00802	1.05769	0.8677
540	9.29169	106.43	2.572	1559.03	0.0024551	0.02026	1.850	0.00834	1.05624	0.8589
550	9.07006	109.06	2.566	1566.18	0.0023743	0.02037	1.859	0.00867	1.05487	0.8509
560	8.86059	111.67	2.560	1572.82	0.0022998	0.02048	1.869	0.00900	1.05358	0.8437
570	8.66217	114.28	2.554	1578.99	0.0022307	0.02060	1.880	0.00933	1.05236	0.8373
580	8.47384	116.88	2.549	1584.75	0.0021664	0.02073	1.890	0.00966	1.05120	0.8314
590	8.29475	119.48	2.544	1590.14	0.0021065	0.02085	1.901	0.00999	1.05010	0.8261
600	8.12415	122.08	2.538	1595.19	0.0020504	0.02098	1.913	0.01032	1.04906	0.8214

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1700 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 130.234	0.01219	2194.93	318.8	-82.946	-79.108	0.50385	0.267	0.395	3875
105	0.01230	2106.47	306.9	-81.099	-77.228	0.52217	0.263	0.394	3826
110	0.01241	2016.27	294.7	-79.164	-75.257	0.54050	0.259	0.394	3771
115	0.01252	1928.69	283.0	-77.231	-73.288	0.55801	0.255	0.394	3714
120	0.01264	1843.68	271.6	-75.300	-71.321	0.57475	0.251	0.393	3657
125	0.01276	1761.18	260.6	-73.371	-69.355	0.59081	0.248	0.393	3598
130	0.01288	1681.12	250.0	-71.444	-67.389	0.60622	0.244	0.393	3538
135	0.01301	1603.46	239.7	-69.518	-65.424	0.62105	0.241	0.393	3478
140	0.01313	1528.13	229.8	-67.594	-63.459	0.63534	0.238	0.393	3416
145	0.01327	1455.09	220.3	-65.670	-61.495	0.64913	0.235	0.393	3354
150	0.01340	1384.27	211.0	-63.744	-59.529	0.66246	0.233	0.393	3292
155	0.01354	1315.62	202.1	-61.825	-57.563	0.67535	0.230	0.393	3229
160	0.01368	1249.09	193.5	-59.902	-55.595	0.68785	0.227	0.394	3165
165	0.01383	1184.61	185.2	-57.978	-53.624	0.69997	0.225	0.394	3101
170	0.01398	1122.15	177.2	-56.052	-51.651	0.71175	0.223	0.395	3036
175	0.01414	1061.63	169.5	-54.125	-49.675	0.72321	0.220	0.396	2971
180	0.01430	1003.02	162.0	-52.195	-47.694	0.73437	0.218	0.397	2906
185	0.01447	946.26	154.9	-50.262	-45.708	0.74526	0.216	0.398	2841
190	0.01464	891.29	147.9	-48.325	-43.715	0.75589	0.214	0.399	2776
195	0.01482	838.09	141.3	-46.382	-41.715	0.76628	0.212	0.401	2710
200	0.01501	786.59	134.8	-44.433	-39.707	0.77645	0.210	0.403	2645
205	0.01521	736.76	128.6	-42.477	-37.688	0.78642	0.208	0.405	2580
210	0.01542	688.55	122.6	-40.511	-35.658	0.79621	0.206	0.407	2514
215	0.01564	641.94	116.8	-38.536	-33.614	0.80583	0.203	0.410	2449
220	0.01586	596.90	111.2	-36.548	-31.554	0.81530	0.201	0.413	2384
225	0.01610	553.39	105.7	-34.546	-29.476	0.82464	0.199	0.417	2319
230	0.01636	511.41	100.5	-32.527	-27.377	0.83386	0.197	0.421	2254
235	0.01663	468.07	94.7	-30.465	-25.230	0.84309	0.200	0.431	2161
240	0.01692	428.59	89.9	-28.382	-23.055	0.85225	0.199	0.439	2094
245	0.01723	391.76	84.6	-26.271	-20.847	0.86135	0.197	0.444	2019
250	0.01756	356.56	79.9	-24.133	-18.604	0.87042	0.196	0.452	1951
255	0.01792	322.66	75.2	-21.964	-16.322	0.87945	0.195	0.461	1879
260	0.01831	290.59	70.5	-19.760	-13.995	0.88849	0.194	0.470	1807
265	0.01874	260.21	66.2	-17.515	-11.616	0.89756	0.193	0.483	1737
270	0.01921	231.08	61.4	-15.222	-9.176	0.90666	0.193	0.494	1656
275	0.01972	203.64	57.3	-12.876	-6.666	0.91589	0.192	0.511	1584
280	0.02030	177.75	52.5	-10.470	-4.080	0.92521	0.192	0.523	1498
285	0.02095	154.24	48.8	-7.980	-1.384	0.93475	0.192	0.549	1430
290	0.02170	132.42	44.7	-5.404	1.426	0.94452	0.196	0.577	1345
295	0.02255	112.88	40.6	-2.727	4.372	0.95459	0.195	0.601	1268
300	0.02354	95.77	36.9	0.049	7.459	0.96497	0.196	0.634	1199
310	0.02604	69.59	29.8	5.903	14.101	0.98674	0.196	0.694	1068
320	0.02938	54.51	23.8	11.997	21.246	1.00943	0.196	0.727	969
330	0.03349	43.04	19.1	17.919	28.462	1.03183	0.193	0.705	910
340	0.03797	50.25	15.7	23.241	35.194	1.05174	0.190	0.638	884
350	0.04243	54.96	13.4	27.849	41.207	1.06918	0.186	0.566	879
360	0.04670	61.20	11.6	31.845	46.544	1.08422	0.183	0.505	884
370	0.05072	68.00	10.3	35.372	51.337	1.09735	0.180	0.457	894
380	0.05452	74.92	9.3	38.557	55.721	1.10905	0.177	0.420	907
390	0.05814	81.82	8.5	41.479	59.780	1.11960	0.175	0.393	922
400	0.06159	88.59	7.9	44.203	63.590	1.12925	0.173	0.370	936
410	0.06490	95.16	7.3	46.771	67.200	1.13817	0.172	0.353	952
420	0.06809	101.57	6.9	49.216	70.649	1.14648	0.170	0.338	966
430	0.07118	107.81	6.5	51.560	73.966	1.15429	0.169	0.326	982
440	0.07418	113.83	6.1	53.821	77.172	1.16166	0.168	0.316	996
450	0.07710	119.59	5.8	56.011	80.281	1.16865	0.167	0.307	1013
460	0.07996	125.39	5.5	58.141	83.311	1.17531	0.166	0.299	1024
470	0.08275	131.05	5.3	60.219	86.270	1.18167	0.165	0.293	1038
480	0.08550	136.59	5.1	62.252	89.167	1.18777	0.164	0.287	1052
490	0.08820	142.03	4.9	64.247	92.011	1.19363	0.163	0.282	1066
500	0.09085	147.35	4.7	66.206	94.807	1.19928	0.162	0.277	1080
510	0.09347	152.60	4.5	68.135	97.560	1.20474	0.162	0.273	1093
520	0.09606	157.76	4.4	70.038	100.276	1.21001	0.161	0.270	1106
530	0.09861	162.84	4.3	71.916	102.958	1.21512	0.161	0.267	1119
540	0.10114	167.86	4.1	73.773	105.611	1.22008	0.160	0.264	1132
550	0.10364	172.81	4.0	75.611	108.236	1.22489	0.160	0.261	1144
560	0.10612	177.70	3.9	77.433	110.837	1.22958	0.159	0.259	1157
570	0.10857	182.54	3.8	79.239	113.417	1.23415	0.159	0.257	1169
580	0.11101	187.33	3.7	81.031	115.977	1.23860	0.159	0.255	1181
590	0.11343	192.04	3.6	82.812	118.520	1.24295	0.159	0.253	1193
600	0.11584	196.78	3.5	84.582	121.047	1.24719	0.158	0.252	1204

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1700 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^2	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 100.234	82.00352	222.80	14.570	179991.57	0.0017712	0.11253	44.037	0.00348	1.57219	5.5596
105	81.31035	220.06	14.360	171277.54	0.0017916	0.11123	43.293	0.00347	1.56662	5.1416
110	80.58077	217.16	14.133	162472.56	0.0018139	0.10979	36.742	0.00346	1.56076	4.7459
115	79.84858	214.22	13.900	154003.42	0.0018374	0.10827	33.540	0.00344	1.55490	4.3895
120	79.11351	211.24	13.662	145860.06	0.0018621	0.10670	30.654	0.00343	1.54903	4.0683
125	78.37529	208.22	13.419	138032.60	0.0018881	0.10506	28.050	0.00341	1.54315	3.7788
130	77.63358	205.16	13.171	130511.34	0.0019156	0.10337	25.702	0.00339	1.53726	3.5176
135	76.88805	202.05	12.918	123286.75	0.0019446	0.10164	23.584	0.00336	1.53135	3.2821
140	76.13830	198.90	12.666	116349.48	0.0019753	0.09986	21.674	0.00334	1.52542	3.0697
145	75.38392	195.70	12.411	109690.38	0.0020080	0.09805	19.950	0.00331	1.51947	2.8782
150	74.62445	192.44	12.153	103300.49	0.0020427	0.09621	18.394	0.00328	1.51350	2.7057
155	73.85936	189.14	11.895	97171.04	0.0020798	0.09434	16.991	0.00325	1.50749	2.5505
160	73.08809	185.77	11.637	91293.49	0.0021195	0.09245	15.723	0.00321	1.50146	2.4108
165	72.31003	182.35	11.380	85659.50	0.0021620	0.09053	14.579	0.00318	1.49539	2.2855
170	71.52448	178.86	11.124	80260.94	0.0022077	0.08860	13.545	0.00314	1.48927	2.1733
175	70.73069	175.31	10.870	75089.94	0.0022570	0.08665	12.611	0.00310	1.48311	2.0731
180	69.92780	171.69	10.619	70138.88	0.0023102	0.08470	11.767	0.00305	1.47689	1.9838
185	69.11487	168.00	10.371	65400.36	0.0023679	0.08273	11.004	0.00301	1.47062	1.9048
190	68.29088	164.23	10.126	60867.31	0.0024305	0.08076	10.314	0.00296	1.46427	1.8352
195	67.45465	160.39	9.886	56532.93	0.0024988	0.07878	9.689	0.00291	1.45786	1.7745
200	66.60488	156.47	9.651	52390.74	0.0025734	0.07680	9.123	0.00286	1.45135	1.7219
205	65.74013	152.46	9.421	48434.63	0.0026552	0.07481	8.610	0.00281	1.44475	1.6771
210	64.85878	148.37	9.197	44658.86	0.0027452	0.07283	8.144	0.00276	1.43805	1.6397
215	63.95899	144.19	8.979	41058.14	0.0028445	0.07084	7.721	0.00270	1.43122	1.6093
220	63.03872	139.92	8.768	37627.64	0.0029546	0.06886	7.337	0.00264	1.42427	1.5858
225	62.09566	135.58	8.562	34363.11	0.0030769	0.06687	6.986	0.00258	1.41716	1.5689
230	61.12720	131.16	8.361	31260.95	0.0032134	0.06489	6.666	0.00252	1.40989	1.5587
235	60.12615	127.97	7.877	28143.11	0.0033651	0.06290	6.372	0.00243	1.40239	1.5706
240	59.09619	123.61	7.653	25328.05	0.0035496	0.06092	6.104	0.00235	1.39471	1.5828
245	58.03284	119.21	7.383	22735.13	0.0037217	0.05894	5.865	0.00229	1.38681	1.5893
250	56.93254	114.80	7.157	20299.63	0.0039368	0.05697	5.680	0.00221	1.37867	1.6222
255	55.79095	110.32	6.910	18001.74	0.0041759	0.05500	5.494	0.00214	1.37026	1.6564
260	54.60263	105.83	6.659	15866.99	0.0044452	0.05305	5.306	0.00207	1.36154	1.6940
265	53.36245	101.40	6.421	13885.35	0.0047672	0.05110	5.117	0.00198	1.35247	1.7428
270	52.06351	96.72	6.124	12030.82	0.0051051	0.04916	4.927	0.00191	1.34302	1.7814
275	50.69852	92.17	5.875	10324.04	0.0055464	0.04722	4.734	0.00182	1.33314	1.8449
280	49.26060	87.27	5.551	8755.89	0.0059948	0.04530	4.539	0.00176	1.32278	1.8870
285	47.72255	82.88	5.327	7360.68	0.0066252	0.04336	4.339	0.00165	1.31177	1.9779
290	46.09006	78.82	4.952	6103.34	0.0073241	0.04151	4.136	0.00156	1.30014	2.0711
295	44.34720	74.10	4.686	5006.00	0.0081093	0.04010	3.931	0.00151	1.28780	2.1203
300	42.48386	69.84	4.442	4068.71	0.0090755	0.03874	3.723	0.00144	1.27470	2.1928
310	38.40188	62.15	3.959	2672.38	0.0111588	0.03597	3.309	0.00135	1.24632	2.2963
320	34.03523	56.66	3.574	1855.26	0.0128268	0.03320	2.922	0.00134	1.21643	2.3038
330	29.85839	53.97	3.313	1464.20	0.0130698	0.03045	2.603	0.00145	1.18831	2.1707
340	26.33608	53.61	3.144	1323.33	0.0118950	0.02795	2.370	0.00156	1.16493	1.9464
350	23.56628	54.84	3.043	1295.23	0.0103242	0.02599	2.210	0.00195	1.14677	1.7329
360	21.41539	56.85	2.970	1310.70	0.0088825	0.02452	2.100	0.00227	1.13281	1.5568
370	19.71791	59.27	2.913	1340.74	0.0077124	0.02339	2.023	0.00260	1.12187	1.4232
380	18.34057	61.91	2.865	1374.02	0.0067838	0.02256	1.968	0.00293	1.11304	1.3192
390	17.20097	64.72	2.837	1407.44	0.0060728	0.02195	1.928	0.00325	1.10578	1.2431
400	16.23733	67.57	2.799	1438.43	0.0054730	0.02148	1.899	0.00358	1.09966	1.1773
410	15.40920	70.45	2.779	1466.43	0.0050113	0.02114	1.878	0.00389	1.09442	1.1294
420	14.68717	73.34	2.747	1491.85	0.0046032	0.02087	1.863	0.00421	1.08986	1.0851
430	14.04970	76.22	2.731	1514.72	0.0042804	0.02068	1.853	0.00451	1.08585	1.0522
440	13.48136	79.07	2.709	1534.60	0.0039946	0.02054	1.846	0.00482	1.08229	1.0220
450	12.97039	81.85	2.688	1551.17	0.0037489	0.02044	1.842	0.00514	1.07909	0.9956
460	12.50678	84.65	2.674	1568.19	0.0035355	0.02037	1.841	0.00544	1.07619	0.9734
470	12.08388	87.42	2.662	1583.61	0.0033481	0.02034	1.841	0.00575	1.07355	0.9540
480	11.69589	90.17	2.651	1597.58	0.0031822	0.02032	1.843	0.00606	1.07113	0.9369
490	11.33809	92.89	2.641	1610.32	0.0030345	0.02033	1.847	0.00636	1.06891	0.9217
500	11.00663	95.58	2.632	1621.94	0.0029019	0.02036	1.852	0.00667	1.06685	0.9082
510	10.69831	98.26	2.624	1632.58	0.0027824	0.02033	1.857	0.00695	1.06493	0.8991
520	10.41048	100.91	2.616	1642.36	0.0026740	0.02041	1.864	0.00726	1.06315	0.8872
530	10.14087	103.55	2.610	1651.37	0.0025752	0.02049	1.871	0.00758	1.06148	0.8766
540	9.88759	106.18	2.603	1659.69	0.0024848	0.02059	1.879	0.00789	1.05992	0.8671
550	9.64900	108.79	2.598	1667.40	0.0024017	0.02069	1.888	0.00821	1.05844	0.8585
560	9.42367	111.40	2.592	1674.57	0.0023250	0.02079	1.897	0.00852	1.05705	0.8508
570	9.21041	114.00	2.587	1681.25	0.0022541	0.02090	1.907	0.00883	1.05574	0.8438
580	9.00813	116.59	2.581	1687.49	0.0021881	0.02102	1.917	0.00915	1.05449	0.8375
590	8.81590	119.18	2.576	1693.33	0.0021267	0.02114	1.927	0.00946	1.05331	0.8318
600	8.63290	121.77	2.571	1698.82	0.0020692	0.02126	1.938	0.00977	1.05218	0.8267

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

1800 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	C_P	VELOCITY OF SOUND FT/SEC
* 100.375	0.01219	2200.98	318.8	-82.930	-78.867	0.50400	0.267	0.394	3882
105	0.01229	2115.27	307.3	-81.140	-77.043	0.52176	0.263	0.394	3832
110	0.01240	2025.19	295.1	-79.207	-75.073	0.54009	0.259	0.394	3777
115	0.01252	1937.74	283.4	-77.277	-73.106	0.55758	0.255	0.393	3721
120	0.01263	1852.85	272.1	-75.349	-71.139	0.57432	0.251	0.393	3663
125	0.01275	1770.48	261.1	-73.424	-69.174	0.59036	0.248	0.393	3605
130	0.01287	1690.56	250.5	-71.500	-67.210	0.60577	0.245	0.393	3545
135	0.01300	1613.03	240.2	-69.579	-65.246	0.62059	0.242	0.393	3485
140	0.01312	1537.84	230.3	-67.657	-63.283	0.63486	0.239	0.393	3424
145	0.01325	1464.94	220.8	-65.738	-61.320	0.64864	0.236	0.393	3362
150	0.01339	1394.27	211.5	-63.819	-59.357	0.66195	0.233	0.393	3300
155	0.01353	1325.78	202.6	-61.901	-57.393	0.67483	0.230	0.393	3237
160	0.01367	1259.40	194.0	-59.982	-55.427	0.68731	0.228	0.393	3174
165	0.01381	1195.08	185.8	-58.063	-53.459	0.69942	0.225	0.394	3110
170	0.01396	1132.78	177.8	-56.144	-51.489	0.71118	0.223	0.394	3046
175	0.01412	1072.44	170.1	-54.222	-49.516	0.72262	0.221	0.395	2982
180	0.01428	1014.03	162.7	-52.298	-47.539	0.73376	0.219	0.396	2917
185	0.01445	957.42	155.5	-50.372	-45.557	0.74463	0.216	0.397	2853
190	0.01462	902.65	148.6	-48.442	-43.569	0.75523	0.214	0.398	2788
195	0.01480	849.63	142.0	-46.507	-41.574	0.76560	0.212	0.400	2723
200	0.01499	798.34	135.5	-44.566	-39.571	0.77574	0.210	0.401	2659
205	0.01518	748.71	129.4	-42.619	-37.559	0.78568	0.208	0.403	2594
210	0.01538	700.72	123.4	-40.664	-35.536	0.79543	0.206	0.406	2530
215	0.01560	654.33	117.6	-38.699	-33.500	0.80501	0.204	0.408	2466
220	0.01582	609.51	112.0	-36.723	-31.450	0.81444	0.201	0.411	2402
225	0.01606	566.24	106.6	-34.735	-29.383	0.82373	0.199	0.415	2339
230	0.01631	524.49	101.4	-32.731	-27.296	0.83289	0.197	0.419	2275
235	0.01657	481.36	95.7	-30.684	-25.163	0.84206	0.200	0.427	2182
240	0.01686	441.91	90.9	-28.624	-23.006	0.85115	0.199	0.435	2116
245	0.01716	405.25	85.7	-26.535	-20.816	0.86018	0.198	0.440	2044
250	0.01748	370.23	81.1	-24.421	-18.594	0.86916	0.196	0.447	1977
255	0.01783	336.54	76.3	-22.280	-16.338	0.87809	0.195	0.455	1907
260	0.01820	304.64	71.9	-20.107	-14.040	0.88702	0.194	0.465	1838
265	0.01861	274.52	67.5	-17.899	-11.696	0.89595	0.193	0.475	1769
270	0.01905	245.55	62.8	-15.650	-9.300	0.90491	0.193	0.484	1692
275	0.01954	218.25	58.8	-13.355	-6.842	0.91393	0.192	0.500	1622
280	0.02008	192.52	54.0	-11.012	-4.319	0.92302	0.192	0.508	1538
285	0.02069	168.96	50.5	-8.595	-1.700	0.93229	0.191	0.532	1475
290	0.02136	147.06	46.5	-6.108	1.013	0.94172	0.195	0.555	1392
295	0.02213	127.28	42.5	-3.539	3.839	0.95138	0.194	0.575	1320
300	0.02301	109.74	38.9	-0.891	6.779	0.96127	0.195	0.601	1253
310	0.02517	81.97	32.0	4.644	13.035	0.98178	0.195	0.650	1126
320	0.02799	64.38	26.0	10.398	19.728	1.00303	0.194	0.683	1024
330	0.03148	55.91	21.2	16.091	26.582	1.02412	0.193	0.680	956
340	0.03540	54.48	17.5	21.382	33.181	1.04382	0.190	0.635	918
350	0.03945	57.38	14.9	26.090	39.238	1.06139	0.187	0.576	905
360	0.04341	62.52	12.9	30.228	44.699	1.07677	0.184	0.519	904
370	0.04721	68.67	11.4	33.897	49.632	1.09030	0.181	0.471	910
380	0.05083	75.19	10.3	37.267	54.149	1.10235	0.178	0.433	920
390	0.05428	81.85	9.4	40.239	58.331	1.11321	0.176	0.405	934
400	0.05758	88.49	8.6	43.056	62.248	1.12313	0.174	0.380	946
410	0.06075	95.00	8.0	45.703	65.952	1.13228	0.172	0.362	961
420	0.06380	101.40	7.5	48.216	69.483	1.14079	0.171	0.345	975
430	0.06676	107.64	7.0	50.620	72.873	1.14877	0.170	0.333	990
440	0.06963	113.65	6.6	52.932	76.142	1.15629	0.168	0.322	1003
450	0.07244	119.54	6.3	55.170	79.314	1.16342	0.167	0.313	1018
460	0.07516	125.13	6.0	57.340	82.391	1.17019	0.166	0.304	1030
470	0.07784	130.85	5.7	59.454	85.398	1.17665	0.165	0.297	1044
480	0.08046	136.44	5.5	61.520	88.339	1.18285	0.164	0.291	1058
490	0.08304	141.93	5.3	63.544	91.222	1.18879	0.163	0.286	1072
500	0.08558	147.31	5.1	65.530	94.054	1.19451	0.163	0.281	1085
510	0.08808	152.61	4.9	67.483	96.840	1.20003	0.162	0.277	1099
520	0.09054	157.83	4.7	69.407	99.587	1.20536	0.161	0.273	1112
530	0.09298	162.96	4.6	71.305	102.297	1.21053	0.161	0.269	1125
540	0.09539	168.03	4.4	73.180	104.975	1.21553	0.160	0.266	1138
550	0.09778	173.04	4.3	75.034	107.624	1.22039	0.160	0.264	1150
560	0.10014	177.99	4.2	76.870	110.248	1.22512	0.159	0.261	1163
570	0.10248	182.89	4.1	78.690	112.848	1.22972	0.159	0.259	1175
580	0.10481	187.73	4.0	80.494	115.428	1.23421	0.159	0.257	1187
590	0.10711	192.54	3.9	82.286	117.988	1.23859	0.158	0.255	1199
600	0.10940	197.30	3.8	84.067	120.532	1.24286	0.158	0.254	1211

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1800 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_p$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 100.375	82.02866	223.35	14.566	180543.40	0.0017660	0.11258	44.181	0.00348	1.57240	5.5725
105	81.35773	220.71	14.362	172093.52	0.0017855	0.11133	43.537	0.00347	1.56700	5.1658
110	80.63025	217.83	14.135	163291.83	0.0018074	0.10990	36.972	0.00346	1.56116	4.7685
115	79.90030	214.91	13.902	154826.01	0.0018305	0.10839	33.756	0.00345	1.55532	4.4105
120	79.16762	211.96	13.664	146686.62	0.0018547	0.10682	30.857	0.00343	1.54946	4.0879
125	78.43192	208.97	13.421	138861.96	0.0018801	0.10520	28.241	0.00341	1.54360	3.7969
130	77.69290	205.93	13.174	131344.12	0.0019070	0.10352	25.882	0.00339	1.53773	3.5345
135	76.95023	202.85	12.923	124122.99	0.0019353	0.10180	23.754	0.00337	1.53184	3.2978
140	76.20354	199.73	12.670	117189.20	0.0019654	0.10003	21.833	0.00334	1.52594	3.0843
145	75.45242	196.56	12.415	110533.62	0.0019972	0.09823	20.100	0.00332	1.52001	2.8918
150	74.69643	193.34	12.158	104147.27	0.0020311	0.09640	18.536	0.00329	1.51406	2.7183
155	73.93507	190.07	11.901	98021.40	0.0020672	0.09454	17.124	0.00325	1.50809	2.5620
160	73.16782	186.74	11.644	92147.45	0.0021058	0.09266	15.849	0.00322	1.50208	2.4215
165	72.39408	183.35	11.387	86517.07	0.0021472	0.09076	14.698	0.00318	1.49604	2.2952
170	71.61318	179.90	11.133	81122.15	0.0021915	0.08884	13.658	0.00315	1.48996	2.1821
175	70.82440	176.39	10.880	75954.81	0.0022393	0.08690	12.718	0.00311	1.48384	2.0810
180	70.02695	172.81	10.630	71007.40	0.0022908	0.08496	11.868	0.00306	1.47766	1.9909
185	69.21993	169.16	10.384	66272.55	0.0023465	0.08301	11.100	0.00302	1.47143	1.9109
190	68.40236	165.44	10.142	61743.14	0.0024069	0.08105	10.405	0.00298	1.46513	1.8404
195	67.57315	161.65	9.904	57412.38	0.0024727	0.07908	9.775	0.00293	1.45876	1.7787
200	66.73107	157.77	9.671	53273.76	0.0025444	0.07711	9.205	0.00288	1.45232	1.7251
205	65.87477	153.82	9.445	49321.15	0.0026229	0.07514	8.688	0.00283	1.44578	1.6792
210	65.00274	149.78	9.224	45548.77	0.0027090	0.07318	8.219	0.00277	1.43914	1.6406
215	64.11328	145.66	9.010	41951.26	0.0028037	0.07121	7.793	0.00272	1.43239	1.6090
220	63.20451	141.45	8.803	38523.76	0.0029084	0.06924	7.405	0.00266	1.42552	1.5840
225	62.27430	137.17	8.603	35261.89	0.0030244	0.06727	7.052	0.00260	1.41850	1.5655
230	61.32027	132.82	8.408	32161.92	0.0031533	0.06531	6.730	0.00254	1.41133	1.5536
235	60.33681	129.75	7.924	29043.70	0.0032942	0.06334	6.434	0.00246	1.40397	1.5630
240	59.32596	125.48	7.703	26217.02	0.0034678	0.06139	6.164	0.00238	1.39643	1.5730
245	58.28379	121.19	7.438	23619.31	0.0036280	0.05943	5.916	0.00232	1.38868	1.5754
250	57.20774	116.89	7.218	21180.05	0.0038274	0.05749	5.729	0.00225	1.38071	1.6049
255	56.09437	112.51	6.975	18877.88	0.0040441	0.05556	5.546	0.00218	1.37249	1.6353
260	54.93868	108.18	6.741	16736.44	0.0042944	0.05363	5.363	0.00210	1.36400	1.6721
265	53.73652	103.87	6.501	14751.58	0.0045759	0.05172	5.178	0.00203	1.35520	1.7130
270	52.48321	99.36	6.217	12887.03	0.0048762	0.04982	4.992	0.00196	1.34607	1.7476
275	51.17271	94.99	5.980	11168.52	0.0052634	0.04793	4.804	0.00187	1.33657	1.8041
280	49.80099	90.25	5.657	9587.46	0.0056325	0.04606	4.616	0.00182	1.32667	1.8339
285	48.34167	86.07	5.454	8167.99	0.0061774	0.04418	4.423	0.00172	1.31619	1.9161
290	46.80618	82.24	5.088	6883.38	0.0067537	0.04233	4.230	0.00163	1.30523	1.9980
295	45.18080	77.71	4.838	5750.62	0.0073934	0.04080	4.034	0.00157	1.29369	2.0449
300	43.45837	73.60	4.606	4769.32	0.0081645	0.03947	3.837	0.00151	1.28154	2.1031
310	39.72466	66.09	4.137	3256.41	0.0098348	0.03678	3.445	0.00142	1.25547	2.1919
320	35.72313	60.36	3.747	2299.78	0.0113195	0.03413	3.075	0.00140	1.22793	2.2158
330	31.77072	56.93	3.461	1776.18	0.0119372	0.03155	2.755	0.00146	1.20113	2.1362
340	28.25097	55.74	3.263	1539.01	0.0113852	0.02916	2.507	0.00163	1.17760	1.9644
350	25.34991	56.30	3.140	1454.51	0.0102269	0.02716	2.327	0.00186	1.15845	1.7760
360	23.03391	57.86	3.051	1440.12	0.0089640	0.02560	2.200	0.00214	1.14331	1.6049
370	21.18269	59.97	2.983	1454.55	0.0078532	0.02436	2.110	0.00244	1.13130	1.4686
380	19.67386	62.39	2.928	1479.24	0.0069380	0.02343	2.045	0.00275	1.12158	1.3602
390	18.42352	65.05	2.894	1507.98	0.0062193	0.02273	1.997	0.00305	1.11357	1.2792
400	17.36724	67.77	2.850	1536.79	0.0056038	0.02219	1.961	0.00336	1.10683	1.2085
410	16.46125	70.58	2.827	1563.85	0.0051264	0.02179	1.935	0.00366	1.10138	1.1568
420	15.67280	73.41	2.793	1589.16	0.0047059	0.02147	1.916	0.00397	1.09608	1.1095
430	14.97818	76.25	2.775	1612.29	0.0043698	0.02124	1.902	0.00426	1.09170	1.0739
440	14.36872	79.05	2.748	1632.13	0.0040701	0.02106	1.892	0.00456	1.08781	1.0406
450	13.80502	81.83	2.736	1650.32	0.0038279	0.02093	1.885	0.00484	1.08432	1.0155
460	13.30521	84.55	2.709	1664.94	0.0035989	0.02084	1.882	0.00515	1.08118	0.9892
470	12.84763	87.31	2.696	1681.05	0.0034046	0.02078	1.880	0.00544	1.07832	0.9683
480	12.42847	90.04	2.684	1695.73	0.0032328	0.02074	1.881	0.00573	1.07570	0.9500
490	12.04249	92.74	2.674	1709.14	0.0030799	0.02073	1.883	0.00603	1.07329	0.9337
500	11.68540	95.43	2.664	1721.42	0.0029429	0.02074	1.886	0.00632	1.07107	0.9192
510	11.35364	98.09	2.656	1732.69	0.0028195	0.02078	1.890	0.00659	1.06900	0.9093
520	11.04426	100.73	2.649	1743.07	0.0027078	0.02076	1.896	0.00689	1.06708	0.8966
530	10.75477	103.36	2.642	1752.65	0.0026061	0.02083	1.902	0.00719	1.06529	0.8853
540	10.48306	105.97	2.636	1761.51	0.0025131	0.02092	1.909	0.00749	1.06360	0.8751
550	10.22732	108.58	2.630	1769.74	0.0024277	0.02101	1.917	0.00779	1.06202	0.8659
560	9.98599	111.17	2.625	1777.40	0.0023491	0.02110	1.925	0.00809	1.06052	0.8577
570	9.75774	113.76	2.619	1784.55	0.0022763	0.02120	1.934	0.00839	1.05911	0.8502
580	9.54139	116.34	2.615	1791.24	0.0022088	0.02131	1.943	0.00869	1.05778	0.8435
590	9.33592	118.92	2.610	1797.52	0.0021459	0.02142	1.953	0.00899	1.05651	0.8374
600	9.14042	121.50	2.605	1803.43	0.0020873	0.02154	1.963	0.00929	1.05531	0.8319

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

1900 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	C_P	VELOCITY OF SOUND FT/SEC
* 100.515	0.01219	2207.02	318.9	-82.913	-78.625	0.50415	0.267	0.394	3887
105	0.01228	2124.05	307.7	-81.180	-76.858	0.52136	0.263	0.394	3835
110	0.01239	2034.09	295.6	-79.250	-74.889	0.53967	0.259	0.394	3783
115	0.01251	1946.76	283.8	-77.323	-72.923	0.55716	0.255	0.393	3727
120	0.01262	1862.00	272.5	-75.398	-70.957	0.57389	0.252	0.393	3670
125	0.01274	1779.75	261.5	-73.476	-68.993	0.58992	0.248	0.393	3611
130	0.01286	1699.96	250.9	-71.556	-67.031	0.60531	0.245	0.392	3552
135	0.01298	1622.57	240.7	-69.637	-65.069	0.62012	0.242	0.392	3492
140	0.01311	1547.52	230.8	-67.720	-63.107	0.63439	0.239	0.392	3432
145	0.01324	1474.76	221.3	-65.805	-61.146	0.64815	0.236	0.392	3370
150	0.01337	1404.23	212.0	-63.890	-59.184	0.66145	0.233	0.392	3308
155	0.01351	1335.89	203.2	-61.976	-57.222	0.67432	0.231	0.392	3246
160	0.01365	1269.66	194.6	-60.062	-55.259	0.68678	0.228	0.393	3183
165	0.01380	1205.50	186.3	-58.148	-53.294	0.69887	0.226	0.393	3120
170	0.01395	1143.36	178.4	-56.234	-51.327	0.71062	0.223	0.394	3056
175	0.01410	1083.18	170.7	-54.318	-49.357	0.72204	0.221	0.394	2992
180	0.01426	1024.92	163.3	-52.400	-47.383	0.73316	0.219	0.395	2928
185	0.01443	968.51	156.1	-50.480	-45.405	0.74400	0.217	0.396	2864
190	0.01460	913.92	149.3	-48.557	-43.421	0.75458	0.215	0.397	2800
195	0.01477	861.09	142.7	-46.629	-41.432	0.76492	0.212	0.399	2736
200	0.01496	809.99	136.3	-44.697	-39.434	0.77504	0.210	0.400	2672
205	0.01515	760.56	130.1	-42.759	-37.428	0.78495	0.208	0.402	2609
210	0.01535	712.77	124.2	-40.813	-35.412	0.79467	0.206	0.404	2545
215	0.01556	666.59	118.4	-38.859	-33.385	0.80421	0.204	0.407	2482
220	0.01578	621.99	112.9	-36.895	-31.343	0.81359	0.202	0.409	2419
225	0.01601	578.93	107.5	-34.920	-29.286	0.82284	0.199	0.413	2357
230	0.01626	537.41	102.4	-32.931	-27.211	0.83195	0.197	0.416	2295
235	0.01652	494.51	96.6	-30.904	-25.092	0.84106	0.200	0.424	2203
240	0.01679	455.11	91.9	-28.859	-22.951	0.85008	0.199	0.432	2138
245	0.01709	418.57	86.7	-26.790	-20.779	0.85904	0.198	0.436	2067
250	0.01740	383.72	82.2	-24.698	-18.577	0.86794	0.197	0.443	2002
255	0.01774	350.21	77.5	-22.584	-16.344	0.87678	0.195	0.450	1933
260	0.01810	318.44	73.2	-20.443	-14.073	0.88560	0.194	0.459	1868
265	0.01849	288.55	68.8	-18.265	-11.760	0.89441	0.193	0.468	1799
270	0.01891	259.72	64.2	-16.055	-9.402	0.90323	0.193	0.476	1725
275	0.01937	232.56	60.2	-13.806	-6.990	0.91208	0.192	0.490	1659
280	0.01988	206.98	55.4	-11.516	-4.522	0.92097	0.191	0.496	1576
285	0.02045	183.36	52.1	-9.161	-1.968	0.93001	0.191	0.517	1515
290	0.02107	161.39	48.2	-6.749	0.665	0.93917	0.195	0.537	1436
295	0.02177	141.41	44.3	-4.269	3.392	0.94849	0.194	0.553	1367
300	0.02256	123.53	40.8	-1.725	6.214	0.95798	0.194	0.575	1303
310	0.02447	94.48	34.0	3.557	12.168	0.97750	0.194	0.616	1179
320	0.02691	74.84	28.1	9.029	18.496	0.99759	0.194	0.646	1076
330	0.02990	63.86	23.2	14.495	25.015	1.01765	0.192	0.651	1002
340	0.03333	59.94	19.3	19.696	31.422	1.03678	0.190	0.624	955
350	0.03698	60.90	16.4	24.437	37.446	1.05425	0.187	0.578	934
360	0.04064	64.75	14.2	28.674	42.972	1.06982	0.184	0.528	927
370	0.04420	70.07	12.5	32.459	48.009	1.08362	0.181	0.482	929
380	0.04763	76.07	11.2	35.881	52.637	1.09597	0.179	0.444	935
390	0.05091	82.38	10.2	39.013	56.925	1.10711	0.177	0.415	947
400	0.05407	88.81	9.4	41.919	60.941	1.11728	0.175	0.389	957
410	0.05710	95.21	8.7	44.643	64.733	1.12665	0.173	0.370	972
420	0.06003	101.55	8.1	47.223	68.343	1.13535	0.171	0.353	984
430	0.06287	107.77	7.6	49.685	71.803	1.14349	0.170	0.340	999
440	0.06562	113.75	7.2	52.048	75.133	1.15115	0.169	0.327	1011
450	0.06830	119.61	6.8	54.330	78.360	1.15841	0.168	0.318	1026
460	0.07092	125.42	6.5	56.543	81.493	1.16529	0.167	0.309	1038
470	0.07348	131.12	6.2	58.696	84.548	1.17187	0.166	0.301	1051
480	0.07598	136.45	5.9	60.792	87.524	1.17813	0.165	0.295	1064
490	0.07845	141.98	5.7	62.845	90.445	1.18416	0.164	0.289	1078
500	0.08088	147.41	5.4	64.857	93.313	1.18995	0.163	0.284	1092
510	0.08327	152.75	5.2	66.834	96.132	1.19553	0.162	0.280	1105
520	0.08563	158.01	5.1	68.779	98.908	1.20092	0.161	0.276	1118
530	0.08797	163.20	4.9	70.697	101.646	1.20614	0.161	0.272	1131
540	0.09027	168.32	4.7	72.589	104.349	1.21119	0.160	0.269	1144
550	0.09255	173.38	4.6	74.459	107.022	1.21610	0.160	0.266	1157
560	0.09481	178.36	4.5	76.310	109.667	1.22086	0.159	0.263	1169
570	0.09705	183.33	4.3	78.143	112.288	1.22550	0.159	0.261	1181
580	0.09927	188.23	4.2	79.959	114.886	1.23002	0.158	0.259	1194
590	0.10148	193.09	4.1	81.762	117.464	1.23443	0.158	0.257	1206
600	0.10366	197.90	4.0	83.552	120.025	1.23873	0.158	0.255	1218

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1900 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/ DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 100.515	82.05374	223.90	14.561	181094.41	0.0017609	0.11264	44.325	0.00348	1.57260	5.5855
105	81.40490	221.36	14.364	172908.14	0.0017794	0.11143	40.783	0.00347	1.56738	5.1901
110	80.67952	218.50	14.137	164109.66	0.0018010	0.11000	37.202	0.00346	1.56156	4.7911
115	79.95179	215.61	13.904	155647.03	0.0018236	0.10851	33.973	0.00345	1.55573	4.4315
120	79.22145	212.68	13.666	147510.35	0.0018473	0.10695	31.060	0.00344	1.54989	4.1075
125	78.48825	209.71	13.423	139689.58	0.0018722	0.10534	28.433	0.00342	1.54405	3.8152
130	77.75189	206.70	13.177	132175.06	0.0018985	0.10367	26.062	0.00340	1.53820	3.5515
135	77.01204	203.65	12.926	124957.26	0.0019262	0.10196	23.923	0.00337	1.53233	3.3137
140	76.26836	200.56	12.673	118026.84	0.0019555	0.10020	21.993	0.00335	1.52645	3.0990
145	75.52045	197.42	12.419	111374.63	0.0019866	0.09841	20.251	0.00332	1.52055	2.9054
150	74.76789	194.23	12.162	104991.68	0.0020197	0.09659	18.678	0.00329	1.51463	2.7309
155	74.01022	190.99	11.906	98869.21	0.0020549	0.09474	17.258	0.00326	1.50868	2.5737
160	73.24690	187.70	11.650	92998.68	0.0020924	0.09287	15.976	0.00323	1.50270	2.4322
165	72.47739	184.34	11.394	87371.73	0.0021326	0.09098	14.817	0.00319	1.49669	2.3051
170	71.70105	180.93	11.141	81980.24	0.0021757	0.08907	13.771	0.00316	1.49064	2.1910
175	70.91719	177.46	10.890	76816.32	0.0022219	0.08715	12.825	0.00312	1.48456	2.0890
180	70.12504	173.92	10.641	71872.32	0.0022718	0.08522	11.970	0.00308	1.47842	1.9980
185	69.32378	170.32	10.397	67140.85	0.0023257	0.08328	11.196	0.00303	1.47223	1.9172
190	68.51246	166.64	10.156	62614.81	0.0023840	0.08133	10.496	0.00299	1.46598	1.8457
195	67.69006	162.89	9.921	58287.35	0.0024474	0.07938	9.862	0.00294	1.45966	1.7830
200	66.85542	159.07	9.691	54151.96	0.0025164	0.07743	9.287	0.00289	1.45327	1.7285
205	66.00729	155.16	9.467	50202.47	0.0025917	0.07547	8.766	0.00284	1.44679	1.6815
210	65.14423	151.17	9.250	46433.07	0.0026741	0.07352	8.294	0.00279	1.44022	1.6418
215	64.26469	147.11	9.040	42838.35	0.0027647	0.07156	7.864	0.00274	1.43354	1.6090
220	63.36692	142.96	8.838	39413.36	0.0028644	0.06961	7.474	0.00268	1.42674	1.5826
225	62.44895	138.73	8.643	36153.66	0.0029745	0.06767	7.118	0.00263	1.41982	1.5627
230	61.50862	134.44	8.454	33055.36	0.0030965	0.06572	6.793	0.00257	1.41275	1.5490
235	60.54176	131.50	7.969	29938.48	0.0032274	0.06378	6.496	0.00248	1.40550	1.5562
240	59.54893	127.31	7.750	27101.25	0.0033907	0.06185	6.224	0.00241	1.39809	1.5639
245	58.52658	123.12	7.491	24497.64	0.0035410	0.05992	5.974	0.00235	1.39048	1.5649
250	57.47303	118.93	7.277	22053.53	0.0037264	0.05800	5.747	0.00228	1.38267	1.5890
255	56.38563	114.65	7.037	19746.66	0.0039237	0.05609	5.537	0.00221	1.37464	1.6159
260	55.25969	110.45	6.819	17597.16	0.0041582	0.05420	5.417	0.00214	1.36635	1.6524
265	54.09177	106.25	6.576	15608.21	0.0044048	0.05232	5.236	0.00207	1.35780	1.6860
270	52.87910	101.89	6.305	13733.82	0.0046746	0.05046	5.054	0.00200	1.34895	1.7176
275	51.61646	97.68	6.078	12003.69	0.0050180	0.04861	4.872	0.00192	1.33978	1.7685
280	50.30178	93.11	5.756	10411.53	0.0053249	0.04679	4.689	0.00186	1.33028	1.7887
285	48.90956	89.08	5.570	8968.10	0.0058040	0.04496	4.502	0.00178	1.32026	1.8641
290	47.45494	85.47	5.211	7658.79	0.0062878	0.04316	4.316	0.00169	1.30986	1.9347
295	45.92573	81.11	4.976	6494.29	0.0068213	0.04147	4.128	0.00163	1.29897	1.9826
300	44.31662	77.13	4.753	5474.27	0.0074524	0.04317	3.940	0.00158	1.28759	2.0300
310	40.86007	69.82	4.297	3860.50	0.0088194	0.03754	3.567	0.00149	1.26336	2.1062
320	37.16321	63.96	3.908	2781.46	0.0101042	0.03499	3.212	0.00146	1.23779	2.1356
330	33.44525	60.65	3.606	2135.82	0.0108496	0.03253	2.896	0.00149	1.21243	2.0879
340	30.00315	58.18	3.386	1796.50	0.0107239	0.03024	2.639	0.00162	1.18927	1.9605
350	27.04387	58.09	3.241	1647.08	0.0099564	0.02826	2.445	0.00181	1.16960	1.8016
360	24.60741	59.15	3.136	1593.23	0.0089211	0.02663	2.302	0.00205	1.15358	1.6422
370	22.62556	60.92	3.056	1585.46	0.0079121	0.02531	2.199	0.00232	1.14065	1.5076
380	20.99703	63.08	2.992	1597.21	0.0070360	0.02429	2.123	0.00251	1.13010	1.3970
390	19.64194	65.56	2.952	1618.13	0.0063283	0.02352	2.067	0.00269	1.12138	1.3127
400	18.49573	68.15	2.904	1642.62	0.0057099	0.02290	2.025	0.00318	1.11403	1.2383
410	17.51307	70.86	2.876	1667.38	0.0052234	0.02244	1.993	0.00346	1.10776	1.1831
420	16.65857	73.61	2.841	1691.60	0.0047956	0.02208	1.969	0.00375	1.10233	1.1334
430	15.90684	76.40	2.820	1714.31	0.0044469	0.02180	1.951	0.00403	1.09756	1.0950
440	15.24039	79.15	2.787	1733.59	0.0041359	0.02158	1.938	0.00433	1.09335	1.0584
450	14.64143	81.89	2.773	1751.31	0.0038883	0.02143	1.929	0.00460	1.08957	1.0319
460	14.10112	84.65	2.749	1768.50	0.0036530	0.02130	1.923	0.00489	1.08618	1.0048
470	13.60900	87.39	2.730	1784.38	0.0034489	0.02122	1.919	0.00517	1.08349	0.9816
480	13.16145	89.98	2.717	1795.84	0.0032797	0.02117	1.918	0.00545	1.08028	0.9629
490	12.74702	92.67	2.707	1809.76	0.0031222	0.02113	1.919	0.00573	1.07769	0.9455
500	12.36405	95.34	2.697	1822.56	0.0029812	0.02113	1.920	0.00601	1.07530	0.9301
510	12.00864	97.98	2.689	1834.35	0.0028543	0.02106	1.923	0.00627	1.07308	0.9194
520	11.67753	100.61	2.681	1845.22	0.0027395	0.02111	1.928	0.00656	1.07102	0.9059
530	11.36799	103.22	2.675	1855.29	0.0026351	0.02118	1.933	0.00685	1.06909	0.8938
540	11.07770	105.82	2.669	1864.63	0.0025394	0.02125	1.939	0.00714	1.06729	0.8830
550	10.80468	108.41	2.663	1873.32	0.0024524	0.02133	1.946	0.00742	1.06559	0.8732
560	10.54723	110.98	2.654	1881.43	0.0023719	0.02141	1.953	0.00771	1.06400	0.8644
570	10.30389	113.56	2.653	1889.01	0.0022975	0.02151	1.961	0.00800	1.06249	0.8565
580	10.07338	116.13	2.648	1896.12	0.0022285	0.02161	1.970	0.00829	1.06107	0.8493
590	9.85458	118.69	2.644	1902.80	0.0021643	0.02171	1.979	0.00858	1.05971	0.8429
600	9.64650	121.25	2.639	1909.09	0.0021044	0.02182	1.988	0.00886	1.05843	0.8370

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

2000 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	C_P BTU / LB -R	VELOCITY OF SOUND FT/SEC
* 100.655	0.01218	2213.05	318.9	-82.897	-78.384	0.50431	0.267	0.394	3891
105	0.01228	2132.81	308.1	-81.220	-76.673	0.52095	0.263	0.394	3844
110	0.01239	2042.97	296.0	-79.293	-74.705	0.53926	0.259	0.393	3789
115	0.01250	1955.76	284.3	-77.369	-72.739	0.55674	0.256	0.393	3733
120	0.01261	1871.12	272.9	-75.447	-70.775	0.57345	0.252	0.393	3676
125	0.01273	1789.00	262.0	-73.528	-68.813	0.58948	0.248	0.392	3618
130	0.01285	1709.33	251.4	-71.611	-66.851	0.60486	0.245	0.392	3559
135	0.01297	1632.07	241.2	-69.696	-64.891	0.61966	0.242	0.392	3500
140	0.01310	1557.16	231.3	-67.783	-62.931	0.63391	0.239	0.392	3439
145	0.01323	1484.54	221.8	-65.871	-60.971	0.64767	0.236	0.392	3378
150	0.01336	1414.15	212.6	-63.961	-59.012	0.66095	0.233	0.392	3316
155	0.01350	1345.95	203.7	-62.050	-57.052	0.67380	0.231	0.392	3254
160	0.01364	1279.87	195.1	-60.141	-55.091	0.68625	0.228	0.392	3192
165	0.01378	1215.87	186.9	-58.232	-53.128	0.69833	0.226	0.393	3129
170	0.01393	1153.89	178.9	-56.323	-51.164	0.71006	0.224	0.393	3066
175	0.01408	1093.87	171.3	-54.412	-49.197	0.72146	0.221	0.394	3002
180	0.01424	1035.77	163.9	-52.500	-47.227	0.73256	0.219	0.394	2939
185	0.01440	979.53	156.8	-50.587	-45.252	0.74338	0.217	0.395	2876
190	0.01457	925.11	149.9	-48.670	-43.273	0.75394	0.215	0.396	2812
195	0.01475	872.47	143.3	-46.750	-41.288	0.76426	0.213	0.398	2749
200	0.01493	821.55	137.0	-44.826	-39.296	0.77435	0.211	0.399	2686
205	0.01512	772.31	130.8	-42.896	-37.296	0.78422	0.210	0.401	2623
210	0.01532	724.72	124.9	-40.960	-35.287	0.79391	0.208	0.403	2560
215	0.01552	678.74	119.2	-39.016	-33.267	0.80342	0.206	0.405	2499
220	0.01574	634.33	113.7	-37.064	-31.234	0.81276	0.202	0.408	2436
225	0.01597	591.49	108.4	-35.101	-29.187	0.82196	0.199	0.411	2375
230	0.01621	550.17	103.3	-33.126	-27.123	0.83103	0.197	0.414	2314
235	0.01646	507.52	97.6	-31.114	-25.017	0.84008	0.200	0.422	2224
240	0.01673	468.18	92.8	-29.087	-22.890	0.84904	0.199	0.428	2159
245	0.01702	431.75	87.8	-27.038	-20.735	0.85793	0.198	0.433	2090
250	0.01732	397.04	83.3	-24.967	-18.552	0.86675	0.197	0.439	2027
255	0.01765	363.69	78.6	-22.876	-16.340	0.87551	0.195	0.445	1959
260	0.01800	332.03	74.4	-20.759	-14.094	0.88423	0.194	0.454	1897
265	0.01837	302.33	69.9	-18.614	-11.810	0.89294	0.193	0.461	1828
270	0.01878	273.63	65.5	-16.439	-9.485	0.90163	0.193	0.469	1757
275	0.01922	246.58	61.6	-14.231	-7.113	0.91033	0.192	0.482	1693
280	0.01970	221.18	56.8	-11.988	-4.693	0.91905	0.191	0.485	1612
285	0.02023	197.46	53.6	-9.688	-2.196	0.92789	0.191	0.505	1555
290	0.02081	175.44	49.7	-7.340	0.368	0.93681	0.194	0.522	1478
295	0.02146	155.29	46.0	-4.933	3.014	0.94585	0.193	0.536	1412
300	0.02218	137.12	42.5	-2.476	5.739	0.95501	0.193	0.554	1350
310	0.02389	107.02	35.9	2.600	11.449	0.97373	0.193	0.588	1229
320	0.02603	85.69	30.0	7.838	17.479	0.99288	0.193	0.615	1126
330	0.02864	72.60	25.0	13.097	23.704	1.01203	0.192	0.625	1047
340	0.03166	66.44	21.0	18.176	29.900	1.03053	0.190	0.609	994
350	0.03493	65.46	17.9	22.903	35.839	1.04775	0.187	0.575	966
360	0.03829	67.85	15.5	27.196	41.376	1.06335	0.185	0.532	952
370	0.04161	72.22	13.7	31.070	46.480	1.07734	0.182	0.490	949
380	0.04484	77.57	12.2	34.586	51.194	1.08992	0.179	0.453	952
390	0.04796	83.43	11.1	37.809	55.572	1.10129	0.177	0.424	961
400	0.05098	89.57	10.2	40.797	59.676	1.11169	0.175	0.398	970
410	0.05388	95.79	9.4	43.595	63.548	1.12125	0.173	0.378	983
420	0.05669	102.02	8.8	46.239	67.232	1.13013	0.172	0.360	995
430	0.05941	108.20	8.2	48.754	70.759	1.13843	0.171	0.346	1009
440	0.06204	114.13	7.7	51.170	74.147	1.14622	0.169	0.333	1019
450	0.06461	119.94	7.3	53.497	77.426	1.15359	0.168	0.323	1034
460	0.06712	125.73	6.9	55.749	80.608	1.16059	0.167	0.314	1046
470	0.06959	131.43	6.6	57.937	83.708	1.16726	0.166	0.306	1059
480	0.07200	137.05	6.3	60.070	86.733	1.17363	0.165	0.299	1073
490	0.07436	142.57	6.0	62.153	89.693	1.17973	0.164	0.293	1086
510	0.07897	153.02	5.6	66.188	95.435	1.19122	0.162	0.283	1111
520	0.08124	158.33	5.4	68.155	98.240	1.19667	0.162	0.278	1124
530	0.08347	163.56	5.2	70.092	101.005	1.20194	0.161	0.275	1137
540	0.08568	168.72	5.1	72.001	103.733	1.20704	0.160	0.271	1150
550	0.08787	173.82	4.9	73.888	106.429	1.21198	0.160	0.268	1163
560	0.09003	178.87	4.8	75.752	109.096	1.21679	0.159	0.265	1176
570	0.09218	183.87	4.6	77.598	111.736	1.22146	0.159	0.263	1188
580	0.09431	188.82	4.5	79.427	114.352	1.22601	0.158	0.261	1200
590	0.09642	193.72	4.4	81.240	116.948	1.23045	0.158	0.259	1213
600	0.09851	198.59	4.3	83.040	119.524	1.23478	0.157	0.257	1225

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

2000 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$(\partial H/\partial V)_P$ BTU/LB	$(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 100.655	82.07874	224.45	14.557	181644.61	0.0017558	0.11269	44.469	0.00348	1.57280	5.5985
105	81.45189	222.01	14.366	173721.42	0.0017735	0.11153	41.629	0.00348	1.56776	5.2145
110	80.72858	219.17	14.139	164926.07	0.0017946	0.11011	37.434	0.00347	1.56195	4.8137
115	80.00304	216.30	13.906	156466.64	0.0018168	0.10863	34.190	0.00346	1.55614	4.4527
120	79.27503	213.40	13.668	148333.08	0.0018400	0.10708	31.269	0.00344	1.55032	4.1272
125	78.54429	210.45	13.426	140515.53	0.0018644	0.10547	28.625	0.00342	1.54450	3.8335
130	77.81055	207.47	13.179	133004.18	0.0018901	0.10382	26.243	0.00340	1.53866	3.5686
135	77.07349	204.45	12.929	125789.60	0.0019172	0.10211	24.093	0.00338	1.53282	3.3295
140	76.33278	201.39	12.677	118862.41	0.0019459	0.10037	22.153	0.00336	1.52696	3.1138
145	75.58803	198.28	12.422	112213.44	0.0019762	0.09859	20.402	0.00333	1.52108	2.9192
150	74.83886	195.12	12.167	105833.73	0.0020084	0.09678	18.821	0.00330	1.51518	2.7436
155	74.08479	191.91	11.911	99714.52	0.0020427	0.09494	17.393	0.00327	1.50926	2.5854
160	73.32535	188.65	11.656	93847.23	0.0020792	0.09308	16.103	0.00324	1.50331	2.4430
165	72.55999	185.34	11.401	88223.52	0.0021183	0.09120	14.937	0.00320	1.49734	2.3149
170	71.78811	181.96	11.149	82835.25	0.0021601	0.08930	13.884	0.00316	1.49132	2.2000
175	71.00905	178.53	10.899	77674.54	0.0022050	0.08739	12.932	0.00313	1.48527	2.0971
180	70.22210	175.03	10.652	72733.72	0.0022533	0.08547	12.071	0.00309	1.47917	2.0052
185	69.42645	171.46	10.409	68005.39	0.0023054	0.08354	11.292	0.00304	1.47302	1.9235
190	68.62122	167.83	10.171	63482.42	0.0023615	0.08161	10.587	0.00300	1.46682	1.8512
195	67.80543	164.13	9.937	59157.96	0.0024229	0.07967	9.948	0.00295	1.46055	1.7875
200	66.97801	160.35	9.710	55025.48	0.0024893	0.07773	9.370	0.00291	1.45420	1.7320
205	66.13776	156.49	9.489	51078.77	0.0025615	0.07579	8.845	0.00286	1.44778	1.6841
210	65.28337	152.55	9.275	47311.97	0.0026406	0.07385	8.369	0.00281	1.44127	1.6433
215	64.41336	148.54	9.069	43719.63	0.0027272	0.07192	7.936	0.00276	1.43467	1.6092
220	63.52611	144.44	8.871	40296.74	0.0028223	0.06998	7.542	0.00270	1.42795	1.5816
225	62.61983	140.27	8.681	37038.73	0.0029270	0.06805	7.184	0.00265	1.42111	1.5602
230	61.69252	136.04	8.498	33941.63	0.0030427	0.06613	6.857	0.00259	1.41413	1.5450
235	60.74136	133.22	8.313	30827.65	0.0031644	0.06421	6.557	0.00251	1.40700	1.5500
240	59.76555	129.10	7.794	27981.15	0.0033179	0.06229	6.284	0.00243	1.39970	1.5555
245	58.76179	125.01	7.542	25370.68	0.0034596	0.06139	6.032	0.00238	1.39223	1.5554
250	57.72921	120.92	7.333	22920.69	0.0036329	0.05850	5.823	0.00231	1.38456	1.5742
255	56.66580	116.74	7.096	20608.81	0.0038130	0.05662	5.646	0.00224	1.37670	1.5981
260	55.56719	112.66	6.893	18449.96	0.0040343	0.05475	5.469	0.00217	1.36861	1.6344
265	54.43028	108.55	6.646	16456.08	0.0042506	0.05290	5.291	0.00211	1.36027	1.6616
270	53.25414	104.34	6.387	14572.09	0.0044952	0.05107	5.114	0.00204	1.35168	1.6908
275	52.03396	100.27	6.170	12830.50	0.0048027	0.04926	4.936	0.00197	1.34281	1.7371
280	50.76901	95.85	5.849	11228.97	0.0050603	0.04747	4.758	0.00193	1.33365	1.7498
285	49.43492	91.96	5.677	9761.58	0.0054869	0.04569	4.577	0.00183	1.32404	1.8196
290	48.04897	88.53	5.324	8429.76	0.0058991	0.04394	4.396	0.00175	1.31410	1.8812
295	46.60022	84.33	5.101	7236.48	0.0063523	0.04221	4.216	0.00169	1.30377	1.9259
300	45.08456	80.47	4.886	6181.79	0.0068796	0.04084	4.035	0.00164	1.29301	1.9692
310	41.85390	73.36	4.441	4479.24	0.0080182	0.03827	3.678	0.00155	1.27038	2.0346
320	38.41132	67.45	4.056	3291.54	0.0091240	0.03579	3.335	0.00151	1.24639	2.0648
330	34.91408	63.22	3.746	2534.75	0.0098606	0.03342	3.026	0.00153	1.22241	2.0361
340	31.58696	60.81	3.509	2098.75	0.0100125	0.03121	2.766	0.00162	1.19991	1.9423
350	28.62936	60.14	3.346	1873.96	0.0095659	0.02926	2.560	0.00178	1.18012	1.8118
360	26.11763	60.71	3.224	1772.17	0.0087689	0.02762	2.404	0.00199	1.16349	1.6685
370	24.03245	62.10	3.133	1735.53	0.0078912	0.02623	2.289	0.00223	1.14982	1.5396
380	22.29974	63.98	3.059	1729.69	0.0070763	0.02513	2.203	0.00249	1.13854	1.4288
390	20.84879	66.25	3.011	1739.38	0.0063969	0.02429	2.138	0.00275	1.12915	1.3430
400	19.61740	68.68	2.959	1757.09	0.0057890	0.02361	2.089	0.00303	1.12122	1.2663
410	18.56055	71.28	2.927	1777.90	0.0053008	0.02310	2.052	0.00329	1.11445	1.2082
420	17.64130	73.95	2.891	1799.83	0.0048713	0.02269	2.023	0.00357	1.10858	1.1566
430	16.83311	76.67	2.866	1821.29	0.0045172	0.02237	2.002	0.00384	1.10344	1.1157
440	16.11824	79.36	2.826	1839.51	0.0041917	0.02211	1.985	0.00412	1.09890	1.0756
450	15.47647	82.05	2.811	1856.26	0.0039400	0.02192	1.973	0.00438	1.09484	1.0477
460	14.89760	84.77	2.787	1873.08	0.0037025	0.02177	1.965	0.00466	1.09119	1.0197
470	14.37087	87.48	2.767	1888.76	0.0034948	0.02166	1.959	0.00493	1.08787	0.9955
480	13.88977	90.15	2.756	1903.58	0.0033187	0.02159	1.956	0.00520	1.08485	0.9758
490	13.44756	92.81	2.741	1917.27	0.0031538	0.02153	1.955	0.00547	1.08207	0.9564
500	13.04196	95.31	2.730	1925.54	0.0030168	0.02151	1.955	0.00574	1.07953	0.9408
510	12.66276	97.93	2.722	1937.70	0.0028867	0.02143	1.957	0.00599	1.07716	0.9293
520	12.30980	100.54	2.715	1948.97	0.0027692	0.02147	1.960	0.00626	1.07496	0.9150
530	11.98009	103.13	2.708	1959.44	0.0026624	0.02152	1.964	0.00654	1.07290	0.9022
540	11.67112	105.71	2.702	1969.17	0.0025649	0.02158	1.969	0.00682	1.07098	0.8907
550	11.38073	108.28	2.697	1978.26	0.0024755	0.02165	1.975	0.00710	1.06917	0.8803
560	11.10708	110.84	2.692	1986.75	0.0023933	0.02172	1.981	0.00737	1.06747	0.8710
570	10.84858	113.40	2.687	1994.71	0.0023174	0.02181	1.988	0.00765	1.06587	0.8626
580	10.60384	115.95	2.683	2002.19	0.0022471	0.02190	1.996	0.00793	1.06435	0.8550
590	10.37164	118.50	2.678	2009.23	0.0021817	0.02200	2.004	0.00820	1.06291	0.8482
600	10.15094	121.05	2.674	2015.89	0.0021208	0.02210	2.013	0.00848	1.06154	0.8420

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

2200 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	C_P	VELOCITY OF SOUND FT/SEC
* 100.933	0.01218	2225.14	319.0	-82.864	-77.904	0.50460	0.267	0.394	3899
105	0.01226	2150.27	308.9	-81.299	-76.303	0.52015	0.264	0.393	3856
110	0.01237	2060.66	296.8	-79.377	-74.337	0.53844	0.260	0.393	3801
115	0.01248	1973.68	285.1	-77.459	-72.373	0.55590	0.256	0.393	3745
120	0.01260	1889.28	273.8	-75.543	-70.411	0.57260	0.252	0.392	3689
125	0.01271	1807.40	262.9	-73.630	-68.451	0.58860	0.249	0.392	3631
130	0.01283	1727.99	252.3	-71.720	-66.492	0.60397	0.246	0.392	3573
135	0.01295	1650.99	242.1	-69.811	-64.534	0.61874	0.242	0.391	3514
140	0.01308	1576.34	232.2	-67.905	-62.577	0.63298	0.239	0.391	3454
145	0.01321	1503.99	222.7	-66.001	-60.621	0.64670	0.237	0.391	3394
150	0.01334	1433.88	213.6	-64.099	-58.665	0.65996	0.234	0.391	3333
155	0.01347	1365.95	204.7	-62.197	-56.709	0.67279	0.231	0.391	3271
160	0.01361	1300.16	196.2	-60.297	-54.753	0.68521	0.229	0.391	3209
165	0.01375	1236.45	188.0	-58.397	-52.795	0.69726	0.226	0.392	3147
170	0.01390	1174.77	180.1	-56.498	-50.836	0.70895	0.224	0.392	3085
175	0.01405	1115.06	172.4	-54.599	-48.875	0.72032	0.222	0.392	3023
180	0.01420	1057.28	165.1	-52.697	-46.912	0.73139	0.220	0.393	2960
185	0.01436	1001.37	158.0	-50.796	-44.945	0.74217	0.218	0.394	2898
190	0.01453	947.28	151.2	-48.892	-42.974	0.75268	0.215	0.395	2836
195	0.01470	894.97	144.7	-46.986	-40.998	0.76295	0.213	0.396	2774
200	0.01488	844.40	138.4	-45.077	-39.016	0.77299	0.211	0.397	2712
205	0.01506	795.52	132.3	-43.163	-37.028	0.78281	0.209	0.398	2651
210	0.01525	748.29	126.4	-41.245	-35.031	0.79243	0.207	0.400	2590
215	0.01546	702.68	120.8	-39.321	-33.025	0.80186	0.205	0.402	2529
220	0.01567	658.66	115.4	-37.390	-31.008	0.81115	0.202	0.404	2470
225	0.01589	616.19	110.1	-35.451	-28.979	0.82026	0.200	0.407	2410
230	0.01612	575.26	105.0	-33.502	-26.936	0.82924	0.197	0.410	2352
235	0.01636	533.16	99.3	-31.520	-24.855	0.83819	0.201	0.416	2263
240	0.01662	494.00	94.7	-29.524	-22.755	0.84703	0.200	0.422	2200
245	0.01689	457.73	89.8	-27.510	-20.630	0.85579	0.198	0.426	2134
250	0.01718	423.21	85.4	-25.478	-18.480	0.86448	0.197	0.432	2074
255	0.01748	390.15	80.7	-23.429	-16.306	0.87309	0.196	0.437	2008
260	0.01781	358.60	76.8	-21.360	-14.105	0.88164	0.195	0.446	1951
265	0.01816	329.22	72.2	-19.268	-11.870	0.89016	0.194	0.450	1883
270	0.01854	300.76	68.0	-17.155	-9.604	0.89863	0.193	0.457	1817
275	0.01894	273.89	64.2	-15.016	-7.301	0.90708	0.192	0.467	1757
280	0.01937	248.85	59.4	-12.852	-4.960	0.91551	0.191	0.468	1679
285	0.01985	224.89	56.4	-10.643	-2.557	0.92482	0.191	0.484	1627
290	0.02036	202.80	52.6	-8.398	-0.103	0.93256	0.194	0.498	1553
295	0.02093	182.38	49.0	-6.111	2.414	0.94116	0.193	0.508	1492
300	0.02154	163.74	45.7	-3.788	4.988	0.94981	0.192	0.521	1434
310	0.02297	132.01	39.3	0.968	10.326	0.96732	0.192	0.546	1319
320	0.02470	106.03	33.5	5.844	15.907	0.98503	0.192	0.568	1218
330	0.02676	91.60	28.5	10.756	21.659	1.00273	0.191	0.579	1136
340	0.02915	81.71	24.3	15.578	27.453	1.02003	0.189	0.576	1074
350	0.03180	77.14	20.9	20.190	33.143	1.03653	0.187	0.559	1034
360	0.03460	76.51	18.2	24.499	38.595	1.05189	0.185	0.530	1009
370	0.03746	78.63	16.0	28.471	43.732	1.06597	0.183	0.497	996
380	0.04031	82.39	14.3	32.121	48.543	1.07880	0.180	0.464	991
390	0.04310	87.10	13.0	35.487	53.047	1.09050	0.178	0.437	995
400	0.04583	92.42	11.8	38.616	57.287	1.10124	0.176	0.411	1000
410	0.04848	98.10	10.9	41.545	61.296	1.11114	0.174	0.391	1009
420	0.05106	103.97	10.1	44.309	65.110	1.12033	0.173	0.373	1020
430	0.05357	109.92	9.5	46.936	68.758	1.12892	0.171	0.358	1031
440	0.05599	115.71	8.8	49.442	72.252	1.13695	0.170	0.342	1039
450	0.05836	121.39	8.4	51.852	75.627	1.14454	0.169	0.332	1052
460	0.06068	127.09	7.9	54.181	78.900	1.15174	0.168	0.323	1064
470	0.06295	132.73	7.5	56.439	82.083	1.15858	0.167	0.314	1075
480	0.06518	138.31	7.2	58.635	85.187	1.16512	0.166	0.307	1089
490	0.06736	143.82	6.9	60.776	88.219	1.17137	0.165	0.300	1101
500	0.06951	149.26	6.6	62.868	91.187	1.17737	0.164	0.294	1115
510	0.07163	154.60	6.3	64.915	94.096	1.18313	0.163	0.288	1126
520	0.07371	159.86	6.1	66.922	96.952	1.18868	0.162	0.283	1139
530	0.07576	164.61	5.9	68.893	99.757	1.19403	0.161	0.280	1151
540	0.07780	169.84	5.7	70.837	102.533	1.19921	0.160	0.276	1164
550	0.07982	175.02	5.5	72.754	105.272	1.20424	0.159	0.272	1177
560	0.08182	180.15	5.4	74.646	107.980	1.20912	0.159	0.269	1190
570	0.08380	185.22	5.2	76.517	110.658	1.21386	0.158	0.266	1202
580	0.08577	190.26	5.1	78.369	113.310	1.21847	0.158	0.264	1215
590	0.08772	195.25	4.9	80.203	115.938	1.22296	0.157	0.262	1227
600	0.08965	200.21	4.8	82.021	118.545	1.22735	0.157	0.260	1240

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

2200 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 100.933	82.12901	225.55	14.548	182748.77	0.0017458	0.11280	44.761	0.00349	1.57321	5.6248
105	81.54528	223.30	14.369	175344.03	0.0017617	0.11172	41.524	0.00348	1.56851	5.2634
110	80.82605	220.50	14.143	166554.69	0.0017821	0.11033	37.898	0.00347	1.56273	4.8593
115	80.10483	217.68	13.910	158101.31	0.0018034	0.10886	34.627	0.00346	1.55695	4.4951
120	79.38140	214.82	13.672	149973.81	0.0018257	0.10733	31.675	0.00345	1.55117	4.1667
125	78.65552	211.93	13.430	142162.30	0.0018491	0.10574	29.011	0.00343	1.54538	3.8704
130	77.92692	209.01	13.184	134657.07	0.0018737	0.10411	26.606	0.00341	1.53959	3.6030
135	77.19533	206.04	12.935	127448.58	0.0018996	0.10242	24.435	0.00339	1.53378	3.3615
140	76.46043	203.03	12.683	120527.48	0.0019269	0.10070	22.475	0.00337	1.52797	3.1436
145	75.72188	199.98	12.430	113884.60	0.0019556	0.09894	20.705	0.00334	1.52214	2.9468
150	74.97930	196.89	12.175	107510.96	0.0019865	0.09715	19.107	0.00331	1.51629	2.7692
155	74.23229	193.74	11.921	101397.78	0.0020198	0.09533	17.663	0.00328	1.51042	2.6091
160	73.48039	190.55	11.667	95536.49	0.0020536	0.09349	16.358	0.00325	1.50453	2.4648
165	72.72310	187.30	11.414	89918.73	0.0020906	0.09163	15.178	0.00322	1.49861	2.3350
170	71.95988	184.00	11.164	84536.35	0.0021300	0.08976	14.112	0.00318	1.49266	2.2183
175	71.19014	180.64	10.916	79381.43	0.0021723	0.08787	13.147	0.00315	1.48667	2.1136
180	70.41321	177.22	10.672	74446.30	0.0022176	0.08597	12.275	0.00311	1.48065	2.0200
185	69.62838	173.73	10.433	69723.52	0.0022664	0.08407	11.485	0.00307	1.47458	1.9365
190	68.83485	170.18	10.198	65205.94	0.0023191	0.08216	10.770	0.00302	1.46846	1.8624
195	68.03175	166.56	9.969	60886.65	0.0023759	0.08025	10.122	0.00298	1.46228	1.7970
200	67.21812	162.87	9.746	56759.08	0.0024376	0.07834	9.535	0.00294	1.45604	1.7396
205	66.39290	159.10	9.531	52816.95	0.0025045	0.07643	9.002	0.00289	1.44973	1.6897
210	65.55493	155.26	9.323	49054.32	0.0025773	0.07452	8.519	0.00284	1.44334	1.6468
215	64.70293	151.34	9.124	45465.65	0.0026567	0.07261	8.079	0.00279	1.43686	1.6105
220	63.83549	147.34	8.934	42045.77	0.0027435	0.07071	7.679	0.00274	1.43029	1.5805
225	62.95107	143.27	8.753	38789.95	0.0028386	0.06881	7.315	0.00269	1.42360	1.5565
230	62.04796	139.14	8.581	35693.99	0.0029430	0.06692	6.983	0.00263	1.41680	1.5383
235	61.12577	136.58	8.096	32589.99	0.0030484	0.06504	6.680	0.00256	1.40988	1.5394
240	60.18134	132.61	7.878	29729.39	0.0031839	0.06317	6.402	0.00249	1.40281	1.5406
245	59.21158	128.70	7.640	27102.69	0.0033123	0.06130	6.148	0.00243	1.39557	1.5389
250	58.21697	124.78	7.438	24638.08	0.0034648	0.05945	5.914	0.00236	1.38818	1.5482
255	57.19656	120.76	7.206	22315.49	0.0036164	0.05762	5.741	0.00231	1.38062	1.5664
260	56.14655	116.89	7.032	20134.34	0.0038164	0.05580	5.569	0.00223	1.37288	1.6027
265	55.06388	112.95	6.775	18128.38	0.0039835	0.05400	5.397	0.00218	1.36492	1.6189
270	53.95088	108.99	5.538	16226.62	0.0041891	0.05223	5.226	0.00212	1.35677	1.6447
275	52.80298	105.16	5.337	14461.96	0.0044412	0.05048	5.056	0.00205	1.34840	1.6839
280	51.62177	101.04	5.021	12845.72	0.0046276	0.04876	4.886	0.00202	1.33981	1.6865
285	50.38296	97.36	5.871	11330.51	0.0049755	0.04705	4.714	0.00193	1.33086	1.7472
290	49.10792	94.26	5.525	9959.03	0.0052848	0.04538	4.544	0.00186	1.32169	1.7956
295	47.78687	90.31	5.322	8715.15	0.0056259	0.04374	4.374	0.00180	1.31223	1.8293
300	46.41707	86.66	5.119	7600.14	0.0060114	0.04213	4.205	0.00174	1.30246	1.8720
310	43.53321	79.91	4.698	5746.93	0.0068366	0.03964	3.872	0.00167	1.28207	1.9212
320	40.48650	74.07	4.321	4373.67	0.0076657	0.03726	3.552	0.00162	1.26076	1.9487
330	37.36512	69.50	4.005	3422.62	0.0083314	0.03501	3.257	0.00162	1.23918	1.9392
340	34.30640	66.40	3.751	2803.24	0.0086725	0.03293	2.997	0.00167	1.21828	1.8866
350	31.45104	64.79	3.559	2426.05	0.0086253	0.03106	2.779	0.00177	1.19898	1.8004
360	28.90170	64.43	3.410	2211.14	0.0082336	0.02941	2.605	0.00192	1.18193	1.6914
370	26.69392	65.06	3.294	2098.86	0.0076462	0.02796	2.469	0.00211	1.16729	1.5819
380	24.80748	66.33	3.198	2043.91	0.0069983	0.02675	2.364	0.00232	1.15489	1.4771
390	23.19960	68.12	3.135	2020.79	0.0064126	0.02579	2.284	0.00255	1.14438	1.3922
400	21.81913	70.19	3.074	2016.62	0.0058615	0.02501	2.221	0.00279	1.13542	1.3151
410	20.62641	72.52	3.032	2023.49	0.0053924	0.02440	2.172	0.00302	1.12771	1.2534
420	19.58522	74.98	2.993	2036.35	0.0049763	0.02390	2.134	0.00327	1.12101	1.1996
430	18.66863	77.54	2.961	2052.12	0.0046185	0.02350	2.104	0.00351	1.11514	1.1546
440	17.86006	80.10	2.907	2066.52	0.0042744	0.02316	2.081	0.00379	1.10997	1.1078
450	17.13517	82.68	2.888	2080.00	0.0040180	0.02291	2.064	0.00402	1.10536	1.0772
460	16.48079	85.30	2.864	2094.50	0.0037811	0.02271	2.050	0.00427	1.10120	1.0481
470	15.88600	87.93	2.842	2108.49	0.0035696	0.02255	2.040	0.00452	1.09743	1.0221
480	15.34315	90.55	2.828	2122.15	0.0033876	0.02244	2.033	0.00477	1.09400	1.0005
490	14.84486	93.16	2.810	2135.03	0.0032170	0.02234	2.028	0.00502	1.09086	0.9792
500	14.38558	95.73	2.801	2147.13	0.0030710	0.02228	2.025	0.00527	1.08796	0.9618
510	13.96073	98.30	2.784	2158.37	0.0029291	0.02217	2.024	0.00552	1.08529	0.9464
520	13.56592	100.79	2.779	2168.65	0.0028104	0.02218	2.025	0.00577	1.08282	0.9308
530	13.19926	103.11	2.775	2178.74	0.0027110	0.02221	2.026	0.00602	1.08052	0.9183
540	12.85283	105.64	2.770	2182.98	0.0026099	0.02224	2.029	0.00628	1.07835	0.9055
550	12.52759	108.17	2.765	2192.60	0.0025174	0.02229	2.033	0.00653	1.07632	0.8941
560	12.22143	110.68	2.761	2201.65	0.0024323	0.02235	2.038	0.00679	1.07441	0.8837
570	11.93250	113.20	2.757	2210.19	0.0023538	0.02241	2.043	0.00705	1.07261	0.8744
580	11.65920	115.71	2.753	2218.26	0.0022812	0.02249	2.049	0.00731	1.07090	0.8660
590	11.40014	118.22	2.750	2225.90	0.0022137	0.02257	2.056	0.00756	1.06929	0.8584
600	11.15409	120.73	2.747	2233.16	0.0021509	0.02265	2.063	0.00782	1.06776	0.8515

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

2400 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_V BTU / LB -R	C_P	VELOCITY OF SOUND FT/SEC
* 101.211	0.01217	2237.17	319.1	-82.831	-77.423	0.50490	0.267	0.393	3907
105	0.01225	2167.64	309.7	-81.376	-75.933	0.51935	0.264	0.393	3867
110	0.01236	2078.25	297.6	-79.460	-73.969	0.53763	0.260	0.393	3813
115	0.01247	1991.51	286.0	-77.547	-72.007	0.55507	0.256	0.392	3758
120	0.01258	1907.34	274.7	-75.638	-70.047	0.57175	0.253	0.392	3702
125	0.01270	1825.70	263.7	-73.731	-68.089	0.58774	0.249	0.391	3645
130	0.01281	1746.53	253.2	-71.827	-66.132	0.60308	0.246	0.391	3587
135	0.01293	1669.78	243.0	-69.925	-64.177	0.61784	0.243	0.391	3528
140	0.01306	1595.38	233.2	-68.026	-62.223	0.63205	0.240	0.391	3469
145	0.01318	1523.29	223.7	-66.129	-60.270	0.64575	0.237	0.390	3409
150	0.01331	1453.44	214.6	-64.234	-58.318	0.65899	0.234	0.390	3348
155	0.01344	1385.79	205.7	-62.341	-56.366	0.67179	0.232	0.390	3288
160	0.01358	1320.27	197.2	-60.449	-54.414	0.68418	0.229	0.390	3227
165	0.01372	1256.84	189.1	-58.559	-52.461	0.69620	0.227	0.391	3165
170	0.01386	1195.45	181.2	-56.669	-50.507	0.70787	0.225	0.391	3104
175	0.01401	1136.03	173.6	-54.779	-48.552	0.71920	0.222	0.391	3042
180	0.01416	1078.54	166.3	-52.889	-46.595	0.73023	0.220	0.392	2981
185	0.01432	1022.94	159.2	-50.999	-44.635	0.74097	0.218	0.392	2919
190	0.01448	969.16	152.5	-49.108	-42.671	0.75145	0.216	0.393	2858
195	0.01465	917.17	146.0	-47.215	-40.704	0.76167	0.214	0.394	2798
200	0.01483	866.92	139.7	-45.320	-38.732	0.77166	0.212	0.395	2737
205	0.01501	818.37	133.7	-43.422	-36.754	0.78143	0.210	0.396	2677
210	0.01519	771.48	127.9	-41.521	-34.769	0.79100	0.207	0.398	2618
215	0.01539	726.21	122.3	-39.615	-32.776	0.80038	0.205	0.399	2559
220	0.01559	682.52	116.9	-37.704	-30.774	0.80958	0.203	0.401	2501
225	0.01581	640.40	111.7	-35.786	-28.762	0.81862	0.200	0.403	2444
230	0.01603	599.81	106.8	-33.861	-26.737	0.82751	0.198	0.406	2388
235	0.01626	560.32	101.1	-31.905	-24.678	0.83637	0.201	0.412	2301
240	0.01651	519.42	96.4	-29.939	-22.603	0.84511	0.200	0.417	2239
245	0.01677	483.23	91.7	-27.956	-20.504	0.85376	0.199	0.421	2176
250	0.01704	448.83	87.4	-25.958	-18.384	0.86233	0.198	0.426	2118
255	0.01733	416.03	82.7	-23.947	-16.243	0.87081	0.196	0.430	2054
260	0.01764	384.47	79.1	-21.920	-14.080	0.87921	0.195	0.439	2002
265	0.01797	355.32	74.3	-19.873	-11.886	0.88757	0.194	0.440	1934
270	0.01832	327.08	70.3	-17.811	-9.670	0.89586	0.193	0.446	1872
275	0.01869	300.33	66.7	-15.730	-7.423	0.90410	0.192	0.455	1816
280	0.01909	275.66	61.9	-13.630	-5.146	0.91231	0.191	0.454	1742
285	0.01952	251.41	59.0	-11.494	-2.818	0.92055	0.191	0.469	1693
290	0.01999	229.28	55.3	-9.331	-0.449	0.92879	0.194	0.480	1621
295	0.02049	208.66	51.8	-7.135	1.970	0.93706	0.192	0.487	1565
300	0.02103	189.66	48.5	-4.914	4.432	0.94533	0.192	0.497	1509
310	0.02226	156.73	42.3	-0.394	9.499	0.96195	0.191	0.516	1399
320	0.02372	130.76	36.6	4.217	14.757	0.97864	0.191	0.533	1300
330	0.02542	111.77	31.7	8.858	20.155	0.99525	0.190	0.544	1218
340	0.02737	98.98	27.4	13.451	25.617	1.01156	0.188	0.546	1152
350	0.02955	91.38	23.8	17.906	31.041	1.02728	0.187	0.537	1104
360	0.03190	87.89	20.8	22.150	36.328	1.04218	0.185	0.519	1070
370	0.03435	87.61	18.4	26.137	41.405	1.05609	0.183	0.496	1049
380	0.03685	89.53	16.4	29.855	46.229	1.06896	0.181	0.468	1037
390	0.03933	92.87	14.8	33.313	50.791	1.08081	0.179	0.444	1033
400	0.04178	97.11	13.5	36.545	55.114	1.09176	0.177	0.421	1034
410	0.04419	101.99	12.5	39.580	59.219	1.10198	0.175	0.401	1040
420	0.04655	107.27	11.6	42.446	63.135	1.11133	0.174	0.383	1048
430	0.04886	112.81	10.8	45.169	66.883	1.12016	0.172	0.368	1057
440	0.05110	118.37	10.0	47.761	70.470	1.12840	0.171	0.351	1061
450	0.05328	123.87	9.4	50.249	73.929	1.13618	0.170	0.340	1073
460	0.05543	129.41	8.9	52.649	77.283	1.14355	0.168	0.330	1084
470	0.05753	134.92	8.5	54.973	80.542	1.15056	0.167	0.321	1095
480	0.05960	140.40	8.1	57.229	83.716	1.15725	0.166	0.314	1108
490	0.06163	145.84	7.7	59.426	86.814	1.16364	0.165	0.306	1119
500	0.06362	151.22	7.4	61.568	89.844	1.16976	0.164	0.300	1131
510	0.06559	156.55	7.1	63.663	92.811	1.17564	0.163	0.294	1142
520	0.06752	161.81	6.8	65.714	95.722	1.18129	0.162	0.289	1155
530	0.06944	167.00	6.6	67.726	98.584	1.18674	0.161	0.284	1164
540	0.07133	172.16	6.4	69.701	101.401	1.19201	0.160	0.280	1181
550	0.07319	177.25	6.1	71.643	104.171	1.19709	0.159	0.275	1191
560	0.07504	181.80	6.0	73.554	106.902	1.20202	0.158	0.273	1205
570	0.07688	186.94	5.8	75.449	109.615	1.20682	0.158	0.270	1218
580	0.07871	192.05	5.6	77.323	112.300	1.21149	0.157	0.267	1230
590	0.08052	197.11	5.5	79.176	114.959	1.21603	0.156	0.265	1243
600	0.08232	202.15	5.3	81.013	117.595	1.22046	0.156	0.262	1255

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

2400 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC $\times 10^4$	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 101.211	82.17885	226.65	14.540	183847.77	0.0017358	0.11291	45.052	0.00349	1.57361	5.6512
105	81.43791	224.58	14.372	176961.43	0.0017502	0.11192	42.021	0.00349	1.56925	5.3127
110	80.92270	221.83	14.146	168177.80	0.0017698	0.11054	38.365	0.00348	1.56351	4.9052
115	80.20571	219.05	13.914	159730.12	0.0017902	0.10909	35.066	0.00347	1.55776	4.5379
120	79.48676	216.25	13.676	151608.33	0.0018117	0.10758	32.088	0.00345	1.55201	4.2066
125	78.76562	213.41	13.434	143802.52	0.0018341	0.10601	29.399	0.00344	1.54626	3.9076
130	78.04205	210.53	13.189	136302.97	0.0018576	0.10439	26.972	0.00342	1.54050	3.6376
135	77.31578	207.62	12.940	129100.14	0.0018824	0.10273	24.779	0.00340	1.53474	3.3938
140	76.58655	204.67	12.689	122184.66	0.0019085	0.10102	22.799	0.00338	1.52896	3.1736
145	75.85401	201.67	12.436	115547.36	0.0019361	0.09928	21.011	0.00335	1.52318	2.9747
150	75.11784	198.64	12.183	109179.24	0.0019652	0.09751	19.395	0.00333	1.51738	2.7952
155	74.37765	195.56	11.930	103071.53	0.0019961	0.09571	17.934	0.00330	1.51156	2.6331
160	73.63303	192.43	11.678	97215.62	0.0020289	0.09390	16.614	0.00327	1.50572	2.4870
165	72.88353	189.25	11.427	91603.14	0.0020639	0.09206	15.421	0.00323	1.49986	2.3553
170	72.12864	186.01	11.178	86225.92	0.0021011	0.09021	14.341	0.00320	1.49397	2.2369
175	71.36783	182.72	10.933	81076.03	0.0021409	0.08834	13.364	0.00316	1.48805	2.1305
180	70.60050	179.38	10.692	76145.76	0.0021836	0.08647	12.480	0.00313	1.48210	2.0352
185	69.82598	175.97	10.455	71427.65	0.0022294	0.08459	11.680	0.00309	1.47611	1.9500
190	69.04357	172.49	10.223	66914.50	0.0022786	0.08270	10.955	0.00305	1.47007	1.8742
195	68.25249	168.95	9.998	62599.37	0.0023317	0.08082	10.297	0.00301	1.46398	1.8070
200	67.45186	165.34	9.780	58475.62	0.0023890	0.07893	9.701	0.00296	1.45783	1.7478
205	66.64076	161.66	9.570	54536.91	0.0024510	0.07704	9.161	0.00292	1.45163	1.6960
210	65.81814	157.90	9.368	50777.23	0.0025183	0.07516	8.669	0.00287	1.44535	1.6512
215	64.98288	154.07	9.175	47190.91	0.0025914	0.07328	8.223	0.00282	1.43899	1.6128
220	64.13375	150.16	8.993	43772.67	0.0026710	0.07141	7.817	0.00278	1.43255	1.5805
225	63.26941	146.18	8.821	40517.63	0.0027578	0.06954	7.447	0.00273	1.42601	1.5541
230	62.38839	142.15	8.659	37421.35	0.0028527	0.06768	7.109	0.00268	1.41936	1.5333
235	61.49228	138.03	8.174	34332.21	0.0029438	0.06584	6.802	0.00260	1.41263	1.5309
240	60.57611	136.01	7.955	31464.18	0.0030635	0.06401	6.520	0.00254	1.40576	1.5281
245	59.63675	132.25	7.731	28818.40	0.0031815	0.06218	6.262	0.00248	1.39874	1.5254
250	58.67575	128.49	7.536	26335.73	0.0033174	0.06037	6.025	0.00241	1.39159	1.5314
255	57.69284	124.64	7.308	24001.75	0.0034467	0.05857	5.830	0.00236	1.38430	1.5393
260	56.68499	120.91	7.158	21793.96	0.0036298	0.05680	5.663	0.00228	1.37684	1.5753
265	55.64838	117.12	6.890	19773.19	0.0037596	0.05504	5.497	0.00225	1.36921	1.5829
270	54.58825	113.37	6.674	17853.65	0.0039364	0.05332	5.331	0.00219	1.36143	1.6064
275	53.49991	109.74	6.487	16067.77	0.0041483	0.05162	5.167	0.00212	1.35347	1.6403
280	52.38385	105.91	6.181	14439.92	0.0042898	0.04996	5.003	0.00210	1.34535	1.6381
285	51.22340	102.36	6.042	12877.94	0.0045791	0.04830	4.839	0.00201	1.33694	1.6905
290	50.03454	99.55	5.700	11472.06	0.0048185	0.04669	4.676	0.00195	1.32835	1.7296
295	48.81101	95.82	5.514	10184.97	0.0050863	0.04511	4.515	0.00190	1.31956	1.7560
300	47.55062	92.35	5.320	9018.55	0.0053814	0.04357	4.355	0.00184	1.31054	1.7883
310	44.92166	85.91	4.918	7040.56	0.0060066	0.04089	4.041	0.00176	1.29186	1.8357
320	42.16698	80.23	4.550	5513.62	0.0066456	0.03860	3.739	0.00172	1.27249	1.8591
330	39.33981	75.56	4.239	4396.90	0.0072025	0.03644	3.456	0.00170	1.25280	1.8583
340	36.53002	72.05	3.978	3615.57	0.0075709	0.03443	3.201	0.00173	1.23345	1.8260
350	33.83530	69.82	3.769	3091.74	0.0076959	0.03262	2.980	0.00179	1.21508	1.7675
360	31.34467	68.72	3.596	2754.94	0.0075570	0.03100	2.795	0.00190	1.19826	1.6858
370	29.10819	68.65	3.462	2550.26	0.0072196	0.02952	2.645	0.00205	1.18330	1.5986
380	27.14042	69.32	3.346	2429.99	0.0067569	0.02826	2.525	0.00222	1.17024	1.5068
390	25.42709	70.61	3.265	2361.46	0.0062865	0.02722	2.430	0.00241	1.15895	1.4264
400	23.93342	72.27	3.195	2324.13	0.0058218	0.02636	2.355	0.00262	1.14917	1.3529
410	22.62841	74.26	3.142	2307.82	0.0053988	0.02566	2.295	0.00283	1.14067	1.2907
420	21.48096	76.47	3.098	2304.21	0.0050151	0.02508	2.247	0.00305	1.13323	1.2366
430	20.46616	78.82	3.060	2308.77	0.0046706	0.02461	2.209	0.00327	1.12668	1.1895
440	19.57026	81.22	2.994	2316.57	0.0043212	0.02420	2.179	0.00352	1.12092	1.1377
450	18.76727	83.69	2.968	2324.79	0.0040638	0.02389	2.155	0.00374	1.11577	1.1043
460	18.04128	86.20	2.944	2334.69	0.0038321	0.02365	2.136	0.00397	1.11113	1.0745
470	17.38138	88.73	2.919	2345.66	0.0036206	0.02344	2.122	0.00420	1.10692	1.0468
480	16.77903	91.27	2.902	2355.84	0.0034366	0.02328	2.110	0.00442	1.10309	1.0235
490	16.22640	93.82	2.880	2366.46	0.0032624	0.02315	2.102	0.00466	1.09959	1.0005
500	15.71735	96.34	2.868	2376.74	0.0031145	0.02306	2.096	0.00489	1.09637	0.9818
510	15.24677	98.87	2.868	2386.81	0.0029694	0.02291	2.092	0.00512	1.09339	0.9651
520	14.80986	101.33	2.860	2396.34	0.0028473	0.02289	2.090	0.00536	1.09064	0.9482
530	14.40178	103.74	2.838	2405.65	0.0027402	0.02289	2.089	0.00559	1.08807	0.9339
540	14.01978	106.15	2.834	2413.66	0.0026376	0.02291	2.090	0.00584	1.08566	0.9195
550	13.66250	108.58	2.822	2418.94	0.0025381	0.02293	2.092	0.00610	1.08342	0.9041
560	13.32676	110.68	2.832	2422.83	0.0024658	0.02297	2.095	0.00632	1.08132	0.8958
570	13.00746	113.14	2.829	2431.66	0.0023854	0.02302	2.098	0.00656	1.07932	0.8856
580	12.70565	115.60	2.827	2440.07	0.0023109	0.02308	2.103	0.00680	1.07743	0.8764
590	12.41974	118.07	2.824	2448.10	0.0022418	0.02314	2.108	0.00704	1.07564	0.8680
600	12.14836	120.53	2.822	2455.77	0.0021775	0.02321	2.114	0.00728	1.07395	0.8605

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

2600 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 101.489	0.01216	2249.16	319.2	-82.797	-76.942	0.50520	0.367	0.393	3916
105	0.01224	2184.93	310.5	-81.453	-75.562	0.51456	0.264	0.393	3879
110	0.01234	2095.76	298.4	-79.542	-73.600	0.52682	0.261	0.392	3829
115	0.01245	2009.24	286.8	-77.635	-71.640	0.53925	0.257	0.392	3778
120	0.01256	1925.30	275.5	-75.731	-69.682	0.57091	0.253	0.391	3714
125	0.01268	1843.89	264.6	-73.833	-67.726	0.58688	0.25.	0.391	3655
130	0.01279	1764.96	254.1	-71.932	-65.772	0.60221	0.246	0.391	3600
135	0.01291	1688.44	243.9	-70.037	-63.820	0.61694	0.243	0.390	3542
140	0.01304	1614.29	234.1	-68.145	-61.869	0.63113	0.240	0.390	3483
145	0.01316	1542.45	224.7	-66.255	-59.919	0.64481	0.238	0.390	3424
150	0.01329	1472.85	215.5	-64.368	-57.970	0.65802	0.235	0.390	3364
155	0.01342	1405.46	206.7	-62.482	-56.022	0.67080	0.232	0.390	3304
160	0.01355	1340.21	198.3	-60.599	-54.073	0.68317	0.230	0.390	3243
165	0.01369	1277.04	190.1	-58.717	-52.125	0.69516	0.228	0.390	3183
170	0.01383	1215.92	182.3	-56.836	-50.176	0.70680	0.225	0.390	3122
175	0.01398	1156.78	174.7	-54.956	-48.226	0.71810	0.223	0.390	3062
180	0.01413	1099.58	167.4	-53.077	-46.275	0.72910	0.221	0.390	3001
185	0.01428	1044.26	160.4	-51.198	-44.322	0.73980	0.219	0.391	2941
190	0.01444	990.77	153.7	-49.318	-42.368	0.75024	0.217	0.392	2881
195	0.01461	939.08	147.2	-47.438	-40.408	0.76042	0.214	0.392	2821
200	0.01478	889.13	141.0	-45.556	-38.443	0.77038	0.212	0.393	2762
205	0.01495	840.88	135.0	-43.673	-36.475	0.78010	0.211	0.394	2703
210	0.01513	794.29	129.3	-41.787	-34.501	0.78960	0.208	0.395	2645
215	0.01532	749.33	123.7	-39.898	-32.520	0.79892	0.206	0.397	2588
220	0.01552	705.96	118.4	-38.006	-30.532	0.80806	0.203	0.398	2532
225	0.01573	664.14	113.3	-36.108	-28.535	0.81703	0.201	0.400	2477
230	0.01595	623.86	108.4	-34.205	-26.528	0.82585	0.198	0.402	2422
235	0.01617	585.02	102.7	-32.273	-24.488	0.83462	0.221	0.407	2337
240	0.01641	544.48	98.1	-30.334	-22.435	0.84327	0.200	0.412	2277
245	0.01666	508.33	93.5	-28.379	-20.360	0.85182	0.199	0.416	2217
250	0.01692	473.97	89.3	-26.412	-18.267	0.86028	0.196	0.421	2160
255	0.01719	441.38	84.7	-24.433	-16.155	0.86865	0.197	0.423	2098
260	0.01749	409.73	81.2	-22.443	-14.024	0.87692	0.195	0.432	2050
265	0.01780	380.73	76.4	-20.435	-11.867	0.88514	0.194	0.432	1981
270	0.01812	352.66	72.5	-18.418	-9.692	0.89327	0.193	0.438	1924
275	0.01847	326.04	68.9	-16.386	-7.493	0.90135	0.192	0.445	1871
280	0.01884	301.70	64.3	-14.338	-5.267	0.90937	0.191	0.444	1801
285	0.01924	277.15	61.4	-12.264	-3.002	0.91739	0.191	0.456	1753
290	0.01966	255.00	57.7	-10.166	-0.700	0.92539	0.194	0.465	1684
295	0.02011	234.24	54.4	-8.043	1.641	0.93339	0.192	0.471	1633
300	0.02060	214.95	51.1	-5.903	4.015	0.94137	0.192	0.478	1577
310	0.02169	181.09	45.0	-1.566	8.876	0.95731	0.191	0.493	1471
320	0.02295	153.58	39.5	2.833	13.887	0.97322	0.191	0.507	1376
330	0.02440	132.52	34.6	7.270	19.018	0.98901	0.189	0.517	1295
340	0.02605	117.39	30.2	11.669	24.211	1.00451	0.188	0.520	1227
350	0.02789	107.29	26.5	15.971	29.398	1.01955	0.186	0.516	1174
360	0.02988	101.33	23.3	20.115	34.503	1.03393	0.185	0.504	1133
370	0.03199	98.75	20.7	24.068	39.469	1.04754	0.183	0.488	1105
380	0.03416	98.74	18.6	27.800	44.248	1.06029	0.181	0.467	1087
390	0.03636	100.58	16.8	31.308	48.816	1.07215	0.179	0.446	1077
400	0.03857	103.58	15.3	34.607	53.174	1.08319	0.177	0.426	1073
410	0.04075	107.46	14.0	37.718	57.337	1.09347	0.176	0.407	1074
420	0.04290	111.93	13.0	40.666	61.322	1.10308	0.174	0.391	1078
430	0.04503	116.86	12.1	43.468	65.146	1.11208	0.173	0.376	1085
440	0.04709	122.09	11.2	46.137	68.810	1.12050	0.172	0.358	1087
450	0.04911	127.37	10.6	48.696	72.342	1.12844	0.170	0.347	1097
460	0.05110	132.66	10.0	51.162	75.765	1.13597	0.169	0.337	1107
470	0.05306	137.98	9.5	53.546	79.090	1.14312	0.168	0.328	1117
480	0.05498	143.30	9.0	55.859	82.326	1.14993	0.167	0.320	1126
490	0.05687	148.61	8.6	58.106	85.484	1.15645	0.166	0.312	1128
500	0.05872	153.89	8.2	60.297	88.570	1.16268	0.165	0.306	1151
510	0.06055	159.15	7.9	62.437	91.590	1.16866	0.164	0.299	1160
520	0.06236	164.36	7.6	64.529	94.551	1.17441	0.163	0.294	1172
530	0.06414	169.49	7.3	66.580	97.460	1.17996	0.162	0.289	1184
540	0.06590	174.56	7.1	68.593	100.322	1.18531	0.161	0.284	1196
550	0.06764	179.46	6.8	70.567	103.131	1.19046	0.160	0.279	1206
560	0.06936	184.32	6.6	72.509	105.901	1.19546	0.159	0.275	1217
570	0.07106	189.10	6.4	74.421	108.634	1.20029	0.158	0.272	1229
580	0.07276	193.82	6.2	76.303	111.333	1.20499	0.157	0.269	1241
590	0.07444	198.50	6.0	78.160	114.000	1.20955	0.156	0.266	1253
600	0.07615	204.39	5.9	80.015	116.676	1.21405	0.155	0.265	1272

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

2600 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(DH/DV)_p$ BTU/LB	$V(DP/DU)_v$ PSIA-CU FT/BTU	$-V(DP/DV)_T$ PSIA	$(DV/DT)_p/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 101.489	82.22849	227.74	14.531	184944.68	0.0017260	0.11302	45.344	0.00350	1.57401	5.6776
105	81.72981	225.86	14.375	178573.74	0.0017388	0.11211	42.521	0.00349	1.56999	5.3623
110	81.01853	223.15	14.149	169795.51	0.0017577	0.11075	38.835	0.00349	1.56428	4.9514
115	80.30569	220.42	13.917	161353.22	0.0017774	0.10932	35.507	0.00347	1.55856	4.5810
120	79.59112	217.65	13.680	153236.78	0.0017979	0.10783	32.503	0.00346	1.55285	4.2468
125	78.87462	214.87	13.438	145436.38	0.0018195	0.10627	29.794	0.00345	1.54713	3.9451
130	78.15598	212.04	13.193	137942.04	0.0018420	0.10467	27.339	0.00343	1.54141	3.6725
135	77.43498	209.18	12.945	130744.45	0.0018657	0.10303	25.126	0.00341	1.53568	3.4264
140	76.71117	206.29	12.694	123834.15	0.0018906	0.10134	23.126	0.00339	1.52995	3.2039
145	75.98449	203.35	12.443	117201.95	0.0019169	0.09962	21.318	0.00336	1.52421	3.0029
150	75.25453	200.37	12.190	110838.86	0.0019446	0.09787	19.685	0.00334	1.51845	2.8214
155	74.52096	197.35	11.938	104736.06	0.0019740	0.09609	18.206	0.00331	1.51268	2.6574
160	73.78338	194.29	11.687	98884.95	0.0020051	0.09429	16.872	0.00328	1.50690	2.5094
165	73.04139	191.17	11.438	93277.13	0.0020382	0.09248	15.664	0.00325	1.50109	2.3760
170	72.29453	188.01	11.192	87904.42	0.0020734	0.09065	14.571	0.00322	1.49527	2.2558
175	71.54229	184.78	10.949	82758.85	0.0021109	0.08880	13.582	0.00318	1.48941	2.1477
180	70.78414	181.51	10.710	77832.68	0.0021511	0.08695	12.686	0.00315	1.48352	2.0507
185	70.01948	178.17	10.476	73118.43	0.0021940	0.08510	11.875	0.00311	1.47760	1.9639
190	69.24767	174.77	10.248	68608.85	0.0022402	0.08323	11.140	0.00307	1.47164	1.8864
195	68.46798	171.31	10.026	64296.95	0.0022898	0.08137	10.473	0.00303	1.46564	1.8175
200	67.67965	167.77	9.812	60176.06	0.0023432	0.07951	9.868	0.00299	1.45958	1.7566
205	66.88183	164.17	9.606	56239.74	0.0024009	0.07765	9.319	0.00295	1.45347	1.7030
210	66.07361	160.49	9.410	52481.92	0.0024632	0.07579	8.821	0.00290	1.44729	1.6563
215	65.25398	156.74	9.223	48896.82	0.0025307	0.07394	8.367	0.00286	1.44105	1.6160
220	64.42185	152.91	9.048	45479.65	0.0026040	0.07209	7.954	0.00281	1.43473	1.5816
225	63.57604	149.02	8.884	42223.58	0.0026836	0.07025	7.578	0.00276	1.42833	1.5529
230	62.71529	145.06	8.731	39125.78	0.0027702	0.06842	7.235	0.00272	1.42183	1.5297
235	61.84278	142.98	8.247	36055.62	0.0028490	0.06661	6.923	0.00264	1.41526	1.5241
240	60.95213	139.32	8.029	33187.43	0.0029551	0.06481	6.638	0.00256	1.40857	1.5179
245	60.04821	135.69	7.817	30520.17	0.0030643	0.06302	6.375	0.00252	1.40175	1.5143
250	59.10928	132.06	7.628	28016.31	0.0031867	0.06124	6.135	0.00246	1.39481	1.5176
255	58.15945	128.37	7.402	25670.48	0.0033284	0.05949	5.916	0.00242	1.38775	1.5158
260	57.18874	124.74	7.272	23432.14	0.0034670	0.05775	5.753	0.00234	1.38057	1.5509
265	56.19195	121.10	5.996	21394.12	0.0035689	0.05603	5.591	0.00231	1.37321	1.5523
270	55.17691	117.50	6.798	19458.63	0.0037235	0.05435	5.430	0.00225	1.36575	1.5740
275	54.13874	114.07	6.622	17651.56	0.0039048	0.05270	5.271	0.00219	1.35814	1.6038
280	53.07702	110.50	6.333	16013.50	0.0040181	0.05107	5.113	0.00217	1.35039	1.6000
285	51.98061	107.06	6.195	14406.30	0.0042607	0.04947	4.954	0.00209	1.34242	1.6447
290	50.86107	104.49	5.856	12969.52	0.0044505	0.04790	4.798	0.00203	1.33432	1.6768
295	49.71493	100.94	5.683	11644.98	0.0046676	0.04636	4.643	0.00198	1.32605	1.6983
300	48.54026	97.63	5.496	10433.83	0.0049006	0.04489	4.491	0.00193	1.31762	1.7231
310	46.10756	91.49	5.108	8349.50	0.0053967	0.04206	4.191	0.00185	1.30026	1.7690
320	43.57679	85.97	4.753	6692.53	0.0058969	0.03984	3.903	0.00181	1.28238	1.7882
330	40.98162	81.30	4.450	5430.94	0.0063622	0.03774	3.632	0.00178	1.26421	1.7920
340	38.38447	77.59	4.186	4505.93	0.0067032	0.03579	3.384	0.00179	1.24620	1.7701
350	35.85533	74.94	3.968	3846.77	0.0068887	0.03402	3.163	0.00184	1.22883	1.7280
360	33.46539	73.30	3.778	3391.07	0.0068813	0.03242	2.973	0.00192	1.21257	1.6651
370	31.26082	72.66	3.629	3086.89	0.0067171	0.03094	2.813	0.00203	1.19770	1.5974
380	29.27031	72.79	3.502	2890.61	0.0064191	0.02965	2.682	0.00217	1.18438	1.5211
390	27.49912	73.59	3.402	2765.91	0.0060610	0.02856	2.575	0.00233	1.17262	1.4476
400	25.93011	74.84	3.319	2685.88	0.0056873	0.02764	2.488	0.00250	1.16226	1.3793
410	24.54105	76.47	3.255	2637.11	0.0053268	0.02687	2.418	0.00269	1.15314	1.3193
420	23.30799	78.36	3.203	2608.86	0.0049877	0.02624	2.361	0.00288	1.14509	1.2663
430	22.20945	80.47	3.159	2595.43	0.0046721	0.02570	2.315	0.00308	1.13795	1.2191
440	21.23503	82.69	3.086	2592.67	0.0043354	0.02523	2.278	0.00331	1.13154	1.1653
450	20.36050	85.03	3.053	2593.23	0.0040811	0.02487	2.248	0.00352	1.12583	1.1294
460	19.56855	87.42	3.026	2596.00	0.0038563	0.02457	2.224	0.00372	1.12091	1.0944
470	18.84795	89.84	2.997	2600.63	0.0036481	0.02432	2.204	0.00394	1.11669	1.0694
480	18.18963	92.29	2.976	2606.66	0.0034655	0.02412	2.189	0.00415	1.11298	1.0448
490	17.58547	94.76	2.950	2613.43	0.0032914	0.02395	2.177	0.00437	1.10982	1.0203
500	17.02891	97.20	2.935	2620.53	0.0031439	0.02382	2.167	0.00458	1.10708	1.0005
510	16.51428	99.68	2.914	2628.24	0.0029983	0.02365	2.160	0.00479	1.10461	0.9828
520	16.03657	102.11	2.903	2636.03	0.0028743	0.02360	2.155	0.00502	1.10239	0.9648
530	15.59090	104.49	2.897	2642.47	0.0027641	0.02358	2.152	0.00524	1.10057	0.9490
540	15.17371	106.85	2.891	2648.95	0.0026617	0.02357	2.151	0.00546	1.09893	0.9341
550	14.78472	109.23	2.888	2653.60	0.0025526	0.02358	2.150	0.00572	1.09748	0.9195
560	14.41816	111.47	2.888	2657.57	0.0024696	0.02360	2.151	0.00594	1.09617	0.9036
570	14.07192	113.66	2.889	2660.99	0.0023929	0.02363	2.153	0.00617	1.08599	0.8925
580	13.74415	115.82	2.892	2663.94	0.0023216	0.02366	2.156	0.00640	1.08393	0.8821
590	13.43325	117.94	2.895	2666.51	0.0022552	0.02371	2.160	0.00664	1.08198	0.8723
600	13.13240	120.44	2.901	2684.18	0.0022007	0.02377	2.164	0.00683	1.08010	0.8689

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

2000 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 101.766	0.01215	2261.11	319.3	-82.763	-76.462	0.50549	0.267	0.393	3924
105	0.01222	2202.14	311.3	-81.529	-75.192	0.51778	0.265	0.392	3890
110	0.01233	2113.18	299.3	-79.623	-73.231	0.53602	0.261	0.392	3836
115	0.01244	2026.88	287.6	-77.721	-71.273	0.55343	0.257	0.391	3782
120	0.01255	1943.16	276.4	-75.823	-69.317	0.57008	0.253	0.391	3727
125	0.01266	1861.98	265.5	-73.928	-67.363	0.58603	0.250	0.390	3671
130	0.01278	1783.27	255.0	-72.036	-65.411	0.60134	0.247	0.390	3613
135	0.01289	1706.99	244.8	-70.147	-63.462	0.61605	0.244	0.390	3556
140	0.01302	1633.07	235.0	-68.262	-61.513	0.63022	0.241	0.389	3497
145	0.01314	1561.47	225.6	-66.379	-59.567	0.64388	0.238	0.389	3439
150	0.01326	1492.12	216.5	-64.498	-57.621	0.65707	0.235	0.389	3379
155	0.01339	1424.97	207.7	-62.621	-55.676	0.66983	0.233	0.389	3320
160	0.01353	1359.97	199.3	-60.745	-53.732	0.68217	0.230	0.389	3260
165	0.01366	1297.07	191.2	-58.871	-51.788	0.69414	0.228	0.389	3200
170	0.01380	1236.20	183.3	-56.999	-49.844	0.70574	0.226	0.389	3140
175	0.01394	1177.33	175.8	-55.129	-47.899	0.71702	0.224	0.389	3080
180	0.01409	1120.39	168.5	-53.260	-45.953	0.72798	0.221	0.389	3021
185	0.01424	1065.34	161.6	-51.391	-44.006	0.73865	0.219	0.390	2961
190	0.01440	1012.13	154.9	-49.523	-42.057	0.74905	0.217	0.390	2902
195	0.01456	960.71	148.5	-47.655	-40.105	0.75919	0.215	0.391	2844
200	0.01473	911.04	142.3	-45.786	-38.150	0.76909	0.213	0.391	2785
205	0.01490	863.07	136.3	-43.916	-36.191	0.77877	0.211	0.392	2728
210	0.01508	816.77	130.6	-42.045	-34.228	0.78824	0.208	0.393	2672
215	0.01526	772.09	125.2	-40.172	-32.259	0.79750	0.206	0.394	2616
220	0.01546	728.99	119.9	-38.297	-30.283	0.80659	0.204	0.395	2561
225	0.01566	687.46	114.8	-36.418	-28.300	0.81549	0.201	0.397	2504
230	0.01587	647.45	110.0	-34.535	-26.309	0.82424	0.198	0.398	2455
235	0.01608	607.30	104.3	-32.626	-24.287	0.83294	0.202	0.403	2372
240	0.01631	569.24	99.7	-30.711	-22.254	0.84150	0.201	0.407	2313
245	0.01655	533.06	95.3	-28.781	-20.200	0.84997	0.200	0.411	2255
250	0.01680	498.68	91.1	-26.842	-18.131	0.85833	0.198	0.416	2201
255	0.01706	466.28	86.6	-24.893	-16.045	0.86659	0.197	0.418	2140
260	0.01734	434.45	83.2	-22.935	-13.944	0.87475	0.196	0.427	2094
265	0.01764	405.53	78.3	-20.962	-11.818	0.88285	0.195	0.425	2026
270	0.01795	377.64	74.5	-18.983	-9.679	0.89085	0.193	0.430	1972
275	0.01827	351.11	71.1	-16.993	-7.520	0.89877	0.193	0.437	1922
280	0.01862	327.03	66.7	-14.990	-5.337	0.91664	0.192	0.436	1857
285	0.01899	302.21	63.6	-12.968	-3.124	0.91447	0.191	0.446	1809
290	0.01938	280.02	60.0	-10.925	-0.879	0.92228	0.194	0.453	1741
295	0.01979	259.16	56.7	-8.862	1.399	0.93007	0.192	0.456	1691
300	0.02023	239.66	53.5	-6.787	3.704	0.93782	0.192	0.464	1639
310	0.02121	205.05	47.5	-2.596	8.402	0.95322	0.191	0.475	1538
320	0.02233	176.34	42.1	1.644	13.219	0.96851	0.190	0.487	1445
330	0.02359	153.55	37.2	5.908	18.141	0.98366	0.189	0.496	1365
340	0.02502	136.46	32.8	10.143	23.117	0.99852	0.188	0.499	1296
350	0.02660	124.25	29.0	14.307	28.101	1.01296	0.186	0.497	1240
360	0.02832	116.22	25.7	18.348	33.033	1.02686	0.184	0.489	1195
370	0.03015	111.56	23.0	22.238	37.871	1.04011	0.183	0.478	1162
380	0.03206	109.66	20.7	25.951	42.572	1.05266	0.181	0.463	1139
390	0.03401	109.96	18.7	29.474	47.108	1.06444	0.179	0.445	1124
400	0.03598	111.68	17.0	32.811	51.467	1.07548	0.178	0.427	1115
410	0.03796	114.45	15.7	35.974	55.653	1.08581	0.176	0.411	1111
420	0.03992	117.96	14.5	38.979	59.677	1.09551	0.175	0.395	1112
430	0.04187	122.11	13.5	41.845	63.552	1.10463	0.173	0.381	1116
440	0.04378	126.85	12.5	44.579	67.276	1.11319	0.172	0.369	1119
450	0.04565	131.81	11.8	47.200	70.869	1.12127	0.171	0.353	1123
460	0.04750	136.80	11.1	49.724	74.350	1.12892	0.170	0.343	1132
470	0.04931	141.87	10.5	52.163	77.732	1.13620	0.168	0.333	1140
480	0.05110	146.98	10.0	54.526	81.022	1.14313	0.167	0.325	1151
490	0.05286	152.11	9.5	56.823	84.232	1.14975	0.166	0.317	1159
500	0.05460	157.24	9.1	59.054	87.368	1.15608	0.165	0.310	1170
510	0.05631	162.39	8.7	61.240	90.436	1.16216	0.164	0.304	1179
520	0.05800	167.54	8.4	63.372	93.443	1.16800	0.163	0.298	1191
530	0.05966	172.66	8.0	65.460	96.394	1.17362	0.162	0.293	1201
540	0.06131	177.53	7.7	67.507	99.296	1.17905	0.161	0.288	1213
550	0.06293	182.44	7.4	69.514	102.143	1.18427	0.160	0.282	1225
560	0.06454	187.29	7.2	71.486	104.948	1.18933	0.159	0.278	1232
570	0.06613	192.07	7.0	73.426	107.714	1.19422	0.158	0.275	1244
580	0.06771	196.79	6.8	75.336	110.443	1.19897	0.157	0.272	1255
590	0.06928	201.46	6.6	77.217	113.139	1.20358	0.156	0.269	1267
600	0.07084	206.08	6.4	79.072	115.804	1.20806	0.155	0.266	1279

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

2000 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_p$ BTU/LB	$V(\partial P/\partial U)_v$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 101.766	82.27794	228.84	14.521	186039.52	0.0017163	0.11312	45.637	0.00350	1.57441	5.7042
105	81.82099	227.13	14.378	180181.04	0.0017277	0.11230	43.023	0.00350	1.57072	5.4123
110	81.11356	224.47	14.152	171407.92	0.0017459	0.11095	39.307	0.00349	1.56544	4.9980
115	80.40480	221.78	13.920	162970.70	0.0017646	0.10954	35.951	0.00348	1.55935	4.6244
120	79.69452	219.07	13.683	154859.38	0.0017845	0.10807	32.929	0.00347	1.55367	4.2872
125	78.98256	216.32	13.442	147063.80	0.0018052	0.10653	30.183	0.00345	1.54749	3.9828
130	78.26869	213.55	13.197	139574.46	0.0018268	0.10495	27.709	0.00344	1.54230	3.7078
135	77.55270	210.74	12.949	132381.71	0.0018494	0.10332	25.474	0.00342	1.53662	3.4592
140	76.83435	207.90	12.699	125476.17	0.0018732	0.10166	23.454	0.00340	1.53092	3.2345
145	76.11336	205.02	12.449	118848.62	0.0018982	0.09996	21.628	0.00337	1.52522	3.0314
150	75.38944	202.10	12.197	112490.07	0.0019246	0.09822	19.979	0.00335	1.51952	2.8478
155	74.66228	199.14	11.946	106391.67	0.0019525	0.09647	18.483	0.00332	1.51380	2.6819
160	73.93152	196.13	11.697	100544.82	0.0019821	0.09469	17.132	0.00329	1.50806	2.5321
165	73.19679	193.08	11.449	94941.04	0.0020134	0.09289	15.910	0.00326	1.50231	2.3969
170	72.45765	189.98	11.204	89572.26	0.0020467	0.09108	14.803	0.00323	1.49654	2.2750
175	71.71367	186.82	10.963	84430.35	0.0020821	0.08926	13.802	0.00320	1.49074	2.1653
180	70.96433	183.61	10.727	79507.59	0.0021199	0.08743	12.894	0.00317	1.48492	2.0666
185	70.20910	180.35	10.495	74796.46	0.0021603	0.08559	12.072	0.00313	1.47907	1.9782
190	69.44738	177.02	10.270	70289.66	0.0022036	0.08375	11.326	0.00309	1.47318	1.8990
195	68.67853	173.62	10.052	65980.18	0.0022500	0.08191	10.650	0.00305	1.46726	1.8285
200	67.90186	170.16	9.842	61861.26	0.0022999	0.08007	10.036	0.00301	1.46129	1.7659
205	67.11659	166.63	9.641	57926.43	0.0023536	0.07824	9.473	0.00297	1.45527	1.7106
210	66.32190	163.03	9.449	54169.53	0.0024115	0.07640	8.972	0.00293	1.44919	1.6621
215	65.51690	159.35	9.268	50584.63	0.0024741	0.07458	8.512	0.00289	1.44305	1.6199
220	64.70061	155.60	9.099	47166.31	0.0025418	0.07276	8.092	0.00284	1.43685	1.5836
225	63.87200	151.77	8.943	43909.36	0.0026151	0.07095	7.710	0.00280	1.43056	1.5528
230	63.02994	147.89	8.798	40809.00	0.0026945	0.06914	7.361	0.00275	1.42420	1.5273
235	62.17885	146.04	8.315	37761.41	0.0027627	0.06737	7.045	0.00266	1.41779	1.5190
240	61.31133	142.55	8.101	34900.64	0.0028573	0.06560	6.755	0.00253	1.41127	1.5100
245	60.42437	139.04	7.898	32209.85	0.0029584	0.06383	6.489	0.00257	1.40462	1.5051
250	59.52058	135.52	7.713	29681.96	0.0030697	0.06209	6.244	0.00251	1.39788	1.5061
255	58.60022	131.99	7.491	27323.92	0.0031675	0.06037	6.020	0.00246	1.39103	1.5011
260	57.66266	128.43	7.373	25051.50	0.0033228	0.05867	5.838	0.00238	1.38407	1.5289
265	56.70079	124.91	7.095	22994.05	0.0034045	0.05698	5.680	0.00236	1.37696	1.5260
270	55.72477	121.50	6.911	21043.78	0.0035409	0.05533	5.523	0.00231	1.36977	1.5461
275	54.72963	118.18	6.746	19216.12	0.0036984	0.05371	5.368	0.00225	1.36247	1.5726
280	53.71338	114.84	6.478	17565.97	0.0037957	0.05212	5.215	0.00223	1.35503	1.5730
285	52.67134	111.48	6.332	15917.57	0.0039977	0.05056	5.062	0.00215	1.34744	1.6062
290	51.60910	109.14	6.995	14451.56	0.0041515	0.04904	4.911	0.00210	1.33973	1.6335
295	50.52616	105.75	5.833	13094.39	0.0043317	0.04755	4.762	0.00205	1.33190	1.6514
300	49.42082	102.58	5.651	11843.98	0.0045199	0.04610	4.615	0.00201	1.32394	1.6706
310	47.14461	96.71	5.276	9667.21	0.0049147	0.04333	4.327	0.00193	1.30764	1.7067
320	44.79107	91.38	4.934	7896.26	0.0053253	0.04099	4.051	0.00188	1.29094	1.7312
330	42.38253	86.73	4.640	6507.97	0.0057167	0.03894	3.789	0.00185	1.27389	1.7368
340	39.96366	82.91	4.374	5453.58	0.0060190	0.03703	3.547	0.00186	1.25713	1.7209
350	37.58704	80.00	4.152	4670.34	0.0062173	0.03529	3.329	0.00189	1.24071	1.6890
360	35.30862	77.98	3.954	4103.51	0.0062715	0.03371	3.137	0.00195	1.22510	1.6383
370	33.16740	76.90	3.793	3700.00	0.0062129	0.03224	2.972	0.00203	1.21055	1.5856
380	31.19390	76.56	3.657	3420.65	0.0060397	0.03094	2.832	0.00214	1.19765	1.5242
390	29.40249	76.94	3.543	3233.24	0.0057807	0.02981	2.716	0.00228	1.18526	1.4587
400	27.79133	77.80	3.447	3103.86	0.0054872	0.02885	2.620	0.00243	1.17455	1.3956
410	26.34620	79.06	3.372	3015.25	0.0051924	0.02803	2.540	0.00259	1.16500	1.3394
420	25.05003	80.63	3.308	2955.60	0.0049013	0.02734	2.475	0.00276	1.15648	1.2880
430	23.88499	82.45	3.258	2916.51	0.0046254	0.02675	2.421	0.00294	1.14885	1.2425
440	22.84311	84.48	3.184	2897.71	0.0043188	0.02623	2.377	0.00315	1.14226	1.1972
450	21.90493	86.67	3.143	2887.27	0.0040733	0.02582	2.341	0.00334	1.13598	1.1525
460	21.05389	88.92	3.110	2880.19	0.0038557	0.02548	2.312	0.00355	1.13047	1.1200
470	20.27807	91.22	3.077	2876.84	0.0036535	0.02519	2.288	0.00373	1.12547	1.0898
480	19.56826	93.56	3.052	2876.15	0.0034755	0.02495	2.268	0.00392	1.12080	1.0642
490	18.91616	95.94	3.022	2877.42	0.0033037	0.02474	2.252	0.00413	1.11672	1.0344
500	18.31505	98.31	3.004	2879.94	0.0031571	0.02458	2.239	0.00432	1.11298	1.0177
510	17.75872	100.72	2.981	2883.91	0.0030153	0.02438	2.229	0.00452	1.10937	0.9994
520	17.24207	103.10	2.968	2888.79	0.0028914	0.02431	2.221	0.00472	1.10604	0.9864
530	16.76071	105.44	2.954	2892.09	0.0027767	0.02426	2.216	0.00494	1.10298	0.9765
540	16.31004	107.75	2.947	2895.57	0.0026757	0.02423	2.212	0.00515	1.10012	0.9673
550	15.89020	110.13	2.918	2899.07	0.0025625	0.02422	2.209	0.00540	1.09746	0.9594
560	15.49483	112.37	2.915	2901.97	0.0024779	0.02422	2.209	0.00561	1.09496	0.9141
570	15.12158	114.56	2.914	2904.33	0.0023998	0.02423	2.209	0.00583	1.09260	0.9023
580	14.76842	116.72	2.914	2906.24	0.0023275	0.02425	2.210	0.00605	1.09037	0.8912
590	14.43357	118.84	2.916	2907.77	0.0022601	0.02428	2.212	0.00626	1.08827	0.8808
600	14.11550	120.92	2.919	2908.98	0.0021973	0.02433	2.215	0.00649	1.08627	0.8711

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

3000 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 102.042	0.01215	2273.03	319.4	-92.723	-75.982	0.50579	0.267	0.392	3932
105	0.01221	2219.27	312.1	-81.603	-74.821	0.51701	0.265	0.392	3911
110	0.01231	2130.52	300.1	-79.703	-72.862	0.53523	0.261	0.392	3843
115	0.01242	2044.43	288.4	-77.806	-70.906	0.55282	0.257	0.391	3794
120	0.01253	1960.93	277.2	-75.913	-68.951	0.56925	0.254	0.391	3739
125	0.01264	1879.96	266.3	-74.024	-67.000	0.58519	0.251	0.390	3683
130	0.01276	1801.48	255.8	-72.138	-65.050	0.60048	0.247	0.390	3627
135	0.01288	1725.42	245.7	-70.255	-63.103	0.61517	0.244	0.389	3569
140	0.01299	1651.73	235.9	-68.376	-61.158	0.62932	0.241	0.389	3512
145	0.01312	1580.36	226.5	-66.500	-59.214	0.64297	0.239	0.389	3453
150	0.01324	1511.24	217.5	-64.627	-57.271	0.65613	0.236	0.388	3395
155	0.01337	1444.33	208.7	-62.756	-55.330	0.66886	0.233	0.388	3336
160	0.01350	1379.58	200.3	-60.889	-53.389	0.68119	0.231	0.388	3277
165	0.01363	1316.91	192.2	-59.023	-51.449	0.69312	0.229	0.388	3217
170	0.01377	1256.30	184.4	-57.160	-49.510	0.70470	0.226	0.388	3159
175	0.01391	1197.67	176.9	-55.299	-47.570	0.71595	0.224	0.388	3099
180	0.01406	1140.98	169.7	-53.438	-45.630	0.72688	0.222	0.388	3040
185	0.01421	1086.19	162.7	-51.580	-43.688	0.73752	0.220	0.388	2982
190	0.01436	1033.24	156.1	-49.722	-41.746	0.74789	0.218	0.389	2923
195	0.01452	982.08	149.7	-47.865	-39.801	0.75799	0.216	0.389	2866
200	0.01468	932.66	143.5	-46.009	-37.854	0.76785	0.213	0.390	2809
205	0.01485	884.96	137.6	-44.152	-35.904	0.77749	0.211	0.391	2753
210	0.01502	838.91	132.0	-42.295	-33.950	0.78691	0.209	0.391	2697
215	0.01520	794.49	126.5	-40.437	-31.991	0.79612	0.207	0.392	2643
220	0.01539	751.66	121.3	-38.578	-30.028	0.80515	0.204	0.393	2590
225	0.01559	710.38	116.3	-36.717	-28.058	0.81400	0.201	0.394	2538
230	0.01579	670.62	111.5	-34.853	-26.082	0.82268	0.199	0.395	2487
235	0.01600	631.19	105.9	-32.984	-24.076	0.83131	0.202	0.402	2436
240	0.01622	593.70	101.4	-31.071	-22.061	0.83979	0.201	0.403	2384
245	0.01645	557.46	97.0	-29.165	-20.026	0.84818	0.201	0.407	2333
250	0.01669	523.01	92.9	-27.251	-17.978	0.85646	0.199	0.412	2283
255	0.01694	490.76	88.4	-25.328	-15.915	0.86463	0.198	0.413	2181
260	0.01721	458.68	85.1	-23.401	-13.841	0.87269	0.196	0.421	2135
265	0.01749	429.73	80.1	-21.458	-11.743	0.88068	0.195	0.418	2063
270	0.01778	402.07	76.5	-19.513	-9.635	0.88856	0.194	0.424	2014
275	0.01809	375.61	73.1	-17.559	-7.510	0.89636	0.193	0.430	1971
280	0.01842	351.7	69.9	-15.594	-5.364	0.90409	0.192	0.429	1913
285	0.01876	326.66	65.7	-13.618	-3.197	0.91177	0.191	0.437	1866
290	0.01912	304.40	62.1	-11.622	-0.999	0.91941	0.194	0.443	1794
295	0.01951	283.46	58.9	-9.609	1.228	0.92702	0.193	0.447	1747
300	0.01991	263.81	55.8	-7.588	3.474	0.93457	0.192	0.451	1695
310	0.02080	228.62	49.8	-3.517	8.040	0.94954	0.191	0.461	1593
320	0.02181	198.93	44.5	0.589	12.703	0.96435	0.190	0.470	1503
330	0.02293	174.69	39.7	4.711	17.452	0.97896	0.189	0.478	1421
340	0.02419	155.91	35.3	8.813	22.253	0.99330	0.188	0.481	1362
350	0.02558	141.69	31.4	12.855	27.065	1.00725	0.185	0.481	1304
360	0.02708	132.10	28.0	16.798	31.843	1.02071	0.184	0.475	1255
370	0.02869	125.61	25.2	20.616	36.553	1.03361	0.183	0.467	1223
380	0.03037	121.96	22.7	24.291	41.164	1.04591	0.181	0.456	1192
390	0.03211	120.71	20.6	27.805	45.646	1.05755	0.180	0.441	1172
400	0.03388	121.17	18.8	31.155	49.980	1.06853	0.174	0.426	1159
410	0.03567	122.81	17.3	34.349	54.164	1.07886	0.177	0.411	1151
420	0.03746	125.32	16.0	37.394	58.202	1.08859	0.175	0.397	1147
430	0.03924	128.56	14.9	40.305	62.105	1.09778	0.174	0.384	1143
440	0.04101	132.64	13.9	43.091	65.872	1.10644	0.173	0.373	1143
450	0.04275	137.15	13.0	45.765	69.512	1.11460	0.171	0.363	1153
460	0.04446	141.77	12.2	48.340	73.040	1.12237	0.170	0.348	1153
470	0.04616	146.54	11.6	50.868	76.468	1.12975	0.169	0.338	1163
480	0.04783	151.39	11.0	53.277	79.805	1.13677	0.168	0.330	1174
490	0.04947	156.31	10.4	55.577	83.060	1.14349	0.167	0.321	1181
500	0.05109	161.26	10.0	57.784	86.239	1.14991	0.166	0.319	1191
510	0.05270	166.25	9.5	61.875	89.350	1.15607	0.165	0.308	1203
520	0.05428	171.23	9.1	62.845	92.399	1.16199	0.164	0.302	1213
530	0.05584	176.17	8.8	64.367	95.387	1.16769	0.163	0.296	1219
540	0.05739	181.04	8.5	66.443	98.320	1.17318	0.162	0.292	1230
550	0.05891	185.93	8.1	68.484	101.207	1.17847	0.161	0.286	1237
560	0.06041	190.75	7.8	70.496	104.048	1.18358	0.160	0.282	1249
570	0.06190	195.53	7.6	72.483	106.848	1.18854	0.159	0.278	1260
580	0.06339	200.24	7.4	74.384	109.611	1.19334	0.158	0.274	1271
590	0.06486	204.90	7.1	76.295	112.335	1.19799	0.157	0.271	1282
600	0.06632	209.51	6.9	78.173	115.016	1.20252	0.156	0.268	1293

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

3000 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 102.042	82.32720	229.93	14.512	187132.31	0.0017067	0.11323	45.431	0.00350	1.57460	5.7308
105	81.91146	228.40	14.381	181783.42	0.0017164	0.11248	43.529	0.00350	1.57145	5.4625
110	81.20782	225.78	14.155	173515.14	0.0017343	0.11116	39.782	0.00350	1.56530	5.0448
115	80.50305	223.13	13.923	164582.70	0.0017525	0.10976	36.398	0.00349	1.56014	4.6641
120	79.79698	220.47	13.686	156476.02	0.0017714	0.10831	33.341	0.00348	1.55449	4.3280
125	79.08945	217.77	13.445	148685.16	0.0017912	0.10679	30.578	0.00346	1.54864	4.0328
130	78.38027	215.04	13.200	141200.38	0.0018119	0.10523	28.081	0.00345	1.54319	3.7732
135	77.66924	212.29	12.953	134012.11	0.0018335	0.10362	25.824	0.00343	1.53754	3.4923
140	76.95612	209.50	12.704	127110.91	0.0018562	0.10197	23.784	0.00341	1.53189	3.2654
145	76.24067	206.67	12.454	120487.59	0.0018801	0.10028	21.939	0.00339	1.52623	3.0652
150	75.52263	203.81	12.204	114133.12	0.0019052	0.09857	20.270	0.00336	1.52056	2.8746
155	74.80169	200.91	11.954	108038.65	0.0019318	0.09683	18.760	0.00334	1.51489	2.7068
160	74.07753	197.96	11.706	102195.54	0.0019598	0.09508	17.394	0.00331	1.50921	2.5551
165	73.34981	194.97	11.459	96595.35	0.0019895	0.09330	16.157	0.00328	1.50351	2.4182
170	72.61814	191.93	11.216	91229.83	0.0020210	0.09151	15.037	0.00325	1.49779	2.2946
175	71.88209	188.84	10.977	86090.98	0.0020544	0.08971	14.023	0.00322	1.49205	2.1832
180	71.14121	185.70	10.743	81170.99	0.0020901	0.08790	13.103	0.00318	1.48629	2.0829
185	70.39501	182.49	10.514	76462.30	0.0021281	0.08608	12.270	0.00315	1.48051	1.9928
190	69.64295	179.23	10.292	71957.58	0.0021688	0.08426	11.514	0.00311	1.47469	1.9121
195	68.88443	175.91	10.077	67649.76	0.0022123	0.08245	10.828	0.00308	1.46884	1.8399
200	68.11882	172.52	9.870	63532.63	0.0022589	0.08063	10.205	0.00304	1.46295	1.7757
205	67.34542	169.06	9.673	59597.85	0.0023091	0.07882	9.639	0.00300	1.45702	1.7188
210	66.56350	165.52	9.486	55840.97	0.0023630	0.07701	9.125	0.00296	1.45104	1.6685
215	65.77224	161.91	9.311	52255.46	0.0024211	0.07520	8.657	0.00292	1.44500	1.6246
220	64.97077	158.23	9.148	48835.68	0.0024838	0.07341	8.231	0.00287	1.43890	1.5864
225	64.15817	154.47	8.998	45576.36	0.0025515	0.07162	7.842	0.00283	1.43273	1.5536
230	63.33343	150.65	8.861	42472.57	0.0026247	0.06984	7.488	0.00279	1.42649	1.5260
235	62.50585	149.03	8.380	39450.64	0.0026835	0.06809	7.166	0.00272	1.42022	1.5153
240	61.65533	145.70	8.173	36605.04	0.0027690	0.06635	6.872	0.00267	1.41385	1.5042
245	60.79121	142.29	7.974	33888.94	0.0028628	0.06462	6.601	0.00261	1.40737	1.4976
250	59.91214	138.87	7.793	31334.39	0.0029640	0.06290	6.353	0.00255	1.40080	1.4965
255	59.01824	135.48	7.577	28963.87	0.0030515	0.06121	6.125	0.00251	1.39413	1.4894
260	58.11059	131.99	7.461	26654.13	0.0031933	0.05954	5.920	0.00243	1.38739	1.5087
265	57.17973	128.57	7.188	24575.25	0.0032613	0.05789	5.765	0.00241	1.38090	1.5033
270	56.23790	125.31	7.014	22611.34	0.0033822	0.05627	5.612	0.00236	1.37355	1.5219
275	55.28828	122.10	6.859	20763.64	0.0035208	0.05468	5.461	0.00230	1.36650	1.5456
280	54.30291	118.97	6.615	19098.22	0.0036087	0.05312	5.311	0.00228	1.35934	1.5453
285	53.30763	115.67	6.457	17613.51	0.0037751	0.05160	5.163	0.00222	1.35207	1.5729
290	52.29382	113.54	6.120	15918.65	0.0039031	0.05010	5.016	0.00216	1.34470	1.5971
295	51.26365	110.29	5.970	14532.40	0.0040556	0.04865	4.872	0.00212	1.33723	1.6124
300	50.21578	107.25	5.791	13247.61	0.0042096	0.04724	4.729	0.00208	1.32966	1.6272
310	48.06772	101.64	5.427	10989.39	0.0045352	0.04454	4.452	0.00201	1.31423	1.6587
320	45.85819	96.51	5.095	9122.44	0.0048749	0.04208	4.185	0.00195	1.29849	1.6845
330	43.60285	91.90	4.808	7617.00	0.0052057	0.34007	3.932	0.00192	1.28256	1.6902
340	41.33400	87.99	4.548	6446.55	0.0054712	0.03819	3.696	0.00192	1.26666	1.6774
350	39.09267	84.92	4.320	5547.01	0.0056632	0.03647	3.481	0.00194	1.25109	1.6525
360	36.92255	82.66	4.120	4877.31	0.0057455	0.03491	3.289	0.00199	1.23614	1.6109
370	34.85721	81.23	3.952	4378.53	0.0057454	0.03343	3.120	0.00206	1.22202	1.5682
380	32.92405	80.55	3.808	4015.28	0.0056550	0.03213	2.975	0.00214	1.20891	1.5187
390	31.13933	80.54	3.684	3758.69	0.0054800	0.03098	2.852	0.00225	1.19689	1.4625
400	29.51164	81.03	3.575	3575.85	0.0052523	0.02998	2.748	0.00239	1.18599	1.4044
410	28.03436	81.96	3.490	3442.85	0.0050165	0.02913	2.661	0.00253	1.17616	1.3523
420	26.69615	83.20	3.413	3345.50	0.0047699	0.02839	2.588	0.00268	1.16721	1.3025
430	25.48238	84.75	3.356	3275.95	0.0045367	0.02777	2.527	0.00283	1.15932	1.2598
440	24.38586	86.55	3.285	3234.45	0.0042725	0.02721	2.477	0.00302	1.15213	1.2117
450	23.39313	88.57	3.237	3208.43	0.0040427	0.02675	2.435	0.00319	1.14565	1.1732
460	22.49063	90.67	3.195	3188.55	0.0038334	0.02636	2.400	0.00337	1.13977	1.1391
470	21.66572	92.84	3.156	3174.85	0.0036393	0.02603	2.371	0.00356	1.13443	1.1079
480	20.90952	95.07	3.128	3165.41	0.0034684	0.02576	2.347	0.00374	1.12954	1.0816
490	20.21364	97.34	3.094	3159.51	0.0033012	0.02552	2.327	0.00393	1.12505	1.0549
500	19.57142	99.63	3.073	3156.04	0.0031582	0.02533	2.311	0.00411	1.12092	1.0335
510	18.97627	101.96	3.049	3154.81	0.0030207	0.02511	2.296	0.00430	1.11711	1.0145
520	18.42301	104.28	3.033	3155.41	0.0028987	0.02502	2.287	0.00449	1.11357	0.9949
530	17.90808	106.59	3.010	3154.92	0.0027797	0.02494	2.279	0.00470	1.11028	0.9746
540	17.42591	108.84	3.001	3154.71	0.0026843	0.02489	2.273	0.00490	1.10721	0.9591
550	16.97635	111.19	2.972	3156.39	0.0025677	0.02486	2.269	0.00513	1.10435	0.9391
560	16.55317	113.42	2.966	3157.66	0.0024820	0.02484	2.266	0.00533	1.10166	0.9246
570	16.15383	115.61	2.962	3158.52	0.0024030	0.02483	2.264	0.00552	1.09913	0.9120
580	15.77613	117.76	2.960	3159.01	0.0023298	0.02484	2.264	0.00574	1.09674	0.9003
590	15.41814	119.88	2.959	3159.16	0.0022617	0.02485	2.265	0.00595	1.09447	0.8893
600	15.07818	121.96	2.960	3159.04	0.0021983	0.02488	2.266	0.00615	1.09233	0.8790

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

3200 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 102.319	0.01214	2284.92	319.5	-82.695	-75.502	0.50608	0.267	0.392	3940
105	0.01219	2236.32	312.9	-81.677	-74.451	0.51622	0.265	0.392	3912
110	0.01230	2147.78	300.8	-79.781	-72.493	0.53444	0.261	0.391	3859
115	0.01241	2061.89	289.2	-77.890	-70.538	0.55182	0.258	0.391	3806
120	0.01252	1978.60	278.0	-76.002	-68.586	0.56843	0.254	0.390	3751
125	0.01263	1897.85	267.2	-74.118	-66.636	0.58435	0.251	0.390	3695
130	0.01274	1819.58	256.7	-72.238	-64.689	0.59962	0.248	0.389	3640
135	0.01286	1743.74	246.6	-70.362	-62.744	0.61430	0.245	0.389	3583
140	0.01297	1670.27	236.8	-68.489	-60.801	0.62844	0.242	0.388	3525
145	0.01309	1599.12	227.4	-66.619	-58.860	0.64206	0.239	0.388	3464
150	0.01322	1530.23	218.4	-64.753	-56.921	0.65521	0.236	0.388	3410
155	0.01334	1463.55	209.7	-62.890	-54.983	0.66791	0.234	0.387	3351
160	0.01347	1399.02	201.3	-61.029	-53.046	0.68021	0.231	0.387	3293
165	0.01361	1336.59	193.2	-59.172	-51.110	0.69213	0.229	0.387	3234
170	0.01374	1276.21	185.4	-57.316	-49.174	0.70368	0.227	0.387	3175
175	0.01388	1217.82	177.9	-55.464	-47.239	0.71490	0.225	0.387	3117
180	0.01402	1161.37	170.7	-53.613	-45.304	0.72580	0.223	0.387	3059
185	0.01417	1106.82	163.8	-51.764	-43.368	0.73641	0.220	0.387	3001
190	0.01432	1054.11	157.2	-49.917	-41.432	0.74674	0.218	0.387	2944
195	0.01447	1003.19	150.8	-48.071	-39.494	0.75681	0.216	0.388	2887
200	0.01463	954.02	144.7	-46.226	-37.554	0.76664	0.214	0.388	2831
205	0.01480	906.56	138.9	-44.382	-35.612	0.77623	0.212	0.389	2776
210	0.01497	860.75	133.2	-42.538	-33.667	0.78561	0.209	0.389	2722
215	0.01515	816.57	127.8	-40.694	-31.719	0.79478	0.207	0.390	2669
220	0.01533	773.97	122.7	-38.850	-29.766	0.80375	0.205	0.391	2617
225	0.01552	732.92	117.7	-37.005	-27.809	0.81255	0.202	0.392	2566
230	0.01572	693.39	112.9	-35.159	-25.846	0.82117	0.199	0.393	2517
235	0.01592	654.71	107.4	-33.288	-23.855	0.82973	0.202	0.397	2438
240	0.01613	617.91	103.0	-31.415	-21.856	0.83815	0.202	0.400	2384
245	0.01636	581.57	98.6	-29.531	-19.840	0.84647	0.200	0.403	2329
250	0.01659	546.98	94.6	-27.639	-17.810	0.85467	0.199	0.408	2276
255	0.01683	514.87	90.2	-25.741	-15.768	0.86275	0.198	0.409	2223
260	0.01708	482.47	86.9	-23.841	-13.716	0.87072	0.197	0.417	2175
265	0.01735	453.56	82.0	-21.926	-11.645	0.87862	0.195	0.414	2110
270	0.01763	426.00	78.4	-20.011	-9.564	0.88639	0.194	0.418	2061
275	0.01792	399.60	75.0	-18.090	-7.470	0.89408	0.193	0.424	2015
280	0.01823	375.71	71.1	-16.158	-5.356	0.90170	0.192	0.424	1960
285	0.01855	350.58	67.7	-14.222	-3.228	0.90923	0.191	0.429	1908
290	0.01889	328.17	64.1	-12.266	-1.070	0.91674	0.194	0.435	1844
295	0.01925	307.24	61.0	-10.296	1.112	0.92420	0.193	0.438	1799
300	0.01963	287.46	57.9	-8.322	3.310	0.93159	0.192	0.441	1757
310	0.02045	251.80	52.0	-4.352	7.766	0.94620	0.191	0.449	1656
320	0.02136	221.29	46.7	-0.357	12.302	0.96066	0.190	0.457	1569
330	0.02238	195.83	41.9	3.648	16.909	0.97477	0.189	0.464	1491
340	0.02351	175.58	37.5	7.635	21.563	0.98867	0.188	0.467	1423
350	0.02474	159.97	33.6	11.569	26.229	1.00220	0.186	0.467	1364
360	0.02608	148.64	30.2	15.423	30.875	1.01528	0.184	0.462	1315
370	0.02750	140.57	27.2	19.170	35.466	1.02786	0.182	0.456	1276
380	0.02900	135.32	24.7	22.795	39.980	1.03990	0.181	0.447	1244
390	0.03056	132.52	22.5	26.289	44.398	1.05138	0.180	0.436	1221
400	0.03216	131.76	20.5	29.638	48.694	1.06226	0.178	0.423	1203
410	0.03378	132.33	18.9	32.842	52.858	1.07254	0.177	0.410	1193
420	0.03541	133.87	17.4	35.903	56.891	1.08226	0.175	0.397	1184
430	0.03704	136.19	16.2	38.853	60.804	1.09147	0.174	0.386	1182
440	0.03867	139.43	15.1	41.673	64.595	1.10018	0.173	0.373	1181
450	0.04029	143.36	14.2	44.395	68.269	1.10844	0.172	0.362	1183
460	0.04189	147.53	13.4	47.013	71.833	1.11627	0.171	0.351	1187
470	0.04347	151.94	12.6	49.543	75.298	1.12373	0.169	0.342	1191
480	0.04503	156.48	12.0	51.993	78.674	1.13084	0.168	0.334	1199
490	0.04657	161.15	11.4	54.373	81.967	1.13763	0.167	0.325	1205
500	0.04809	165.89	10.9	56.683	85.183	1.14413	0.166	0.318	1213
510	0.04959	170.69	10.4	58.944	88.331	1.15036	0.165	0.312	1222
520	0.05108	175.55	10.0	61.148	91.417	1.15635	0.164	0.306	1231
530	0.05255	180.33	9.5	63.302	94.440	1.16211	0.163	0.299	1234
540	0.05400	185.08	9.2	65.412	97.410	1.16767	0.162	0.295	1243
550	0.05543	189.92	8.8	67.479	100.324	1.17302	0.161	0.289	1255
560	0.05685	194.72	8.5	69.508	103.193	1.17819	0.160	0.285	1265
570	0.05825	199.47	8.2	71.502	106.020	1.18319	0.159	0.281	1277
580	0.05965	204.10	8.0	73.463	108.807	1.18804	0.158	0.277	1287
590	0.06103	208.80	7.7	75.393	111.557	1.19274	0.157	0.274	1293
600	0.06241	213.39	7.5	77.294	114.273	1.19731	0.156	0.270	1303

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

3200 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV)$_P$ BTU/LB	V(DP/DU)$_V$ PSIA-CU FT/BTU	-V(DP/DV)$_T$ PSIA	(DV/DT)$_P$/V 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 102.318	82.37628	231.03	14.503	188223.09	0.0016973	0.11334	46.226	0.00351	1.57520	5.7577
105	82.00124	229.66	14.384	183380.98	0.0017061	0.11267	44.037	0.00351	1.57218	5.5131
110	81.30132	227.08	14.158	174617.26	0.0017229	0.11136	40.260	0.00350	1.56665	5.0900
115	80.60046	224.48	13.926	166189.31	0.0017404	0.10998	36.847	0.00349	1.56092	4.7121
120	79.89852	221.86	13.689	158087.05	0.0017586	0.10854	33.763	0.00348	1.55530	4.3690
125	79.19533	219.21	13.448	150300.52	0.0017775	0.10704	30.975	0.00347	1.54969	4.0591
130	78.49074	216.53	13.204	142819.96	0.0017973	0.10550	28.455	0.00345	1.54407	3.7790
135	77.78454	213.83	12.957	135635.77	0.0018180	0.10391	26.177	0.00344	1.53846	3.5257
140	77.07653	211.09	12.709	128738.55	0.0018397	0.10227	24.116	0.00342	1.53284	3.2965
145	76.36648	208.32	12.459	122119.06	0.0018625	0.10061	22.252	0.00341	1.52722	3.0892
150	75.65414	205.51	12.210	115768.25	0.0018864	0.09892	20.569	0.00337	1.52160	2.9016
155	74.93925	202.66	11.961	109677.25	0.0019116	0.09720	19.039	0.00335	1.51597	2.7319
160	74.22149	199.77	11.714	103837.41	0.0019382	0.09546	17.657	0.00332	1.51033	2.5784
165	73.50056	196.84	11.469	98240.25	0.0019664	0.09370	16.406	0.00329	1.50469	2.4397
170	72.77608	193.86	11.227	92877.51	0.0019962	0.09193	15.272	0.00326	1.49902	2.3144
175	72.04769	190.84	10.990	87741.15	0.0020278	0.09015	14.245	0.00323	1.49334	2.2014
180	71.31495	187.75	10.758	82823.34	0.0020614	0.08836	13.314	0.00321	1.48764	2.0995
185	70.57741	184.62	10.531	78116.46	0.0020973	0.08656	12.469	0.00317	1.48192	2.0078
190	69.83458	181.42	10.312	73613.17	0.0021355	0.08477	11.703	0.00313	1.47617	1.9255
195	69.08591	178.16	10.100	69306.33	0.0021763	0.08297	11.007	0.00310	1.47039	1.8518
200	68.33083	174.84	9.897	65189.08	0.0022201	0.08117	10.375	0.00306	1.46458	1.7860
205	67.56870	171.44	9.703	61254.82	0.0022671	0.07938	9.801	0.00302	1.45873	1.7274
210	66.79885	167.97	9.521	57497.24	0.0023173	0.07759	9.278	0.00298	1.45283	1.6755
215	66.02053	164.42	9.350	53910.30	0.0023714	0.07581	8.803	0.00295	1.44689	1.6299
220	65.23297	160.80	9.193	50488.30	0.0024296	0.07404	8.370	0.00291	1.44089	1.5899
225	64.43533	157.10	9.050	47225.82	0.0024924	0.07228	7.975	0.00286	1.43483	1.5553
230	63.62670	153.33	8.920	44117.82	0.0025600	0.07053	7.615	0.00282	1.42871	1.5258
235	62.81293	151.94	8.441	41124.30	0.0026108	0.06880	7.288	0.00276	1.42256	1.5128
240	61.98550	148.79	8.246	38301.61	0.0026894	0.06708	6.989	0.00270	1.41633	1.5007
245	61.14242	145.46	8.046	35558.65	0.0027737	0.06538	6.713	0.00265	1.41000	1.4914
250	60.28602	142.13	7.869	32975.00	0.0028678	0.06369	6.461	0.00259	1.40359	1.4885
255	59.41605	138.88	7.660	30591.76	0.0029474	0.06202	6.230	0.00255	1.39710	1.4801
260	58.53566	135.44	7.540	28241.76	0.0030757	0.06039	6.018	0.00248	1.39065	1.4945
265	57.63263	132.12	7.276	26139.62	0.0031353	0.05876	5.847	0.00246	1.38365	1.4839
270	56.72104	128.97	7.111	24163.14	0.0032427	0.05717	5.697	0.00241	1.37711	1.5004
275	55.79630	125.88	6.962	22295.93	0.0033657	0.05561	5.549	0.00235	1.37030	1.5221
280	54.85289	122.90	6.745	20608.69	0.0034494	0.05407	5.403	0.00232	1.36337	1.5247
285	53.89843	119.66	6.568	18895.73	0.0035823	0.05258	5.258	0.00224	1.35638	1.5432
290	52.92636	117.71	6.235	17368.64	0.0036928	0.05112	5.119	0.00222	1.34929	1.5659
295	51.94105	114.60	6.093	15958.18	0.0038240	0.04970	4.979	0.00218	1.34213	1.5794
300	50.94171	111.68	5.917	14643.59	0.0039514	0.04831	4.837	0.00215	1.33490	1.5965
310	48.90086	106.32	5.565	12313.06	0.0042250	0.04566	4.567	0.00206	1.32020	1.6173
320	46.81087	101.37	5.240	10356.88	0.0045105	0.04319	4.304	0.00202	1.30567	1.6462
330	44.68357	96.84	4.957	8750.42	0.0047913	0.04113	4.063	0.00198	1.29068	1.6930
340	42.54218	92.86	4.705	7469.42	0.0050248	0.03927	3.833	0.00198	1.27511	1.7395
350	40.41961	89.68	4.477	6465.97	0.0052032	0.03757	3.621	0.00199	1.26009	1.8188
360	38.34950	87.27	4.275	5700.15	0.0052984	0.03602	3.434	0.00203	1.24596	1.9848
370	36.36224	85.57	4.104	5111.34	0.0053286	0.03454	3.266	0.00207	1.23260	1.9649
380	34.48114	84.58	3.951	4666.01	0.0052862	0.03323	3.111	0.00211	1.21946	1.9068
390	32.72189	84.25	3.821	4336.13	0.0051795	0.03207	2.982	0.00225	1.20734	1.9826
400	31.09510	84.46	3.701	4096.93	0.0050067	0.03105	2.872	0.00236	1.19659	1.9941
410	29.60393	85.10	3.607	3917.53	0.0048191	0.03016	2.773	0.00248	1.18601	1.9839
420	28.24109	86.05	3.519	3780.74	0.0046104	0.02939	2.699	0.00262	1.17734	1.9118
430	26.99478	87.31	3.455	3676.34	0.0044161	0.02873	2.632	0.00278	1.16968	1.8715
440	25.85729	88.87	3.386	3605.36	0.0041982	0.02815	2.576	0.00291	1.16178	1.8348
450	24.82006	90.69	3.333	3558.12	0.0039911	0.02765	2.528	0.00308	1.15447	1.7911
460	23.87405	92.62	3.281	3522.21	0.0037923	0.02723	2.488	0.00325	1.14778	1.7568
470	23.00654	94.66	3.236	3495.54	0.0036083	0.02686	2.455	0.00342	1.14213	1.7287
480	22.20937	96.77	3.204	3475.31	0.0034465	0.02656	2.426	0.00359	1.13765	1.7071
490	21.47418	98.94	3.166	3460.51	0.0032861	0.02629	2.403	0.00376	1.13319	1.6780
500	20.79456	101.15	3.142	3449.65	0.0031478	0.02607	2.383	0.00394	1.12980	1.6679
510	20.16383	103.38	3.116	3441.74	0.0030151	0.02584	2.367	0.00411	1.12643	1.6481
520	19.57669	105.63	3.098	3436.61	0.0028965	0.02571	2.354	0.00429	1.12396	1.6382
530	19.03041	107.90	3.067	3431.80	0.0027748	0.02562	2.343	0.00456	1.12145	1.6857
540	18.51878	110.10	3.056	3427.41	0.0026770	0.02554	2.334	0.00468	1.11948	1.6947
550	18.04087	112.41	3.028	3426.40	0.0025684	0.02549	2.328	0.00489	1.11113	1.6993
560	17.59109	114.62	3.019	3425.37	0.0024822	0.02545	2.323	0.00508	1.10826	1.6949
570	17.16674	116.80	3.012	3424.19	0.0024025	0.02543	2.320	0.00528	1.10556	1.6916
580	16.76547	118.94	3.008	3422.81	0.0023288	0.02542	2.318	0.00547	1.10301	1.6893
590	16.38523	121.05	3.005	3421.22	0.0022603	0.02542	2.317	0.00567	1.10059	1.6877
600	16.02421	123.12	3.004	3419.44	0.0021964	0.02543	2.317	0.00587	1.09831	1.6869

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

3400 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 102.594	0.01213	2296.77	319.5	-82.661	-75.022	0.50638	0.267	0.392	3945
105	0.01218	2253.30	313.6	-81.749	-74.080	0.51546	0.266	0.392	3923
110	0.01229	2164.95	301.6	-79.859	-72.124	0.53368	0.262	0.391	3871
115	0.01239	2079.27	290.0	-77.972	-70.170	0.55102	0.258	0.390	3817
120	0.01250	1996.18	278.8	-76.090	-68.220	0.56762	0.255	0.390	3763
125	0.01261	1915.63	268.0	-74.212	-66.272	0.58352	0.251	0.389	3709
130	0.01272	1837.57	257.5	-72.337	-64.327	0.59878	0.248	0.389	3652
135	0.01284	1761.94	247.5	-70.467	-62.385	0.61344	0.245	0.388	3596
140	0.01295	1688.69	237.7	-68.600	-60.444	0.62756	0.242	0.388	3539
145	0.01307	1617.75	228.3	-66.737	-58.506	0.64116	0.240	0.387	3482
150	0.01320	1549.08	219.3	-64.877	-56.569	0.65429	0.237	0.387	3424
155	0.01332	1482.62	210.6	-63.020	-54.634	0.66698	0.234	0.387	3365
160	0.01345	1418.31	202.2	-61.167	-52.701	0.67925	0.232	0.386	3309
165	0.01358	1356.11	194.2	-59.317	-50.769	0.69114	0.230	0.386	3251
170	0.01371	1295.95	186.4	-57.470	-48.837	0.70267	0.227	0.386	3193
175	0.01385	1237.79	179.0	-55.626	-46.907	0.71387	0.225	0.386	3135
180	0.01399	1181.57	171.8	-53.784	-44.976	0.72474	0.223	0.386	3075
185	0.01413	1127.24	164.9	-51.944	-43.046	0.73532	0.221	0.386	3021
190	0.01428	1074.75	158.3	-50.107	-41.115	0.74562	0.219	0.386	2964
195	0.01443	1024.06	152.0	-48.271	-39.184	0.75566	0.217	0.386	2909
200	0.01459	975.12	145.9	-46.437	-37.251	0.76545	0.215	0.387	2853
205	0.01475	927.88	140.1	-44.605	-35.317	0.77500	0.212	0.387	2799
210	0.01492	882.30	134.5	-42.773	-33.381	0.78434	0.210	0.387	2745
215	0.01509	838.34	129.1	-40.943	-31.442	0.79346	0.208	0.388	2694
220	0.01527	795.95	124.0	-39.113	-29.499	0.80239	0.205	0.389	2644
225	0.01545	755.11	119.1	-37.284	-27.553	0.81113	0.202	0.389	2594
230	0.01565	715.78	114.4	-35.454	-25.603	0.81970	0.199	0.390	2547
235	0.01584	677.88	109.8	-33.661	-23.626	0.82821	0.203	0.394	2469
240	0.01605	641.88	104.7	-31.746	-21.641	0.83658	0.202	0.397	2419
245	0.01627	605.40	100.2	-29.882	-19.642	0.84481	0.201	0.400	2363
250	0.01649	570.62	96.2	-28.012	-17.630	0.85294	0.200	0.404	2312
255	0.01672	538.65	91.9	-26.135	-15.606	0.86095	0.199	0.406	2259
260	0.01697	505.86	88.5	-24.260	-13.578	0.86883	0.197	0.412	2212
265	0.01722	476.88	83.7	-22.370	-11.527	0.87665	0.196	0.410	2151
270	0.01749	449.49	80.2	-20.482	-9.471	0.88433	0.195	0.413	2103
275	0.01777	423.12	76.9	-18.590	-7.404	0.89192	0.194	0.418	2059
280	0.01806	399.08	73.1	-16.688	-5.317	0.89944	0.192	0.419	2007
285	0.01837	374.02	69.5	-14.787	-3.224	0.90685	0.191	0.421	1952
290	0.01869	351.35	66.0	-12.867	-1.102	0.91423	0.195	0.427	1891
295	0.01902	330.44	63.0	-10.933	1.043	0.92156	0.193	0.431	1847
300	0.01938	310.61	59.8	-8.999	3.206	0.92881	0.192	0.433	1800
310	0.02014	274.58	54.1	-5.115	7.563	0.94312	0.191	0.439	1709
320	0.02098	243.39	48.8	-1.214	11.993	0.95718	0.191	0.446	1624
330	0.02190	216.91	44.0	2.691	16.481	0.97099	0.190	0.452	1544
340	0.02292	195.36	39.7	6.577	21.016	0.98452	0.188	0.454	1480
350	0.02404	178.35	35.7	10.418	25.551	0.99768	0.186	0.454	1421
360	0.02524	165.62	32.3	14.192	30.081	1.01044	0.184	0.451	1371
370	0.02652	156.15	29.2	17.871	34.566	1.02273	0.183	0.446	1330
380	0.02787	149.50	26.5	21.443	38.987	1.03452	0.181	0.438	1295
390	0.02927	145.19	24.3	24.904	43.333	1.04581	0.180	0.430	1273
400	0.03072	143.21	22.2	28.242	47.583	1.05657	0.178	0.423	1249
410	0.03220	142.79	20.5	31.449	51.719	1.06678	0.177	0.418	1235
420	0.03369	143.46	18.9	34.526	55.736	1.07646	0.176	0.396	1223
430	0.03519	144.91	17.6	37.488	59.641	1.08565	0.174	0.385	1219
440	0.03669	147.22	16.4	40.341	63.442	1.09439	0.173	0.375	1215
450	0.03819	150.40	15.4	43.091	67.137	1.10270	0.172	0.369	1215
460	0.03968	154.05	14.5	45.743	70.726	1.11059	0.171	0.364	1216
470	0.04116	158.04	13.7	48.309	74.221	1.11810	0.170	0.344	1213
480	0.04262	162.22	13.0	50.795	77.626	1.12527	0.169	0.337	1224
490	0.04406	166.60	12.3	53.210	80.951	1.13213	0.169	0.328	1229
500	0.04549	171.11	11.8	55.553	84.200	1.13870	0.167	0.322	1237
510	0.04691	175.68	11.2	57.849	87.381	1.14495	0.166	0.315	1244
520	0.04831	180.33	10.8	60.084	90.497	1.15105	0.165	0.309	1253
530	0.04969	185.01	10.3	62.268	93.551	1.15687	0.164	0.302	1259
540	0.05106	189.65	9.9	64.406	96.550	1.16247	0.163	0.297	1264
550	0.05241	194.42	9.5	66.500	99.494	1.16784	0.162	0.292	1275
560	0.05374	199.16	9.2	68.556	102.392	1.17310	0.161	0.287	1285
570	0.05507	203.86	8.9	70.575	105.246	1.17815	0.16	0.283	1295
580	0.05639	208.52	8.6	72.560	108.060	1.18305	0.159	0.280	1305
590	0.05769	213.13	8.3	74.513	110.835	1.18779	0.157	0.276	1315
600	0.05899	217.70	8.1	76.435	113.574	1.19239	0.156	0.273	1326

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

3400 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_p$ BTU/LB	$V(\partial P/\partial U)_v$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 102.594	82.42517	232.12	14.493	189311.86	0.0016879	0.11344	46.523	0.00351	1.57559	5.7846
105	82.09833	230.91	14.386	184973.79	0.0016955	0.11285	44.548	0.00351	1.57289	5.5641
110	81.39407	228.38	14.160	176214.37	0.0017117	0.11156	40.740	0.00351	1.56729	5.1395
115	80.69705	225.82	13.928	167790.65	0.0017285	0.11020	37.299	0.00350	1.56170	4.7563
120	79.99915	223.24	13.692	159692.51	0.0017460	0.10877	34.188	0.00349	1.55611	4.4104
125	79.30023	220.64	13.451	151909.99	0.0017642	0.10729	31.375	0.00348	1.55052	4.0977
130	78.60011	218.01	13.207	144433.33	0.0017831	0.10576	28.832	0.00346	1.54494	3.8150
135	77.89864	215.35	12.961	137252.91	0.0018029	0.10419	26.532	0.00344	1.53936	3.5593
140	77.19561	212.67	12.713	130359.29	0.0018236	0.10258	24.450	0.00343	1.53379	3.3279
145	76.49083	209.95	12.464	123743.24	0.0018453	0.10093	22.567	0.00341	1.52821	3.1185
150	75.78404	207.19	12.215	117395.68	0.0018681	0.09925	20.863	0.00338	1.52263	2.9289
155	75.07502	204.40	11.967	111307.73	0.0018921	0.09755	19.320	0.00336	1.51704	2.7573
160	74.36347	201.57	11.721	105470.70	0.0019173	0.09583	17.922	0.00333	1.51145	2.6028
165	73.64911	198.70	11.478	99876.10	0.0019440	0.09409	16.656	0.00331	1.50585	2.4615
170	72.93160	195.78	11.238	94515.64	0.0019723	0.09234	15.509	0.00328	1.50024	2.3346
175	72.21058	192.81	11.002	89381.25	0.0020022	0.09058	14.469	0.00325	1.49461	2.2199
180	71.48568	189.79	10.772	84465.06	0.0020339	0.08881	13.525	0.00322	1.48897	2.1164
185	70.75646	186.72	10.548	79759.43	0.0020677	0.08704	12.670	0.00319	1.48331	2.0232
190	70.02248	183.58	10.331	75256.96	0.0021037	0.08526	11.893	0.00315	1.47763	1.9393
195	69.28323	180.38	10.122	70958.48	0.0021421	0.08348	11.187	0.00312	1.47192	1.8641
200	68.53818	177.12	9.922	66833.07	0.0021831	0.08171	10.546	0.00308	1.46618	1.7967
205	67.78676	173.78	9.732	62898.07	0.0022270	0.07994	9.963	0.00305	1.46040	1.7366
210	67.02833	170.37	9.554	59139.10	0.0022741	0.07817	9.433	0.00301	1.45459	1.6831
215	66.26224	166.89	9.388	55550.06	0.0023246	0.07641	8.950	0.00297	1.44873	1.6358
220	65.48777	163.32	9.236	52125.14	0.0023788	0.07466	8.510	0.00293	1.44283	1.5941
225	64.70415	159.67	9.098	48856.83	0.0024371	0.07292	8.106	0.00290	1.43687	1.5577
230	63.91057	155.96	8.975	45745.97	0.0024999	0.07119	7.742	0.00286	1.43086	1.5263
235	63.11312	154.79	8.499	42783.24	0.0025436	0.06949	7.410	0.00280	1.42483	1.5114
240	62.30304	151.81	8.321	39991.17	0.0026176	0.06780	7.105	0.00274	1.41872	1.4993
245	61.47944	148.56	8.113	37219.95	0.0026922	0.06612	6.825	0.00269	1.41253	1.4865
250	60.64397	145.30	7.939	34604.93	0.0027797	0.06445	6.569	0.00263	1.40627	1.4820
255	59.79577	142.16	7.740	32208.80	0.0028536	0.06281	6.334	0.00259	1.39993	1.4728
260	58.94843	138.77	7.609	29815.81	0.0029660	0.06120	6.119	0.00252	1.39356	1.4825
265	58.06259	135.57	7.358	27688.73	0.0030237	0.05960	5.925	0.00250	1.38704	1.4672
270	57.17800	132.51	7.201	25700.69	0.0031187	0.05803	5.778	0.00246	1.38049	1.4814
275	56.28258	129.52	7.058	23814.45	0.0032290	0.05650	5.634	0.00240	1.37388	1.5013
280	55.36926	126.64	6.863	22096.75	0.0033102	0.05499	5.490	0.00237	1.36716	1.5067
285	54.45058	123.47	5.664	20365.80	0.0034120	0.05352	5.349	0.00233	1.36042	1.5157
290	53.51516	121.67	6.341	18802.80	0.0035122	0.05208	5.209	0.00228	1.35359	1.5387
295	52.56851	118.71	6.206	17370.77	0.0036267	0.05069	5.072	0.00224	1.34669	1.5510
300	51.61077	115.91	6.032	16030.96	0.0037328	0.04933	4.937	0.00221	1.33974	1.5590
310	49.66115	110.77	5.690	13636.09	0.0039664	0.04673	4.675	0.00214	1.32566	1.5824
320	47.67224	106.01	5.373	11602.84	0.0042093	0.04430	4.424	0.00208	1.31141	1.6041
330	45.65351	101.56	5.091	9902.76	0.0044475	0.04213	4.184	0.00204	1.29704	1.6151
340	43.62161	97.59	4.843	8521.72	0.0046545	0.04030	3.959	0.00203	1.28269	1.6065
350	41.60324	94.26	4.623	7419.76	0.0048174	0.03861	3.751	0.00204	1.26854	1.5880
360	39.62382	91.76	4.422	6562.56	0.0049187	0.03787	3.561	0.00207	1.25477	1.5607
370	37.71195	89.88	4.246	5888.78	0.0049634	0.03559	3.391	0.00212	1.24157	1.5298
380	35.88727	88.61	4.086	5365.16	0.0049447	0.03427	3.239	0.00218	1.22915	1.4911
390	34.16314	88.01	3.953	4960.05	0.0048903	0.03310	3.107	0.00225	1.21730	1.4540
400	32.55135	87.97	3.827	4661.61	0.0047652	0.03206	2.992	0.00235	1.20639	1.4081
410	31.05925	88.39	3.724	4434.99	0.0046168	0.03115	2.892	0.00246	1.19645	1.3639
420	29.68479	89.10	3.625	4258.53	0.0044388	0.03034	2.808	0.00258	1.18715	1.3175
430	28.41911	90.12	3.553	4118.12	0.0042755	0.02966	2.735	0.00271	1.17872	1.2792
440	27.25383	91.40	3.486	4012.34	0.0040990	0.02905	2.673	0.00285	1.17099	1.2411
450	26.18264	93.00	3.428	3937.84	0.0039200	0.02853	2.621	0.00299	1.16392	1.2056
460	25.20113	94.76	3.368	3882.29	0.0037354	0.02806	2.576	0.00315	1.15747	1.1696
470	24.29761	96.66	3.317	3839.98	0.0035632	0.02767	2.538	0.00331	1.15155	1.1373
480	23.46501	98.64	3.281	3806.55	0.0034116	0.02733	2.506	0.00346	1.14611	1.1107
490	22.69510	100.71	3.239	3781.06	0.0032600	0.02704	2.478	0.00363	1.14110	1.0835
500	21.98192	102.82	3.212	3761.36	0.0031274	0.02679	2.455	0.00379	1.13647	1.0611
510	21.31904	104.97	3.182	3745.41	0.0029994	0.02655	2.436	0.00396	1.13218	1.0401
520	20.70100	107.14	3.162	3733.07	0.0028855	0.02640	2.420	0.00413	1.12819	1.0201
530	20.12558	109.36	3.127	3723.48	0.0027639	0.02628	2.407	0.00432	1.12449	0.9964
540	19.58652	111.52	3.112	3714.60	0.0026674	0.02619	2.396	0.00449	1.12102	0.9797
550	19.08188	113.76	3.086	3709.82	0.0025643	0.02611	2.387	0.00469	1.11778	0.9600
560	18.60687	115.95	3.075	3705.65	0.0024784	0.02606	2.380	0.00487	1.11474	0.9450
570	18.15872	118.11	3.066	3701.79	0.0023987	0.02602	2.375	0.00506	1.11188	0.9311
580	17.73496	120.24	3.058	3698.03	0.0023248	0.02599	2.371	0.00524	1.10918	0.9182
590	17.33344	122.34	3.053	3694.29	0.0022568	0.02598	2.369	0.00543	1.10662	0.9061
600	16.95226	124.41	3.050	3690.50	0.0021920	0.02598	2.367	0.00562	1.10419	0.8947

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

3600 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 102.869	0.01213	2308.59	319.6	-82.626	-74.543	0.50667	0.268	0.392	3956
105	0.01217	2270.20	314.4	-81.821	-73.709	0.51469	0.266	0.391	3934
110	0.01227	2182.05	302.4	-79.935	-71.754	0.53288	0.262	0.391	3882
115	0.01238	2096.56	290.8	-78.054	-69.803	0.55023	0.258	0.390	3829
120	0.01248	2013.67	279.6	-76.177	-67.854	0.56682	0.255	0.389	3775
125	0.01259	1933.32	268.8	-74.304	-65.908	0.58270	0.252	0.389	3721
130	0.01271	1855.46	258.4	-72.435	-63.965	0.59794	0.249	0.388	3665
135	0.01282	1780.04	248.3	-70.571	-62.025	0.61259	0.246	0.388	3609
140	0.01293	1706.99	238.6	-68.709	-60.087	0.62669	0.243	0.387	3553
145	0.01305	1636.26	229.2	-66.852	-58.151	0.64027	0.240	0.387	3496
150	0.01317	1567.80	220.2	-64.999	-56.217	0.65338	0.237	0.386	3439
155	0.01330	1501.55	211.5	-63.149	-54.285	0.66605	0.235	0.386	3382
160	0.01342	1437.46	203.2	-61.303	-52.355	0.67830	0.233	0.386	3324
165	0.01355	1375.47	195.1	-59.460	-50.427	0.69017	0.230	0.386	3267
170	0.01368	1315.52	187.4	-57.620	-48.499	0.70168	0.228	0.385	3211
175	0.01382	1257.57	180.0	-55.784	-46.573	0.71285	0.226	0.385	3153
180	0.01396	1201.57	172.8	-53.951	-44.647	0.72370	0.224	0.385	3096
185	0.01410	1147.46	166.0	-52.121	-42.722	0.73425	0.222	0.385	3041
190	0.01424	1095.19	159.4	-50.292	-40.797	0.74452	0.219	0.385	2984
195	0.01439	1044.71	153.1	-48.466	-38.871	0.75452	0.217	0.385	2929
200	0.01455	995.98	147.1	-46.643	-36.945	0.76428	0.215	0.385	2875
205	0.01471	948.95	141.3	-44.822	-35.018	0.77380	0.213	0.385	2822
210	0.01487	903.57	135.7	-43.002	-33.090	0.78309	0.211	0.386	2773
215	0.01504	859.81	130.4	-41.185	-31.160	0.79218	0.209	0.386	2719
220	0.01521	817.62	125.3	-39.368	-29.227	0.80106	0.205	0.386	2669
225	0.01539	776.98	120.4	-37.553	-27.292	0.80976	0.203	0.387	2621
230	0.01558	737.83	115.7	-35.739	-25.353	0.81827	0.200	0.387	2575
235	0.01577	700.13	110.2	-33.903	-23.389	0.82672	0.203	0.391	2499
240	0.01597	665.63	106.4	-32.064	-21.417	0.83503	0.202	0.395	2454
245	0.01618	628.99	101.7	-30.219	-19.433	0.84321	0.201	0.397	2395
250	0.01640	593.98	97.8	-28.368	-17.438	0.85127	0.200	0.400	2346
255	0.01662	562.11	93.6	-26.512	-15.431	0.85922	0.199	0.403	2295
260	0.01686	528.89	90.0	-24.659	-13.423	0.86702	0.198	0.407	2246
265	0.01710	499.79	85.5	-22.792	-11.391	0.87476	0.197	0.406	2188
270	0.01736	472.56	81.9	-20.928	-9.357	0.88236	0.195	0.409	2142
275	0.01762	446.23	78.7	-19.063	-7.315	0.88986	0.194	0.413	2099
280	0.01790	421.81	75.1	-17.187	-5.253	0.89729	0.193	0.415	2050
285	0.01819	397.04	71.1	-15.318	-3.191	0.90459	0.192	0.414	1993
290	0.01850	373.98	67.8	-13.430	-1.100	0.91186	0.195	0.421	1935
295	0.01881	353.11	64.9	-11.529	1.012	0.91908	0.193	0.424	1894
300	0.01915	333.30	61.7	-9.628	3.135	0.92622	0.193	0.425	1847
310	0.01986	296.99	56.0	-5.819	7.418	0.94025	0.192	0.431	1759
320	0.02064	265.13	50.8	-1.999	11.757	0.95404	0.191	0.437	1676
330	0.02149	237.69	46.0	1.820	16.146	0.96754	0.190	0.441	1601
340	0.02242	215.19	41.7	5.620	20.568	0.98074	0.189	0.444	1533
350	0.02344	196.93	37.7	9.377	25.000	0.99359	0.186	0.443	1475
360	0.02453	182.90	34.3	13.077	29.426	1.00606	0.184	0.442	1425
370	0.02569	172.17	31.1	16.695	33.818	1.01810	0.183	0.437	1382
380	0.02691	164.30	28.3	20.217	38.155	1.02966	0.181	0.430	1344
390	0.02818	158.58	26.0	23.636	42.424	1.04075	0.180	0.424	1317
400	0.02951	155.36	23.9	26.954	46.623	1.05138	0.178	0.415	1294
410	0.03086	153.99	22.0	30.156	50.726	1.06151	0.177	0.405	1277
420	0.03223	153.87	20.4	33.239	54.722	1.07114	0.175	0.394	1263
430	0.03361	154.57	19.0	36.210	58.613	1.08030	0.175	0.384	1255
440	0.03500	155.96	17.7	39.078	62.408	1.08903	0.173	0.375	1253
450	0.03639	158.27	16.7	41.852	66.111	1.09735	0.172	0.366	1248
460	0.03778	161.32	15.7	44.532	69.716	1.10527	0.171	0.356	1245
470	0.03916	164.81	14.8	47.128	73.232	1.11284	0.170	0.346	1247
480	0.04053	168.59	14.0	49.644	76.661	1.12008	0.169	0.339	1251
490	0.04189	172.64	13.3	52.090	80.011	1.12697	0.168	0.331	1255
500	0.04323	176.89	12.7	54.469	83.288	1.13359	0.167	0.324	1261
510	0.04456	181.22	12.1	56.788	86.495	1.13994	0.166	0.317	1267
520	0.04588	185.63	11.6	59.052	89.639	1.14605	0.165	0.312	1275
530	0.04719	190.20	11.1	61.264	92.720	1.15191	0.164	0.305	1280
540	0.04848	194.74	10.7	63.428	95.746	1.15757	0.163	0.300	1289
550	0.04976	199.38	10.2	65.549	98.717	1.16302	0.162	0.295	1296
560	0.05102	204.03	9.9	67.628	101.641	1.16829	0.161	0.290	1305
570	0.05228	208.67	9.5	69.671	104.521	1.17339	0.160	0.286	1315
580	0.05352	213.28	9.2	71.679	107.359	1.17833	0.159	0.282	1324
590	0.05476	217.86	8.9	73.654	110.157	1.18311	0.158	0.278	1334
600	0.05599	222.40	8.7	75.597	112.919	1.18775	0.157	0.275	1344

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

3600 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_p$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 102.869	82.47388	233.22	14.483	190398.65	0.0016787	0.11354	46.821	0.00352	1.57538	5.8117
105	82.17876	232.16	14.389	186561.95	0.0016852	0.11302	45.062	0.00352	1.57301	5.6153
110	81.48608	229.67	14.162	177806.58	0.0017008	0.11175	41.223	0.00351	1.56803	5.1873
115	80.79284	227.15	13.930	169386.82	0.0017169	0.11041	37.753	0.00350	1.56246	4.8009
120	80.39891	224.62	13.694	161292.52	0.0017337	0.10900	34.615	0.00349	1.55631	4.4520
125	79.40415	222.06	13.453	153513.72	0.0017511	0.10754	31.778	0.00348	1.55155	4.1366
130	78.70843	219.48	13.210	146040.64	0.0017692	0.10603	29.211	0.00347	1.54580	3.8514
135	78.31157	216.87	12.964	138863.65	0.0017881	0.10447	26.889	0.00345	1.54026	3.5932
140	77.31341	214.24	12.717	131973.30	0.0018079	0.10288	24.787	0.00344	1.53472	3.3596
145	76.61375	211.57	12.468	125360.32	0.0018285	0.10125	22.885	0.00342	1.52918	3.1480
150	75.91238	208.87	12.220	119015.62	0.0018503	0.09959	21.162	0.00339	1.52364	2.9564
155	75.20906	206.13	11.973	112930.31	0.0018731	0.09791	19.602	0.00337	1.51810	2.7829
160	74.50354	203.36	11.728	107095.67	0.0018971	0.09620	18.189	0.00335	1.51255	2.6258
165	73.79554	200.54	11.486	101503.19	0.0019224	0.09448	16.908	0.00332	1.50699	2.4836
170	73.08477	197.68	11.248	96144.55	0.0019492	0.09275	15.747	0.00329	1.50143	2.3550
175	72.37088	194.77	11.014	91011.64	0.0019775	0.09101	14.694	0.00326	1.49586	2.2387
180	71.65352	191.81	10.785	86096.56	0.0020075	0.08925	13.739	0.00324	1.49028	2.1336
185	70.93231	188.79	10.563	81391.65	0.0020394	0.08750	12.871	0.00320	1.48467	2.0389
190	70.20682	185.72	10.348	76889.46	0.0020733	0.08574	12.084	0.00317	1.47905	1.9535
195	69.47658	182.58	10.142	72582.77	0.0021094	0.08399	11.368	0.00314	1.47341	1.8767
200	68.74112	179.37	9.945	68464.61	0.0021479	0.08223	10.718	0.00310	1.46774	1.8078
205	67.99989	176.10	9.759	64528.28	0.0021891	0.08048	10.126	0.00307	1.46204	1.7462
210	67.25232	172.74	9.584	60767.32	0.0022332	0.07874	9.586	0.00303	1.45630	1.6912
215	66.49780	169.31	9.423	57175.56	0.0022804	0.07700	9.097	0.00300	1.45053	1.6422
220	65.73567	165.79	9.276	53747.13	0.0023311	0.07527	8.650	0.00296	1.44472	1.5989
225	64.96524	162.19	9.144	50476.37	0.0023854	0.07355	8.242	0.00293	1.43886	1.5609
230	64.18575	158.52	9.027	47358.07	0.0024437	0.07184	7.870	0.00289	1.43294	1.5277
235	63.40328	157.57	8.555	44428.26	0.0024814	0.07016	7.532	0.00283	1.42702	1.5111
240	62.60899	154.77	8.399	41674.38	0.0025533	0.06849	7.222	0.00277	1.42102	1.4999
245	61.80351	151.60	8.176	38873.69	0.0026166	0.06683	6.938	0.00273	1.41496	1.4825
250	60.98746	148.40	8.005	36225.17	0.0026985	0.06519	6.677	0.00267	1.40884	1.4766
255	60.15920	145.39	7.818	33815.97	0.0027686	0.06357	6.438	0.00263	1.40264	1.4674
260	59.32704	142.01	7.668	31377.47	0.0028684	0.06199	6.220	0.00257	1.39643	1.4713
265	58.47219	138.92	7.438	29223.91	0.0029243	0.06041	6.016	0.00254	1.39018	1.4565
270	57.61188	135.94	7.283	27225.26	0.0030076	0.05886	5.857	0.00250	1.38370	1.4645
275	56.74277	133.03	7.148	25320.43	0.0031072	0.05735	5.714	0.00245	1.37727	1.4826
280	55.85663	130.22	6.969	23560.91	0.0031864	0.05586	5.573	0.00241	1.37074	1.4902
285	54.96946	127.14	6.745	21825.29	0.0032583	0.05442	5.435	0.00239	1.36402	1.4835
290	54.06674	125.46	6.438	20219.80	0.0033550	0.05301	5.293	0.00233	1.35761	1.5148
295	53.15383	122.61	6.312	18769.16	0.0034562	0.05163	5.165	0.00229	1.35095	1.5260
300	52.23216	119.95	6.137	17408.84	0.0035451	0.05030	5.033	0.00226	1.34425	1.5319
310	50.36125	115.03	5.807	14956.89	0.0037472	0.04774	4.777	0.00220	1.33071	1.5527
320	48.45916	110.43	5.494	12850.51	0.0039556	0.04534	4.531	0.00214	1.31714	1.5714
330	46.53360	106.09	5.212	11069.93	0.0041582	0.04312	4.298	0.00210	1.30329	1.5828
340	44.59669	102.14	4.969	9596.89	0.0043425	0.04128	4.074	0.00209	1.28957	1.5774
350	42.67007	98.72	4.756	8403.23	0.0044900	0.03960	3.873	0.00209	1.27661	1.5614
360	40.77259	96.11	4.562	7457.37	0.0045943	0.03807	3.684	0.00211	1.26275	1.5383
370	38.93146	94.10	4.380	6702.74	0.0046450	0.03659	3.514	0.00215	1.24998	1.5112
380	37.16327	92.64	4.209	6106.62	0.0046366	0.03525	3.361	0.00221	1.23779	1.4745
390	35.48128	91.76	4.079	5626.66	0.0046175	0.03408	3.226	0.00227	1.22628	1.4440
400	33.89232	91.51	3.950	5265.34	0.0045346	0.03332	3.107	0.00235	1.21546	1.4055
410	32.40819	91.75	3.839	4990.40	0.0044168	0.03209	3.003	0.00244	1.20542	1.3652
420	31.03120	92.29	3.732	4774.72	0.0042670	0.03125	2.914	0.00256	1.19616	1.3213
430	29.75589	93.12	3.651	4599.26	0.0041263	0.03055	2.836	0.00267	1.18762	1.2844
440	28.57421	94.15	3.580	4456.38	0.0039808	0.02992	2.770	0.00279	1.17975	1.2491
450	27.47937	95.49	3.521	4349.28	0.0038314	0.02937	2.712	0.00292	1.17249	1.2163
460	26.47020	97.06	3.465	4270.89	0.0036654	0.02888	2.663	0.00307	1.16582	1.1811
470	25.53719	98.81	3.397	4208.80	0.0035063	0.02845	2.621	0.00322	1.15968	1.1449
480	24.67468	100.67	3.357	4159.92	0.0033664	0.02809	2.585	0.00336	1.15402	1.1226
490	23.87465	102.62	3.313	4121.75	0.0032249	0.02777	2.554	0.00351	1.14879	1.0957
500	23.13175	104.64	3.282	4091.66	0.0030987	0.02750	2.528	0.00367	1.14394	1.0731
510	22.44016	106.71	3.248	4066.53	0.0029752	0.02725	2.505	0.00383	1.13946	1.0507
520	21.79434	108.79	3.225	4045.68	0.0028664	0.02708	2.486	0.00398	1.13536	1.0306
530	21.19195	110.96	3.189	4030.68	0.0027486	0.02694	2.470	0.00417	1.13156	1.0068
540	20.62741	113.08	3.171	4017.01	0.0026529	0.02682	2.457	0.00433	1.12772	0.9893
550	20.09788	115.26	3.147	4007.16	0.0025556	0.02673	2.446	0.00452	1.12451	0.9724
560	19.59919	117.41	3.133	3998.90	0.0024706	0.02666	2.437	0.00469	1.12110	0.9548
570	19.12855	119.54	3.121	3991.58	0.0023915	0.02660	2.430	0.00486	1.11808	0.9403
580	18.68346	121.65	3.111	3984.86	0.0023179	0.02656	2.425	0.00504	1.11523	0.9269
590	18.26171	123.74	3.103	3978.49	0.0022493	0.02653	2.421	0.00522	1.11264	0.9143
600	17.86131	125.79	3.098	3972.33	0.0021853	0.02651	2.418	0.00540	1.10998	0.9025

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

3000 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	Cv BTU / LB -R	Cp	VELOCITY OF SOUND FT/SEC
* 103.143	0.01212	2320.38	319.7	-82.591	-74.084	0.51696	0.268	0.391	3964
105	0.01216	2287.02	315.1	-81.891	-73.338	0.51394	0.266	0.391	3945
110	0.01226	2199.07	303.2	-80.010	-71.385	0.53211	0.262	0.390	3893
115	0.01236	2113.77	291.6	-78.134	-69.435	0.54945	0.259	0.390	3840
120	0.01247	2031.07	280.4	-76.262	-67.488	0.56602	0.255	0.389	3787
125	0.01258	1950.92	269.6	-74.394	-65.544	0.58189	0.252	0.388	3733
130	0.01269	1873.26	259.2	-72.531	-63.603	0.59712	0.249	0.388	3678
135	0.01280	1798.03	249.2	-70.671	-61.664	0.61175	0.245	0.387	3622
140	0.01291	1725.18	239.5	-68.816	-59.729	0.62582	0.243	0.387	3566
145	0.01303	1654.66	230.1	-66.965	-57.795	0.63939	0.240	0.386	3511
150	0.01315	1586.40	221.1	-65.118	-55.864	0.65248	0.238	0.386	3453
155	0.01327	1520.35	212.4	-63.275	-53.935	0.66513	0.235	0.385	3396
160	0.01340	1456.46	204.1	-61.436	-52.009	0.67736	0.233	0.385	3341
165	0.01352	1394.67	196.1	-59.600	-50.083	0.68921	0.231	0.385	3283
170	0.01365	1334.93	188.4	-57.768	-48.160	0.70070	0.229	0.385	3225
175	0.01379	1277.19	181.0	-55.939	-46.237	0.71184	0.226	0.384	3170
180	0.01392	1221.39	173.9	-54.114	-44.316	0.72267	0.224	0.384	3114
185	0.01406	1167.48	167.0	-52.292	-42.396	0.73319	0.222	0.384	3059
190	0.01421	1115.41	160.5	-50.473	-40.476	0.74343	0.220	0.384	3003
195	0.01435	1065.13	154.2	-48.657	-38.556	0.75341	0.218	0.384	2949
200	0.01451	1016.60	148.2	-46.843	-36.637	0.76313	0.216	0.384	2896
205	0.01466	969.76	142.4	-45.033	-34.717	0.77262	0.213	0.384	2844
210	0.01482	924.58	136.9	-43.225	-32.796	0.78188	0.211	0.384	2792
215	0.01499	881.01	131.6	-41.419	-30.874	0.79092	0.209	0.384	2743
220	0.01516	839.00	126.5	-39.616	-28.951	0.79976	0.206	0.385	2694
225	0.01533	798.53	121.7	-37.814	-27.025	0.80841	0.203	0.385	2647
230	0.01552	759.55	117.1	-36.015	-25.098	0.81688	0.200	0.385	2602
235	0.01570	723.26	111.6	-34.195	-23.146	0.82528	0.204	0.388	2529
240	0.01590	689.17	108.2	-32.370	-21.184	0.83354	0.203	0.393	2489
245	0.01610	652.34	103.2	-30.543	-19.215	0.84166	0.202	0.394	2428
250	0.01631	617.06	99.3	-28.711	-17.235	0.84966	0.201	0.397	2379
255	0.01653	585.28	95.3	-26.872	-15.243	0.85755	0.200	0.403	2331
260	0.01675	551.58	91.4	-25.041	-13.254	0.86527	0.198	0.403	2279
265	0.01699	522.33	87.2	-23.195	-11.241	0.87294	0.197	0.403	2225
270	0.01723	495.27	83.6	-21.352	-9.226	0.88048	0.196	0.405	2179
275	0.01749	468.96	80.4	-19.511	-7.205	0.88789	0.194	0.409	2138
280	0.01776	443.88	76.9	-17.660	-5.166	0.89524	0.193	0.411	2091
285	0.01803	419.69	72.6	-15.818	-3.130	0.90245	0.192	0.407	2033
290	0.01832	396.05	69.5	-13.960	-1.069	0.90962	0.195	0.415	1976
295	0.01862	375.25	66.6	-12.088	1.015	0.91674	0.194	0.418	1937
300	0.01893	355.53	63.5	-10.217	3.106	0.92377	0.193	0.419	1891
310	0.01960	319.04	57.9	-6.473	7.322	0.93759	0.192	0.424	1807
320	0.02033	286.65	52.7	-2.724	11.583	0.95112	0.191	0.429	1725
330	0.02112	258.74	47.9	1.021	15.886	0.96436	0.190	0.432	1650
340	0.02198	235.06	43.6	4.746	20.216	0.97729	0.188	0.434	1584
350	0.02291	215.69	39.6	8.430	24.554	0.98987	0.186	0.434	1525
360	0.02391	200.38	36.2	12.059	28.886	1.00207	0.184	0.433	1477
370	0.02497	188.47	33.0	15.621	33.195	1.01388	0.183	0.429	1432
380	0.02609	179.58	30.0	19.096	37.455	1.02524	0.181	0.422	1392
390	0.02726	172.64	27.6	22.474	41.653	1.03614	0.180	0.417	1363
400	0.02847	168.10	25.5	25.763	45.793	1.04663	0.178	0.410	1339
410	0.02971	165.76	23.6	28.956	49.860	1.05667	0.177	0.402	1320
420	0.03097	164.90	21.8	32.039	53.833	1.06624	0.176	0.392	1304
430	0.03225	164.97	20.3	35.015	57.708	1.07536	0.175	0.383	1293
440	0.03354	165.58	19.0	37.892	61.489	1.08406	0.174	0.374	1285
450	0.03483	166.99	17.9	40.679	65.188	1.09237	0.173	0.366	1281
460	0.03613	169.33	16.8	43.378	68.799	1.10031	0.171	0.357	1279
470	0.03742	172.26	15.8	45.997	72.327	1.10790	0.170	0.348	1276
480	0.03870	175.57	15.0	48.539	75.773	1.11515	0.169	0.341	1274
490	0.03998	179.24	14.3	51.011	79.144	1.12210	0.168	0.333	1282
500	0.04125	183.19	13.6	53.418	82.443	1.12877	0.167	0.326	1287
510	0.04251	187.28	13.0	55.763	85.673	1.13517	0.166	0.320	1291
520	0.04375	191.45	12.4	58.054	88.841	1.14132	0.165	0.314	1299
530	0.04499	195.88	11.9	60.291	91.947	1.14724	0.164	0.308	1303
540	0.04621	200.33	11.4	62.480	94.997	1.15294	0.163	0.302	1311
550	0.04742	204.80	11.0	64.624	97.992	1.15843	0.162	0.297	1318
560	0.04862	209.33	10.6	66.727	100.940	1.16375	0.161	0.293	1325
570	0.04981	213.88	10.2	68.792	103.843	1.16888	0.160	0.288	1335
580	0.05099	218.42	9.9	70.820	106.703	1.17386	0.159	0.284	1344
590	0.05217	222.95	9.6	72.816	109.523	1.17868	0.158	0.281	1353
600	0.05333	227.45	9.3	74.779	112.306	1.18336	0.157	0.277	1362

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

3800 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_p$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 103.143	82.52241	234.31	14.473	191483.49	0.0016696	0.11365	47.118	0.00352	1.57638	5.8389
105	82.26653	233.41	14.391	188145.53	0.0016750	0.11320	45.578	0.00352	1.57431	5.6669
110	81.57738	230.95	14.164	179393.97	0.0016900	0.11194	41.709	0.00352	1.56877	5.2354
115	80.88784	228.48	13.933	170977.90	0.0017055	0.11062	38.210	0.00351	1.56323	4.8458
120	80.19780	225.99	13.696	162887.18	0.0017216	0.10923	35.045	0.00350	1.55770	4.4939
125	79.50713	223.48	13.456	155111.82	0.0017383	0.10778	32.182	0.00349	1.55217	4.1758
130	78.81570	220.95	13.213	147642.02	0.0017556	0.10629	29.592	0.00348	1.54666	3.8880
135	78.12336	218.39	12.967	140468.15	0.0017737	0.10475	27.248	0.00346	1.54115	3.6274
140	77.42996	215.80	12.720	133580.73	0.0017926	0.10317	25.125	0.00344	1.53564	3.3915
145	76.73530	213.18	12.472	126970.48	0.0018123	0.10156	23.204	0.00343	1.53014	3.1778
150	76.03919	210.52	12.225	120628.29	0.0018330	0.09992	21.463	0.00341	1.52464	2.9842
155	75.34143	207.85	11.979	114545.23	0.0018547	0.09825	19.886	0.00338	1.51914	2.8089
160	74.64176	205.13	11.735	108712.58	0.0018775	0.09657	18.457	0.00336	1.51363	2.6499
165	73.93994	202.37	11.494	103121.81	0.0019015	0.09487	17.162	0.00333	1.50813	2.5060
170	73.23569	199.56	11.257	97764.53	0.0019269	0.09315	15.987	0.00331	1.50261	2.3757
175	72.52869	196.71	11.024	92632.65	0.0019537	0.09143	14.921	0.00328	1.49709	2.2578
180	71.81861	193.80	10.796	87718.22	0.0019820	0.08969	13.953	0.00325	1.49156	2.1512
185	71.10510	190.85	10.573	83013.54	0.0020121	0.08796	13.075	0.00322	1.48601	2.0549
190	70.38776	187.83	10.365	78511.12	0.0020441	0.08622	12.276	0.00319	1.48045	1.9680
195	69.66617	184.75	10.161	74203.70	0.0020781	0.08448	11.551	0.00316	1.47487	1.8897
200	68.93987	181.60	9.967	70084.27	0.0021144	0.08275	10.891	0.00313	1.46927	1.8194
205	68.20836	178.37	9.784	66146.05	0.0021531	0.08101	10.291	0.00309	1.46364	1.7562
210	67.47112	175.07	9.613	62382.56	0.0021944	0.07929	9.744	0.00306	1.45798	1.6997
215	66.72758	171.69	9.456	58787.53	0.0022386	0.07757	9.246	0.00302	1.45229	1.6492
220	65.97713	168.22	9.313	55355.61	0.0022860	0.07586	8.791	0.00299	1.44656	1.6043
225	65.21913	164.67	9.186	52079.32	0.0023367	0.07416	8.377	0.00296	1.44079	1.5646
230	64.45290	161.04	9.076	48955.08	0.0023912	0.07247	7.998	0.00292	1.43497	1.5298
235	63.68419	160.33	8.608	46060.09	0.0024235	0.07081	7.654	0.00286	1.42914	1.5117
240	62.90425	157.66	8.482	43351.83	0.0024950	0.06916	7.339	0.00280	1.42325	1.5026
245	62.11572	154.58	8.234	40820.54	0.0025463	0.06753	7.050	0.00276	1.41731	1.4793
250	61.31779	151.43	8.067	37836.54	0.0026233	0.06591	6.785	0.00271	1.41132	1.4721
255	60.50785	148.52	7.894	35414.11	0.0026911	0.06431	6.541	0.00266	1.40525	1.4635
260	59.69729	145.16	7.719	32927.78	0.0027757	0.06275	6.320	0.00261	1.39919	1.4629
265	58.86358	142.17	7.516	30746.31	0.0028353	0.06119	6.113	0.00258	1.39298	1.4496
270	58.02522	139.30	7.358	28737.94	0.0029074	0.05967	5.932	0.00254	1.38676	1.4494
275	57.17989	136.43	7.232	26814.93	0.0029978	0.05818	5.792	0.00249	1.38050	1.4558
280	56.31874	133.62	7.060	24998.49	0.0030744	0.05671	5.653	0.00245	1.37414	1.4743
285	55.45930	130.69	6.807	23275.67	0.0031171	0.05529	5.518	0.00245	1.36762	1.4637
290	54.58628	129.09	6.527	21618.80	0.0032168	0.05390	5.385	0.00238	1.36142	1.4935
295	53.70311	126.35	5.409	20152.22	0.0033073	0.05254	5.253	0.00234	1.35496	1.5040
300	52.81299	123.81	6.236	18776.35	0.0033822	0.05122	5.124	0.00232	1.34847	1.5080
310	51.01078	119.12	5.915	16274.28	0.0035588	0.04870	4.873	0.00225	1.33540	1.5270
320	49.18431	114.66	5.603	14098.76	0.0037384	0.04634	4.633	0.00220	1.32224	1.5427
330	47.33945	110.46	5.323	12248.75	0.0039116	0.04415	4.404	0.00216	1.30903	1.5518
340	45.48567	106.56	5.084	10691.67	0.0040763	0.04221	4.188	0.00214	1.29585	1.5516
350	43.64020	103.11	4.872	9412.82	0.0042092	0.04055	3.987	0.00214	1.28282	1.5362
360	41.81701	100.32	4.693	8379.27	0.0043144	0.03902	3.804	0.00216	1.27004	1.5173
370	40.04148	98.22	4.506	7546.70	0.0043671	0.03753	3.636	0.00219	1.25767	1.4934
380	38.32744	96.64	4.329	6883.03	0.0043644	0.03619	3.478	0.00224	1.24581	1.4589
390	36.69036	95.55	4.195	6334.14	0.0043634	0.03500	3.339	0.00229	1.23455	1.4321
400	35.12996	95.05	4.070	5905.43	0.0043166	0.03394	3.217	0.00235	1.22388	1.4063
410	33.66009	95.12	3.953	5579.47	0.0042265	0.03299	3.110	0.00244	1.21389	1.3844
420	32.28688	95.54	3.841	5323.98	0.0041018	0.03214	3.016	0.00254	1.20461	1.3240
430	31.00856	96.23	3.751	5115.47	0.0039778	0.03140	2.935	0.00265	1.19611	1.2880
440	29.81915	97.07	3.673	4937.43	0.0038511	0.03075	2.864	0.00276	1.18844	1.2536
450	28.70997	98.17	3.608	4794.30	0.0037286	0.03018	2.802	0.00287	1.18165	1.2237
460	27.68065	99.53	3.540	4687.16	0.0035845	0.02966	2.749	0.00300	1.17582	1.1912
470	26.72449	101.10	3.478	4603.45	0.0034397	0.02921	2.703	0.00314	1.17090	1.1584
480	25.83742	102.82	3.433	4536.32	0.0033122	0.02883	2.663	0.00328	1.16695	1.1327
490	25.01182	104.66	3.388	4483.24	0.0031820	0.02848	2.629	0.00342	1.16383	1.1066
500	24.24302	106.59	3.353	4441.02	0.0030630	0.02819	2.599	0.00356	1.16119	1.0838
510	23.52601	108.57	3.314	4405.94	0.0029442	0.02794	2.574	0.00372	1.15851	1.0632
520	22.85546	110.58	3.289	4375.60	0.0028403	0.02775	2.552	0.00387	1.15615	1.0399
530	22.22830	112.68	3.254	4354.16	0.0027297	0.02759	2.534	0.00403	1.15367	1.0171
540	21.64015	114.77	3.231	4335.21	0.0026348	0.02745	2.518	0.00420	1.15126	1.0007
550	21.08776	116.88	3.207	4318.85	0.0025421	0.02734	2.505	0.00436	1.14909	0.9841
560	20.56707	118.98	3.191	4305.31	0.0024591	0.02725	2.494	0.00453	1.14733	0.9642
570	20.07537	121.08	3.177	4293.67	0.0023812	0.02717	2.485	0.00470	1.14516	0.9493
580	19.61019	123.16	3.165	4283.31	0.0023084	0.02712	2.478	0.00488	1.14317	0.9353
590	19.16929	125.23	3.155	4273.79	0.0022403	0.02708	2.473	0.00506	1.14134	0.9223
600	18.75165	127.27	3.147	4264.84	0.0021766	0.02705	2.468	0.00521	1.13956	0.9101

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

4000 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	Cv BTU / LB -R	Cp	VELOCITY OF SOUND FT/SEC
* 103.417	0.01211	2332.14	319.8	-82.556	-73.586	0.50725	0.265	0.391	3972
105	0.01214	2303.78	315.9	-81.961	-72.967	0.51319	0.267	0.391	3956
110	0.01224	2216.00	303.9	-80.085	-71.015	0.53135	0.263	0.390	3904
115	0.01235	2130.89	292.4	-78.213	-69.067	0.54867	0.259	0.389	3852
120	0.01245	2048.38	281.2	-76.346	-67.121	0.56523	0.256	0.389	3799
125	0.01256	1968.42	270.4	-74.483	-65.179	0.58108	0.252	0.388	3745
130	0.01267	1890.95	260.0	-72.625	-63.240	0.59629	0.249	0.388	3691
135	0.01278	1815.92	250.0	-70.771	-61.304	0.61091	0.246	0.387	3635
140	0.01290	1743.26	240.3	-68.922	-59.374	0.62497	0.244	0.386	3579
145	0.01301	1672.93	231.0	-67.077	-57.439	0.63852	0.241	0.386	3523
150	0.01313	1604.87	222.0	-65.236	-55.511	0.65159	0.239	0.385	3467
155	0.01325	1539.01	213.3	-63.399	-53.585	0.66422	0.236	0.385	3411
160	0.01337	1475.32	205.0	-61.566	-51.661	0.67644	0.234	0.384	3355
165	0.01350	1413.73	197.0	-59.737	-49.739	0.68827	0.231	0.384	3299
170	0.01363	1354.18	189.3	-57.912	-47.819	0.69973	0.229	0.384	3242
175	0.01376	1296.63	182.0	-56.091	-45.901	0.71085	0.227	0.383	3187
180	0.01389	1241.03	174.9	-54.274	-43.984	0.72165	0.225	0.383	3131
185	0.01403	1187.31	168.1	-52.460	-42.068	0.73215	0.223	0.383	3075
190	0.01417	1135.43	161.5	-50.650	-40.153	0.74237	0.221	0.383	3022
195	0.01432	1085.35	155.3	-48.843	-38.239	0.75231	0.218	0.383	2969
200	0.01446	1037.00	149.3	-47.039	-36.325	0.76201	0.216	0.383	2916
205	0.01462	990.35	143.5	-45.239	-34.412	0.77146	0.214	0.383	2865
210	0.01477	945.34	138.1	-43.441	-32.498	0.78068	0.212	0.383	2815
215	0.01494	901.94	132.8	-41.647	-30.584	0.78969	0.209	0.383	2765
220	0.01510	860.10	127.8	-39.856	-28.669	0.79849	0.206	0.383	2718
225	0.01528	819.79	123.0	-38.068	-26.754	0.80710	0.204	0.383	2673
230	0.01545	780.96	118.3	-36.282	-24.836	0.81552	0.200	0.383	2629
235	0.01564	745.50	113.0	-34.477	-22.896	0.82387	0.204	0.386	2557
240	0.01583	712.52	110.0	-32.666	-20.944	0.83209	0.203	0.392	2524
245	0.01602	675.47	104.6	-30.854	-18.988	0.84016	0.202	0.391	2459
250	0.01622	639.88	100.7	-29.040	-17.023	0.84810	0.201	0.394	2411
255	0.01644	606.19	97.0	-27.213	-15.045	0.85593	0.200	0.397	2366
260	0.01665	573.96	92.7	-25.407	-13.073	0.86359	0.199	0.399	2309
265	0.01688	544.53	88.9	-23.580	-11.076	0.87120	0.198	0.400	2261
270	0.01712	517.62	85.2	-21.757	-9.078	0.87867	0.196	0.401	2215
275	0.01736	491.33	82.0	-19.938	-7.078	0.88601	0.195	0.405	2175
280	0.01762	465.25	78.4	-18.111	-5.060	0.89328	0.194	0.407	2127
285	0.01788	442.00	73.8	-16.292	-3.047	0.90041	0.193	0.400	2063
290	0.01816	417.57	71.2	-14.461	-1.013	0.90748	0.195	0.410	2015
295	0.01844	396.87	68.3	-12.615	1.045	0.91452	0.194	0.413	1974
300	0.01874	377.31	65.2	-10.771	3.110	0.92146	0.193	0.413	1934
310	0.01937	340.73	59.7	-7.083	7.266	0.93509	0.192	0.418	1852
320	0.02006	307.78	54.5	-3.397	11.459	0.94840	0.192	0.421	1771
330	0.02080	279.45	49.7	0.283	15.687	0.96141	0.190	0.424	1698
340	0.02160	254.92	45.4	3.942	19.939	0.97410	0.189	0.426	1633
350	0.02246	234.59	41.4	7.560	24.194	0.98644	0.187	0.426	1574
360	0.02338	217.99	38.0	11.128	28.444	0.99841	0.184	0.425	1525
370	0.02436	204.96	34.7	14.632	32.672	1.01000	0.183	0.421	1480
380	0.02538	195.25	31.8	18.066	36.868	1.02119	0.181	0.415	1440
390	0.02645	187.35	29.2	21.406	41.000	1.03192	0.180	0.410	1403
400	0.02757	181.43	27.0	24.662	45.080	1.04225	0.178	0.405	1382
410	0.02872	178.01	25.1	27.835	49.104	1.05219	0.177	0.399	1362
420	0.02989	176.35	23.3	30.915	53.052	1.06170	0.176	0.390	1344
430	0.03107	175.89	21.7	33.894	56.910	1.07078	0.175	0.381	1332
440	0.03227	176.00	20.3	36.777	60.677	1.07944	0.174	0.372	1321
450	0.03347	176.56	19.1	39.572	64.365	1.08773	0.173	0.365	1313
460	0.03468	178.12	17.9	42.284	67.974	1.09566	0.172	0.357	1310
470	0.03589	180.39	16.9	44.919	71.506	1.10326	0.171	0.348	1306
480	0.03710	183.17	16.0	47.480	74.961	1.11054	0.170	0.342	1307
490	0.03831	186.40	15.2	49.975	78.347	1.11752	0.169	0.335	1303
500	0.03950	190.00	14.5	52.404	81.663	1.12422	0.168	0.328	1313
510	0.04069	193.87	13.9	54.774	84.913	1.13065	0.167	0.322	1316
520	0.04187	197.81	13.3	57.087	88.100	1.13684	0.166	0.316	1322
530	0.04304	202.07	12.7	59.349	91.229	1.14281	0.165	0.311	1328
540	0.04420	206.46	12.2	61.561	94.301	1.14855	0.164	0.305	1334
550	0.04535	210.85	11.7	63.725	97.318	1.15408	0.163	0.299	1340
560	0.04649	215.42	11.3	65.852	100.287	1.15944	0.162	0.295	1348
570	0.04762	219.44	10.9	67.937	103.211	1.16461	0.161	0.291	1356
580	0.04875	223.90	10.5	69.986	106.091	1.16962	0.160	0.286	1364
590	0.04986	228.36	10.2	72.003	108.932	1.17448	0.159	0.283	1373
600	0.05097	232.82	9.9	73.981	111.733	1.17919	0.158	0.279	1382

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

4000 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_p$ BTU/LB	$V(\partial P/\partial U)_v$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC X 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 103.417	82.57076	235.41	14.463	192566.39	0.0016605	0.11375	47.417	0.00352	1.57677	5.8662
105	82.35366	234.65	14.393	189724.61	0.0016650	0.11337	46.698	0.00352	1.57502	5.7189
110	81.66798	232.23	14.166	180976.63	0.0016794	0.11213	42.197	0.00352	1.56949	5.2838
115	80.98208	229.81	13.934	172564.01	0.0016943	0.11082	38.664	0.00351	1.56368	4.8910
120	80.29585	227.36	13.698	164476.60	0.0017097	0.10945	35.478	0.00351	1.55748	4.5362
125	79.60919	224.89	13.458	156704.41	0.0017257	0.10802	32.589	0.00351	1.55099	4.2152
130	78.92197	222.40	13.215	149237.61	0.0017423	0.10654	29.975	0.00348	1.54751	3.9248
135	78.23405	219.89	12.970	142066.55	0.0017596	0.10502	27.609	0.00347	1.54263	3.6619
140	77.54528	217.35	12.723	135181.75	0.0017777	0.10346	25.466	0.00345	1.53696	3.4237
145	76.85551	214.78	12.476	128573.89	0.0017965	0.10187	23.525	0.00344	1.53109	3.2079
150	76.16454	212.19	12.230	122233.86	0.0018162	0.10024	21.766	0.00342	1.52503	3.0123
155	75.47217	209.55	11.984	116152.70	0.0018368	0.09860	20.173	0.00339	1.52017	2.8350
160	74.77820	206.89	11.741	110321.67	0.0018585	0.09693	18.728	0.00337	1.51471	2.6743
165	74.08237	204.18	11.501	104732.19	0.0018812	0.09524	17.417	0.00335	1.50964	2.5287
170	73.38443	201.43	11.265	99375.69	0.0019053	0.09355	16.228	0.00332	1.50378	2.3967
175	72.68410	198.63	11.034	94244.62	0.0019306	0.09184	15.143	0.00329	1.49830	2.2772
180	71.98106	195.78	10.809	89330.40	0.0019575	0.09013	14.169	0.00327	1.49262	2.1696
185	71.27497	192.88	10.591	84625.49	0.0019859	0.08841	13.279	0.00324	1.48733	2.0732
190	70.56548	189.92	10.381	80122.37	0.0020161	0.08669	12.470	0.00321	1.48183	1.9868
195	69.85218	186.89	10.179	75813.74	0.0020482	0.08497	11.735	0.00318	1.47651	1.9091
200	69.13465	183.79	9.988	71692.55	0.0020823	0.08325	11.065	0.00315	1.47077	1.8393
205	68.41244	180.62	9.808	67751.97	0.0021187	0.08154	10.456	0.00311	1.46521	1.7766
210	67.68504	177.37	9.641	63985.44	0.0021575	0.07983	9.901	0.00308	1.45962	1.7206
215	66.95193	174.04	9.487	60386.65	0.0021990	0.07813	9.395	0.00305	1.45401	1.6707
220	66.21256	170.61	9.348	56949.58	0.0022434	0.07644	8.934	0.00302	1.44835	1.6263
225	65.46631	167.10	9.227	53668.47	0.0022909	0.07476	8.512	0.00298	1.44267	1.5870
230	64.71256	163.51	9.122	50537.86	0.0023418	0.07309	8.127	0.00295	1.43694	1.5526
235	63.95654	162.97	8.659	47679.43	0.0023696	0.07145	7.777	0.00289	1.43120	1.5132
240	63.18964	160.50	8.570	45024.00	0.0024429	0.06982	7.455	0.00282	1.42541	1.5073
245	62.41698	157.51	8.288	42161.09	0.0024804	0.06820	7.162	0.00280	1.41958	1.4769
250	61.63605	154.40	8.124	39439.74	0.0025533	0.06661	6.893	0.00274	1.41370	1.4486
255	60.84304	151.57	7.968	37003.93	0.0026202	0.06503	6.645	0.00269	1.40776	1.4616
260	60.05270	148.25	7.762	34467.60	0.0026890	0.06350	6.421	0.00265	1.40185	1.4511
265	59.23854	145.32	7.594	32256.90	0.0027551	0.06196	6.210	0.00261	1.39577	1.4447
270	58.42017	142.56	7.429	30239.64	0.0028163	0.06045	6.017	0.00258	1.38969	1.4387
275	57.59649	139.75	7.309	28298.84	0.0028989	0.05898	5.867	0.00253	1.38358	1.4528
280	56.75872	136.87	7.135	26407.82	0.0029707	0.05753	5.731	0.00249	1.37739	1.4580
285	55.92358	134.15	6.850	24718.49	0.0029846	0.05613	5.598	0.00251	1.37123	1.4375
290	55.07797	132.58	6.608	22998.85	0.0030941	0.05476	5.467	0.00242	1.36502	1.4743
295	54.22124	129.93	6.498	21518.77	0.0031760	0.05342	5.338	0.00239	1.35874	1.4844
300	53.35893	127.52	6.329	20132.65	0.0032398	0.05211	5.211	0.00236	1.35245	1.4871
310	51.61723	123.06	6.015	17587.31	0.0033950	0.04962	4.965	0.00230	1.33979	1.5046
320	49.85744	118.71	5.702	15344.94	0.0035497	0.04729	4.729	0.00225	1.32718	1.5170
330	48.08301	114.66	5.427	13436.71	0.0036994	0.04512	4.505	0.00221	1.31434	1.5247
340	46.30247	110.84	5.191	11803.66	0.0038464	0.04311	4.293	0.00218	1.30165	1.5284
350	44.52910	107.40	4.981	10446.04	0.0039860	0.04145	4.094	0.00219	1.28909	1.5145
360	42.77371	104.46	4.811	9324.28	0.0040701	0.03994	3.909	0.00220	1.27674	1.4984
370	41.05882	102.20	4.627	8415.50	0.0041232	0.03844	3.740	0.00222	1.26475	1.4761
380	39.39537	100.61	4.449	7691.76	0.0041291	0.03708	3.584	0.00227	1.25319	1.4463
390	37.80215	99.39	4.305	7082.40	0.0041292	0.03588	3.448	0.00231	1.24219	1.4195
400	36.27524	98.62	4.182	6581.25	0.0041101	0.03481	3.324	0.00237	1.23170	1.3930
410	34.82440	98.48	4.065	6199.13	0.0040467	0.03385	3.213	0.00244	1.22160	1.3618
420	33.45969	98.78	3.949	5900.70	0.0039459	0.03298	3.116	0.00252	1.21253	1.3254
430	32.18269	99.38	3.852	5660.71	0.0038358	0.03222	3.030	0.00263	1.20390	1.2908
440	30.99098	100.13	3.760	5454.35	0.0037181	0.03154	2.950	0.00273	1.19589	1.2560
450	29.87506	101.02	3.692	5274.82	0.0036154	0.03095	2.891	0.00284	1.18842	1.2281
460	28.83262	102.18	3.623	5135.23	0.0034947	0.03042	2.834	0.00296	1.18147	1.1973
470	27.85937	103.55	3.556	5025.27	0.0033651	0.02995	2.784	0.00310	1.17500	1.1661
480	26.95293	105.11	3.510	4936.84	0.0032505	0.02954	2.741	0.00321	1.16900	1.1411
490	26.10618	106.82	3.462	4866.31	0.0031325	0.02918	2.703	0.00334	1.16342	1.1160
500	25.31522	108.65	3.424	4809.91	0.0030214	0.02886	2.671	0.00347	1.15822	1.0935
510	24.57581	110.56	3.383	4764.61	0.0029086	0.02862	2.642	0.00362	1.15337	1.0690
520	23.88340	112.49	3.353	4724.34	0.0028085	0.02841	2.618	0.00376	1.14884	1.0483
530	23.23373	114.53	3.322	4694.79	0.0027076	0.02822	2.597	0.00392	1.14461	1.0277
540	22.62386	116.58	3.295	4669.61	0.0026138	0.02807	2.579	0.00417	1.14064	1.0095
550	22.05078	118.62	3.268	4645.04	0.0025239	0.02794	2.564	0.00423	1.13692	0.9931
560	21.50989	120.66	3.249	4624.95	0.0024438	0.02783	2.551	0.00439	1.13342	0.9786
570	20.99865	122.71	3.234	4608.01	0.0023679	0.02774	2.540	0.00455	1.13011	0.9659
580	20.51466	124.76	3.220	4593.25	0.0022964	0.02767	2.531	0.00471	1.12699	0.9546
590	20.05573	126.80	3.208	4580.00	0.0022292	0.02761	2.524	0.00487	1.12404	0.9451
600	19.61984	128.82	3.198	4567.81	0.0021661	0.02757	2.518	0.00504	1.12124	0.9375

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

4500 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 104.099	0.01209	2361.39	319.9	-82.463	-72.391	0.50797	0.268	0.390	3991
105	0.01211	2345.36	317.7	-82.131	-72.039	0.51133	0.267	0.390	3982
110	0.01221	2258.03	305.8	-80.266	-70.091	0.52946	0.264	0.389	3931
115	0.01231	2173.36	294.3	-78.406	-68.146	0.54675	0.260	0.389	3881
120	0.01242	2091.30	283.2	-76.551	-66.204	0.56327	0.257	0.388	3827
125	0.01252	2011.79	272.4	-74.700	-64.266	0.57910	0.253	0.387	3774
130	0.01263	1934.78	262.0	-72.855	-62.331	0.59427	0.250	0.387	3721
135	0.01274	1860.20	252.0	-71.014	-60.400	0.60885	0.247	0.386	3666
140	0.01285	1788.00	242.4	-69.178	-58.472	0.62287	0.245	0.385	3612
145	0.01296	1718.12	233.1	-67.347	-56.547	0.63638	0.242	0.385	3557
150	0.01308	1650.52	224.2	-65.521	-54.624	0.64942	0.239	0.384	3502
155	0.01319	1585.12	215.5	-63.699	-52.705	0.66200	0.237	0.384	3447
160	0.01331	1521.88	207.3	-61.882	-50.788	0.67417	0.235	0.383	3392
165	0.01344	1460.75	199.3	-60.070	-48.874	0.68595	0.233	0.382	3337
170	0.01356	1401.66	191.7	-58.262	-46.963	0.69736	0.230	0.382	3282
175	0.01369	1344.55	184.3	-56.458	-45.053	0.70843	0.228	0.382	3228
180	0.01382	1289.39	177.3	-54.659	-43.146	0.71918	0.226	0.381	3174
185	0.01395	1236.12	170.5	-52.865	-41.241	0.72962	0.224	0.381	3120
190	0.01409	1184.67	164.1	-51.075	-39.338	0.73977	0.222	0.380	3068
195	0.01422	1135.01	157.9	-49.289	-37.436	0.74965	0.220	0.380	3015
200	0.01437	1087.08	151.9	-47.508	-35.536	0.75928	0.218	0.380	2966
205	0.01451	1040.83	146.3	-45.731	-33.638	0.76866	0.215	0.380	2915
210	0.01466	996.22	140.8	-43.959	-31.741	0.77780	0.213	0.379	2868
215	0.01482	953.20	135.6	-42.191	-29.844	0.78673	0.210	0.379	2821
220	0.01498	911.72	130.7	-40.428	-27.949	0.79544	0.208	0.379	2776
225	0.01514	871.75	125.9	-38.669	-26.055	0.80395	0.205	0.378	2733
230	0.01531	833.24	121.4	-36.915	-24.161	0.81227	0.201	0.378	2691
235	0.01548	796.90	116.3	-35.165	-22.267	0.82050	0.205	0.381	2625
240	0.01566	770.13	114.9	-33.362	-20.314	0.82864	0.204	0.391	2614
245	0.01584	732.45	107.8	-31.586	-18.386	0.83659	0.203	0.384	2532
250	0.01603	695.93	104.1	-29.811	-16.454	0.84440	0.202	0.387	2485
255	0.01623	664.39	101.0	-28.027	-14.506	0.85212	0.201	0.392	2449
260	0.01642	628.67	95.4	-26.261	-12.575	0.85962	0.200	0.388	2377
265	0.01664	598.65	93.1	-24.476	-10.614	0.86709	0.199	0.395	2348
270	0.01685	572.16	89.0	-22.694	-8.651	0.87443	0.198	0.394	2299
275	0.01708	545.88	85.9	-20.919	-6.690	0.88162	0.196	0.397	2262
280	0.01731	515.58	81.3	-19.148	-4.726	0.88870	0.195	0.394	2198
285	0.01755	496.63	75.7	-17.377	-2.756	0.89568	0.194	0.381	2125
290	0.01779	468.97	74.8	-15.607	-0.782	0.90254	0.197	0.400	2102
295	0.01805	448.59	72.2	-13.817	1.223	0.90939	0.195	0.402	2073
300	0.01832	429.84	69.3	-12.029	3.233	0.91615	0.194	0.402	2032
310	0.01887	393.47	63.9	-8.458	7.270	0.92939	0.193	0.405	1956
320	0.01947	358.98	58.4	-4.900	11.324	0.94226	0.193	0.406	1873
330	0.02011	330.49	54.0	-1.350	15.407	0.95483	0.191	0.409	1803
340	0.02079	304.57	49.7	2.174	19.500	0.96704	0.190	0.410	1746
350	0.02152	282.38	45.7	5.663	23.594	0.97891	0.188	0.410	1689
360	0.02229	262.37	42.1	9.099	27.673	0.99040	0.186	0.409	1635
370	0.02311	246.57	38.7	12.476	31.729	1.00152	0.183	0.406	1590
380	0.02397	235.63	36.4	15.804	35.775	1.01231	0.181	0.408	1566
390	0.02486	227.26	33.2	19.068	39.783	1.02272	0.180	0.397	1524
400	0.02578	217.54	30.6	22.244	43.724	1.03278	0.179	0.391	1485
410	0.02673	210.53	28.6	25.355	47.631	1.04235	0.177	0.389	1462
420	0.02771	205.89	26.6	28.392	51.486	1.05164	0.176	0.388	1439
430	0.02872	203.97	25.0	31.364	55.295	1.06060	0.175	0.387	1425
440	0.02974	204.85	23.6	34.262	59.043	1.06922	0.175	0.370	1419
450	0.03076	206.32	22.1	37.067	62.698	1.07743	0.174	0.362	1404
460	0.03178	203.49	20.8	39.795	66.279	1.08530	0.173	0.355	1393
470	0.03282	203.78	19.6	42.453	69.800	1.09288	0.172	0.348	1384
480	0.03386	204.91	18.6	45.043	73.254	1.10015	0.171	0.342	1381
490	0.03490	206.76	17.7	47.569	76.648	1.10715	0.169	0.337	1379
500	0.03594	209.23	16.9	50.037	79.984	1.11389	0.168	0.331	1380
510	0.03698	212.79	16.2	52.453	83.270	1.12040	0.167	0.327	1387
520	0.03802	216.40	15.4	54.816	86.495	1.12666	0.166	0.321	1384
530	0.03905	219.77	14.8	57.126	89.665	1.13270	0.166	0.315	1393
540	0.04007	223.52	14.2	59.388	92.781	1.13852	0.165	0.310	1395
550	0.04109	226.97	13.6	61.601	95.837	1.14413	0.164	0.303	1396
560	0.04209	230.73	13.1	63.772	98.849	1.14956	0.163	0.299	1403
570	0.04310	234.72	12.6	65.904	101.817	1.15481	0.162	0.295	1409
580	0.04410	238.84	12.2	67.998	104.742	1.15990	0.161	0.291	1415
590	0.04509	243.07	11.8	70.056	107.627	1.16483	0.160	0.287	1424
600	0.04607	247.34	11.5	72.080	110.472	1.16961	0.159	0.284	1432

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

4500 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 104.099	82.69088	238.14	14.437	195265.30	0.0016384	0.11400	48.169	0.00353	1.57774	5.9351
105	82.56876	237.73	14.397	193653.13	0.0016407	0.11379	47.409	0.00353	1.57675	5.8531
110	81.89150	235.41	14.170	184913.12	0.0016538	0.11259	43.431	0.00353	1.57129	5.4063
115	81.21441	233.09	13.939	176508.11	0.0016673	0.11132	39.830	0.00352	1.56585	5.0054
120	80.53742	230.75	13.702	168427.91	0.0016811	0.10999	36.579	0.00352	1.56042	4.6430
125	79.86044	228.39	13.463	160662.51	0.0016955	0.10861	33.618	0.00351	1.55506	4.3151
130	79.18336	226.01	13.220	153202.03	0.0017104	0.10717	30.944	0.00350	1.54979	4.0182
135	78.50608	223.61	12.975	146036.78	0.0017258	0.10569	28.522	0.00349	1.54419	3.7492
140	77.82847	221.19	12.730	139157.23	0.0017418	0.10417	26.327	0.00347	1.53881	3.5054
145	77.15041	218.75	12.484	132554.02	0.0017585	0.10262	24.337	0.00346	1.53343	3.2843
150	76.47173	216.27	12.239	126217.98	0.0017759	0.10104	22.533	0.00344	1.52806	3.0837
155	75.79227	213.77	11.995	120140.11	0.0017941	0.09943	20.896	0.00342	1.52269	2.9016
160	75.11185	211.23	11.755	114311.60	0.0018132	0.09781	19.411	0.00340	1.51733	2.7364
165	74.43028	208.65	11.517	108723.81	0.0018332	0.09617	18.063	0.00338	1.51197	2.5864
170	73.74732	206.03	11.284	103368.31	0.0018542	0.09451	16.839	0.00335	1.50662	2.4503
175	73.06274	203.36	11.056	98236.86	0.0018764	0.09285	15.727	0.00333	1.50126	2.3269
180	72.37627	200.65	10.835	93321.43	0.0018998	0.09118	14.716	0.00330	1.49590	2.2148
185	71.68764	197.87	10.621	88614.19	0.0019245	0.08950	13.797	0.00328	1.49054	2.1133
190	70.99652	195.04	10.416	84107.53	0.0019507	0.08782	12.961	0.00325	1.48517	2.0213
195	70.30259	192.14	10.220	79794.05	0.0019785	0.08615	12.200	0.00322	1.47979	1.9379
200	69.60548	189.17	10.035	75666.58	0.0020080	0.08446	11.506	0.00321	1.47440	1.8625
205	68.90481	186.12	9.862	71718.21	0.0020393	0.08281	10.875	0.00317	1.46900	1.7944
210	68.20014	182.98	9.702	67942.24	0.0020727	0.08115	10.299	0.00314	1.46358	1.7328
215	67.49104	179.75	9.557	64332.23	0.0021084	0.07949	9.773	0.00311	1.45813	1.6773
220	66.77702	176.42	9.428	60882.00	0.0021464	0.07785	9.293	0.00308	1.45267	1.6272
225	66.05758	173.00	9.317	57585.63	0.0021870	0.07621	8.854	0.00305	1.44717	1.5823
230	65.33217	169.48	9.225	54437.49	0.0022304	0.07459	8.452	0.00302	1.44165	1.5420
235	64.60378	169.43	8.778	51676.70	0.0022498	0.07299	8.086	0.00296	1.43611	1.5204
240	63.86437	167.33	8.815	49183.81	0.0023363	0.07139	7.749	0.00286	1.43051	1.5277
245	63.12754	164.62	8.408	46238.00	0.0023323	0.06982	7.444	0.00288	1.42494	1.4735
250	62.38496	161.58	8.251	43415.80	0.0023973	0.06828	7.164	0.00283	1.41934	1.4630
255	61.62920	158.92	8.149	40945.97	0.0024669	0.06675	6.904	0.00276	1.41365	1.4610
260	60.88460	155.69	7.834	38276.11	0.0024926	0.06527	6.672	0.00276	1.40807	1.4281
265	60.11372	152.85	7.787	35987.08	0.0025862	0.06378	6.452	0.00268	1.40230	1.4398
270	59.33830	150.36	7.590	33950.92	0.0026207	0.06231	6.250	0.00266	1.39652	1.4229
275	58.56121	147.73	7.476	31967.17	0.0026883	0.06088	6.065	0.00262	1.39074	1.4241
280	57.77839	144.36	7.220	29789.25	0.0027293	0.05948	5.914	0.00261	1.38493	1.4103
285	56.98988	142.54	6.861	28303.08	0.0026753	0.05811	5.785	0.00257	1.37910	1.3663
290	56.20649	140.74	6.774	26358.90	0.0028395	0.05680	5.661	0.00253	1.37332	1.4338
295	55.40472	138.27	6.691	24854.12	0.0029064	0.05549	5.536	0.00249	1.36742	1.4433
300	54.59892	136.20	6.544	23468.53	0.0029528	0.05421	5.413	0.00247	1.36151	1.4457
310	52.98097	132.27	6.241	20846.38	0.0030645	0.05178	5.177	0.00241	1.34969	1.4588
320	51.35931	128.16	5.985	18436.92	0.0031671	0.04951	4.951	0.00238	1.33792	1.4613
330	49.72588	124.62	5.666	16433.87	0.0032830	0.04738	4.736	0.00233	1.32613	1.4721
340	48.09448	121.04	5.435	14648.17	0.0033899	0.04541	4.532	0.00231	1.31443	1.4741
350	46.46946	117.72	5.229	13122.06	0.0034818	0.04359	4.340	0.00229	1.30284	1.4690
360	44.86172	114.48	5.048	11770.29	0.0035740	0.04207	4.160	0.00229	1.29144	1.4566
370	43.28007	111.82	4.878	10671.57	0.0036275	0.04056	3.993	0.00231	1.28029	1.4376
380	41.72445	110.35	4.808	9831.62	0.0036997	0.03924	3.838	0.00230	1.26939	1.4378
390	40.22611	109.17	4.590	9141.71	0.0036352	0.03795	3.698	0.00238	1.25845	1.3922
400	38.79317	107.71	4.418	8439.15	0.0036268	0.03684	3.571	0.00243	1.24902	1.3641
410	37.40718	106.91	4.315	7875.45	0.0036364	0.03587	3.456	0.00247	1.23947	1.3467
420	36.08189	106.58	4.190	7428.78	0.0035873	0.03496	3.352	0.00252	1.23038	1.3197
430	34.82010	107.00	4.099	7102.17	0.0035240	0.03416	3.259	0.00260	1.22177	1.2949
440	33.62578	108.11	4.018	6888.24	0.0034232	0.03343	3.176	0.00269	1.21366	1.2657
450	32.51155	108.81	3.912	6642.83	0.0033235	0.03278	3.103	0.00279	1.20612	1.2325
460	31.46263	109.44	3.825	6402.48	0.0032445	0.03221	3.033	0.00288	1.19906	1.2060
470	30.47081	110.34	3.745	6209.26	0.0031531	0.03170	2.982	0.00299	1.19240	1.1792
480	29.53691	111.46	3.691	6052.48	0.0030717	0.03126	2.931	0.00309	1.18616	1.1556
490	28.65575	112.78	3.641	5924.92	0.0029848	0.03088	2.886	0.00321	1.18029	1.1324
500	27.82528	114.25	3.599	5821.76	0.0028968	0.03055	2.847	0.00332	1.17478	1.1112
510	27.04021	116.04	3.579	5753.99	0.0028154	0.03025	2.811	0.00342	1.16958	1.0930
520	26.30325	117.89	3.528	5692.11	0.0027141	0.02999	2.781	0.00356	1.16472	1.0679
530	25.60877	119.65	3.498	5628.03	0.0026345	0.02977	2.754	0.00369	1.16015	1.0499
540	24.95349	121.52	3.464	5577.60	0.0025500	0.02957	2.730	0.00382	1.15584	1.0331
550	24.33892	123.36	3.412	5524.21	0.0024591	0.02940	2.710	0.00398	1.15182	1.0187
560	23.75592	125.22	3.391	5481.29	0.0023940	0.02925	2.692	0.00411	1.14801	1.0071
570	23.20280	127.12	3.373	5446.05	0.0023221	0.02913	2.677	0.00425	1.14441	0.9967
580	22.67770	129.06	3.356	5416.42	0.0022565	0.02902	2.664	0.00439	1.14099	0.9883
590	22.17875	131.01	3.340	5390.90	0.0021935	0.02893	2.652	0.00454	1.13775	0.9815
600	21.70414	132.97	3.327	5368.38	0.0021334	0.02886	2.643	0.00469	1.13467	0.9753

* TWO-PHASE BOUNDARY

C-2a

THERMODYNAMIC PROPERTIES OF OXYGEN

5000 PSIA ISOBAR

TEMPERATURE DEG. R	VOLUME CU FT/LB	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	C_v BTU / LB -R	C_p	VELOCITY OF SOUND FT/SEC
* 104.777	0.01208	2390.44	320.1	-82.374	-71.198	0.50868	0.264	0.389	4010
105	0.01208	2386.51	319.5	-82.295	-71.111	0.50951	0.264	0.389	4005
110	0.01218	2299.59	307.6	-80.441	-69.165	0.52761	0.264	0.389	3958
115	0.01228	2215.35	296.1	-78.592	-67.224	0.54487	0.261	0.388	3907
120	0.01238	2133.71	285.0	-76.748	-65.286	0.56136	0.257	0.387	3855
125	0.01248	2054.63	274.3	-74.910	-63.352	0.57715	0.254	0.386	3803
130	0.01259	1978.03	264.0	-73.076	-61.421	0.59229	0.251	0.386	3750
135	0.01269	1903.88	254.0	-71.246	-59.494	0.60684	0.248	0.385	3697
140	0.01280	1832.10	244.4	-69.425	-57.571	0.62083	0.245	0.384	3643
145	0.01291	1762.65	235.1	-67.607	-55.651	0.63430	0.243	0.384	3589
150	0.01303	1695.46	226.2	-65.795	-53.735	0.64729	0.241	0.383	3535
155	0.01314	1630.48	217.7	-63.987	-51.821	0.65984	0.238	0.382	3481
160	0.01326	1567.66	209.4	-62.185	-49.911	0.67197	0.236	0.382	3427
165	0.01337	1506.93	201.5	-60.387	-48.004	0.68370	0.234	0.381	3374
170	0.01350	1448.24	193.9	-58.595	-46.100	0.69507	0.232	0.380	3320
175	0.01362	1391.54	186.6	-56.808	-44.199	0.70609	0.229	0.380	3267
180	0.01374	1336.78	179.6	-55.026	-42.301	0.71679	0.227	0.379	3214
185	0.01387	1283.88	172.9	-53.249	-40.405	0.72718	0.225	0.379	3161
190	0.01400	1232.82	166.5	-51.478	-38.512	0.73728	0.223	0.378	3111
195	0.01414	1183.52	160.3	-49.711	-36.622	0.74710	0.221	0.378	3061
200	0.01427	1135.95	154.5	-47.950	-34.734	0.75666	0.219	0.377	3012
205	0.01441	1090.04	148.8	-46.195	-32.849	0.76597	0.217	0.377	2964
210	0.01456	1045.76	143.4	-44.445	-30.966	0.77505	0.214	0.376	2918
215	0.01471	1003.05	138.3	-42.700	-29.085	0.78390	0.212	0.376	2873
220	0.01486	961.87	133.4	-40.962	-27.207	0.79254	0.209	0.375	2830
225	0.01501	922.17	128.7	-39.230	-25.331	0.80096	0.206	0.374	2789
230	0.01517	883.92	124.3	-37.504	-23.458	0.80919	0.202	0.374	2750
235	0.01534	852.76	119.4	-35.784	-21.586	0.81733	0.206	0.377	2689
240	0.01551	826.75	120.4	-34.004	-19.647	0.82541	0.205	0.393	2703
245	0.01568	788.34	110.8	-32.263	-17.745	0.83326	0.204	0.378	2599
250	0.01585	750.71	107.1	-30.518	-15.839	0.84096	0.203	0.381	2554
255	0.01604	719.26	105.0	-28.766	-13.917	0.84857	0.202	0.388	2529
260	0.01622	681.83	97.5	-27.041	-12.022	0.85593	0.201	0.379	2435
265	0.01642	651.07	97.3	-25.291	-10.092	0.86329	0.200	0.392	2432
270	0.01662	625.00	92.5	-23.543	-8.156	0.87052	0.199	0.384	2377
275	0.01683	598.70	89.5	-21.805	-6.227	0.87760	0.196	0.391	2342
280	0.01703	568.81	81.9	-20.086	-4.315	0.88449	0.196	0.376	2232
285	0.01726	550.11	75.6	-18.343	-2.365	0.89140	0.195	0.358	2165
290	0.01748	516.84	78.0	-16.634	-0.453	0.89804	0.198	0.391	2176
295	0.01771	496.88	75.7	-14.885	1.512	0.90476	0.196	0.393	2150
300	0.01795	479.62	73.2	-13.140	3.483	0.91139	0.195	0.395	2122
310	0.01846	444.22	67.7	-9.662	7.428	0.92432	0.194	0.396	2049
320	0.01899	407.72	61.6	-6.206	11.375	0.93686	0.194	0.392	1967
330	0.01956	380.41	58.1	-2.751	15.356	0.94911	0.193	0.400	1913
340	0.02016	354.16	53.6	0.672	19.333	0.96098	0.191	0.399	1850
350	0.02079	330.93	49.7	4.061	23.308	0.97250	0.189	0.399	1797
360	0.02145	307.04	45.6	7.390	27.249	0.98366	0.187	0.395	1733
370	0.02215	288.27	42.2	10.671	31.174	0.99436	0.185	0.393	1685
380	0.02289	277.37	42.2	13.921	35.118	1.00488	0.182	0.419	1718
390	0.02368	272.27	37.7	17.113	39.034	1.01504	0.180	0.391	1655
400	0.02445	258.76	33.6	20.265	42.841	1.02468	0.179	0.372	1573
410	0.02525	246.19	31.8	23.247	46.625	1.03402	0.174	0.377	1554
420	0.02608	235.52	29.1	26.221	50.364	1.04304	0.177	0.367	1505
430	0.02694	230.45	27.9	29.153	54.099	1.05183	0.176	0.371	1511
440	0.02786	236.33	27.6	32.078	57.869	1.06050	0.175	0.378	1540
450	0.02875	237.55	25.4	34.891	61.509	1.06868	0.174	0.361	1519
460	0.02962	233.99	23.5	37.613	65.048	1.07644	0.173	0.350	1488
470	0.03051	231.83	22.2	40.276	68.526	1.08394	0.172	0.344	1465
480	0.03141	230.84	21.1	42.879	71.959	1.09117	0.171	0.343	1458
490	0.03231	230.80	20.1	45.425	75.343	1.09814	0.170	0.336	1451
500	0.03322	231.62	19.2	47.917	78.678	1.10488	0.169	0.331	1449
510	0.03416	233.52	18.9	50.373	81.995	1.11145	0.168	0.336	1475
520	0.03509	239.60	17.9	52.764	85.248	1.11777	0.167	0.326	1471
530	0.03599	240.90	16.9	55.095	88.420	1.12381	0.166	0.317	1459
540	0.03696	243.09	16.2	57.388	91.553	1.12966	0.165	0.313	1462
550	0.03780	245.38	15.4	59.633	94.626	1.13539	0.164	0.305	1452
560	0.03869	248.24	14.9	61.833	97.662	1.14077	0.163	0.301	1457
570	0.03959	251.54	14.4	64.003	100.663	1.14604	0.162	0.296	1462
580	0.04048	255.15	13.9	66.140	103.619	1.15122	0.161	0.295	1469
590	0.04137	258.99	13.4	68.235	106.539	1.15622	0.160	0.291	1475
600	0.04226	262.99	13.0	70.297	109.422	1.16106	0.159	0.287	1482

* TWO-PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

5000 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(\partial H/\partial V)_P$ BTU/LB	$V(\partial P/\partial U)_V$ PSIA-CU FT/BTU	$-V(\partial P/\partial V)_T$ PSIA	$(\partial V/\partial T)_P/V$ 1/DEG. R	THERMAL CONDUCTIVITY BTU/FT-HR-R	VISCOSITY LB/FT-SEC x 10^5	THERMAL DIFFUSIVITY SQ FT/HR	DIELECTRIC CONSTANT	PRANDTL NUMBER
* 104.777	82.80994	240.88	14.410	197952.53	0.0016169	0.11425	48.928	0.00354	1.57870	6.0348
105	82.78009	240.78	14.400	197555.14	0.0016175	0.11420	48.736	0.00354	1.57846	5.9836
110	82.11091	238.56	14.174	188821.79	0.0016293	0.11304	44.681	0.00354	1.57346	5.5308
115	81.44227	236.33	13.942	180423.62	0.0016414	0.11181	41.005	0.00354	1.56768	5.1217
120	80.77411	234.10	13.705	172348.63	0.0016539	0.11052	37.678	0.00353	1.56231	4.7517
125	80.10636	231.85	13.466	164588.53	0.0016667	0.10917	34.662	0.00353	1.55696	4.4166
130	79.43893	229.58	13.224	157132.81	0.0016800	0.10777	31.928	0.00352	1.55163	4.1134
135	78.77175	227.29	12.980	149971.76	0.0016937	0.10633	29.449	0.00351	1.54631	3.8383
140	78.10471	224.99	12.735	143095.78	0.0017080	0.10486	27.202	0.00349	1.54100	3.5887
145	77.43770	222.66	12.490	136495.47	0.0017228	0.10335	25.162	0.00348	1.53570	3.3623
150	76.77060	220.30	12.246	130161.62	0.0017382	0.10181	23.312	0.00346	1.53042	3.1566
155	76.10326	217.92	12.004	124085.16	0.0017542	0.10024	21.632	0.00345	1.52514	2.9698
160	75.43554	215.50	11.765	118257.23	0.0017710	0.09866	20.106	0.00343	1.51988	2.8001
165	74.76725	213.04	11.530	112669.13	0.0017886	0.09706	18.720	0.00341	1.51462	2.6458
170	74.09822	210.55	11.300	107312.37	0.0018070	0.09544	17.460	0.00339	1.50937	2.5056
175	73.42823	208.01	11.075	102178.65	0.0018264	0.09382	16.315	0.00336	1.50412	2.3782
180	72.75707	205.41	10.857	97259.86	0.0018468	0.09219	15.272	0.00334	1.49887	2.2624
185	72.08448	202.76	10.647	92548.09	0.0018683	0.09056	14.324	0.00332	1.49363	2.1571
190	71.41020	200.05	10.446	88035.65	0.0018911	0.08892	13.460	0.00329	1.48838	2.0615
195	70.73393	197.28	10.254	83715.07	0.0019153	0.08729	12.673	0.00327	1.48313	1.9747
200	70.05536	194.46	10.075	79579.10	0.0019409	0.08566	11.955	0.00324	1.47788	1.8958
205	69.37414	191.46	9.907	75620.70	0.0019681	0.08403	11.301	0.00321	1.47262	1.8242
210	68.68991	188.42	9.754	71833.08	0.0019970	0.08241	10.703	0.00319	1.46734	1.7593
215	68.00228	185.28	9.616	68209.69	0.0020278	0.08080	10.157	0.00316	1.46206	1.7003
220	67.31082	182.04	9.496	64744.24	0.0020606	0.07919	9.658	0.00314	1.45675	1.6469
225	66.61509	178.68	9.395	61430.68	0.0020957	0.07760	9.201	0.00311	1.45143	1.5984
230	65.91461	175.22	9.313	58263.22	0.0021331	0.07601	8.783	0.00309	1.44608	1.5546
235	65.20898	171.62	9.249	55237.62	0.0021729	0.07444	8.399	0.00306	1.44071	1.5149
240	64.49779	167.87	9.204	52348.99	0.0022156	0.07287	8.044	0.00303	1.43525	1.4792
245	63.78531	171.49	8.505	50284.57	0.0022031	0.07135	7.727	0.00296	1.42991	1.4730
250	63.07645	168.47	8.357	47352.81	0.0022628	0.06986	7.438	0.00291	1.42455	1.4609
255	62.35220	165.90	8.323	44847.35	0.0023404	0.06836	7.165	0.00282	1.41909	1.4651
260	61.64795	162.89	8.258	42033.29	0.0023189	0.06694	6.925	0.00287	1.41379	1.4267
265	60.91420	159.93	7.981	39659.40	0.0024525	0.06548	6.695	0.00274	1.40829	1.4436
270	60.17397	157.70	7.732	37608.52	0.0024602	0.06405	6.483	0.00274	1.40275	1.4137
275	59.43532	155.24	7.624	35583.75	0.0025162	0.06266	6.290	0.00270	1.39724	1.4116
280	58.70712	151.24	7.109	32923.64	0.0024882	0.06132	6.115	0.00278	1.39162	1.3509
285	57.94593	151.03	6.696	31876.57	0.0023724	0.05996	5.958	0.00289	1.38617	1.2818
290	57.22107	148.15	6.899	29574.41	0.0026385	0.05870	5.840	0.00262	1.38060	1.4001
295	56.46265	145.87	5.838	28055.17	0.0026971	0.05741	5.719	0.00258	1.37520	1.4107
300	55.69902	144.15	5.742	26714.40	0.0027404	0.05616	5.599	0.00255	1.36958	1.4180
310	54.17574	140.73	5.437	24465.91	0.0028124	0.05377	5.369	0.00251	1.35841	1.4228
320	52.66463	136.78	5.042	21472.53	0.0028684	0.05155	5.153	0.00250	1.34739	1.4117
330	51.13449	133.89	5.901	19451.93	0.0029864	0.04945	4.943	0.00242	1.33629	1.4349
340	49.61541	130.66	5.656	17571.70	0.0030516	0.04750	4.745	0.00240	1.32534	1.4338
350	48.10370	127.58	5.463	15919.15	0.0031238	0.04570	4.558	0.00238	1.31449	1.4311
360	46.62166	123.95	5.230	14314.75	0.0031875	0.04406	4.384	0.00236	1.30392	1.4155
370	45.15354	121.04	5.062	13016.44	0.0032454	0.04254	4.221	0.00240	1.29350	1.4032
380	43.67885	120.34	5.294	12115.04	0.0034819	0.04136	4.065	0.00226	1.28316	1.4827
390	42.23714	119.42	4.948	11499.81	0.0032749	0.03987	3.920	0.00241	1.27298	1.3845
400	40.90227	117.21	4.593	10583.71	0.0031761	0.03872	3.795	0.00254	1.26336	1.3135
410	39.60409	115.43	4.513	9749.97	0.0032604	0.03771	3.679	0.00253	1.25403	1.3223
420	38.35047	113.86	4.301	9032.27	0.0032269	0.03680	3.573	0.00261	1.24597	1.2842
430	37.12212	113.71	4.280	8554.64	0.0032622	0.03597	3.475	0.00261	1.23751	1.2899
440	35.89784	116.33	4.399	8483.62	0.0032517	0.03527	3.381	0.00260	1.22912	1.3064
450	34.78353	117.42	4.202	8262.91	0.0030759	0.03450	3.301	0.00275	1.22152	1.2440
460	33.75686	117.49	4.027	7898.62	0.0029792	0.03393	3.232	0.00287	1.21455	1.2064
470	32.77384	117.91	3.930	7598.00	0.0029203	0.03341	3.170	0.00296	1.20759	1.1761
480	31.83630	118.59	3.867	7349.69	0.0028703	0.03294	3.114	0.00304	1.20158	1.1542
490	30.94678	119.46	3.805	7142.37	0.0028091	0.03252	3.063	0.00312	1.19569	1.1340
500	30.09838	120.57	3.759	6971.32	0.0027489	0.03215	3.016	0.00322	1.18991	1.1220
510	29.27605	122.39	3.840	6895.15	0.0027450	0.03183	2.975	0.00323	1.18442	1.1318
520	28.50220	124.31	3.751	6829.22	0.0026193	0.03149	2.939	0.00339	1.17927	1.0938
530	27.78387	125.56	3.653	6693.27	0.0025211	0.03123	2.907	0.00355	1.17440	1.0646
540	27.09959	126.97	3.624	6587.67	0.0024641	0.03100	2.878	0.00366	1.16997	1.0459
550	26.45847	128.57	3.538	6492.35	0.0023693	0.03079	2.854	0.00386	1.16574	1.0162
560	25.84578	130.17	3.519	6416.02	0.0023160	0.03062	2.831	0.00397	1.16170	1.0037
570	25.26109	131.87	3.500	6354.12	0.0022602	0.03046	2.812	0.00405	1.15796	0.9856
580	24.70351	133.65	3.483	6303.12	0.0022034	0.03032	2.795	0.00417	1.15461	0.9777
590	24.17185	135.48	3.466	6260.33	0.0021477	0.03020	2.779	0.00429	1.15173	0.9746
600	23.66478	137.35	3.451	6223.71	0.0020924	0.03010	2.765	0.00442	1.14942	0.9810

* TWO-PHASE BOUNDARY

Table C-12

Second and Third Virial Coefficients for Oxygen

T (K)	B (cm^3/mol)	C (cm^3/mol)^2	T (K)	B (cm^3/mol)	C (cm^3/mol)^2
85	-267.78	-21462	210	-44.66	1580
90	-240.67	-12764	215	-42.47	1537
95	-217.51	- 7058	220	-40.02	1498
100	-197.54	- 3326	225	-37.90	1461
105	-180.20	- 904	230	-35.89	1428
110	-165.05	644	235	-33.98	1397
115	-151.71	1609	240	-32.17	1368
120	-139.91	2187	245	-30.45	1342
125	-129.41	2507	250	-28.81	1317
130	-120.02	2659	255	-27.25	1294
135	-111.59	2702	260	-25.77	1273
140	-103.98	2677	265	-24.34	1253
145	- 97.08	2611	270	-22.98	1234
150	- 90.81	2522	275	-21.68	1217
155	- 85.09	2423	280	-20.44	1201
160	- 79.84	2320	285	-19.24	1186
165	- 75.02	2219	290	-18.09	1172
170	- 70.58	2122	295	-16.98	1160
175	- 66.48	2031	300	-15.92	1149
180	- 62.67	1948			
185	- 59.14	1871			
190	- 55.85	1801			
195	- 52. 77	1738			
200	- 49.89	1680			
205	- 47.20	1628			

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Table C-12a

Parameters for Calculation of the Second and Third
Virial Coefficients for Oxygen
(See Equations on Sheet A-12)

$B_1 = -1.5226420059 \times 10^3$

$B_2 = 2.7768311172 \times 10^4$

$B_3 = -1.8606884996 \times 10^5$

$B_4 = 5.5834774260 \times 10^5$

$B_5 = -6.5056457930 \times 10^5$

$C_1 = 3.3711154314 \times 10^5$

$C_2 = -2.5369852041 \times 10^7$

$C_3 = 7.6407469222 \times 10^8$

$C_4 = -1.1480733696 \times 10^{10}$

$C_5 = 8.6044663037 \times 10^{10}$

$C_6 = -2.5679270159 \times 10^{11}$

Table C . 4

FIXED POINT PROPERTIES OF OXYGEN (Metric Units)

PROPERTIES \ CONDITIONS →		Triple Point			Normal Boiling Point		Critical	Standard Conditions		References and Notes ‡
		Solid	Liquid	Vapor	Liquid	Vapor	Point ††	STP(0°C)	NTP(20°C)	
Temperature (K)		54.351			90.180*		154.576	273.15	293.15	[64400]
Pressure (mmHg)		1.138			760		37.823	760	760	[64400]
Density (mole/cm³) x 10^3		42.46	40.83	0.000336	35.65	0.1399	13.63	0.04466	0.04160	[64400]
Specific Volume (cm³/mole) x 10^{-3}		0.02355	0.02449	2975	0.028047	7.1501	0.07337	22.392	24.038	[64400]
Compressibility Factor, $Z = \frac{PV}{RT}$		——	0.0000082	0.9986	0.00379	0.9662	0.2879	0.9990	0.9992	b
Heats of Fusion & Vaporization (J/mole)		444.8[2]		7761.4	6812.3		0	——	——	c
Specific Heat (J/mole-K)	C_v, @ saturation	46.07	53.313	-108.7	54.14	-53.2	(very large)	——	——	[57396]
	C_p, @ constant pressure	——	53.27	29.13	54.28	30.77	(very large)	29.33	29.40	[64400, 57396]
	C_v, @ constant volume	——	35.65	20.81	29.64	21.28	(18.7)	20.96	21.04	[64400, 57396]
Specific Heat Ratio, $\gamma = C_p/C_v$		——	1.494	1.400	1.832	1.446	(large)	1.40	1.40	d
Enthalpy (J/mole)		-6634.4[3]	-6189.6	1571.8	-4270.3	2542.0	1032.2	7937.8	8525.1	[64400], f
Internal Energy (J/mole)		-6634.4[3]	-6189.6	1120.0	-4273.1	1817.5	662.3	5668.9	6089.5	[64400], f
Entropy (J/mole-K)		58.92[4]	67.11	209.54	94.17	169.68	134.42	202.4	204.5	[64400], f
Velocity of Sound (m/sec)			1159	141	903	178	164	315	326	[64400]
Viscosity, u	(N-sec/m²) x 10^3	——	0.6194	0.003914	0.1958	0.00685	(0.031)	0.01924	0.02036	[71808]
	(centipoise) ††	——	0.6194	0.003914	0.1958	0.00685	(0.031)	0.01924	0.02036	[71808]
Thermal Conductivity (mW/cm-K), k			1.927	0.04826	1.515	0.08544	(*)	0.2428	0.2575	[71808]
Prandtl Number, $N_{pr} = u\,C_p/k$		——	5.344	0.7392	2.193	0.7714		0.7259	0.7265	[71808]
Dielectric Constant, ϵ		(1.614)	1.5687	1.000004	1.4870	1.00166	1.17082	1.00053	1.00049	[V0358]
Index of Refraction, $n = \sqrt{\epsilon}$ †		(1.271)	1.2525	1.000002	1.219	1.00083	1.0820	1.00027	1.00025	g
Surface Tension (N/m) x 10^3		——	22.65	——	13.20	——	0	——	——	[71808]
Equiv. Vol. /Vol. Liquid at NBT		0.8397	0.8732	106.068	1	254.9	2.616	798.4	857.1	h

† Long Wavelengths
* Anomalously Large
‡ Apply to all items on the line except for specific values separately referenced by superscript

Gas Constant: R = 62,365.4 cm³-mm Hg/mole-K [1]
†† Values in parenthesis are estimates

Molecular Weight = 31.9988[3]
"mole" = gram mole
‡‡ Units for poise are: g/cm-sec

Superscripts 1, 2, and 3 refer to references [64400], [527] and [24033] respectively.

Additional Notes:

a. Based on the NBS-1955 temperature scale using 90.180 K as a fixed point for the normal boiling temperature of oxygen. (The IPTS-1968 temperature scale uses 90.188 K as the normal boiling temperature of oxygen but the reported data used in these tables has not yet been converted to the new temperature scale.)

273.15 K = 0°C = 32°F = 491.67°R

b. Compressibility factor calculated from the tabulated data using the gas constant, R, from reference [64400].

c. Heats of vaporization calculated from enthalpy differences given in reference [64400].

d. Calculated from property values given in this table.

e. Enthalpy of solid oxygen at the triple point calculated by subtracting the heat of fusion given in reference [527] from enthalpy of the liquid at the triple point given in reference [64400].

f. Base point (zero values) for enthalpy, internal energy, and entropy are 0 K for the ideal gas at 1 atmosphere pressure.

g. Index of refraction calculated from the dielectric constant data given in reference [V0358].

h. Ratio of specific volumes reported in reference [64400].

413

Table C-14a

FIXED POINT PROPERTIES OF OXYGEN (English Units)

PROPERTIES \ CONDITIONS →		Triple Point			Normal Boiling Point		Critical	Standard Conditions		References
		Solid	Liquid	Vapor	Liquid	Vapor	Point ‡‡	STP(32°F)	NTP(68°F)	and Notes †
Temperature (°F)			-361.84			-297.35[a]	-181.43	32.0	68.0	[64400]
Pressure (psia)			0.0220			14.696	731.4	14.696	14.696	[64400]
Density (lb/ft³)		84.82	81.57	0.0006715	71.23	0.2794	27.23	0.0892	0.0831	[64400]
Specific Volume (ft³/lb)		0.01179	0.01226	1489.2	0.01404	3.5793	0.03673	11.21	12.03	[64400]
Compressibility Factor, $Z = \frac{PV}{RT}$		—	0.0000082	0.9985	0.00379	0.9662	0.2879	0.9990	0.9992	b
Heats of Fusion & Vaporization (Btu/lb)		5.976[a]		104.348		91.588	0	—	—	c
Specific Heat (Btu/lb-°R)	C_v, @ saturation	0.345	0.398	-0.812	0.404	-0.397	(very large)	—	—	[57396]
	C_p, @ constant pressure	—	0.398	0.218	0.405	0.230	(very large)	0.219	0.220	[64400 57396]
	C_v, @ constant volume	—	0.266	0.155	0.221	0.159	(0.289)	0.157	0.157	[64400 57396]
Specific Heat Ratio, $\gamma = C_p/C_v$		—	1.496	1.406	1.833	1.447	(large)	1.40	1.40	d
Enthalpy (Btu/lb)		-89.192[e]	-83.216	21.132	-57.412	34.176	13.88	106.72	114.62	[64400], f
Internal Energy (Btu/lb)		-89.192[e]	-83.216	15.057	-57.450	24.435	8.90	76.22	81.875	[64400], f
Entropy (Btu/lb-°R)		0.4401[e]	0.50122	1.5651	0.70339	1.2674	1.004	1.5123	1.5278	[64400], f
Velocity of Sound (ft/sec)			3804	461	2963	583	537	1033	1070	[64400]
Viscosity, u	(lb/sec-ft) x 10^5	—	41.62	0.263	13.16	0.460	(2.1)	1.293	1.368	[71808]
	(centipoise) ‡‡	—	0.6194	0.003914	0.1958	0.00685	(0.031)	0.01924	0.02036	[71808]
Thermal Conductivity (Btu/hr-ft-°R), k			0.11156	0.00279	0.08758	0.00494	(*)	0.01404	0.01489	[71808]
Prandtl Number, $N_{Pr} = u\,C_p/k$		—	5.3437	0.7392	2.1929	0.7714		0.7259	0.7265	[71808]
Dielectric Constant, ε		(1.614)	1.5687	1.000004	1.4870	1.00166	1.17082	1.00053	1.00049	[V0358]
Index of Refraction, $n = \sqrt{\varepsilon}$ †		(1.271)	1.2525	1.000002	1.219	1.00083	1.0820	1.00027	1.00025	g
Surface Tension (lb/ft) x 10^3		—	1.552	—	0.9046	—	0	—	—	[71808]
Equiv. Vol./Vol. Liquid at NBT		0.8397	0.8732	106.068	1	254.9	2.616	798.4	857.1	h

† Long Wavelengths
‡ Anomalously Large
‡‡ Values in parenthesis are estimates
‡ Apply to all items on the line except for specific values separately referenced by superscript

Gas Constant: R = 0.335385 ft³ - psi/lb-°R [1]

‡‡ Units for poise are: g/cm-sec

Superscripts 1 and 2 refer to references [64400] and [527] respectively

Additional Notes:

a. Based on the NBS-1955 temperature scale using 90.180 K as a fixed point for the normal boiling temperature of oxygen. (The IPTS-1968 temperature scale used 90.188 K as the normal boiling temperature of oxygen but the reported data used in these tables has not yet been converted to the new temperature scale.)

273.15 K = 0°C = 32°F = 491.67°R

b. Compressibility factor calculated from the tabulated data using the gas constant, R, from reference [64400].

c. Heats of vaporization calculated from enthalpy differences given in reference [64400].

d. Calculated from property values given in this table.

e. Enthalpy of solid oxygen at the triple point calculated by subtracting the heat of fusion given in reference [527] from enthalpy of the liquid at the triple point given in reference [64400].

f. Base point (zero values) for enthalpy, internal energy, and entropy are 0 K for the ideal gas at 1 atmosphere pressure.

g. Index of refraction calculated from the dielectric constant data given in reference [V0358].

h. Ratio of specific volumes reported in reference [64400].

414

Table C-20

THE SPECIFIC REFRACTION AND REFRACTIVE INDEX
OF SATURATED LIQUID OXYGEN AT THREE WAVELENGTHS

		4358 A		5461 A		6939 A	
T	DENSITY	R	N	R	N	R	N
K	cm^3/mol	cm^3/mol		cm^3/mol		cm^3/mol	
54.35	0.0408	4.0561	1.2631	4.0003	1.2592	3.9630	1.2567
56.00	0.0406	4.0568	1.2616	4.0009	1.2577	3.9637	1.2552
58.00	0.0403	4.0576	1.2598	4.0017	1.2559	3.9645	1.2534
60.00	0.0401	4.0584	1.2579	4.0025	1.2541	3.9653	1.2516
62.00	0.0398	4.0591	1.2560	4.0033	1.2523	3.9660	1.2498
64.00	0.0395	4.0599	1.2542	4.0041	1.2504	3.9668	1.2479
66.00	0.0392	4.0607	1.2523	4.0049	1.2486	3.9676	1.2461
68.00	0.0389	4.0615	1.2504	4.0057	1.2467	3.9684	1.2443
70.00	0.0386	4.0623	1.2485	4.0064	1.2448	3.9692	1.2424
72.00	0.0384	4.0631	1.2466	4.0072	1.2430	3.9699	1.2406
74.00	0.0381	4.0638	1.2447	4.0080	1.2411	3.9707	1.2387
76.00	0.0378	4.0646	1.2427	4.0088	1.2392	3.9715	1.2368
78.00	0.0375	4.0654	1.2408	4.0095	1.2372	3.9723	1.2349
80.00	0.0372	4.0662	1.2388	4.0103	1.2353	3.9730	1.2330
82.00	0.0369	4.0669	1.2368	4.0111	1.2334	3.9738	1.2311
84.00	0.0366	4.0677	1.2348	4.0119	1.2314	3.9746	1.2291
86.00	0.0363	4.0685	1.2328	4.0126	1.2294	3.9754	1.2272
88.00	0.0360	4.0692	1.2308	4.0134	1.2274	3.9761	1.2252
90.00	0.0357	4.0700	1.2287	4.0142	1.2254	3.9769	1.2232
92.00	0.0354	4.0708	1.2266	4.0150	1.2234	3.9777	1.2212
94.00	0.0351	4.0716	1.2246	4.0157	1.2213	3.9785	1.2191
96.00	0.0347	4.0724	1.2224	4.0165	1.2192	3.9793	1.2171
98.00	0.0344	4.0731	1.2203	4.0173	1.2171	3.9800	1.2150
100.00	0.0341	4.0739	1.2181	4.0181	1.2149	3.9808	1.2128
102.00	0.0338	4.0747	1.2159	4.0189	1.2128	3.9816	1.2107
104.00	0.0334	4.0755	1.2136	4.0197	1.2105	3.9824	1.2085
106.00	0.0331	4.0763	1.2114	4.0205	1.2083	3.9832	1.2063
108.00	0.0327	4.0771	1.2090	4.0213	1.2060	3.9840	1.2040
110.00	0.0324	4.0779	1.2067	4.0221	1.2037	3.9848	1.2017
112.00	0.0320	4.0787	1.2042	4.0229	1.2013	3.9856	1.1993
114.00	0.0316	4.0795	1.2018	4.0237	1.1989	3.9864	1.1969
116.00	0.0312	4.0804	1.1992	4.0245	1.1964	3.9873	1.1945
118.00	0.0308	4.0812	1.1967	4.0254	1.1938	3.9881	1.1920
120.00	0.0304	4.0820	1.1940	4.0262	1.1912	3.9889	1.1894
122.00	0.0300	4.0829	1.1913	4.0271	1.1885	3.9898	1.1867
124.00	0.0296	4.0838	1.1884	4.0279	1.1857	3.9907	1.1839
126.00	0.0291	4.0847	1.1855	4.0288	1.1829	3.9916	1.1811
128.00	0.0287	4.0856	1.1825	4.0297	1.1799	3.9925	1.1781
130.00	0.0282	4.0865	1.1794	4.0306	1.1768	3.9934	1.1751
132.00	0.0277	4.0874	1.1761	4.0316	1.1736	3.9943	1.1719
134.00	0.0272	4.0884	1.1727	4.0326	1.1702	3.9953	1.1686
136.00	0.0266	4.0894	1.1690	4.0336	1.1666	3.9963	1.1650
138.00	0.0260	4.0904	1.1652	4.0346	1.1628	3.9973	1.1613
140.00	0.0254	4.0915	1.1611	4.0357	1.1588	3.9984	1.1573
142.00	0.0247	4.0926	1.1567	4.0368	1.1544	3.9995	1.1530
144.00	0.0240	4.0938	1.1518	4.0380	1.1497	4.0007	1.1483
146.00	0.0232	4.0951	1.1465	4.0393	1.1444	4.0020	1.1430
148.00	0.0222	4.0965	1.1404	4.0406	1.1384	4.0034	1.1371
150.00	0.0211	4.0980	1.1332	4.0422	1.1313	4.0049	1.1300
152.00	0.0196	4.0999	1.1238	4.0441	1.1220	4.0068	1.1209
154.00	0.0171	4.1028	1.1074	4.0469	1.1059	4.0097	1.1049

Table C-22

Joule-Thomson Inversion Curve

T K	P atm	Density mol/cm^3	ΔP^* atm
125	15.60	0.02942	1.83
130	52.71	0.02907	1.98
135	86.45	0.02869	2.13
140	119.17	0.02835	2.32
145	150.87	0.02802	2.58
150	178.30	0.02765	2.61
155	204.56	0.02729	2.91
160	232.57	0.02700	2.92
165	256.29	0.02666	3.13
170	278.96	0.02633	3.23
175	300.60	0.02600	3.43
180	321.28	0.02569	3.49
185	340.06	0.02537	3.81
190	357.65	0.02504	3.80

* Estimated uncertainty

Table C-24

Latent Heat of Sublimation and Sublimation Pressures

Of Oxygen

Temperature	Pressure	Heat of Sublimation	
K	mm Hg	cal/mol	J/mol*
	Gas-Gamma Solid		
54.352	1.09842	1961.50	8206.9
54.000	9.75732×10^{-1}	1962.96	8213.0
52.000	4.82056×10^{-1}	1971.19	8247.5
50.000	2.24393×10^{-1}	1979.33	8281.5
48.000	9.76741×10^{-2}	1987.45	8315.5
46.000	3.94036×10^{-2}	1995.58	8349.5
44.000	1.45779×10^{-2}	2003.76	8383.7
43.772	1.29373×10^{-2}	2004.70	8387.7
	Gas-Beta Solid		
43.772	1.29373×10^{-2}	2182.30	9130.7
42.000	4.48106×10^{-3}	2189.39	9160.4
40.000	1.20464×10^{-3}	2196.12	9188.6
38.000	2.80896×10^{-4}	2201.45	9210.9
36.000	5.55266×10^{-5}	2205.38	9227.3
34.000	9.04639×10^{-6}	2207.94	9238.0
32.000	1.17269×10^{-6}	2209.22	9243.4
30.000	1.15688×10^{-7}	2209.28	9343.6
28.000	8.20283×10^{-9}	2208.22	9239.2
26.000	3.87961×10^{-10}	2206.10	9230.3
24.000	1.10816×10^{-11}	2202.96	9217.2
23.781	7.24252×10^{-12}	2202.56	9215.5
	Gas-Alpha Solid		
23.781	7.24252×10^{-12}	2224.98	9309.3
22.000	1.60715×10^{-13}	2220.94	9292.4
20.000	1.00696×10^{-15}	2214.50	9265.5

* 1 cal = 4.184 J

Table C-31

CONSTANTS FOR TOTAL BAND ABSORPTANCE CORRELATION

T(K)	100	200	300	400	500	600	700	800	900	1000
(a) ROTATIONAL BAND										
$C_1 \times 10^5$ (cm^{-2})	9.47	8.26	8.64	9.46	10.37	11.23	12.17	13.04	14.00	14.89
C_3 (cm^{-1})	44.2	62.6	76.6	88.3	98.6	105.9	114.3	122.2	129.5	136.4
(b) FUNDAMENTAL BAND										
$C_1 \times 10^5$ (cm^{-2})	124.9	76.8	71.8	70.6	71.6	73.2	74.8	76.3	77.9	79.5
C_3 (cm^{-1})	37.08	54.3	66.2	76.9	86.0	94.5	102.2	109.4	116.0	122.2
(c) FIRST OVERTONE BAND										
$C_1 \times 10^5$ (cm^{-2})	1.123	0.691	0.646	0.635	0.645	0.659	0.674	0.688	0.702	0.716
C_3 (cm^{-1})	37.6	55.3	67.1	77.6	87.1	95.7	103.5	110.6	117.0	122.4

Table C-35

Values of Surface Tension for Oxygen

TEMPERATURE DEG K	SURFACE TENSION DYNE/CM	TEMPERATURE DEG K	SURFACE TENSION DYNE/CM
58.00	21.64	75.00	17.08
59.00	21.37	76.00	16.82
60.00	21.10	77.00	16.56
61.00	20.83	78.00	16.30
62.00	20.55	79.00	16.04
63.00	20.28	80.00	15.78
64.00	20.01	81.00	15.52
65.00	19.74	82.00	15.27
66.00	19.47	83.00	15.01
67.00	19.21	84.00	14.75
68.00	18.94	85.00	14.50
69.00	18.67	86.00	14.24
70.00	18.40	87.00	13.99
71.00	18.14	88.00	13.74
72.00	17.87	89.00	13.49
73.00	17.61	90.00	13.23
74.00	17.35	91.00	12.98

10. Index

10. Index

SECTION I, THERMODYNAMIC PROPERTIES

SECTION IV, ALPHABETICAL KEY WORD LIST OF PROPERTIES

NASA-Langley, 1972 —— 6