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TABLES OF CRITICAL-FLOW FUNCTIONS AND THERMODYNAMIC PROPERTIES FOR METHANE AND COMPUTATIONAL PROCEDURES FOR BOTH METHANE AND NATURAL GAS

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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TABLES OF CRITICAL-FLOW FUNCTIONS AND THERMODYNAMIC PROPERTIES FOR METHANE AND COMPUTATIONAL PROCEDURES FOR BOTH METHANE AND NATURAL GAS

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SUMMARY

Procedures for calculating the mass flow rate of methane and natural gas through nozzles are given, along with the FORTRAN IV subroutines used to make these calculations. Three sets of independent variables are permitted in these routines. In addition to the plenum pressure and temperature, the third independent variable is either nozzle exit pressure, Mach number, or temperature. A critical-flow factor that becomes a convenient means for determining the mass flow rate of methane through critical-flow nozzles is tabulated. Other tables are included for nozzle throat velocity and critical pressure, density, and temperature ratios, along with some thermodynamic properties of methane, including compressibility factor, enthalpy, entropy, specific heat, specific-heat ratio, and speed of sound. These tabulations cover a temperature range from 120 to 600 K and pressures to 300×10^5 N/m^2.

INTRODUCTION

When nozzles are used for measuring the mass flow rate of gases, it is usually assumed that the flow of the gas from the plenum to the throat of the nozzle is one dimensional and isentropic; and, in addition, the assumption is frequently made that the gas is perfect. For a typical nozzle, the assumption of one-dimensional and isentropic flow is a good approximation. Actual deviations from these conditions can be handled by applying a multiplying factor (the discharge coefficient) that is almost unity and is a function of Reynolds number and nozzle geometry. The assumption that the gas is perfect is sufficiently accurate for gases such as air or nitrogen at room temperatures and at pressures up to a few atmospheres. However, for gases such as methane or natural-gas mixtures, this assumption breaks down even at atmospheric pressure because of the strong dependence of specific heat on temperature. At high pressures and/or low temperatures, the effect of compressibility factor variation becomes important. (In this report, a perfect gas is defined as one whose compressibility factor has a value of unity and whose specific heat is a constant whose value depends only on the composition of the gas. A perfect gas should be distinguished from an ideal gas, which, in this report, is defined as a gas whose compressibility factor has a value of unity but whose specific heat varies with temperature. In the absence of dissociation, all real gases approach this ideal-gas condition as the pressure is reduced.)

There is a case where the real-gas, mass-flow-rate calculation is easy to make. This is the case where the change in pressure and temperature of the gas as it flows from the plenum to the throat of the nozzle is much smaller than the absolute level of pressure and temperature. The flow is then considered incompressible, and the real-gas correction consists of using the actual value of density in the flow equation rather than the value that would result from the perfect-gas assumption. However, in this mode of operation, it is necessary to measure a differential pressure between the plenum and the throat of the nozzle which is much smaller than the pressure level. At high pressure levels, this is a difficult measurement to make accurately. There is a second mode of nozzle operation which eliminates the need of making this accurate differential pressure measurement. In this mode, the pressure at the exit of the nozzle is made so low that the flow velocity at the throat of the nozzle is sonic. Once this condition is reached, the mass flow rate through the nozzle does not change as the nozzle exit pressure is lowered further. A nozzle operating in this mode is referred to as a critical-flow nozzle; and, under this condition, the mass flow rate of the gas through the nozzle depends only on plenum pressure, plenum temperature, and gas composition. However, the real-gas, mass-flow-rate calculation for a critical-flow nozzle is not so simple as that for a nozzle operating in the incompressible flow mode. In fact, in the absence of appropriate tables, this computation usually necessitates the use of a digital computer.

In reference 1, critical-flow tables are presented for methane and natural-gas mixtures. By using these tables, the isentropic mass flow rate of these gases through critical-flow nozzles can be calculated. These tables cover temperatures from 250 to 390 K and pressures to 69×10^5 N/m^2. The state equation used in these computations is that developed by Benedict, Webb, and Rubin and reported in references 2 to 4. Since 1940, when this equation was first presented, more accurate state data for methane have been obtained (refs. 5 and 6). In 1969, Vennix and Kobayashi (ref. 7) presented a state equation whose coefficients were computed from this more recent and accurate data. Except for the data points in the liquid region, the pressures predicted by the state equation of reference 7 agree with the measured pressures in references 5 and 6 to within 0.1 percent. According to reference 7, this state equation is valid for pressures to 410×10^5 N/m^2 and for temperatures from 130 to 625 K.

Natural gas is being considered as a fuel for propulsion and power systems to be used for aircraft and ground transportation, and methane is the principal component of natural gas. Therefore, isentropic flow calculations based on the more accurate state equation of reference 7 would be useful. Such calculations would also be useful to the natural-gas industry in the metering of fuel.

In this report, a critical-flow factor that permits the computation of the isentropic mass flow rate of methane through critical-flow nozzles is tabulated. Besides this critical-flow factor, additional critical-flow functions are tabulated. These are the nozzle throat velocity, the ratio of throat to plenum pressure, the ratio of throat to plenum density, and the ratio of throat to plenum temperature. In addition, some thermodynamic state functions are included in the tabulations. These are compressibility factor, enthalpy, entropy, specific heat, specific-heat ratio, and speed of sound. These tabulations cover pressures to 300×10^5 N/m^2 and temperatures from 120 to 600 K. In addition to these tabulations, a method based on the principle of corresponding states, by which the state equation used for methane can be extended to natural-gas mixtures, is presented in appendix B. The FORTRAN IV computer subprograms used to make the methane computations are described and presented in appendix C. Appendix D describes and presents the FORTRAN IV subprograms that apply to natural-gas mixtures. All symbols are defined in appendix A. The International System of Units (SI) is used throughout this report.

CALCULATION PROCEDURES

The compressibility factor for methane and natural-gas mixtures as given in appendix B is a function of density and temperature. For this reason, the calculation of the mass flow rate of these gases through critical-flow nozzles requires that the entropy, the enthalpy, and the speed of sound be expressed in terms of density and temperature. To do this requires the following functions of the compressibility factor:

$$Z_I(\rho, T) = Z = \frac{p}{\rho RT} \tag{1}$$

$$Z_{II}(\rho, T) = Z + T\left(\frac{\partial Z}{\partial T}\right)_\rho = \frac{1}{R\rho}\left(\frac{\partial p}{\partial T}\right)_\rho \tag{2}$$

$$Z_{III}(\rho, T) = Z + \rho\left(\frac{\partial Z}{\partial \rho}\right)_T = \frac{1}{RT}\left(\frac{\partial p}{\partial \rho}\right)_T \tag{3}$$

$$Z_{IV}(\rho, T) = \int_0^\rho (Z_{II} - 1)\frac{d\rho}{\rho} \tag{4}$$

$$Z_V(\rho, T) = \int_0^\rho (Z_{II} - Z_I)\frac{d\rho}{\rho} \tag{5}$$

$$Z_{VI}(\rho, T) = T\left(\frac{\partial Z_{IV}}{\partial T}\right)_\rho = \frac{C_{v,ideal} - C_v}{R} \tag{6}$$

(These and most of the other equations in this section can be found in ref. 8). For an ideal gas, Z_I, Z_{II}, and Z_{III} equal unity; and Z_{IV}, Z_V, and Z_{VI} equal zero.

In addition, two functions of the ideal-gas specific heat are necessary. These are

$$\xi_I(T) = \int \frac{C_{v,ideal}}{R} \frac{dT}{T} \tag{7}$$

$$\xi_{II}(T) = \int \frac{C_{v,ideal}}{R} dT \tag{8}$$

The equations for the ideal-gas specific heat and the related functions ξ_I and ξ_{II} are given in appendix B for both methane and natural-gas mixtures.

In terms of the functions represented by equations (1) to (8), the following thermodynamic quantities can be expressed as functions of density and temperature:

$$\frac{S}{R} = \xi_I - \ln \rho - Z_{IV} \tag{9}$$

$$\frac{H}{R} = \xi_{II} + T(Z_I - Z_V) \tag{10}$$

$$\frac{C_v}{R} = \frac{C_{v,ideal}}{R} - Z_{VI} \tag{11}$$

$$\frac{C_p}{R} = \frac{C_v}{R} + \frac{Z_{II}^2}{Z_{III}} \tag{12}$$

$$\gamma = \frac{C_p}{C_v} \tag{13}$$

$$k = \frac{\rho}{p}\left(\frac{\partial p}{\partial \rho}\right)_S = \gamma \frac{\rho}{p}\left(\frac{\partial p}{\partial \rho}\right)_T = \gamma \frac{Z_{III}}{Z_I} \tag{14}$$

$$\alpha = \sqrt{kZ_I RT} \tag{15}$$

Now that entropy, enthalpy, and speed of sound are given in terms of density and temperature, the procedures for calculating the flow functions tabulated in this report can be discussed. While these flow functions are concerned with critical flow, the calculation procedures contained in the computer routines are more general. These procedures permit three sets of independent variables. The plenum pressure and the plenum temperature are independent variables included in all three sets. The third independent variable can be either nozzle throat temperature, nozzle throat pressure, or nozzle throat Mach number. For the case of critical flow, the nozzle throat Mach number would be specified and would have a value of unity. For the case of subsonic flow, the pressure at the nozzle throat would be specified. In all cases, the flow from the plenum ahead of the nozzle, where the gas is essentially at rest, to the throat of the nozzle is assumed to be isentropic and one dimensional. The quantities that have to be determined in order to make the mass-flow-rate calculation are the density and flow velocity at the nozzle throat. The equations that have to be solved for these three cases are as follows:

Case I - Given p_0, T_0, and T_1

$$p_0 = Z(\rho_0, T_0)\rho_0 RT_0 \tag{16}$$

$$S(\rho_0, T_0) = S(\rho_1, T_1) \tag{17}$$

$$H(\rho_0, T_0) = H(\rho_1, T_1) + \frac{1}{2} v_1^2 \tag{18}$$

Case II - Given p_0, T_0, and p_1

In addition to equations (16) to (18), the following equation has to be satisfied:

$$p_1 = Z(\rho_1, T_1)\rho_1 RT_1 \tag{19}$$

Case III - Given p_0, T_0, and M_1

In addition to equations (16) to (18), the following equation has to be satisfied:

$$M_1 = \frac{v_1}{\alpha(\rho_1, T_1)} \tag{20}$$

The solution of the sets of equations for any of the three cases determines the value of the nozzle throat density and nozzle throat velocity. In fact, thermodynamic state functions as represented by equations (9) to (15) can now be easily determined at both the plenum and throat of the nozzle. The iteration procedures necessary to solve these sets of equations are given in reference 8.

The mass flow rate of the gas through a nozzle whose throat has geometric area A_1 is then

$$\dot{m} = C_D A_1 \rho_1 v_1 \tag{21}$$

The quantity C_D is referred to as the discharge coefficient. It has a value close to unity. The amount that C_D deviates from unity mainly represents the effects of non-one-dimensional and nonisentropic flow in the boundary layer of the nozzle. The value of C_D is usually determined by a nozzle calibration and is considered to be uniquely determined by Reynolds number.

RESULTS AND DISCUSSION

Methane

The isentropic mass flow rate of methane through critical-flow nozzles was calculated. The result of this calculation is a critical-flow factor which is defined as follows:

$$C^* = \frac{(\rho_1 v_1)\sqrt{RT_0}}{p_0} \tag{22}$$

For a perfect gas, C^* would only depend on the specific-heat ratio and would equal

$$C^*_{perf} = \left[\gamma\left(\frac{2}{\gamma + 1}\right)^{(\gamma+1)/(\gamma-1)}\right]^{1/2} \tag{23}$$

In terms of C^*, the mass flow rate of methane through the critical-flow nozzle is

$$\dot{m} = C_D A_1 C^* \frac{p_0}{\sqrt{RT_0}} \tag{24}$$

The value of the gas constant R for methane is 518.26 J/(kg)(K) These calculations also yielded two groups of quantities. The first group contains flow quantities that depend on both plenum and nozzle-throat conditions. These are given in tables I to V and are

(1) The critical-flow factor C^* as defined by equation (22) - table I
(2) Nozzle throat velocity, v_1, m/sec - table II
(3) Critical pressure ratio, p_1/p_0 - table III
(4) Critical density ratio, ρ_1/ρ_0 - table IV
(5) Critical temperature ratio, T_1/T_0 - table V

The second group contains thermodynamic state functions that depend only on gas temperature and pressure. These are given in tables VI to XI and are

(1) Compressibility factor, Z - table VI
(2) Enthalpy, H/R, K - table VII
(3) Entropy, S/R - table VIII
(4) Specific heat, C_p/R - table IX
(5) Specific-heat ratio, γ - table X
(6) Speed of sound, α, m/sec - table XI

The pressure range is from 0 to 300×10^5 N/m^2 and the temperature range is 120 to 600 K. If methane were a perfect gas, C^*, p_1/p_0, ρ_1/ρ_0, T_1/T_0, Z, C_p/R, and γ would be independent of pressure and temperature. That is, they would be constant. Figures 1 and 2 are presented to illustrate these variations. The critical-flow factor (fig. 1) and the specific heat (fig. 2) are plotted as functions of pressure and temperature. In both cases, the temperature dependency at zero pressure represents the effects of the variation of the ideal-gas specific heat, and the amount that an individual curve varies with pressure represents the effects of the variation of the compressibility factor. The sensitivity to pressure of both the critical-flow factor and the specific heat diminishes as the temperature increases.

All the flow calculations given in this report involve a state equation whose accuracy is estimated by the author to be 0.1 percent in the gaseous phase and an ideal-gas specific-heat equation that probably has the same degree of accuracy. Because of this, most of the thermodynamic properties that are tabulated should have approximately the same order of accuracy except at the upper and lower temperature limits of the tabulations. There are two tabulated thermodynamic functions that become infinite at the

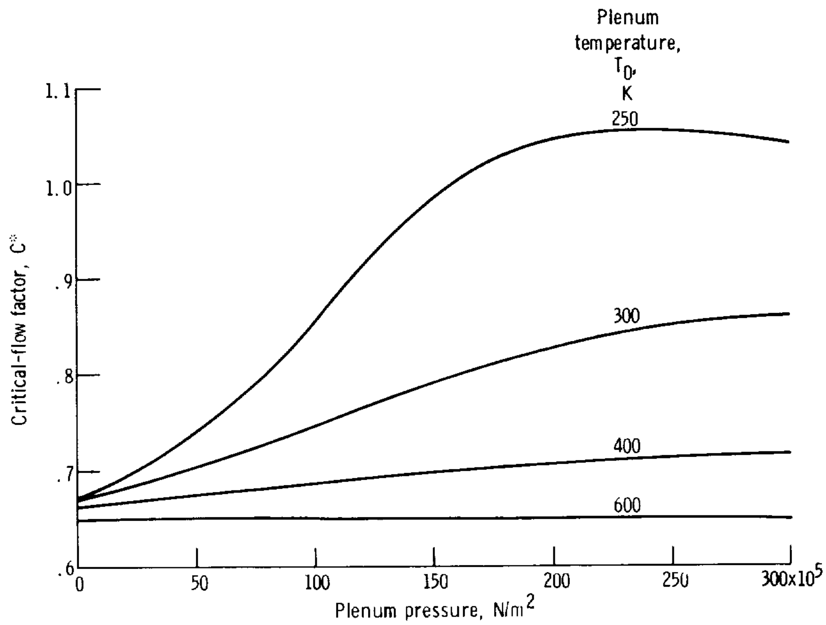

Figure 1. - Critical-flow factor for methane.

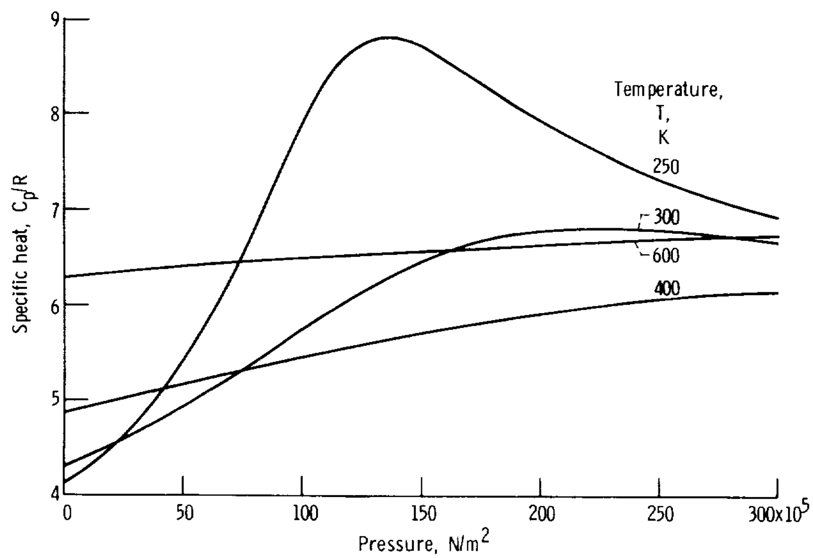

Figure 2. - Specific heat for methane.

critical point. These functions are the specific heat at constant pressure and the specific-heat ratio. Therefore, large errors in these functions would be expected in the vicinity of the critical point.

The computer routines that were used to make all calculations are described and presented in appendix C. These routines are written in the FORTRAN IV version 13 language for an IBM 7094II/7044 direct couple computer.

Natural-Gas Mixtures

The computer routines that apply to natural-gas mixtures are described and presented in appendix D. As in the case of methane, they are written in the FORTRAN IV version 13 language for an IBM 7094II/7044 direct couple computer.

The accuracy of the natural-gas mass flow calculations is limited by the accuracy of the state equation. Since the state equation is based on that used for methane, the accuracy of the mass flow calculations is highest for these natural-gas mixtures that have a high methane content. For natural-gas mixtures having methane mole fractions of 0.9 or higher, the computational methods of this report are estimated to be more accurate than those described in reference 8. For mixtures that have lower methane mole fractions, it is difficult to say which method is the more accurate. One advantage of the computational methods used in this report is that they allow for the inclusion of C_5H_{12} and C_6H_{14}.

CONCLUDING REMARKS

When the critical-flow factor tabulated in this report is used to calculate the mass flow rate of methane through critical-flow nozzles, the greatest uncertainty in the calculation is probably the uncertainty in the knowledge of the discharge coefficient rather than the uncertainty in the knowledge of the critical-flow factor. This is because of the accuracy of the state equation used in calculating this critical-flow factor.

The computer routines used in this report are designed to be easily modified for other gases.

Lewis Research Center,
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764-74.

APPENDIX A

SYMBOLS

A	area, m^2
$a_1, \ldots, a_{24}$	coefficients for the state equation (eq. (B1))
$b_0, \ldots, b_n$	coefficients for the ideal-gas specific-heat equation (eqs. (B6) and (B7))
C^*	critical-flow factor (eq. (22))
C_D	discharge coefficient
C_p	specific heat at constant pressure, J/(kg)(K)
C_v	specific heat at constant volume, J/(kg)(K)
$c_0, \ldots, c_8$	coefficients in eq. (B17)
H	enthalpy, J/kg
K_H	integration constant (eq. (B10)), K
K_S	integration constant (eq. (B9))
k	isentropic exponent (eq. (14))
M	Mach number
m	molecular weight
$\dot{m}$	mass flow rate, kg/sec
p	pressure, N/m^2
p_c	pseudocritical pressure (eq. (B19)), N/m^2
p_{sat}	minimum pressure at which condensation occurs at a given temperature, N/m^2
p'_{sat}	adjusted value of p_{sat} (eq. (B18))
R	gas constant (for methane, $R = 518.26$ J/(kg)(K); for natural-gas mixtures, $R = \frac{8314.4}{m}$ J/(kg)(K))
S	entropy, J/(kg)(K)
T	temperature, K
T_c	pseudocritical temperature (eq. (B5)), K

T_{sat}	maximum temperature at which condensation occurs for a given pressure, K
T'	adjusted temperature (eq. (B3)), K
T'_{sat}	adjusted value of T_{sat} (eq. (B3) applied to T_{sat}), K
v	velocity, m/sec
X	mole fraction
Z	compressibility factor
$Z_I, \ldots, Z_{VI}$	functions of compressibility factor (eqs. (1) to (6))
α	speed of sound, m/sec
γ	specific-heat ratio
ξ_I, ξ_{II}	functions of ideal-gas specific heat (eqs. (7) and (8))
ρ	density, kg/m^3
ρ_c	pseudocritical density (eq. (B4)), kg/m^3
ρ'	adjusted density (eq. (B2))
φ	factor in eq. (B16)
Subscripts:	
i	1, 2, 3, . . ., n; index used in summation
ideal	ideal-gas condition
j	species
perf	perfect-gas condition
0	plenum station
1	nozzle-exit station

APPENDIX B

BASIC EQUATIONS

The calculations in this report use three basic relations. The first describes the pressure-temperature-density behavior of the gas and is referred to as the state equation. The second describes the ideal-gas specific-heat variation with temperature, and the third describes the saturated-vapor-pressure variation with temperature. This last relation is used to determine whether or not the fluid is a gas. These relations are discussed in detail in this appendix for both methane and natural-gas mixtures.

State Equation for Methane

The state equation for methane is that developed by Vennix and Kobayashi in reference 7. That equation has been modified herein by dividing by ρRT and has been further modified by changing the density units from grams per cubic centimeter to kilograms per cubic meter. This equation, which is computationally equivalent to that given in reference 7, is

$$Z = 1 + \sum_{i=1}^{5}\left(\frac{a_i}{T} + a_{5+i}\right)\rho^i + \frac{1}{T}\left[\sum_{i=1}^{5} a_{10+i}\rho^i\right]e^{(a_{16}+a_{17}\rho)/T}$$

$$+ \frac{a_{18}}{T}\rho(\rho + a_{19})^2\left[(\rho + a_{19})^3 - a_{20}\right]\left[a_{21} - (\rho + a_{19})^3\right]$$

$$\times e^{\left[a_{22}+a_{23}(\rho+a_{19})^3\right](T+a_{24})} \tag{B1}$$

where

$a_1 = -2.239832$	$a_9 = 5.8951021\times10^{-10}$	$a_{17} = 1.3441846$
$a_2 = 1.3433125\times10^{-3}$	$a_{10} = -5.7438228\times10^{-13}$	$a_{18} = 1.0993467\times10^{-14}$
$a_3 = 2.7591018\times10^{-5}$	$a_{11} = -3.9776054$	$a_{19} = 113.318$
$a_4 = -1.6554698\times10^{-7}$	$a_{12} = -1.5062252\times10^{-2}$	$a_{20} = 1.6487332\times10^{7}$
$a_5 = 2.3412456\times10^{-10}$	$a_{13} = 4.3294074\times10^{-4}$	$a_{21} = 1.0724364\times10^{8}$
$a_6 = 4.9147357\times10^{-3}$	$a_{14} = -1.8535561\times10^{-6}$	$a_{22} = -0.046002$
$a_7 = 7.3766422\times10^{-6}$	$a_{15} = 2.0528632\times10^{-9}$	$a_{23} = -2.1177\times10^{-10}$
$a_8 = -1.1458784\times10^{-7}$	$a_{16} = -1378.7933$	$a_{24} = 147.71055$

In the gaseous phase, the compressibility factors calculated by this equation are estimated to be accurate to 0.1 percent for pressures to 410×10^5 N/m^2, and temperatures from 130 to 625 K (ref. 7).

State Equation for Natural-Gas Mixtures

If the principle of corresponding states is assumed to be valid, equation (B1) can also be used to calculate the compressibility factor of natural-gas mixtures. This is done by substituting the following quantities, referred to as the adjusted density and temperature, for the actual density and temperature in equation (B1):

$$\rho' = \frac{162.5}{\rho_c} \times \rho \tag{B2}$$

$$T' = \frac{190.8}{T_c} \times T \tag{B3}$$

where ρ_c and T_c are the pseudocritical density and temperature of the natural-gas mixture and are defined as follows:

$$\rho_c = \sum_{j=1}^{8} X_j \rho_c \tag{B4}$$

$$T_c = \sum_{j=1}^{8} X_j T_c \tag{B5}$$

Natural gas is assumed to consist of paraffins containing one to six carbon atoms and the dilutent gases N_2 and CO_2. Since there are two C_4H_{10}'s, three C_5H_{12}'s, and five C_6H_{14}'s, it is arbitrarily assumed that the various molecular configurations of the paraffins containing the same number of carbon atoms are equally probable. The following table gives the values of the critical density and critical temperature and, in addition, includes the values of the critical pressure and molecular weight for these natural-gas components. The values for C_4H_{10}, C_5H_{12}, and C_6H_{14} are the average of the values

Component	Molecular weight, m	Critical pressure, p_c, N/m^2	Critical temperature, T_c, K	Critical density, ρ_c, kg/m^3
CH_4	16.043	46.26×10^5	190.8	162.5
C_2H_6	30.070	48.94	305.6	203.2
C_3H_8	44.097	42.57	370.0	220.5
C_4H_{10}	58.124	[a]37.22	[a]416.7	[a]224.4
C_5H_{12}	72.151	[a]32.99	[a]454.6	[a]235.0
C_6H_{14}	86.178	[a]31.49	[a]499.7	[a]236.7
N_2	28.013	33.98	126.1	311.0
CO_2	44.010	73.68	304.2	468.0

[a]Average of values given for various molecular configurations.

for the various molecular configurations. The CH_4 values are from reference 7. The values for the other paraffins are from reference 9. The N_2 and CO_2 values are from reference 10.

This method of calculating the compressibility factor is similar to that used by the American Gas Association (AGA) in reference 11. There are, however, two differences: first, a different form of state equation is used; second, since the AGA state equation gives Z as a function of pressure and temperature rather than of density and temperature, reference 11 uses adjusted pressures and temperatures rather than adjusted densities and temperatures.

At a temperature of 250 K and at pressures to 100×10^5 N/m^2, the compressibility factors calculated by the methods of this report were compared with those calculated by the methods of reference 11. The differences were as much as 1/2 percent for methane, $1\frac{1}{4}$ percent for a natural gas containing 90-percent methane, and $2\frac{1}{2}$ percent for a natural gas containing 84-percent methane. Under the same conditions of pressure and temperature, the compressibility factors calculated by the methods of this report were also compared with those calculated by the methods of reference 8. In this case, the differences were 1/4 percent for methane, 1/4 percent for the natural gas containing 90-percent methane, and 1 percent for the natural gas containing 84-percent methane.

Ideal-Gas Specific Heat for Methane

The ideal-gas specific heat for methane is taken from the data in reference 12 and is represented by a temperature polynomial as follows:

$$\frac{C_{v,\,ideal}}{R} = b_0 + \sum_{i=1}^{8} b_i\left(\frac{T}{100}\right)^i \tag{B6}$$

For $70\ K \leq T \leq 259.78828\ K$,

$b_0 = 3.0159729$

$b_1 = -6.7124682\times10^{-2}$

$b_2 = 0.1053479$

$b_3 = -5.9827343\times10^{-2}$

$b_4 = 1.0207347\times10^{-3}$

$b_5 = 7.7524692\times10^{-3}$

$b_6 = -4.6776567\times10^{-4}$

$b_7 = -2.240781\times10^{-4}$

$b_8 = 2.5771104\times10^{-6}$

For $259.78828\ K < T \leq 600\ K$,

$b_0 = 4.5834702$

$b_1 = -1.6311027$

$b_2 = 0.4503988$

$b_3 = 1.8825512\times10^{-2}$

$b_4 = -1.7244897\times10^{-2}$

$b_5 = 1.7546467\times10^{-3}$

$b_6 = 1.2048213\times10^{-4}$

$b_7 = -3.6924768\times10^{-5}$

$b_8 = 2.1771302\times10^{-6}$

Ideal-Gas Specific Heat for Natural-Gas Mixtures

The ideal-gas specific heat for natural-gas mixtures is represented by the following equation:

$$\frac{C_{v,\,ideal}}{R} = b_0 + \sum_{i=1}^{7} b_i\left(\frac{T}{100}\right)^i \tag{B7}$$

where

$$b_i = \sum_{j=1}^{8} X_j b_{i,j} \tag{B8}$$

The values of $b_{i,j}$ are presented in the following table for the natural-gas components:

Coefficient	Natural-gas component							
	CH_4	C_2H_6	C_3H_8	C_4H_{10}	C_5H_{12}	C_6H_{14}	N_2	CO_2
b_0	2.79983	-9.85338	-16.7968	-1.81229	-3.3598	-0.537922	2.50115	2.50447
b_1	.4285	19.6577	29.0846	5.6641	7.41963	5.65394	-9.72058×10^{-3}	-.508557
b_2	-.27518	-10.1866	-13.8109	-.907714	-.726671	.360786	1.03606×10^{-2}	.48403
b_3	2.58217×10^{-2}	1.82674	2.21983	.143523	4.55318×10^{-2}	-.168431	-4.43726×10^{-3}	-3.73057×10^{-2}
b_4	2.41658×10^{-2}	.246368	.365514	3.46448×10^{-2}	0	1.54752×10^{-2}	6.8256×10^{-4}	-2.52264×10^{-2}
b_5	-2.51637×10^{-3}	-.120205	-.15326	-1.7196×10^{-2}	0	0	0	6.14015×10^{-3}
b_6	-8.24658×10^{-4}	1.08075×10^{-2}	1.29667×10^{-2}	1.76606×10^{-3}	0	0	0	-4.11664×10^{-4}
b_7	1.15233×10^{-4}	0	0	0	0	0	0	0

These values were obtained by a least-squares fit of tabulated data. These fits are valid over a temperature range of 200 to 400 K. The CH_4 data are from reference 12, the data for the other paraffins are from reference 9. The N_2 data are from reference 13, and the CO_2 data are from reference 14.

In terms of the coefficients in equations (B6) and (B7), equations (7) and (8) become

$$\xi_I(T) = \int \frac{C_{v,ideal}}{R} \frac{dT}{T} = b_0 \ln\left(\frac{T}{100}\right) + \sum_{i=1}^{n} \frac{b_i}{i}\left(\frac{T}{100}\right)^i + K_S \tag{B9}$$

$$\xi_{II}(T) = \int \frac{C_{v,ideal}}{R} dT = 100\left[\sum_{i=0}^{n} \frac{b_i}{i+1}\left(\frac{T}{100}\right)^{i+1}\right] + K_H \tag{B10}$$

where n equals 8 for methane and 7 for natural-gas mixtures. In terms of ξ_I and ξ_{II}, the ideal-gas entropy and enthalpy are given by

$$\frac{S_{ideal}}{R} = \xi_I(T) - \ln\left(\frac{p}{RT}\right) \tag{B11}$$

$$\frac{H_{ideal}}{R} = \xi_{II}(T) + T \tag{B12}$$

The terms K_S and K_H in equations (B9) and (B10) are constants of integration for the indefinite temperature integrals in these equations. For the case of methane, K_S is chosen so that the ideal-gas entropy equals zero at a temperature of 0 K and a pressure of 1×10^5 N/m^2, and K_H is chosen such that the ideal-gas enthalpy equals zero at a temperature of 0 K. The values of K_H and K_S are

For $70\ K \leq T \leq 259.78828\ K$,

$$K_S = 18.667924$$

$$K_H = -2.1763239$$

For $259.78828\ K < T \leq 600\ K$,

$$K_S = 19.908975$$

$$K_H = -110.43728$$

For the components of natural-gas mixtures, K_S is chosen such that the ideal-gas entropy equals zero at a temperature of 200 K and a pressure of 1×10^5 N/m^2, and K_H is chosen such that the ideal-gas enthalpy equals zero at a temperature of 200 K. These values of K_S and K_H for the components of natural-gas mixtures are given in the following table.

Component	Integration constant	
	K_S	K_H
CH_4	-2.4259223	-794.25505
C_2H_6	-16.722706	-224.35315
C_3H_8	-24.468514	43.25468
C_4H_{10}	-7.4352313	-792.77257
C_5H_{12}	-9.7108697	-836.39894
C_6H_{14}	-9.6240575	-1261.944
N_2	-1.2043084	-699.70984
CO_2	-.54815092	-702.9866

The values of K_S and K_H for natural-gas mixtures are given by

$$K_H = \sum_{j=1}^{8} X_j K_{H,j} \tag{B13}$$

$$K_S = \ln m + \sum_{j=1}^{8} X_j (K_{S,j} - \ln m_j) \tag{B14}$$

where m is the molecular weight of the natural-gas mixture and is given by

$$m = \sum_{j=1}^{8} X_j m_j \tag{B15}$$

Saturated Vapor Pressure for Methane

The relation that gives the saturated vapor pressure for methane as a function of temperature is given in reference 15 and is

$$\log_{10} p_{sat} = 8.30516 - \frac{296.1}{T_{sat}} - \frac{8000}{T_{sat}^2} + \varphi \tag{B16}$$

where

$$\varphi = 0 \qquad \text{for } T_{sat} \leq 118.83$$

and

$$\varphi = 0.257\left(\frac{T}{118.83} - 1\right)^{1.32} \qquad \text{for } T_{sat} > 118.83$$

In addition to equation (B16), the calculations also require a direct representation of temperature in terms of pressure; that is,

$$T_{sat} = c_0 + \sum_{i=1}^{8} c_i\left(\ln p_{sat}\right)^i \tag{B17}$$

where

$$c_0 = 53.88758 \qquad c_5 = 1.2470553\times10^{-4}$$
$$c_1 = 1.8253577 \qquad c_6 = 9.4808617\times10^{-6}$$
$$c_2 = 0.18723912 \qquad c_7 = -1.280319\times10^{-6}$$
$$c_3 = 1.570661\times10^{-5} \qquad c_8 = 4.5446557\times10^{-8}$$
$$c_4 = -8.7451662\times10^{-4}$$

Saturated Vapor Pressure for Natural-Gas Mixtures

Equation (B16) can be used to estimate p_{sat} and equation (B17) can be used to estimate T_{sat} if an adjusted value of the saturated pressure is substituted for p_{sat} and an adjusted value of the saturated temperature is substituted for T_{sat} in equations (B16) and (B17). These values are as follows:

$$p'_{sat} = \frac{46.26 \times 10^5}{p_c} \times p_{sat} \tag{B18}$$

and, when equation (B3) is rewritten to apply to saturated temperatures,

$$T'_{sat} = \frac{190.8}{T_c} \times T_{sat} \tag{B3}$$

where T_c is given by equation (B5) and p_c is the pseudocritical pressure and is defined as follows:

$$p_c = \sum_{j=1}^{8} X_j p_{c,j} \tag{B19}$$

The values of the critical pressures for the natural-gas components are tabulated on page 14.

APPENDIX C

DESCRIPTION AND CARD LISTING OF COMPUTER ROUTINES THAT APPLY TO METHANE

This set of computer routines is referenced in the main program by the following statement:

CALL RGAS(KK, PA, TA, AM, PB, TB, FLOW, KODE)

For a valid computation, three conditions have to be satisfied:

(1) $69\ K \leq T \leq 601\ K$.

(2) $0.1\ N/m^2 \leq p \leq 401\times10^5\ N/m^2$.

(3) The pressure of methane has to be less than a constant times its saturation pressure. Unless specified otherwise, this constant will have a value of unity.

Some of the variables in this program are entered or returned through labeled common. Therefore, the following common statements should be in the main program:

```
COMMON/LDATA/XKV,R,XMW,RC,D2,G
COMMON/LIMIT/EDA,EDB,ETP,ETM
COMMON/OUTPUT/OUT(9),CONV(4),ZA(6),ZB(6),KOD1(5)
```

The following symbols apply to these routines:

KK	Controls entry to and exit from RGAS. If KK=0, just the plenum properties are calculated. If KK=2, both the plenum and nozzle-exit properties are calculated. If KK=1, just the nozzle-exit properties are calculated. For a given set of plenum conditions, at least one reference to RGAS has to be made for KK=0 or KK=2 before a reference can be made for KK=1.
PA	Plenum pressure, p_0, N/m^2
TA	Plenum temperature, T_0, K
AM	Nozzle-exit Mach number, M_1
PB	Nozzle-exit pressure, p_1, N/m^2
TB	Nozzle-exit temperature, T_1, K
FLOW	Nozzle-exit mass flow rate per unit area, $\rho_1 v_1$, $kg/(m^2)(sec)$

KODE	Indicates the independent variables to RGAS. If KODE=1, these variables are PA, TA, and PB. If KODE=2, these variables are PA, TA, and AM. If KODE=3, these variables are PA, TA, and TB.
XKV	Constant referred to in condition 3. Unless specified otherwise, the value of XKV is 1.
R	Gas constant, J/(kg)(K)
XMW	Molecular weight
EDA	Maximum value of $\left\|1 - \frac{p_0}{Z_0 \rho_0 R T_0}\right\|$ permitted. Unless otherwise specified, EDA equals 1×10^{-6}.
EDB	Maximum value of $\left\|(S_1 - S_0)/R\right\|$ permitted. Unless otherwise specified, EDB equals 1×10^{-6}.
ETP	Applies when the nozzle exit independent variable is pressure. It is the maximum value of $\left\|1 - \frac{p_1}{Z_1 \rho_1 R T_1}\right\|$ permitted. Unless otherwise specified, ETP equals 1×10^{-6}
ETM	Applies when the nozzle exit independent variable is Mach number. It is the maximum value of $\left\|1 - \frac{v_1/\alpha_1}{M_1}\right\|$ permitted. Unless otherwise specified, ETM equals 1×10^{-4}.
OUT(1)	Actual mass flow rate $\rho_1 v_1$ divided by the perfect-gas mass flow rate $(\rho_1 v_1)_{perf}$, where

$$(\rho_1 v_1)_{perf} = \frac{p_0}{\sqrt{RT_0}} \left\{ 8\left(\frac{p_1}{p_0}\right)^{3/2} \left[1 - \left(\frac{p_1}{p_0}\right)^{1/4}\right] \right\}^{1/2}$$

for $M_1 \neq 1$ (C1)

and

$$\left(\rho_1 v_1\right)_{perf} = 0.6732 \frac{p_0}{\sqrt{RT_0}} \quad \text{for } M_1 = 1 \tag{C2}$$

OUT(2)	Nozzle-exit specific heat, $C_{p,1}/R$
OUT(3)	Nozzle-exit specific-heat ratio, γ_1
OUT(4)	Nozzle-exit isentropic exponent, k_1
OUT(5)	Plenum enthalpy, H_0/R, K
OUT(6)	Plenum entropy, S_0/R
OUT(7)	Plenum specific heat, $C_{p,0}/R$
OUT(8)	Plenum specific-heat ratio, γ_0
OUT(9)	Plenum isentropic exponent, k_0
CONV(1)	Degree to which the nozzle-exit entropy equals the plenum entropy. CONV(1) = $(S_1 - S_0)/R$.
CONV(2)	For KODE=1, CONV(2) = $Z_1\rho_1RT_1$. For KODE=2, CONV(2) = v_1/α_1. For KODE=3, CONV(2) = 0.
CONV(3)	Degree to which the calculated plenum pressure equals the prescribed plenum pressure. CONV(3) = $1 - (p_0/Z_0\rho_0RT_0)$.
CONV(4)	CONV(4) = $Z_0\rho_0RT_0$
ZA(1), . . . , ZA(6)	$Z_I(\rho_0, T_0)$ to $Z_{VI}(\rho_0, T_0)$
ZB(1), . . . , ZB(6)	$Z_I(\rho_1, T_1)$ to $Z_{VI}(\rho_1, T_1)$

The following symbols represent integers to indicate various error conditions. If all the integers equal zero, a valid calculation has been performed. If the integers are not zero, errors exist. These errors are described for each symbol as follows:

KOD1(1)	If KODE=1, this quantity equals 1 if the calculated nozzle-exit pressure fails to converge to p_1. If KODE=2, this quantity equals 1 if the calculated nozzle-exit Mach number fails to converge to M_1.
KOD1(2)	Equals 1 if the iteration procedure for the calculation of the nozzle-exit density fails to converge.

KOD1(3) Equals 1 if the nozzle-exit conditions are out of range in either pressure of temperature. A value of 1 terminates the calculation.

KOD1(4) Equals 1 if the iteration procedure for the calculation of the plenum density fails to converge.

KOD1(5) Equals 1 if the plenum conditions are out of range in either pressure or temperature. A value of 1 terminates the calculation.

The computer routines that apply to methane are described briefly in the following paragraphs. In order to calculate the thermodynamic properties of methane, all these routines have to be included in the program. The routines are identified by their deck names.

Deck RGASC1

In this subroutine, the iteration procedures necessary to calculate the isentropic mass flow rate of a nonperfect gas through a nozzle are given. These procedures are general and apply to any gas whose compressibility factor is given as a function of density and temperature. In addition to the mass flow rate per unit area, the output of this subroutine includes such quantities as entropy, enthalpy, specific heat, and compressibility factor. Except for minor changes, this routine very closely resembles RGASC in reference 8.

Deck RDATA

This is a block data subprogram that supplies constants that have to do with the convergence criteria for the iteration procedures in RGASC1.

Deck MEZETA and Deck MEPOLY

The compressibility factor functions Z_I to Z_{VI}, as defined by equations (1) to (6), are calculated in these two subroutines. MEPOLY is only called by MEZETA.

Deck METEMP

The nondimensional ideal-gas specific heat $C_{v,ideal}/R$ and the related functions

ξ_I and ξ_{II} as given by equations (B6), (B9), and (B10) are calculated in this routine.

Deck MELOG

This is a logical function that tests whether the pressure and temperature lie within the range of both the state equation and the ideal-gas specific-heat equation. In addition, this routine also tests whether or not methane is in the gaseous state.

Deck METLG

This subroutine, if necessary, will change the temperature such that it is above the condensation temperature of methane.

Deck MEDATA

This is a block data subprogram that supplies constants for the other routines.

Exclusive of the library routines, these routines require 2630 storage locations. The execution time for a typical case on an IBM 7094II/7044 direct couple computer is of the order of 0.1 second.

The card listing of these routines follows.

```
$IBFTC RGASC1
C
C  THE THERMODYNAMIC PROPERTIES OF A NON-PERFECT GAS ARE CALCULATED IN
C  THIS SUBROUTINE.
C
      SUBROUTINE RGAS (KK,PAA,TAA,AMM,PBB,TBB,FLOW,KO)
      COMMON /OUTPUT/ OUT(9),CONV(4),ZA(6),ZB(6),KOD1(5)
      COMMON /LDATA/ XKV,R,XMW,RC,D2,G
      COMMON /LIMIT/ EDA,EDB,ETP,ETM
      DOUBLE PRECISION CP,CS,CH,CHA,CSA,CSB,CAB,LRHCA,LRHOB,DZA,DZB
      LOGICAL LGFN
      DATA KG/0/
      IF (KG.EQ.1) GO TO 1
      GAMC=G-1.0
      GAMA=GAMD/G
      GAMB=GAMD/2.0
      GAMC=2.0/G
      GAMF=G/GAMD
      GAME=2.0*GAMF
      KG=1
```

```
1       PA=PAA
        TA=TAA
        KKK=KK
        KODE=KO
        PB=0.0
        AM=0.0
        TB=0.0
        FLOW=0.0
        CONV(1)=0.0
        CONV(2)=0.0
        GO TO (2,3,4),KODE
2       PB=PBB
        GO TO 5
3       AM=AMM
        GO TO 5
4       TB=TBB
5       DO 6 N=1,3
        OUT(N)=0.0
        ZB(N)=1.0
6       KOD1(N)=0
        OUT(4)=0.0
        DO 7 N=4,6
7       ZB(N)=0.0
        IF (KKK.EQ.1) GO TO 18
        CONV(3)=0.0
        CONV(4)=0.0
        DO 8 N=5,9
8       OUT(N)=0.0
        KOD1(4)=0
        DO 9 N=1,3
9       ZA(N)=1.0
        DO 10 N=4,6
10      ZA(N)=0.0
        IF (LGFN(PA,TA,KOD1(5),ZA)) GO TO 44
C
C   THE ITERATION PROCESS FOR CALCULATING THE PLENUM DENSITY FOLLOWS.
        A=PA/(R*TA)
        RHOA=A
        KN=0
11      DO 14 MM=1,50
        CALL ZETA (1,RHOA,TA,ZA)
        IF (ZA(3).LE.0.0) GO TO 15
        CONV(3)=1.0-(PA/RHOA)/(ZA(1)*R*TA)
        IF (ABS(CONV(3)).LT.EDA) GO TO 17
        AAA=(ZA(1)-A/RHOA)/ZA(3)
12      IF (1.0-AAA) 13,13,14
13      AAA=AAA/2.0
        GO TO 12
14      RHOA=RHOA*(1.0-AAA)
15      IF (KN.EQ.1) GO TO 16
        RHOA=C2*A
        KN=1
        GO TO 11
16      KOD1(4)=1
17      CALL ZETA (3,RHOA,TA,ZA)
        IF (LGFN(PA,TA,KOD1(5),ZA)) GO TO 44
C
C   THE PLENUM THERMODYNAMIC FUNCTIONS ARE CALCULATED BY THE FOLLOWING
C   STATEMENTS.
```

```
C
      CV=CP(TA)-ZA(6)
      GA=ZA(3)+ZA(2)**2/CV
      OUT(8)=GA/ZA(3)
      OUT(9)=GA/ZA(1)
      OUT(7)=CV*OUT(8)
      CHA=CH(TA)+DBLE(TA*(ZA(1)-ZA(5)))
      OUT(5)=CHA
      CSA=CS(TA)
      LRHOA=DLOG(DBLE(RHOA))
      DZA=DBLE(ZA(4))
      OUT(6)=CSA-LRHOA-DZA
      CONV(4)=ZA(1)*TA*R*RHOA
C
      IF (KKK.EQ.0) GO TO 44
18    GO TO (19,20,21),KODE
C
C  THE INITIAL ESTIMATE OF THE NOZZLE EXIT TEMPERATURE WHEN THE NOZZLE
C  EXIT PRESSURE IS GIVEN IS MADE BY THE FOLLOWING STATEMENTS.
C
19    TB=TA*(PB/PA)**GAMA
      GO TO 22
C
C  THE INITIAL ESTIMATE OF THE NOZZLE EXIT TEMPERATURE WHEN THE NOZZLE
C  EXIT MACH NUMBER IS GIVEN IS MADE BY THE FOLLOWING STATEMENTS.
C
20    TRAT=1.0+GAMB*AM**2
      PB=PA/TRAT**GAMF
      TB=TA/TRAT
C
      GO TO 22
21    PB=PA*(TB/TA)**GAMF
      GO TO 23
22    CALL TLOGIC (PB,TB)
23    IF (TB.LT.TA.AND.PB.LT.PA) GO TO 24
      KOD1(3)=1
      GO TO 44
24    TB1=TB
      NN=1
25    KOD1(2)=0
      IF (NN.EQ.1) GO TO 26
      IF (LGFN(PB,TB,KOD1(3),ZB)) GO TO 44
C
C  THE ITERATION PROCESS FOR CALCULATING THE NOZZLE EXIT DENSITY
C  FOLLOWS.
C
26    CSB=CS(TB)
      CAB=CSB-CSA+LRHOA+DZA
      LRHOB=LRHOA+CSB-CSA
      DO 27 M=1,50
      RHOB=DEXP(LRHOB)
      CALL ZETA (2,RHOB,TB,ZB)
      DZB=DBLE(ZB(4))
      CONV(1)=CAB-DZB-LRHOB
      IF (ABS(CONV(1)).LT.EDB) GO TO 28
27    LRHOB=LRHOB+CONV(1)/ZB(2)
      KOD1(2)=1
28    IF (RHOA-RHOB) 29,29,30
29    KOD1(3)=1
      GO TO 44
```

```
30    CALL ZETA (3,RHOB,TB,ZB)
C
C  THE THERMODYNAMIC FUNCTIONS AT THE NOZZLE EXIT CONDITIONS ARE
C  CALCULATED BY THE FOLLOWING STATEMENTS.
C
      VV=2.0D0*(CHA-CH(TB)-DBLE(TB*(ZB(1)-ZB(5))))
      CV=CP(TB)-ZB(6)
      GA=ZB(3)+ZB(2)**2/CV
      OUT(4)=GA/ZB(1)
C
      GO TO (31,35,39),KODE
31    AM=ASQRT(VV/(ZB(1)*OUT(4)*TB))
      IF (NN.NE.1) B1=CONV(2)
      CONV(2)=RHOB*ZB(1)*R*TB
      PERR=PB/CONV(2)-1.0
      IF (ABS(PERR).LT.ETP) GO TO 40
      IF (NN.GT.20) GO TO 34
      NN=NN+1
C
C  THE SUCCEEDING ESTIMATES OF THE NOZZLE EXIT TEMPERATURE ARE MADE
C  BY THE FOLLOWING STATEMENTS FOR THE CASE OF A GIVEN NOZZLE EXIT
C  PRESSURE.
C
      IF (NN-2) 33,32,33
32    TB=TB*(1.0+GAMA*PERR)
      IF (TB.GE.TA) TB=0.999*TA
      TB2=TB
      GO TO 25
33    TB=TB+(TB2-TB1)*(PB-CONV(2))/(CONV(2)-B1)
      TB1=TB2
      TB2=TB
      GO TO 25
C
34    KOD1(1)=1
      GO TO 40
35    PB=ZB(1)*TB*R*RHOB
      IF (NN.NE.1) B1=CONV(2)
      CONV(2)=ASQRT(VV/(ZB(1)*TB*OUT(4)))
      IF (ABS(1.0-CONV(2)/AM).LT.ETM) GO TO 40
      IF (NN.GT.20) GO TO 38
      NN=NN+1
C
C  THE SUCCEEDING ESTIMATES OF THE NOZZLE EXIT TEMPERATURE ARE MADE
C  BY THE FOLLOWING STATEMENTS FOR THE CASE OF A GIVEN NOZZLE EXIT
C  MACH NUMBER.
C
      IF (NN-2) 37,36,37
36    TB=TB*(1.0-GAMD*TB*AM*(AM-CONV(2))/TA)
      IF (TB.GE.TA) TB=0.999*TA
      TB2=TB
      GO TO 25
37    TB=TB+(TB2-TB1)*(AM-CONV(2))/(CONV(2)-B1)
      TB1=TB2
      TB2=TB
      GO TO 25
C
38    KOD1(1)=1
      GO TO 40
```

```
39    AM=ASQRT(VV/(ZB(1)*OUT(4)*TB))
      PB=ZB(1)*R*RHOB*TB
      CONV(2)=0.0
40    IF (LGFN(PB,TB,KOD1(3),ZB)) GO TO 44
      IF (VV.GT.0.0) GO TO 41
      KOD1(3)=1
      GO TO 44
C
C  THE ISENTROPIC FLOW PROPERTIES ARE CALCULATED BY THE FOLLOWING
C  STATEMENTS.
C
41    FLOW=PB*SQRT(VV/R)/(ZB(1)*TB)
      OUT(3)=GA/ZB(3)
      OUT(2)=CV*OUT(3)
      TBF=(PB/PA)**GAMA
      IF ((AM.EQ.1.0).AND.(KODE.EQ.2)) GO TO 42
      FLOWI=PA*SQRT(GAME*(PB/PA)**GAMC*(1.0-TBF)/(R*TA))
      GO TO 43
42    FLOWI=PA*SQRT(RC/TA)
43    OUT(1)=FLOW/FLOWI
C
44    AMM=AM
      PBB=PB
      TBB=TB
      RETURN
      END
```

```
$IBFTC RDATA
      BLOCK DATA
      COMMON /LIMIT/ E(4)
      DATA E/3*1.0E-6,1.0E-4/
      END
```

```
$IBFTC MEZETA
      SUBROUTINE ZETA (KK,PP,TT,Z)
      COMMON /VALUE/ F(4,4),G(6,4)
      DIMENSION Z(6)
      DOUBLE PRECISION F,G,B1,B2,B3,B4,B5,A1,A2,A3,A4,A5,E1,E2,PA,TA,TH1
     1,TH2,TH3,TH4,D1,D2,D3,D4,D5,F1,F2,UA,P,T,P1,P2,U,T1,RC,EXPC,RB,EXP
     2B,ZB1,ZC1,AB1,AB2,AB3,AB4,AB5,ZA,ZB,ZC,RB1,EXPB1,S,SS,PSI1,PSI2,PS
     3I3,PSI4,RC1,EXPC1,PSI5,PSI6,PSI7,PSI8
      DATA B1,B2,B3,B4,B5,A1,A2,A3,A4,A5,E1,E2,PA/4.91473574991686D-03,7
     1.37664223478550D-06,-1.14587843032923D-07,5.89510209511141D-10,-5.
     274362281343532D-13,-2.23983199201862D00,1.34331253741270D-03,2.759
     310182906551D-05,-1.65546977053542D-07,2.34124562687064D-10,-4.6002
     40000000000D-02,-2.11770000000000D-10,1.13318000000000D02/
      DATA TA,TH1,TH2,TH3,TH4,D1,D2,D3,D4,D5,F1,F2,UA/1.47710550000000D0
     12,1.09934666473654D-14,1.64873321284064D07,1.07243639762491D08,3.6
     264468882455140-15,-3.97760537104600D00,-1.50622516081086D-02,4.329
     340740732648D-04,-1.85355607372189D-06,2.05286315303314D-09,-1.3787
     49330000000D03,1.34418460000000D00,1.45511293919343D06/
      K=KK
      P=PP
      T=TT
```

```
      P1=P+PA
      P2=P1*P1
      U=P2*P1
      T1=T+TA
      RC=(F1+F2*P)/T
      EXPC=DEXP(RC)
      RB=(E1+E2*U)
      EXPB=DEXP(RB*T1)
      ZB1=(TH1*P*P2*(U-TH2)*(TH3-U)*EXPB)/T
      ZC1=(D1+(D2+(D3+(D4+D5*P)*P)*P)*P)*P*EXPC/T
      IF (K.EQ.2) GO TO 1
      AB1=B1+A1/T
      AB2=B2+A2/T
      AB3=B3+A3/T
      AB4=B4+A4/T
      AB5=B5+A5/T
      ZA=1.0+(AB1+(AB2+(AB3+(AB4+AB5*P)*P)*P)*P)*P
      Z(1)=ZA+ZB1+ZC1
      IF (K.EQ.0) RETURN
      ZA=1.0+(2.0*AB1+(3.0*AB2+(4.0*AB3+(5.0*AB4+6.0*AB5*P)*P)*P)*P)*P
      ZB=ZB1*(2.0*(1.0+P/P1)+3.0*P*P2*(E2*T1+1.0/(U-TH3)+1.0/(U-TH2)))
      ZC=(F2*P*ZC1+EXPC*(2.0*D1+(3.0*D2+(4.0*D3+(5.0*D4+6.0*D5*P)*P)*P)*
     1P)*P)/T
      Z(3)=ZA+ZB+ZC
      IF (K.EQ.1) RETURN
      RB1=E1+E2*UA
      EXPB1=DEXP(RB1*T1)
      ZA=1.0+(B1+(B2+(B3+(B4+B5*P)*P)*P)*P)*P
      ZB=RB*T*ZB1
      ZC=-RC*ZC1
      Z(2)=ZA+ZB+ZC
      S=E2*T1
      SS=F2/T
      CALL POLY (1,1,U,T,S)
      CALL POLY (1,2,P,T,SS)
      ZA=(B1+(B2/2.0+(B3/3.0+(B4/4.0+B5*P/5.0)*P)*P)*P)*P
      PSI1=F(1,1)-F(2,1)+F(3,1)-F(4,1)
      PSI2=F(1,2)-F(2,2)+F(3,2)-F(4,2)
      ZB=TH4*(PSI1*EXPB-PSI2*EXPB))
      PSI3=G(1,1)-G(2,1)+G(3,1)-G(4,1)+G(5,1)-G(6,1)
      PSI4=G(1,2)-G(2,2)+G(3,2)-G(4,2)+G(5,2)-G(6,2)
      RC1=F1/T
      EXPC1=DEXP(RC1)
      ZC=(PSI4*EXPC1-PSI3*EXPC)/T**2
      Z(4)=ZA+ZB+ZC
      IF (K.EQ.2) RETURN
      CALL POLY (2,1,U,T,S)
      CALL POLY (2,2,P,T,SS)
      PSI5=F(1,3)-F(2,3)+F(3,3)-F(4,3)
      PSI6=F(1,4)-F(2,4)+F(3,4)-F(4,4)
      PSI7=G(1,3)-G(2,3)+G(3,3)-G(4,3)+G(5,3)-G(6,3)
      PSI8=G(1,4)-G(2,4)+G(3,4)-G(4,4)+G(5,4)-G(6,4)
      ZA=-(A1+(A2/2.0+(A3/3.0+(A4/4.0+A5*P/5.0)*P)*P)*P)*P/T
      ZB=TH4*(PSI5*EXPB-PSI6*EXPB1)
      ZC=(PSI8*EXPC1-PSI7*EXPC)/T**2
      Z(5)=ZA+ZB+ZC
      ZB=TH4*T*(EXPB*(RB*PSI1-(F(1,1)-2.0*F(2,1)+3.0*F(3,1)-4.0*F(4,1))/
     1T1)-EXPB1*(RB1*PSI2-(F(1,2)-2.0*F(2,2)+3.0*F(3,2)-4.0*F(4,2))/T1))
      ZC=(EXPC*((2.0+RC)*PSI3-G(1,1)+2.0*G(2,1)-3.0*G(3,1)+4.0*G(4,1)-5.
```

```
     1*G(5,1)+6.0*G(6,1))-EXPC1*((2.0+RC1)*PSI4-G(1,2)+2.0*G(2,2)-3.0*G(
     23,2)+4.0*G(4,2)-5.0*G(5,2)+6.0*G(6,2)))/T**2
      Z(6)=ZB+ZC
      RETURN
      END
```

```
$IBFTC MEPOLY
      SUBROUTINE POLY (J,K,PP,TT,CC)
      COMMON /VALUE/ F(4,4),G(6,4)
      DIMENSION A(7,2), B(16,2)
      DOUBLE PRECISION PP,TT,CC,F,G,A,B,AA,AB,UA,D1,D2,D3,D4,D5,P,T,C1,C
     12,C3,C4,C5,C6,V1,V2,V3
      DATA B/5.48429563564224D03,1.54210957155370D01,-6.17182239272157D-
     101,3.13762297202746D-03,-5.32199549075239D-06,2.75942703621458D-09
     2,-1.23436447854431D00,9.41286891608238D-03,1.88257378321648D-02,-2
     3.12879819630095D-05,-6.38639458890286D-05,-1.27727891778057D-04,1.
     4379713518107290-08,5.51885407242917D-08,1.65565622172875D-07,3.311
     5312443457500-07,5*0.0D00,2.75942703621458D-09,6*0.0D00,1.379713518
     6107290-08,5.51885407242917D-08,1.65565622172875D-07,3.311312443457
     750D-07/
      DATA A,AA,AB,UA,D1,D2,D3,D4,D5,V1,V2,V3/8.13389656644895D13,-5.317
     142860649802D06,1.97994920826647D-02,2.11770000000000D-10,3.9598984
     21653293D-02,6.35310000000000D-10,1.27062000000000D-09,3*0.0D00,2.1
     3177000000000D-10,0.0D00,6.35310000000000D-10,1.27062000000000D-09
     4,1.76816150742336D15,1.23730971890897D08,1.45511293919343D06,-3.97
     576053710460OD00,-1.50622516081086D-02,4.32940740732648D-04,-1.8535
     665607372189D-06,2.05286315303314D-09,7.36440814840596D13,-5.2584624
     7363C271D06,4.14478797681273D-02/
      P=PP
      T=TT
      C1=CC
      C2=C1*C1
      C3=C1*C2
      C4=C1*C3
      GO TO (1,7),K
1     GO TO (2,3),J
2     N=1
      GO TO 4
3     A(1,2)=A(1,1)+AA/T
      A(2,2)=A(2,1)-AB/T
      A(3,2)=A(3,1)+1.0/T
      A(5,2)=2.0*A(3,2)
      N=2
4     DO 5 I=1,2
      M=2*N-2+I
      IF (M.EQ.2) GO TO 6
      F(1,M)=(A(1,N)+(A(2,N)+(A(3,N)+A(4,N)*P)*P)*P)/C1
      F(2,M)=(A(2,N)+(A(5,N)+A(6,N)*P)*P)/C2
      F(3,M)=(A(5,N)+A(7,N)*P)/C3
      F(4,M)=A(7,N)/C4
5     P=UA
      RETURN
6     F(1,2)=V1/C1
      F(2,2)=V2/C2
      F(3,2)=V3/C3
```

```
      F(4,2)=F(4,1)
      RETURN
7     C5=C4*C1
      C6=C5*C1
      GO TO (8,9),J
8     N=1
      GO TO 10
9     B(1,2)=B(1,1)+T*D1
      B(2,2)=B(2,1)+T*D2
      B(3,2)=B(3,1)+T*D3
      B(4,2)=B(4,1)+T*D4
      B(5,2)=B(5,1)+T*D5
      B(7,2)=B(3,2)*2.0
      B(8,2)=B(4,2)*3.0
      B(9,2)=B(8,2)*2.0
      B(10,2)=B(5,2)*4.0
      B(11,2)=B(10,2)*3.0
      B(12,2)=B(11,2)*2.0
      N=2
10    M=2*N-1
      G(1,M)=(B(1,N)+(B(2,N)+(B(3,N)+(B(4,N)+(B(5,N)+B(6,N)*P)*P)*P)*P)*
     1P)/C1
      G(2,M)=(B(2,N)+(B(7,N)+(B(8,N)+(B(10,N)+B(13,N)*P)*P)*P)*P)/C2
      G(3,M)=(B(7,N)+(B(9,N)+(B(11,N)+B(14,N)*P)*P)*P)/C3
      G(4,M)=(B(9,N)+(B(12,N)+B(15,N)*P)*P)/C4
      G(5,M)=(B(12,N)+B(16,N)*P)/C5
      G(6,M)=B(16,N)/C6
      M=M+1
      G(1,M)=B(1,N)/C1
      G(2,M)=B(2,N)/C2
      G(3,M)=B(7,N)/C3
      G(4,M)=B(9,N)/C4
      G(5,M)=B(12,N)/C5
      G(6,M)=B(16,N)/C6
      RETURN
      END
```

```
$IBFTC METEMP
      DOUBLE PRECISION FUNCTION CP(T)
      DOUBLE PRECISION SI(2),HI(2),S
      DIMENSION A(9,3,2)
      DATA A/2.5771104E-6,-2.240781E-4,-4.6776567E-4,7.7524692E-3,1.0207
     1347E-3,-5.9827343E-2,.1053479,-6.7124682E-2,3.0159729,3.221388E-7,
     2-3.2011157E-5,-7.7960945E-5,1.5504938E-3,2.5518368E-4,-1.9942448E-
     32,5.267395E-2,-6.7124682E-2,3.0159729,2.863456E-7,-2.8009762E-5,-6
     4.6823667E-5,1.2920782E-3,2.0414694E-4,-1.4956836E-2,3.5115967E-2,-
     53.3562341E-2,3.0159729,2.1771302E-6,-3.6924768E-5,1.2048213E-4,1.7
     6546467E-3,-1.7244897E-2,1.8825512E-2,.4503988,-1.6311027,4.5834702
     7,2.7214128E-7,-5.2749669E-6,2.0080355E-5,3.5092934E-4,-4.3112242E-
     83,6.2751707E-3,.2251994,-1.6311027,4.5834702,2.4190336E-7,-4.61559
     96E-6,1.7211733E-5,2.9244112E-4,-3.4489794E-3,4.706378E-3,.15013293
     $,-.81555135,4.5834702/
      DATA SI,HI/18.66792402732497,19.90897487890906,-2.176323905587196,
     1-110.4372755187238/
      K=1
```

```
1     N=1
      IF(T.GE.259.78828)N=2
      S=T/1.0D2
      CP=A(1,K,N)
      DO 2 J=2,8
2     CP=CP*S+A(J,K,N)
      GO TO (3,4,5),K
3     CP=CP*S+A(9,1,N)
      RETURN
      ENTRY CS(T)
      K=2
      GO TO 1
4     CP=CP*S+A(9,2,N)*DLOG(S)+SI(N)
      RETURN
      ENTRY CH(T)
      K=3
      GO TO 1
5     CP=T*(CP*S+A(9,3,N))+HI(N)
      RETURN
      END
```

```
$IBFTC MELOG
      LOGICAL FUNCTION LGFN(P,T,J,Z)
      COMMON /LDATA/ XKV,R,XMW,RC,D2,G
      DIMENSION Z(6)
      S=T/100.0
      J=1
      LGFN=.TRUE.
      IF (P.GT.4.01E7.OR.P.LT.0.1.OR.S.LT.0.69.OR.S.GT.6.01.OR.Z(1).LE.0
     1.0.OR.Z(2).LE.0.0.OR.Z(3).LE.0.0) RETURN
      IF (S.GT.1.9077) GO TO 1
      PLOG=8.30516+(-2.961-0.8/S)/S
      IF (S.GE.1.1883) PLOG=PLOG+0.257*(S/1.1883-1.0)**1.32
      IF (P.GT.XKV*EXP(2.3025851*PLOG)) RETURN
1     J=0
      LGFN=.FALSE.
      RETURN
      END
```

```
$IBFTC METLG
      SUBROUTINE TLOGIC (P,T)
      DATA A1,A2,A3,A4,A5,A6,A7,A8,A9/53.88758,1.8253577,0.18723912,1.57
     10661E-5,-8.7451662E-4,1.2470553E-4,9.4808617E-6,-1.280319E-6,4.544
     26557E-8/
      IF (T.GT.190.77) RETURN
      V=ALOG(P)
      S=A1+(A2+(A3+(A4+(A5+(A6+(A7+(A8+A9*V)*V)*V)*V)*V)*V)*V)*V
      IF (T.LT.S) T=S
      IF (T.LT.69.0) T=69.0
      RETURN
      END
```

```
$IBFTC MECATA
      BLOCK DATA
      COMMON /LDATA/ R(6)
      DATA R/1.0,518.2562,16.04303,8.745139E-4,5.6,1.3333333/
      END
```

APPENDIX D

DESCRIPTION AND CARD LISTING OF COMPUTER ROUTINES THAT APPLY TO NATURAL GAS

Since natural gas is a mixture of many gases, the first reference in the main program is to the subroutine that calculates a set of composition-dependent constants for use in the other routines. For a given composition, this has to be referenced only once in a given run. The following statement references this routine:

```
CALL BDATA(X)
```

The subroutine used to calculate the thermodynamic properties of natural gas is referenced by the following statement:

```
CALL RGAS(KK,PA,TA,AM,PB,TB,FLOW,KODE)
```

For a successful computation, three conditions have to be satisfied:

(1) $190\ K \leq T \leq 410\ K$.

(2) $0.1\ N/m^2 \leq p \leq 110\times10^5\ N/m^2$.

(3) The pressure of the natural gas has to be less than a constant times the saturation pressure. Unless otherwise specified, the value of this constant will be unity.

Some of the variables in this program are entered or returned through labeled common. Therefore, the following common statements should be in the main program:

```
COMMON/LDATA/XKV,R,XMW,RC,D2,G
COMMON/LIMIT/EDA,EDB,ETP,ETM
COMMON/OUTPUT/OUT(9),CONV(4),ZA(6),ZB(6),KOD1(5)
```

With the exception of X, the symbols that apply to these routines are defined in appendix C. The symbol X represents an eight-element array. The elements in this array are proportional to the mole fractions of the natural-gas components. The order in which these elements appear is as follows: CH_4, C_2H_6, C_3H_8, C_4H_{10}, C_5H_{12}, C_6H_{14}, N_2, and CO_2.

The computer routines that apply to natural-gas mixtures are described in the following paragraphs. In order to calculate the thermodynamic properties of natural-gas mixtures, all these routines have to be included in the program. The routines are identified by their deck names.

$$[F(3,3) - F(3,3,2) - 2F(3,1) + 2F(3,2)] + \frac{4}{Pr}[F(4,4)] = 0 \tag{83}$$

$$[F(3,3,3,2) - F(3,3,3) - 3F(3,3,2) + F(3,3) + F(3,2) - 3F(3,1)] + \frac{12}{Pr}[F(4,4) - F(4,4,3)] = 0 \tag{84}$$

$$[F(3,3,3,3) - F(3,3,3,3,2) + 4F(3,3,3,2) - 4F(3,3,3) - 6F(3,3,2) + 6F(3,3) + 4F(3,2) - 4F(3,1)] + \frac{24}{Pr}[F(4,4) - 2F(4,4,3) + F(4,4,3,3)] = 0 \tag{85}$$

where the following definitions are utilized:

$$[f_i] = \begin{bmatrix} 1 \\ 1 - u_0 \\ 1 - \theta_0 \\ d\theta_0/d\eta \end{bmatrix} \qquad [s_i] = \begin{bmatrix} 0 \\ A \\ \overline{A} \\ \overline{A} \end{bmatrix} \qquad [h_{im}] = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 1 & B & C & D \\ 1 & \overline{B} & \overline{C} & \overline{D} \\ \overline{A} - \overline{B} & \overline{AB} - 2\overline{C} & \overline{AC} - 3\overline{D} & \overline{AD} \end{bmatrix} \tag{86}$$

The solution to the set of algebraic equations (82) to (85) is, for $Pr = 0.72$

$$\begin{bmatrix} \overline{A} \\ \overline{B} \\ \overline{C} \\ \overline{D} \end{bmatrix} = \begin{bmatrix} 1.665 \\ 1.367 \\ 0.6699 \\ 0.7161 \end{bmatrix} \tag{87}$$

The corresponding profile results are compared with the exact similarity solution in table II and also shown graphically in figure 18. In addition to the obvious agreement, we note the following comparison of slopes at the wall:

$$\left.\begin{aligned} \left(\frac{dG}{d\eta}\right)_{\eta=0} &= 0.2976 \\ \left(\frac{d\theta_0}{d\eta}\right)_{\eta=0} &= 0.2980 \end{aligned}\right\} \tag{88}$$

Deck NMLOG

This is a logical function that tests whether the pressure and temperature lie within the range of both the state equation and the ideal-gas specific-heat equation. In addition, a check is made on whether the natural gas is in the gaseous state.

Deck NMTLG

This subroutine, if necessary, will change the temperature such that it is above the condensation temperature of natural gas.

Deck NMDATA

This is a block data subprogram that supplies constants for the other routines.

Exclusive of the library routines, these routines require 2889 storage locations. The execution time for a typical case on an IBM 7094II/7044 direct couple computer is of the order of 0.1 second.

A card listing of the decks that apply to natural-gas mixtures follows. The card listings of the decks that are identical to those for methane are omitted in this appendix but are in appendix B. The omitted decks are RGASC1, RDATA, and MEPOLY.

```
$IBFTC NMCOMP
      SUBROUTINE BDATA (X)
      DIMENSION X(8), MOL(8), XMOL(8), S(8), H(8), CP(8,8), T(8), P(8),
     1RHO(8)
      COMMON /LDATA/ XKV,R,MW,RC,D2,G
      COMMON /PDATA/ F(9)/ZDATA/PC,TC,RHOC/TDATA/A(8,3),HI,SI
      REAL MOL,MW
      DATA MOL,XMOL/16.043,30.07,44.097,58.124,72.151,86.178,28.013,44.0
     11,2.77527262,3.403528,3.78639175,4.06264748,4.27876115,4.45641492,
     23.33266869,3.78441688/
      DATA CP/2.7998255,.4284998,-.2751805,2.5821711E-2,2.4165792E-2,-2.
     15163737E-3,-8.2465805E-4,1.1523272E-4,-9.8533835,19.657673,-10.186
     2582,1.8267443,.2463681,-.1202048,1.0807487E-2,0.0,-16.796807,29.08
     34569,-13.810883,2.2198327,.3655141,-.1532602,1.296668E-2,0.0,-1.81
     422946,5.6640979,-.907714,.1435233,.034644782,-.017195974,1.7660626
     5E-3,0.0,-3.3598014,7.4196271,-.726671,.045531828,4*0.0,-.5379224,5
     6.6539353,.3607859,-.1684308,.015475231,3*0.0,2.501146,-9.720581E-3
     7,1.036056E-2,-4.437258E-3,6.825596E-4,3*0.0,2.5044684,-.5085567,.4
     88840302,-3.730571E-2,-2.522643E-2,6.1401476E-3,-4.1166357E-4,0.0/
      DATA S,H/-2.42592233,-16.722706,-24.4685144,-7.4352313,-9.71086973
     1,-9.62405754,-1.20430845,-.54815092,-794.255051,-224.353146,43.254
     2268,-792.772573,-836.398938,-1261.94398,-699.709835,-702.986595/
      DATA P,T,RHO/4.626E6,4.894E6,4.257E6,3.722E6,3.299E6,3.149E6,3.398
```

```
     1E6,7.368E6,190.77,305.56,369.97,416.7,454.6,499.7,126.135,304.20,1
     262.5,203.2,220.5,224.4,235.0,236.7,311.0,468.0/
      XX=0.0
      DO 1 N=1,8
1     XX=XX+X(N)
      DO 2 N=1,8
2     F(N)=X(N)/XX
      F(9)=F(8)-F(7)/2.0+F(2)+2.0*F(3)+3.0*F(4)+4.0*F(5)+5.0*F(6)
      PC=0.0
      TC=0.0
      RHOC=0.0
      SI=0.0
      HI=0.0
      MW=0.0
      DO 3 N=1,8
      SI=SI+F(N)*(S(N)-XMOL(N))
      HI=HI+F(N)*H(N)
      MW=MW+F(N)*MOL(N)
      PC=PC+F(N)*P(N)
      TC=TC+F(N)*T(N)
3     RHOC=RHOC+F(N)*RHO(N)
      SI=SI+ALOG(MW)
      PC=P(1)/PC
      TC=T(1)/TC
      RHOC=RHO(1)/RHOC
      DO 5 N=1,8
      NN=9-N
      A(NN,1)=0.0
      DO 4 M=1,8
4     A(NN,1)=A(NN,1)+F(M)*CP(N,M)
      XN=N-1
      IF (XN.EQ.0.0) XN=1.0
      A(NN,2)=A(NN,1)/XN
5     A(NN,3)=A(NN,1)/FLOAT(N)
      R=8314.41/MW
      RC=5.45105E-5*MW
      RETURN
      END
```

```
$IBFTC NMZETA
      SUBROUTINE ZETA (KK,PP,TT,Z)
      COMMON /VALUE/ F(4,4),G(6,4)
      COMMON /ZDATA/ PC,TC,RHOC
      DIMENSION Z(6)
      DOUBLE PRECISION F,G,B1,B2,B3,B4,B5,A1,A2,A3,A4,A5,E1,E2,PA,TA,TH1
     1,TH2,TH3,TH4,D1,D2,D3,D4,D5,F1,F2,UA,P,T,P1,P2,U,T1,RC,EXPC,RB,EXP
     2B,ZB1,ZC1,AB1,AB2,AB3,AB4,AB5,ZA,ZB,ZC,RB1,EXPB1,S,SS,PSI1,PSI2,PS
     3I3,PSI4,RC1,EXPC1,PSI5,PSI6,PSI7,PSI8
      DATA B1,B2,B3,B4,B5,A1,A2,A3,A4,A5,E1,E2,PA/4.91473574991686D-03,7
     1.37664223478550D-06,-1.14587843032923D-07,5.89510209511141D-10,-5.
     274382281343532D-13,-2.23983199201862D00,1.34331253741270D-03,2.759
     310182906551D-05,-1.65546977053542D-07,2.34124562687064D-10,-4.6002
     40000000000D-02,-2.11770000000000D-10,1.13318000000000D02/
      DATA TA,TH1,TH2,TH3,TH4,D1,D2,D3,D4,D5,F1,F2,UA/1.47710550000000D0
```

```
     12,1.09934666473654D-14,1.64873321284064D07,1.07243639762491D08,3.6
     2644E8882455140-15,-3.97760537104600D00,-1.50622516081086D-02,4.329
     340740732648D-04,-1.85355607372189D-06,2.05286315303314D-09,-1.3787
     4933C000000D03,1.34418460000000D00,1.45511293919343D06/
      K=KK
      P=PP*RHOC
      T=TT*TC
      P1=P+PA
      P2=P1*P1
      U=P2*P1
      T1=T+TA
      RC=(F1+F2*P)/T
      EXPC=DEXP(RC)
      RB=(E1+E2*U)
      EXPB=DEXP(RB*T1)
      ZB1=(TH1*P*P2*(U-TH2)*(TH3-U)*EXPB)/T
      ZC1=(D1+(D2+(D3+(D4+D5*P)*P)*P)*P)*P*EXPC/T
      IF (K.EQ.2) GO TO 1
      AB1=B1+A1/T
      AB2=B2+A2/T
      AB3=B3+A3/T
      AB4=B4+A4/T
      AB5=B5+A5/T
      ZA=1.0+(AB1+(AB2+(AB3+(AB4+AB5*P)*P)*P)*P)*P
      Z(1)=ZA+ZB1+ZC1
      IF (K.EQ.0) RETURN
      ZA=1.0+(2.0*AB1+(3.0*AB2+(4.0*AB3+(5.0*AB4+6.0*AB5*P)*P)*P)*P)*P
      ZB=ZB1*(2.0*(1.0+P/P1)+3.0*P*P2*(E2*T1+1.0/(U-TH3)+1.0/(U-TH2)))
      ZC=(F2*P*ZC1+EXPC*(2.0*D1+(3.0*D2+(4.0*D3+(5.0*D4+6.0*D5*P)*P)*P)*
     1P)*P)/T
      Z(3)=ZA+ZB+ZC
      IF (K.EQ.1) RETURN
1     RB1=E1+E2*UA
      EXPB1=DEXP(RB1*T1)
      ZA=1.0+(B1+(B2+(B3+(B4+B5*P)*P)*P)*P)*P
      ZB=RB*T*ZB1
      ZC=-RC*ZC1
      Z(2)=ZA+ZB+ZC
      S=E2*T1
      SS=F2/T
      CALL POLY (1,1,U,T,S)
      CALL POLY (1,2,P,T,SS)
      ZA=(B1+(B2/2.0+(B3/3.0+(B4/4.0+B5*P/5.0)*P)*P)*P)*P
      PSI1=F(1,1)-F(2,1)+F(3,1)-F(4,1)
      PSI2=F(1,2)-F(2,2)+F(3,2)-F(4,2)
      ZB=TH4*(PSI1*EXPB-PSI2*EXPB1)
      PSI3=G(1,1)-G(2,1)+G(3,1)-G(4,1)+G(5,1)-G(6,1)
      PSI4=G(1,2)-G(2,2)+G(3,2)-G(4,2)+G(5,2)-G(6,2)
      RC1=F1/T
      EXPC1=DEXP(RC1)
      ZC=(PSI4*EXPC1-PSI3*EXPC)/T**2
      Z(4)=ZA+ZB+ZC
      IF (K.EQ.2) RETURN
      CALL POLY (2,1,U,T,S)
      CALL POLY (2,2,P,T,SS)
      PSI5=F(1,3)-F(2,3)+F(3,3)-F(4,3)
      PSI6=F(1,4)-F(2,4)+F(3,4)-F(4,4)
      PSI7=G(1,3)-G(2,3)+G(3,3)-G(4,3)+G(5,3)-G(6,3)
      PSI8=G(1,4)-G(2,4)+G(3,4)-G(4,4)+G(5,4)-G(6,4)
```

```
      ZA=-(A1+(A2/2.0+(A3/3.0+(A4/4.0+A5*P/5.0)*P)*P)*P)*P/T
      ZB=TH4*(PSI5*EXPB-PSI6*EXPB1)
      ZC=(PSI8*EXPC1-PSI7*EXPC)/T**2
      Z(5)=ZA+ZB+ZC
      ZB=TH4*T*(EXPB*(RB*PSI1-(F(1,1)-2.0*F(2,1)+3.0*F(3,1)-4.0*F(4,1))/
     1T1)-EXPB1*(RB1*PSI2-(F(1,2)-2.0*F(2,2)+3.0*F(3,2)-4.0*F(4,2))/T1))
      ZC=(EXPC*((2.0+RC)*PSI3-G(1,1)+2.0*G(2,1)-3.0*G(3,1)+4.0*G(4,1)-5.
     1*G(5,1)+6.0*G(6,1))-EXPC1*((2.0+RC1)*PSI4-G(1,2)+2.0*G(2,2)-3.0*G(
     23,2)+4.0*G(4,2)-5.0*G(5,2)+6.0*G(6,2)))/T**2
      Z(6)=ZB+ZC
      RETURN
      END


$IBFTC NMTEMP
      DOUBLE PRECISION FUNCTION CP(T)
      DOUBLE PRECISION S
      COMMON/TDATA/A(8,3),HI,SI
      K=1
    1 S=T/1.0D2
      CP=A(1,K)
      DO 2 N=2,7
    2 CP=CP*S+A(N,K)
      GO TO (3,4,5),K
    3 CP=CP*S+A(8,1)
      RETURN
      ENTRY CS(T)
      K=2
      GO TO 1
    4 CP=CP*S+A(8,2)*DLOG(S)+SI
      RETURN
      ENTRY CH(T)
      K=3
      GO TO 1
    5 CP=T*(CP*S+A(8,3))+HI
      RETURN
      END


$IBFTC NMLOG
      LOGICAL FUNCTION LGFN(P,T,J,Z)
      COMMON /ZDATA/ PC,TC,RHOC
      COMMON /LDATA/ XKV,R,XMW,RC,D2,G
      DIMENSION Z(6)
      S=T/100.0
      J=1
      LGFN=.TRUE.
      IF (P.GT.1.1E7.OR.P.LT.0.1.OR.S.LT.1.9.OR.S.GT.4.1.OR.Z(1).LE.0.0.
     1OR.Z(2).LE.0.0.OR.Z(3).LE.0.0) RETURN
      S=S*TC
      IF (S.GT.1.9077) GO TO 1
      PLOG=8.30516+(-2.961-0.8/S)/S+.257*(S/1.1883-1.0)**1.32
      IF (P*PC.GT.XKV*EXP(2.3025851*PLOG)) RETURN
1     J=0
      LGFN=.FALSE.
      RETURN
      END
```

```
$IBFTC NMTLG
      SUBROUTINE TLOGIC (P,T)
      COMMON /ZDATA/ PC,TC,RHOC
      DIMENSION A(9)
      DATA A/4.5446557E-8,-1.280319E-6,9.4808617E-6,1.2470553E-4,-8.7451
     1662E-4,1.570661E-5,.18723912,1.8253577,53.88758/
      PP=P*PC
      TT=T*TC
      IF (TT.GT.190.77) RETURN
      V=ALOG(PP)
      S=0.0
      DO 1 N=1,9
1     S=S*V+A(N)
      IF (TT.LT.S) T=S/TC
      IF(T.LT.190.0)T=190.0
      RETURN
      END
```

```
$IBFTC NMDATA
      BLOCK DATA
      COMMON /LDATA/ R(6)
      DATA R(1),R(5),R(6)/1.0,5.6,1.3333333/
      END
```

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TABLE I. - THERMODYNAMIC PROPERTIES OF METHANE - CRITICAL-FLOW FACTOR, C*

Plenum temperature, K	Plenum pressure, N $m^2 \times 10^{-5}$										
	0	1	2	3	4	5	6	7	8	9	10
120	0.6732	------	------	------	------	------	------	------	------	------	------
122	0.6732	0.6828	------	------	------	------	------	------	------	------	------
124	0.6732	0.6820	------	------	------	------	------	------	------	------	------
126	0.6732	0.6813	------	------	------	------	------	------	------	------	------
128	0.6732	0.6807	------	------	------	------	------	------	------	------	------
130	0.6732	0.6801	0.6880	------	------	------	------	------	------	------	------
132	0.6732	0.6797	0.6869	------	------	------	------	------	------	------	------
134	0.6732	0.6792	0.6860	------	------	------	------	------	------	------	------
136	0.6732	0.6788	0.6851	0.6920	------	------	------	------	------	------	------
138	0.6732	0.6785	0.6844	0.6908	------	------	------	------	------	------	------
140	0.6732	0.6782	0.6837	0.6896	------	------	------	------	------	------	------
142	0.6732	0.6779	0.6831	0.6886	0.6947	------	------	------	------	------	------
144	0.6731	0.6777	0.6825	0.6877	0.6934	------	------	------	------	------	------
146	0.6731	0.6774	0.6820	0.6869	0.6922	0.6980	------	------	------	------	------
148	0.6731	0.6772	0.6816	0.6862	0.6912	0.6966	0.7024	------	------	------	------
150	0.6731	0.6770	0.6812	0.6855	0.6902	0.6953	0.7007	------	------	------	------
152	0.6731	0.6768	0.6808	0.6849	0.6894	0.6941	0.6992	0.7046	------	------	------
154	0.6731	0.6767	0.6804	0.6844	0.6886	0.6931	0.6978	0.7029	0.7083	------	------
156	0.6731	0.6765	0.6801	0.6839	0.6879	0.6921	0.6966	0.7014	0.7064	0.7119	------
158	0.6731	0.6764	0.6798	0.6834	0.6872	0.6912	0.6955	0.7000	0.7047	0.7098	------
160	0.6731	0.6763	0.6796	0.6830	0.6866	0.6905	0.6945	0.6987	0.7032	0.7080	0.7131
162	0.6731	0.6762	0.6793	0.6826	0.6861	0.6897	0.6935	0.6976	0.7018	0.7063	0.7110
164	0.6731	0.6760	0.6791	0.6823	0.6856	0.6891	0.6927	0.6965	0.7005	0.7047	0.7092
166	0.6731	0.6759	0.6789	0.6819	0.6851	0.6884	0.6919	0.6955	0.6994	0.7034	0.7076
168	0.6731	0.6758	0.6787	0.6816	0.6847	0.6879	0.6912	0.6947	0.6983	0.7021	0.7061
170	0.6731	0.6757	0.6785	0.6813	0.6843	0.6873	0.6905	0.6938	0.6973	0.7009	0.7047
172	0.6731	0.6756	0.6783	0.6810	0.6839	0.6868	0.6899	0.6931	0.6964	0.6998	0.7034
174	0.6731	0.6756	0.6781	0.6808	0.6835	0.6864	0.6893	0.6924	0.6955	0.6988	0.7023
176	0.6731	0.6755	0.6780	0.6805	0.6832	0.6859	0.6888	0.6917	0.6947	0.6979	0.7012
178	0.6730	0.6754	0.6778	0.6803	0.6829	0.6855	0.6883	0.6911	0.6940	0.6970	0.7002
180	0.6730	0.6753	0.6777	0.6801	0.6826	0.6851	0.6878	0.6905	0.6933	0.6962	0.6992
182	0.6730	0.6752	0.6775	0.6799	0.6823	0.6848	0.6873	0.6899	0.6927	0.6955	0.6983
184	0.6730	0.6752	0.6774	0.6797	0.6820	0.6844	0.6869	0.6894	0.6920	0.6947	0.6975
186	0.6730	0.6751	0.6773	0.6795	0.6817	0.6841	0.6865	0.6889	0.6915	0.6941	0.6967
188	0.6730	0.6750	0.6771	0.6793	0.6815	0.6838	0.6861	0.6885	0.6909	0.6934	0.6960
190	0.6730	0.6750	0.6770	0.6791	0.6812	0.6834	0.6857	0.6880	0.6904	0.6928	0.6953
192	0.6729	0.6749	0.6769	0.6789	0.6810	0.6831	0.6853	0.6876	0.6899	0.6922	0.6946
194	0.6729	0.6748	0.6768	0.6788	0.6808	0.6829	0.6850	0.6872	0.6894	0.6917	0.6940
196	0.6729	0.6748	0.6767	0.6786	0.6806	0.6826	0.6846	0.6868	0.6889	0.6911	0.6934
198	0.6729	0.6747	0.6765	0.6784	0.6804	0.6823	0.6843	0.6864	0.6885	0.6906	0.6928
200	0.6729	0.6746	0.6764	0.6783	0.6801	0.6821	0.6840	0.6860	0.6880	0.6901	0.6923

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	10	12	14	16	18	20	22	24	26	28	30
160	0.7131	------	------	------	------	------	------	------	------	------	------
162	0.7110	------	------	------	------	------	------	------	------	------	------
164	0.7092	0.7190	------	------	------	------	------	------	------	------	------
166	0.7076	0.7167	0.7271	------	------	------	------	------	------	------	------
168	0.7061	0.7147	0.7244	------	------	------	------	------	------	------	------
170	0.7047	0.7128	0.7219	0.7321	------	------	------	------	------	------	------
172	0.7034	0.7111	0.7196	0.7292	------	------	------	------	------	------	------
174	0.7023	0.7096	0.7176	0.7265	0.7365	------	------	------	------	------	------
176	0.7012	0.7081	0.7157	0.7241	0.7334	0.7438	------	------	------	------	------
178	0.7002	0.7068	0.7140	0.7219	0.7306	0.7403	0.7513	------	------	------	------
180	0.6992	0.7056	0.7124	0.7199	0.7281	0.7371	0.7472	------	------	------	------
182	0.6983	0.7044	0.7110	0.7181	0.7258	0.7342	0.7436	0.7541	------	------	------
184	0.6975	0.7034	0.7096	0.7164	0.7237	0.7316	0.7404	0.7501	0.7610	------	------
186	0.6967	0.7024	0.7083	0.7148	0.7217	0.7292	0.7374	0.7464	0.7565	0.7678	------
188	0.6960	0.7014	0.7072	0.7133	0.7199	0.7270	0.7347	0.7431	0.7524	0.7628	0.7745
190	0.6953	0.7005	0.7060	0.7119	0.7182	0.7250	0.7322	0.7402	0.7488	0.7584	0.7691
192	0.6946	0.6997	0.7050	0.7106	0.7166	0.7231	0.7300	0.7374	0.7455	0.7544	0.7642
194	0.6940	0.6989	0.7040	0.7094	0.7151	0.7213	0.7278	0.7349	0.7425	0.7508	0.7599
196	0.6934	0.6981	0.7030	0.7082	0.7138	0.7196	0.7259	0.7325	0.7397	0.7475	0.7559
198	0.6928	0.6974	0.7021	0.7071	0.7124	0.7181	0.7240	0.7304	0.7372	0.7445	0.7524
200	0.6923	0.6967	0.7013	0.7061	0.7112	0.7166	0.7223	0.7283	0.7348	0.7417	0.7491

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	30	32	34	36	38	40	42	44	46	48	50
180	------	------	------	------	------	------	------	------	------	------	------
182	------	------	------	------	------	------	------	------	------	------	------
184	------	------	------	------	------	------	------	------	------	------	------
186	------	------	------	------	------	------	------	------	------	------	------
188	0.7745	------	------	------	------	------	------	------	------	------	------
190	0.7691	0.7812	------	------	------	------	------	------	------	------	------
192	0.7642	0.7752	0.7876	------	------	------	------	------	------	------	------
194	0.7599	0.7699	0.7811	0.7938	------	------	------	------	------	------	------
196	0.7559	0.7652	0.7754	0.7869	0.7998	------	------	------	------	------	------
198	0.7524	0.7610	0.7704	0.7808	0.7924	0.8055	------	------	------	------	------
200	0.7491	0.7571	0.7658	0.7754	0.7859	0.7976	0.8109	0.8260	------	------	------

TABLE I. - Continued. THERMODYNAMIC PROPERTIES OF METHANE - CRITICAL-FLOW FACTOR, C*

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	0	5	10	15	20	25	30	35	40	45	50
200	0.6729	0.6821	0.6923	0.7037	0.7166	0.7315	0.7491	0.7705	0.7976	------	------
202	0.6728	0.6818	0.6917	0.7028	0.7152	0.7295	0.7461	0.7660	0.7908	0.8232	------
204	0.6728	0.6816	0.6912	0.7019	0.7139	0.7275	0.7433	0.7620	0.7847	0.8136	0.8526
206	0.6728	0.6813	0.6907	0.7011	0.7126	0.7257	0.7407	0.7583	0.7793	0.8055	0.8394
208	0.6728	0.6811	0.6902	0.7003	0.7114	0.7240	0.7383	0.7549	0.7745	0.7983	0.8284
210	0.6727	0.6809	0.6897	0.6995	0.7103	0.7224	0.7360	0.7517	0.7700	0.7920	0.8190
212	0.6727	0.6806	0.6893	0.6988	0.7092	0.7208	0.7339	0.7488	0.7660	0.7863	0.8108
214	0.6727	0.6804	0.6889	0.6981	0.7082	0.7193	0.7319	0.7460	0.7622	0.7812	0.8036
216	0.6726	0.6802	0.6884	0.6974	0.7071	0.7179	0.7299	0.7434	0.7588	0.7765	0.7972
218	0.6726	0.6800	0.6880	0.6967	0.7062	0.7166	0.7281	0.7410	0.7556	0.7722	0.7914
220	0.6725	0.6798	0.6876	0.6961	0.7052	0.7153	0.7264	0.7387	0.7525	0.7682	0.7861
222	0.6725	0.6796	0.6872	0.6954	0.7043	0.7141	0.7248	0.7366	0.7497	0.7645	0.7812
224	0.6725	0.6794	0.6868	0.6948	0.7035	0.7129	0.7232	0.7345	0.7470	0.7610	0.7768
226	0.6724	0.6792	0.6864	0.6942	0.7026	0.7117	0.7217	0.7325	0.7445	0.7578	0.7727
228	0.6724	0.6790	0.6861	0.6937	0.7018	0.7106	0.7202	0.7307	0.7421	0.7548	0.7688
230	0.6723	0.6788	0.6857	0.6931	0.7010	0.7096	0.7188	0.7289	0.7399	0.7519	0.7652
232	0.6723	0.6786	0.6854	0.6926	0.7003	0.7086	0.7175	0.7272	0.7377	0.7492	0.7619
234	0.6722	0.6784	0.6850	0.6920	0.6995	0.7076	0.7162	0.7256	0.7357	0.7467	0.7587
236	0.6722	0.6782	0.6847	0.6915	0.6988	0.7066	0.7150	0.7240	0.7337	0.7443	0.7557
238	0.6721	0.6780	0.6843	0.6910	0.6981	0.7057	0.7138	0.7225	0.7318	0.7420	0.7529
240	0.6721	0.6779	0.6840	0.6905	0.6974	0.7048	0.7126	0.7210	0.7301	0.7398	0.7502
242	0.6720	0.6777	0.6837	0.6900	0.6967	0.7039	0.7115	0.7196	0.7283	0.7377	0.7477
244	0.6719	0.6775	0.6834	0.6895	0.6961	0.7030	0.7104	0.7183	0.7267	0.7356	0.7452
246	0.6719	0.6773	0.6830	0.6891	0.6955	0.7022	0.7094	0.7170	0.7251	0.7337	0.7429
248	0.6718	0.6771	0.6827	0.6886	0.6948	0.7014	0.7084	0.7157	0.7235	0.7319	0.7407
250	0.6717	0.6769	0.6824	0.6882	0.6942	0.7006	0.7074	0.7145	0.7221	0.7301	0.7386

Plenum temperature, K	Plenum pressure, N m$^{2}\times10^{-5}$										
	50	55	60	65	70	75	80	85	90	95	100
200	------	------	------	------	------	------	------	------	------	------	------
202	------	------	------	------	------	------	------	------	------	------	------
204	0.8526	------	------	------	------	------	------	------	------	------	------
206	0.8394	------	------	------	------	------	------	------	------	------	------
208	0.8284	0.8680	------	------	------	------	------	------	------	------	------
210	0.8190	0.8534	0.8990	------	------	------	------	------	------	------	------
212	0.8108	0.8412	0.8801	0.9308	------	------	------	------	------	------	------
214	0.8036	0.8309	0.8647	0.9075	0.9611	------	------	------	------	------	------
216	0.7972	0.8218	0.8518	0.8887	0.9339	0.9878	1.0470	------	------	------	------
218	0.7914	0.8139	0.8408	0.8731	0.9120	0.9580	1.0094	1.0625	------	------	------
220	0.7861	0.8068	0.8311	0.8599	0.8939	0.9337	0.9785	1.0259	1.0726	1.1158	------
222	0.7812	0.8004	0.8227	0.8485	0.8787	0.9135	0.9527	0.9949	1.0376	1.0784	1.1154
224	0.7768	0.7947	0.8151	0.8386	0.8656	0.8965	0.9311	0.9686	1.0073	1.0453	1.0808
226	0.7727	0.7894	0.8083	0.8297	0.8542	0.8818	0.9127	0.9462	0.9812	1.0163	1.0498
228	0.7688	0.7845	0.8020	0.8218	0.8441	0.8691	0.8968	0.9269	0.9586	0.9908	1.0221
230	0.7652	0.7800	0.7964	0.8147	0.8351	0.8579	0.8829	0.9101	0.9389	0.9683	0.9975
232	0.7619	0.7758	0.7912	0.8082	0.8271	0.8479	0.8707	0.8954	0.9216	0.9486	0.9757
234	0.7587	0.7719	0.7863	0.8022	0.8197	0.8389	0.8599	0.8824	0.9063	0.9311	0.9561
236	0.7557	0.7682	0.7818	0.7967	0.8131	0.8308	0.8501	0.8708	0.8927	0.9155	0.9387
238	0.7529	0.7648	0.7776	0.7917	0.8069	0.8234	0.8413	0.8604	0.8806	0.9016	0.9231
240	0.7502	0.7615	0.7737	0.7869	0.8013	0.8167	0.8333	0.8510	0.8696	0.8891	0.9090
242	0.7477	0.7584	0.7700	0.7825	0.7960	0.8105	0.8259	0.8424	0.8597	0.8777	0.8963
244	0.7452	0.7555	0.7666	0.7784	0.7911	0.8047	0.8192	0.8345	0.8506	0.8674	0.8847
246	0.7429	0.7528	0.7633	0.7745	0.7865	0.7993	0.8129	0.8273	0.8424	0.8580	0.8741
248	0.7407	0.7501	0.7602	0.7709	0.7822	0.7943	0.8071	0.8206	0.8347	0.8494	0.8645
250	0.7386	0.7476	0.7572	0.7674	0.7782	0.7897	0.8017	0.8144	0.8277	0.8414	0.8556

TABLE I. - Continued. THERMODYNAMIC PROPERTIES OF METHANE - CRITICAL-FLOW FACTOR, C*

Plenum temperature, K	Plenum pressure, N/m^2×10^{-5}										
	100	110	120	130	140	150	160	170	180	190	200
220	------	------	------	------	------	------	------	------	------	------	------
222	1.1154	------	------	------	------	------	------	------	------	------	------
224	1.0808	1.1408	1.1856	1.2173	1.2388	1.2525	1.2604	1.2638	1.2638	1.2612	1.2567
226	1.0498	1.1084	1.1538	1.1870	1.2102	1.2258	1.2354	1.2405	1.2420	1.2409	1.2377
228	1.0221	1.0787	1.1241	1.1583	1.1830	1.2001	1.2113	1.2179	1.2208	1.2210	1.2191
230	0.9975	1.0516	1.0964	1.1312	1.1570	1.1755	1.1881	1.1960	1.2003	1.2017	1.2009
232	0.9757	1.0269	1.0707	1.1057	1.1323	1.1519	1.1657	1.1748	1.1803	1.1829	1.1831
234	0.9561	1.0044	1.0469	1.0817	1.1089	1.1293	1.1442	1.1544	1.1610	1.1646	1.1658
236	0.9387	0.9841	1.0250	1.0593	1.0867	1.1078	1.1235	1.1347	1.1423	1.1468	1.1490
238	0.9231	0.9656	1.0048	1.0384	1.0658	1.0874	1.1038	1.1158	1.1242	1.1296	1.1326
240	0.9090	0.9488	0.9862	1.0189	1.0461	1.0679	1.0849	1.0975	1.1067	1.1129	1.1167
242	0.8963	0.9335	0.9690	1.0007	1.0276	1.0495	1.0668	1.0801	1.0899	1.0968	1.1013
244	0.8847	0.9196	0.9533	0.9838	1.0102	1.0320	1.0496	1.0633	1.0736	1.0812	1.0863
246	0.8741	0.9069	0.9388	0.9681	0.9938	1.0155	1.0332	1.0472	1.0580	1.0661	1.0718
248	0.8645	0.8952	0.9254	0.9535	0.9785	0.9998	1.0176	1.0318	1.0430	1.0515	1.0577
250	0.8556	0.8844	0.9130	0.9399	0.9641	0.9851	1.0027	1.0171	1.0286	1.0375	1.0442

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	200	210	220	230	240	250	260	270	280	290	300
220	------	------	------	------	------	------	------	------	------	------	------
222	------	------	------	------	------	------	------	------	------	------	------
224	1.2567	1.2508	1.2437	1.2359	1.2274	1.2185	1.2093	1.1999	1.1904	------	------
226	1.2377	1.2329	1.2270	1.2201	1.2125	1.2045	1.1960	1.1873	1.1784	1.1694	------
228	1.2191	1.2154	1.2105	1.2046	1.1979	1.1906	1.1829	1.1749	1.1667	1.1583	1.1498
230	1.2009	1.1983	1.1944	1.1893	1.1835	1.1770	1.1700	1.1626	1.1550	1.1472	1.1392
232	1.1831	1.1816	1.1785	1.1744	1.1693	1.1636	1.1573	1.1506	1.1435	1.1363	1.1288
234	1.1658	1.1652	1.1631	1.1597	1.1554	1.1504	1.1448	1.1387	1.1322	1.1255	1.1186
236	1.1490	1.1492	1.1479	1.1454	1.1418	1.1375	1.1325	1.1270	1.1211	1.1149	1.1084
238	1.1326	1.1337	1.1332	1.1313	1.1285	1.1248	1.1204	1.1155	1.1101	1.1044	1.0984
240	1.1167	1.1185	1.1187	1.1176	1.1154	1.1123	1.1085	1.1041	1.0993	1.0940	1.0885
242	1.1013	1.1038	1.1047	1.1042	1.1026	1.1001	1.0968	1.0930	1.0886	1.0839	1.0788
244	1.0863	1.0894	1.0909	1.0911	1.0901	1.0881	1.0854	1.0820	1.0782	1.0739	1.0692
246	1.0718	1.0755	1.0776	1.0783	1.0778	1.0764	1.0742	1.0713	1.0679	1.0640	1.0597
248	1.0577	1.0620	1.0646	1.0658	1.0659	1.0649	1.0632	1.0608	1.0578	1.0543	1.0504
250	1.0442	1.0489	1.0520	1.0537	1.0542	1.0537	1.0524	1.0504	1.0478	1.0448	1.0413

TABLE I. - Continued. THERMODYNAMIC PROPERTIES OF METHANE - CRITICAL-FLOW FACTOR, C*

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	0	10	20	30	40	50	60	70	80	90	100
250	0.6717	0.6824	0.6942	0.7074	0.7221	0.7386	0.7572	0.7782	0.8017	0.8277	0.8556
255	0.6716	0.6817	0.6928	0.7050	0.7186	0.7337	0.7504	0.7691	0.7897	0.8121	0.8361
260	0.6714	0.6809	0.6914	0.7028	0.7154	0.7292	0.7444	0.7611	0.7793	0.7990	0.8199
265	0.6712	0.6802	0.6901	0.7008	0.7124	0.7251	0.7390	0.7540	0.7703	0.7877	0.8061
270	0.6709	0.6795	0.6888	0.6988	0.7097	0.7214	0.7341	0.7477	0.7623	0.7778	0.7941
275	0.6707	0.6788	0.6876	0.6970	0.7071	0.7179	0.7296	0.7420	0.7552	0.7692	0.7837
280	0.6704	0.6782	0.6864	0.6953	0.7047	0.7147	0.7254	0.7368	0.7488	0.7614	0.7745
285	0.6702	0.6775	0.6853	0.6936	0.7024	0.7118	0.7217	0.7321	0.7431	0.7545	0.7663
290	0.6699	0.6769	0.6842	0.6920	0.7003	0.7090	0.7181	0.7278	0.7378	0.7482	0.7589
295	0.6696	0.6762	0.6832	0.6905	0.6983	0.7064	0.7149	0.7238	0.7330	0.7425	0.7523
300	0.6693	0.6756	0.6822	0.6891	0.6964	0.7039	0.7118	0.7201	0.7286	0.7373	0.7463
305	0.6690	0.6750	0.6812	0.6877	0.6946	0.7016	0.7090	0.7166	0.7245	0.7325	0.7408
310	0.6687	0.6744	0.6803	0.6864	0.6928	0.6995	0.7063	0.7134	0.7207	0.7281	0.7357
315	0.6684	0.6737	0.6793	0.6852	0.6912	0.6974	0.7038	0.7104	0.7172	0.7241	0.7310
320	0.6680	0.6731	0.6784	0.6839	0.6896	0.6955	0.7015	0.7076	0.7139	0.7203	0.7267
325	0.6677	0.6725	0.6776	0.6828	0.6881	0.6936	0.6992	0.7050	0.7108	0.7168	0.7227
330	0.6673	0.6719	0.6767	0.6816	0.6867	0.6918	0.6971	0.7025	0.7079	0.7135	0.7190
335	0.6669	0.6713	0.6759	0.6805	0.6853	0.6901	0.6951	0.7001	0.7052	0.7104	0.7156
340	0.6666	0.6707	0.6751	0.6795	0.6840	0.6885	0.6932	0.6979	0.7027	0.7075	0.7123
345	0.6662	0.6702	0.6742	0.6784	0.6827	0.6870	0.6914	0.6958	0.7003	0.7048	0.7093
350	0.6658	0.6696	0.6735	0.6774	0.6814	0.6855	0.6896	0.6938	0.6980	0.7022	0.7064
355	0.6654	0.6690	0.6727	0.6764	0.6802	0.6841	0.6880	0.6919	0.6958	0.6998	0.7037
360	0.6650	0.6684	0.6719	0.6755	0.6791	0.6827	0.6864	0.6901	0.6938	0.6975	0.7012
365	0.6646	0.6679	0.6712	0.6746	0.6780	0.6814	0.6849	0.6883	0.6918	0.6953	0.6987
370	0.6642	0.6673	0.6705	0.6737	0.6769	0.6801	0.6834	0.6867	0.6900	0.6932	0.6965
375	0.6638	0.6667	0.6698	0.6728	0.6759	0.6789	0.6820	0.6851	0.6882	0.6912	0.6943
380	0.6634	0.6662	0.6691	0.6719	0.6748	0.6778	0.6807	0.6836	0.6865	0.6894	0.6922
385	0.6629	0.6657	0.6684	0.6711	0.6739	0.6766	0.6794	0.6821	0.6849	0.6876	0.6903
390	0.6625	0.6651	0.6677	0.6703	0.6729	0.6755	0.6781	0.6807	0.6833	0.6859	0.6884
395	0.6621	0.6646	0.6670	0.6695	0.6720	0.6745	0.6769	0.6794	0.6818	0.6842	0.6866
400	0.6617	0.6640	0.6664	0.6687	0.6711	0.6734	0.6758	0.6781	0.6804	0.6827	0.6849

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	100	110	120	130	140	150	160	170	180	190	200
250	0.8556	0.8844	0.9130	0.9399	0.9641	0.9851	1.0027	1.0171	1.0286	1.0375	1.0442
255	0.8361	0.8610	0.8859	0.9098	0.9320	0.9517	0.9688	0.9833	0.9951	1.0047	1.0122
260	0.8199	0.8415	0.8633	0.8846	0.9046	0.9229	0.9391	0.9532	0.9651	0.9750	0.9830
265	0.8061	0.8251	0.8442	0.8631	0.8811	0.8979	0.9131	0.9266	0.9382	0.9481	0.9564
270	0.7941	0.8109	0.8279	0.8447	0.8609	0.8762	0.8903	0.9030	0.9142	0.9240	0.9323
275	0.7837	0.7987	0.8138	0.8288	0.8434	0.8573	0.8703	0.8822	0.8928	0.9023	0.9104
280	0.7745	0.7879	0.8015	0.8149	0.8281	0.8408	0.8527	0.8637	0.8737	0.8827	0.8907
285	0.7663	0.7784	0.7906	0.8027	0.8146	0.8261	0.8371	0.8473	0.8567	0.8652	0.8728
290	0.7589	0.7699	0.7809	0.7919	0.8027	0.8132	0.8232	0.8326	0.8414	0.8494	0.8566
295	0.7523	0.7622	0.7723	0.7822	0.7921	0.8016	0.8108	0.8195	0.8276	0.8351	0.8420
300	0.7463	0.7553	0.7645	0.7736	0.7825	0.7912	0.7997	0.8077	0.8152	0.8222	0.8287
305	0.7408	0.7491	0.7574	0.7657	0.7739	0.7819	0.7896	0.7970	0.8040	0.8106	0.8167
310	0.7357	0.7433	0.7510	0.7586	0.7661	0.7735	0.7806	0.7874	0.7939	0.8000	0.8057
315	0.7310	0.7381	0.7451	0.7521	0.7590	0.7658	0.7723	0.7786	0.7846	0.7903	0.7956
320	0.7267	0.7332	0.7397	0.7462	0.7525	0.7588	0.7648	0.7706	0.7762	0.7815	0.7865
325	0.7227	0.7288	0.7347	0.7407	0.7466	0.7523	0.7579	0.7633	0.7685	0.7734	0.7781
330	0.7190	0.7246	0.7302	0.7357	0.7411	0.7464	0.7516	0.7566	0.7614	0.7660	0.7703
335	0.7156	0.7207	0.7259	0.7310	0.7360	0.7410	0.7458	0.7504	0.7549	0.7592	0.7632
340	0.7123	0.7171	0.7219	0.7267	0.7313	0.7359	0.7404	0.7447	0.7488	0.7528	0.7566
345	0.7093	0.7138	0.7182	0.7226	0.7270	0.7312	0.7354	0.7394	0.7433	0.7470	0.7505
350	0.7064	0.7106	0.7147	0.7189	0.7229	0.7269	0.7307	0.7345	0.7381	0.7416	0.7449
355	0.7037	0.7076	0.7115	0.7153	0.7191	0.7228	0.7264	0.7299	0.7333	0.7365	0.7396
360	0.7012	0.7048	0.7084	0.7120	0.7155	0.7190	0.7224	0.7256	0.7288	0.7318	0.7347
365	0.6987	0.7022	0.7056	0.7089	0.7122	0.7154	0.7186	0.7216	0.7246	0.7274	0.7301
370	0.6965	0.6997	0.7029	0.7060	0.7091	0.7121	0.7150	0.7179	0.7206	0.7233	0.7258
375	0.6943	0.6973	0.7003	0.7032	0.7061	0.7089	0.7117	0.7143	0.7169	0.7194	0.7218
380	0.6922	0.6951	0.6979	0.7006	0.7033	0.7060	0.7085	0.7110	0.7135	0.7158	0.7180
385	0.6903	0.6929	0.6956	0.6982	0.7007	0.7032	0.7056	0.7079	0.7102	0.7124	0.7145
390	0.6884	0.6909	0.6934	0.6958	0.6987	0.7005	0.7028	0.7050	0.7071	0.7091	0.7111
395	0.6866	0.6890	0.6913	0.6936	0.6958	0.6980	0.7001	0.7022	0.7042	0.7061	0.7080
400	0.6849	0.6871	0.6893	0.6915	0.6936	0.6956	0.6976	0.6995	0.7014	0.7032	0.7050

TABLE I. - Continued. THERMODYNAMIC PROPERTIES OF METHANE - CRITICAL-FLOW FACTOR, C*

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	200	210	220	230	240	250	260	270	280	290	300
250	1.0442	1.0489	1.0520	1.0537	1.0542	1.0537	1.0524	1.0504	1.0478	1.0448	1.0413
255	1.0122	1.0179	1.0220	1.0247	1.0263	1.0268	1.0265	1.0255	1.0238	1.0217	1.0191
260	0.9830	0.9893	0.9942	0.9977	1.0001	1.0015	1.0021	1.0019	1.0010	0.9997	0.9978
265	0.9564	0.9631	0.9685	0.9727	0.9757	0.9778	0.9790	0.9795	0.9794	0.9787	0.9776
270	0.9323	0.9392	0.9449	0.9495	0.9530	0.9556	0.9575	0.9585	0.9590	0.9589	0.9583
275	0.9104	0.9174	0.9233	0.9281	0.9320	0.9350	0.9373	0.9388	0.9398	0.9401	0.9401
280	0.8907	0.8976	0.9035	0.9084	0.9125	0.9158	0.9184	0.9204	0.9217	0.9225	0.9228
285	0.8728	0.8795	0.8854	0.8904	0.8946	0.8981	0.9009	0.9031	0.9047	0.9059	0.9065
290	0.8566	0.8631	0.8688	0.8738	0.8781	0.8816	0.8846	0.8870	0.8889	0.8903	0.8912
295	0.8420	0.8482	0.8537	0.8586	0.8628	0.8664	0.8695	0.8720	0.8741	0.8757	0.8768
300	0.8287	0.8346	0.8399	0.8446	0.8488	0.8524	0.8555	0.8581	0.8603	0.8620	0.8633
305	0.8167	0.8222	0.8273	0.8318	0.8359	0.8395	0.8425	0.8452	0.8474	0.8492	0.8507
310	0.8057	0.8109	0.8157	0.8201	0.8240	0.8275	0.8305	0.8332	0.8354	0.8373	0.8389
315	0.7956	0.8006	0.8051	0.8093	0.8131	0.8164	0.8194	0.8220	0.8243	0.8262	0.8278
320	0.7865	0.7911	0.7954	0.7994	0.8030	0.8062	0.8091	0.8117	0.8139	0.8159	0.8175
325	0.7781	0.7824	0.7865	0.7902	0.7936	0.7968	0.7996	0.8021	0.8043	0.8062	0.8078
330	0.7703	0.7744	0.7782	0.7818	0.7850	0.7880	0.7907	0.7931	0.7953	0.7972	0.7988
335	0.7632	0.7670	0.7706	0.7740	0.7771	0.7799	0.7825	0.7848	0.7869	0.7887	0.7904
340	0.7566	0.7602	0.7636	0.7667	0.7697	0.7724	0.7748	0.7771	0.7791	0.7809	0.7825
345	0.7505	0.7539	0.7571	0.7600	0.7628	0.7653	0.7677	0.7698	0.7718	0.7735	0.7751
350	0.7449	0.7480	0.7510	0.7538	0.7564	0.7588	0.7611	0.7631	0.7650	0.7666	0.7681
355	0.7396	0.7426	0.7454	0.7480	0.7504	0.7527	0.7549	0.7568	0.7586	0.7602	0.7616
360	0.7347	0.7375	0.7401	0.7426	0.7449	0.7471	0.7491	0.7509	0.7526	0.7542	0.7556
365	0.7301	0.7327	0.7352	0.7375	0.7397	0.7417	0.7436	0.7454	0.7470	0.7485	0.7498
370	0.7258	0.7283	0.7306	0.7328	0.7348	0.7368	0.7386	0.7402	0.7418	0.7432	0.7445
375	0.7218	0.7241	0.7263	0.7283	0.7303	0.7321	0.7338	0.7354	0.7368	0.7382	0.7394
380	0.7180	0.7202	0.7222	0.7241	0.7260	0.7277	0.7293	0.7308	0.7322	0.7335	0.7346
385	0.7145	0.7165	0.7184	0.7202	0.7219	0.7236	0.7251	0.7265	0.7278	0.7290	0.7301
390	0.7111	0.7130	0.7148	0.7165	0.7181	0.7197	0.7211	0.7224	0.7237	0.7248	0.7259
395	0.7080	0.7097	0.7114	0.7130	0.7146	0.7160	0.7174	0.7186	0.7198	0.7209	0.7219
400	0.7050	0.7066	0.7082	0.7097	0.7112	0.7125	0.7138	0.7150	0.7161	0.7171	0.7181

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	0	10	20	30	40	50	60	70	80	90	100
400	0.6617	0.6640	0.6664	0.6687	0.6711	0.6734	0.6758	0.6781	0.6804	0.6827	0.6849
405	0.6613	0.6635	0.6658	0.6680	0.6702	0.6724	0.6746	0.6768	0.6790	0.6812	0.6833
410	0.6609	0.6630	0.6651	0.6673	0.6694	0.6715	0.6736	0.6756	0.6777	0.6797	0.6817
415	0.6605	0.6625	0.6645	0.6665	0.6685	0.6705	0.6725	0.6745	0.6764	0.6783	0.6802
420	0.6601	0.6620	0.6639	0.6658	0.6677	0.6696	0.6715	0.6734	0.6752	0.6770	0.6788
425	0.6597	0.6615	0.6633	0.6651	0.6670	0.6687	0.6705	0.6723	0.6740	0.6757	0.6774
430	0.6593	0.6610	0.6627	0.6645	0.6662	0.6679	0.6696	0.6712	0.6729	0.6745	0.6761
435	0.6588	0.6605	0.6622	0.6638	0.6654	0.6671	0.6687	0.6702	0.6718	0.6733	0.6748
440	0.6584	0.6600	0.6616	0.6632	0.6647	0.6663	0.6678	0.6693	0.6707	0.6722	0.6736
445	0.6580	0.6596	0.6611	0.6625	0.6640	0.6655	0.6669	0.6683	0.6697	0.6711	0.6724
450	0.6577	0.6591	0.6605	0.6619	0.6633	0.6647	0.6661	0.6674	0.6687	0.6700	0.6713
455	0.6573	0.6586	0.6600	0.6613	0.6627	0.6640	0.6653	0.6665	0.6678	0.6690	0.6702
460	0.6569	0.6582	0.6595	0.6607	0.6620	0.6632	0.6645	0.6657	0.6668	0.6680	0.6691
465	0.6565	0.6577	0.6590	0.6602	0.6614	0.6625	0.6637	0.6648	0.6659	0.6670	0.6681
470	0.6561	0.6573	0.6585	0.6596	0.6607	0.6619	0.6630	0.6640	0.6651	0.6661	0.6671
475	0.6557	0.6569	0.6580	0.6591	0.6601	0.6612	0.6622	0.6632	0.6642	0.6652	0.6662
480	0.6554	0.6564	0.6575	0.6585	0.6595	0.6605	0.6615	0.6625	0.6634	0.6643	0.6652
485	0.6550	0.6560	0.6570	0.6580	0.6590	0.6599	0.6608	0.6617	0.6626	0.6635	0.6643
490	0.6546	0.6556	0.6565	0.6575	0.6584	0.6593	0.6602	0.6610	0.6619	0.6627	0.6635
495	0.6543	0.6552	0.6561	0.6570	0.6578	0.6587	0.6595	0.6603	0.6611	0.6619	0.6626
500	0.6539	0.6548	0.6556	0.6565	0.6573	0.6581	0.6589	0.6597	0.6604	0.6611	0.6618
505	0.6536	0.6544	0.6552	0.6560	0.6568	0.6575	0.6583	0.6590	0.6597	0.6604	0.6611
510	0.6532	0.6540	0.6548	0.6555	0.6563	0.6570	0.6577	0.6584	0.6590	0.6597	0.6603
515	0.6529	0.6536	0.6544	0.6551	0.6558	0.6564	0.6571	0.6577	0.6584	0.6590	0.6596
520	0.6525	0.6532	0.6539	0.6546	0.6553	0.6559	0.6565	0.6571	0.6577	0.6583	0.6588
525	0.6522	0.6529	0.6535	0.6542	0.6548	0.6554	0.6560	0.6565	0.6571	0.6576	0.6581
530	0.6519	0.6525	0.6531	0.6537	0.6543	0.6549	0.6554	0.6560	0.6565	0.6570	0.6575
535	0.6516	0.6522	0.6527	0.6533	0.6539	0.6544	0.6549	0.6554	0.6559	0.6564	0.6568
540	0.6512	0.6518	0.6524	0.6529	0.6534	0.6539	0.6544	0.6549	0.6553	0.6558	0.6562
545	0.6509	0.6515	0.6520	0.6525	0.6530	0.6534	0.6539	0.6543	0.6548	0.6552	0.6556
550	0.6506	0.6511	0.6516	0.6521	0.6525	0.6530	0.6534	0.6538	0.6542	0.6546	0.6550
555	0.6503	0.6508	0.6512	0.6517	0.6521	0.6525	0.6529	0.6533	0.6537	0.6540	0.6544
560	0.6500	0.6505	0.6509	0.6513	0.6517	0.6521	0.6525	0.6528	0.6532	0.6535	0.6538
565	0.6497	0.6501	0.6505	0.6509	0.6513	0.6517	0.6520	0.6523	0.6527	0.6530	0.6533
570	0.6494	0.6498	0.6502	0.6506	0.6509	0.6512	0.6516	0.6519	0.6522	0.6525	0.6527
575	0.6492	0.6495	0.6499	0.6502	0.6505	0.6508	0.6511	0.6514	0.6517	0.6519	0.6522
580	0.6489	0.6492	0.6495	0.6498	0.6501	0.6504	0.6507	0.6510	0.6512	0.6515	0.6517
585	0.6486	0.6489	0.6492	0.6495	0.6498	0.6500	0.6503	0.6505	0.6508	0.6510	0.6512
590	0.6483	0.6486	0.6489	0.6492	0.6494	0.6497	0.6499	0.6501	0.6503	0.6505	0.6507
595	0.6480	0.6483	0.6486	0.6488	0.6491	0.6493	0.6495	0.6497	0.6499	0.6501	0.6502
600	0.6478	0.6480	0.6483	0.6485	0.6487	0.6489	0.6491	0.6493	0.6495	0.6496	0.6498

TABLE I. - Concluded. THERMODYNAMIC PROPERTIES OF METHANE - CRITICAL-FLOW FACTOR, C*

Plenum temperature, K	Plenum pressure, N/m^2×10^{-5}										
	100	110	120	130	140	150	160	170	180	190	200
400	0.6849	0.6871	0.6893	0.6915	0.6936	0.6956	0.6976	0.6995	0.7014	0.7032	0.7050
405	0.6833	0.6854	0.6874	0.6895	0.6914	0.6934	0.6952	0.6970	0.6988	0.7005	0.7021
410	0.6817	0.6837	0.6856	0.6875	0.6894	0.6912	0.6930	0.6947	0.6963	0.6979	0.6995
415	0.6802	0.6821	0.6839	0.6857	0.6875	0.6892	0.6908	0.6924	0.6940	0.6955	0.6969
420	0.6788	0.6806	0.6823	0.6840	0.6856	0.6872	0.6888	0.6903	0.6917	0.6931	0.6945
425	0.6774	0.6791	0.6807	0.6823	0.6838	0.6853	0.6868	0.6882	0.6896	0.6909	0.6922
430	0.6761	0.6777	0.6792	0.6807	0.6821	0.6836	0.6849	0.6863	0.6876	0.6888	0.6900
435	0.6748	0.6763	0.6777	0.6791	0.6805	0.6819	0.6832	0.6844	0.6856	0.6868	0.6879
440	0.6736	0.6750	0.6763	0.6777	0.6790	0.6802	0.6814	0.6826	0.6838	0.6849	0.6859
445	0.6724	0.6737	0.6750	0.6763	0.6775	0.6787	0.6798	0.6809	0.6820	0.6830	0.6840
450	0.6713	0.6725	0.6737	0.6749	0.6761	0.6772	0.6782	0.6793	0.6803	0.6813	0.6822
455	0.6702	0.6714	0.6725	0.6736	0.6747	0.6757	0.6767	0.6777	0.6787	0.6796	0.6805
460	0.6691	0.6702	0.6713	0.6723	0.6734	0.6744	0.6753	0.6762	0.6771	0.6780	0.6788
465	0.6681	0.6691	0.6702	0.6711	0.6721	0.6730	0.6739	0.6748	0.6756	0.6764	0.6772
470	0.6671	0.6681	0.6691	0.6700	0.6709	0.6718	0.6726	0.6734	0.6742	0.6750	0.6757
475	0.6662	0.6671	0.6680	0.6689	0.6697	0.6705	0.6713	0.6721	0.6728	0.6735	0.6742
480	0.6652	0.6661	0.6670	0.6678	0.6686	0.6694	0.6701	0.6708	0.6715	0.6722	0.6728
485	0.6643	0.6652	0.6660	0.6667	0.6675	0.6682	0.6689	0.6696	0.6702	0.6709	0.6714
490	0.6635	0.6643	0.6650	0.6657	0.6664	0.6671	0.6678	0.6684	0.6690	0.6696	0.6701
495	0.6626	0.6634	0.6641	0.6648	0.6654	0.6661	0.6667	0.6673	0.6678	0.6684	0.6689
500	0.6618	0.6625	0.6632	0.6638	0.6644	0.6650	0.6656	0.6662	0.6667	0.6672	0.6677
505	0.6611	0.6617	0.6623	0.6629	0.6635	0.6641	0.6646	0.6651	0.6656	0.6661	0.6665
510	0.6603	0.6609	0.6615	0.6620	0.6626	0.6631	0.6636	0.6641	0.6646	0.6650	0.6654
515	0.6596	0.6601	0.6607	0.6612	0.6617	0.6622	0.6627	0.6631	0.6635	0.6639	0.6643
520	0.6588	0.6594	0.6599	0.6604	0.6609	0.6613	0.6617	0.6622	0.6626	0.6629	0.6633
525	0.6581	0.6586	0.6591	0.6596	0.6600	0.6605	0.6609	0.6612	0.6616	0.6620	0.6623
530	0.6575	0.6579	0.6584	0.6588	0.6592	0.6596	0.6600	0.6604	0.6607	0.6610	0.6613
535	0.6568	0.6572	0.6577	0.6581	0.6585	0.6588	0.6592	0.6595	0.6598	0.6601	0.6604
540	0.6562	0.6566	0.6570	0.6573	0.6577	0.6580	0.6584	0.6587	0.6590	0.6592	0.6595
545	0.6556	0.6559	0.6563	0.6566	0.6570	0.6573	0.6576	0.6579	0.6581	0.6584	0.6586
550	0.6550	0.6553	0.6556	0.6560	0.6563	0.6566	0.6568	0.6571	0.6573	0.6576	0.6578
555	0.6544	0.6547	0.6550	0.6553	0.6556	0.6558	0.6561	0.6563	0.6566	0.6568	0.6569
560	0.6538	0.6541	0.6544	0.6547	0.6549	0.6552	0.6554	0.6556	0.6558	0.6560	0.6562
565	0.6533	0.6535	0.6538	0.6540	0.6543	0.6545	0.6547	0.6549	0.6551	0.6552	0.6554
570	0.6527	0.6530	0.6532	0.6534	0.6537	0.6539	0.6540	0.6542	0.6544	0.6545	0.6546
575	0.6522	0.6524	0.6526	0.6529	0.6530	0.6532	0.6534	0.6535	0.6537	0.6538	0.6539
580	0.6517	0.6519	0.6521	0.6523	0.6525	0.6526	0.6528	0.6529	0.6530	0.6531	0.6532
585	0.6512	0.6514	0.6516	0.6517	0.6519	0.6520	0.6522	0.6523	0.6524	0.6525	0.6526
590	0.6507	0.6509	0.6510	0.6512	0.6513	0.6514	0.6516	0.6517	0.6517	0.6518	0.6519
595	0.6502	0.6504	0.6505	0.6507	0.6508	0.6509	0.6510	0.6511	0.6511	0.6512	0.6513
600	0.6498	0.6499	0.6500	0.6501	0.6502	0.6503	0.6504	0.6505	0.6506	0.6506	0.6506

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	200	210	220	230	240	250	260	270	280	290	300
400	0.7050	0.7066	0.7082	0.7097	0.7112	0.7125	0.7138	0.7150	0.7161	0.7171	0.7181
405	0.7021	0.7037	0.7052	0.7066	0.7080	0.7093	0.7105	0.7116	0.7126	0.7136	0.7145
410	0.6995	0.7009	0.7023	0.7037	0.7050	0.7062	0.7073	0.7083	0.7093	0.7103	0.7111
415	0.6969	0.6983	0.6996	0.7009	0.7021	0.7032	0.7043	0.7053	0.7062	0.7071	0.7079
420	0.6945	0.6958	0.6970	0.6982	0.6993	0.7004	0.7014	0.7024	0.7032	0.7041	0.7048
425	0.6922	0.6934	0.6946	0.6957	0.6968	0.6978	0.6987	0.6996	0.7004	0.7012	0.7019
430	0.6900	0.6912	0.6923	0.6933	0.6943	0.6952	0.6961	0.6970	0.6977	0.6985	0.6991
435	0.6879	0.6890	0.6900	0.6910	0.6919	0.6928	0.6937	0.6944	0.6952	0.6959	0.6965
440	0.6859	0.6869	0.6879	0.6888	0.6897	0.6905	0.6913	0.6921	0.6927	0.6934	0.6940
445	0.6840	0.6850	0.6859	0.6868	0.6876	0.6884	0.6891	0.6898	0.6904	0.6910	0.6916
450	0.6822	0.6831	0.6840	0.6848	0.6855	0.6863	0.6870	0.6876	0.6882	0.6888	0.6893
455	0.6805	0.6813	0.6821	0.6829	0.6836	0.6843	0.6849	0.6855	0.6861	0.6866	0.6871
460	0.6788	0.6796	0.6803	0.6811	0.6817	0.6824	0.6830	0.6835	0.6841	0.6846	0.6850
465	0.6772	0.6779	0.6786	0.6793	0.6800	0.6806	0.6811	0.6816	0.6821	0.6826	0.6830
470	0.6757	0.6764	0.6770	0.6777	0.6782	0.6788	0.6793	0.6798	0.6803	0.6807	0.6811
475	0.6742	0.6749	0.6755	0.6761	0.6766	0.6771	0.6776	0.6781	0.6785	0.6789	0.6793
480	0.6728	0.6734	0.6740	0.6745	0.6750	0.6755	0.6760	0.6764	0.6768	0.6772	0.6775
485	0.6714	0.6720	0.6726	0.6731	0.6735	0.6740	0.6744	0.6748	0.6752	0.6755	0.6758
490	0.6701	0.6707	0.6712	0.6716	0.6721	0.6725	0.6729	0.6733	0.6736	0.6739	0.6742
495	0.6689	0.6694	0.6699	0.6703	0.6707	0.6711	0.6715	0.6718	0.6721	0.6724	0.6726
500	0.6677	0.6681	0.6686	0.6690	0.6694	0.6697	0.6701	0.6704	0.6707	0.6709	0.6712
505	0.6665	0.6670	0.6674	0.6677	0.6681	0.6684	0.6687	0.6690	0.6693	0.6695	0.6697
510	0.6654	0.6658	0.6662	0.6665	0.6669	0.6672	0.6674	0.6677	0.6679	0.6682	0.6683
515	0.6643	0.6647	0.6650	0.6654	0.6657	0.6659	0.6662	0.6664	0.6667	0.6668	0.6670
520	0.6633	0.6636	0.6639	0.6642	0.6645	0.6648	0.6650	0.6652	0.6654	0.6656	0.6657
525	0.6623	0.6626	0.6629	0.6632	0.6634	0.6636	0.6639	0.6641	0.6642	0.6644	0.6645
530	0.6613	0.6616	0.6619	0.6621	0.6623	0.6626	0.6627	0.6629	0.6631	0.6632	0.6633
535	0.6604	0.6606	0.6609	0.6611	0.6613	0.6615	0.6617	0.6618	0.6620	0.6621	0.6622
540	0.6595	0.6597	0.6599	0.6601	0.6603	0.6605	0.6606	0.6608	0.6609	0.6610	0.6611
545	0.6586	0.6588	0.6590	0.6592	0.6594	0.6595	0.6597	0.6598	0.6599	0.6600	0.6600
550	0.6578	0.6580	0.6581	0.6583	0.6584	0.6586	0.6587	0.6588	0.6589	0.6589	0.6590
555	0.6569	0.6571	0.6573	0.6574	0.6576	0.6577	0.6578	0.6578	0.6579	0.6580	0.6580
560	0.6562	0.6563	0.6564	0.6566	0.6567	0.6568	0.6569	0.6569	0.6570	0.6570	0.6570
565	0.6554	0.6555	0.6556	0.6558	0.6558	0.6559	0.6560	0.6560	0.6561	0.6561	0.6561
570	0.6546	0.6548	0.6549	0.6550	0.6550	0.6551	0.6552	0.6552	0.6552	0.6552	0.6552
575	0.6539	0.6540	0.6541	0.6542	0.6543	0.6543	0.6543	0.6544	0.6544	0.6544	0.6544
580	0.6532	0.6533	0.6534	0.6534	0.6535	0.6535	0.6536	0.6536	0.6536	0.6535	0.6535
585	0.6526	0.6526	0.6527	0.6527	0.6528	0.6528	0.6528	0.6528	0.6528	0.6527	0.6527
590	0.6519	0.6519	0.6520	0.6520	0.6520	0.6521	0.6520	0.6520	0.6520	0.6520	0.6519
595	0.6513	0.6513	0.6513	0.6513	0.6514	0.6513	0.6513	0.6513	0.6513	0.6512	0.6512
600	0.6506	0.6507	0.6507	0.6507	0.6507	0.6507	0.6506	0.6506	0.6506	0.6505	0.6504

TABLE II. - THERMODYNAMIC PROPERTY OF METHANE - NOZZLE THROAT VELOCITY, v_1, m/sec

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	0	1	2	3	4	5	6	7	8	9	10
120	266.6	------	------	------	------	------	------	------	------	------	------
122	268.8	264.0	------	------	------	------	------	------	------	------	------
124	271.0	266.5	------	------	------	------	------	------	------	------	------
126	273.2	268.9	------	------	------	------	------	------	------	------	------
128	275.3	271.3	------	------	------	------	------	------	------	------	------
130	277.5	273.6	269.5	------	------	------	------	------	------	------	------
132	279.6	275.9	272.0	------	------	------	------	------	------	------	------
134	281.7	278.2	274.4	------	------	------	------	------	------	------	------
136	283.8	280.4	276.9	273.1	------	------	------	------	------	------	------
138	285.9	282.7	279.3	275.7	------	------	------	------	------	------	------
140	287.9	284.8	281.6	278.2	------	------	------	------	------	------	------
142	290.0	287.0	283.9	280.7	277.2	------	------	------	------	------	------
144	292.0	289.2	286.2	283.1	279.8	------	------	------	------	------	------
146	294.1	291.3	288.4	285.5	282.4	279.1	------	------	------	------	------
148	296.1	293.4	290.7	287.8	284.8	281.7	278.4	------	------	------	------
150	298.1	295.5	292.9	290.1	287.3	284.3	281.2	------	------	------	------
152	300.0	297.6	295.0	292.4	289.7	286.8	283.8	280.7	------	------	------
154	302.0	299.6	297.2	294.6	292.0	289.3	286.5	283.5	280.4	------	------
156	304.0	301.7	299.3	296.9	294.3	291.7	289.0	286.2	283.2	280.1	------
158	305.9	303.7	301.4	299.1	296.6	294.1	291.5	288.8	286.0	283.1	------
160	307.8	305.7	303.5	301.2	298.9	296.5	294.0	291.4	288.7	285.9	283.0
162	309.7	307.7	305.5	303.4	301.1	298.8	296.4	293.9	291.3	288.7	285.9
164	311.7	309.6	307.6	305.5	303.3	301.1	298.8	296.4	293.9	291.4	288.7
166	313.5	311.6	309.6	307.6	305.5	303.3	301.1	298.8	296.5	294.0	291.5
168	315.4	313.5	311.6	309.6	307.6	305.5	303.4	301.2	298.9	296.6	294.2
170	317.3	315.5	313.6	311.7	309.7	307.7	305.7	303.6	301.4	299.1	296.8
172	319.2	317.4	315.6	313.7	311.8	309.9	307.9	305.9	303.8	301.6	299.4
174	321.0	319.3	317.5	315.7	313.9	312.0	310.1	308.1	306.1	304.1	301.9
176	322.9	321.2	319.5	317.7	316.0	314.1	312.3	310.4	308.5	306.5	304.4
178	324.7	323.1	321.4	319.7	318.0	316.2	314.4	312.6	310.7	308.8	306.9
180	326.5	324.9	323.3	321.7	320.0	318.3	316.6	314.8	313.0	311.1	309.2
182	328.3	326.8	325.2	323.6	322.0	320.4	318.7	317.0	315.2	313.4	311.6
184	330.1	328.6	327.1	325.6	324.0	322.4	320.8	319.1	317.4	315.7	313.9
186	331.9	330.4	329.0	327.5	326.0	324.4	322.8	321.2	319.6	317.9	316.2
188	333.7	332.3	330.8	329.4	327.9	326.4	324.9	323.3	321.7	320.1	318.5
190	335.4	334.1	332.7	331.3	329.8	328.4	326.9	325.4	323.8	322.3	320.7
192	337.2	335.9	334.5	333.1	331.7	330.3	328.9	327.4	325.9	324.4	322.9
194	339.0	337.7	336.3	335.0	333.6	332.3	330.9	329.5	328.0	326.5	325.1
196	340.7	339.4	338.2	336.9	335.5	334.2	332.8	331.5	330.1	328.6	327.2
198	342.4	341.2	340.0	338.7	337.4	336.1	334.8	333.4	332.1	330.7	329.3
200	344.2	343.0	341.7	340.5	339.3	338.0	336.7	335.4	334.1	332.8	331.4

Plenum temperature, K	Plenum pressure, N/m^2×10^{-5}										
	10	12	14	16	18	20	22	24	26	28	30
160	283.0	------	------	------	------	------	------	------	------	------	------
162	285.9	------	------	------	------	------	------	------	------	------	------
164	288.7	283.1	------	------	------	------	------	------	------	------	------
166	291.5	286.1	280.3	------	------	------	------	------	------	------	------
168	294.2	289.1	283.6	------	------	------	------	------	------	------	------
170	296.8	292.0	286.7	281.0	------	------	------	------	------	------	------
172	299.4	294.8	289.8	284.4	------	------	------	------	------	------	------
174	301.9	297.5	292.8	287.7	282.1	------	------	------	------	------	------
176	304.4	300.2	295.6	290.8	285.6	279.9	------	------	------	------	------
178	306.9	302.8	298.4	293.8	288.9	283.6	277.8	------	------	------	------
180	309.2	305.3	301.2	296.8	292.1	287.1	281.7	------	------	------	------
182	311.6	307.8	303.9	299.7	295.2	290.5	285.4	279.9	------	------	------
184	313.9	310.3	306.5	302.5	298.2	293.7	288.9	283.8	278.2	------	------
186	316.2	312.7	309.0	305.2	301.7	296.9	292.4	287.5	282.3	276.6	------
188	318.5	315.1	311.6	307.9	304.0	299.9	295.6	291.1	286.2	280.9	275.2
190	320.7	317.4	314.0	310.5	306.8	302.9	298.8	294.5	289.9	285.0	279.7
192	322.9	319.7	316.5	313.1	309.5	305.8	301.9	297.8	293.5	288.9	283.9
194	325.1	322.0	318.8	315.6	312.2	308.6	304.9	301.0	296.9	292.6	288.0
196	327.2	324.3	321.2	318.0	314.8	311.4	307.8	304.1	300.2	296.1	291.8
198	329.3	326.5	323.5	320.5	317.3	314.0	310.6	307.1	303.4	299.5	295.5
200	331.4	328.7	325.8	322.9	319.8	316.7	313.4	310.0	306.5	302.8	299.0

Plenum temperature, K	Plenum pressure, N/m^2×10^{-5}										
	30	32	34	36	38	40	42	44	46	48	50
180	------	------	------	------	------	------	------	------	------	------	------
182	------	------	------	------	------	------	------	------	------	------	------
184	------	------	------	------	------	------	------	------	------	------	------
186	------	------	------	------	------	------	------	------	------	------	------
188	275.2	------	------	------	------	------	------	------	------	------	------
190	279.7	274.0	------	------	------	------	------	------	------	------	------
192	283.9	278.7	272.9	------	------	------	------	------	------	------	------
194	288.0	283.1	277.8	272.1	------	------	------	------	------	------	------
196	291.8	287.2	282.3	277.1	271.4	------	------	------	------	------	------
198	295.5	291.2	286.6	281.8	276.6	271.0	------	------	------	------	------
200	299.0	294.9	290.7	286.2	281.4	276.3	270.9	264.9	------	------	------

TABLE II. - Continued. THERMODYNAMIC PROPERTY OF METHANE - NOZZLE THROAT VELOCITY, v_1, m/sec

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	0	5	10	15	20	25	30	35	40	45	50
200	344.2	338.0	331.4	324.3	316.7	308.3	299.0	288.5	276.3	------	------
202	345.9	339.9	333.5	326.6	319.3	311.2	302.4	292.5	281.3	268.1	------
204	347.6	341.7	335.5	328.9	321.8	314.1	305.7	296.3	285.9	273.9	259.9
206	349.3	343.6	337.6	331.2	324.3	316.9	308.8	300.0	290.2	279.2	266.6
208	351.0	345.4	339.6	333.4	326.7	319.6	311.9	303.6	294.4	284.2	272.7
210	352.7	347.3	341.6	335.5	329.1	322.3	315.0	307.0	298.3	288.8	278.3
212	354.3	349.1	343.5	337.7	331.5	324.9	317.9	310.3	302.1	293.2	283.4
214	356.0	350.9	345.5	339.8	333.8	327.5	320.7	313.5	305.7	297.4	288.3
216	357.6	352.7	347.4	341.9	336.1	330.0	323.5	316.6	309.3	301.4	292.9
218	359.3	354.4	349.3	344.0	338.4	332.5	326.3	319.7	312.6	305.2	297.2
220	360.9	356.2	351.2	346.1	340.6	335.0	329.0	322.6	315.9	308.8	301.4
222	362.6	357.9	353.1	348.1	342.9	337.4	331.6	325.5	319.1	312.4	305.3
224	364.2	359.7	355.0	350.1	345.0	339.7	334.2	328.3	322.2	315.8	309.1
226	365.8	361.4	356.9	352.1	347.2	342.0	336.7	331.1	325.2	319.1	312.8
228	367.4	363.1	358.7	354.1	349.3	344.3	339.2	333.8	328.2	322.3	316.3
230	369.0	364.8	360.5	356.0	351.4	346.6	341.6	336.4	331.0	325.5	319.7
232	370.6	366.5	362.3	358.0	353.5	348.8	344.0	339.0	333.8	328.5	323.0
234	372.2	368.2	364.1	359.9	355.5	351.0	346.3	341.5	336.6	331.5	326.3
236	373.8	369.9	365.9	361.8	357.5	353.2	348.7	344.0	339.3	334.4	329.4
238	375.4	371.6	367.7	363.7	359.5	355.3	351.0	346.5	341.9	337.2	332.4
240	376.9	373.2	369.4	365.5	361.5	357.4	353.2	348.9	344.5	340.0	335.4
242	378.5	374.9	371.2	367.4	363.5	359.5	355.4	351.3	347.0	342.7	338.3
244	380.1	376.5	372.9	369.2	365.4	361.6	357.6	353.6	349.5	345.3	341.1
246	381.6	378.2	374.6	371.0	367.4	363.6	359.8	355.9	351.9	347.9	343.9
248	383.2	379.8	376.3	372.8	369.3	365.6	361.9	358.2	354.3	350.5	346.6
250	384.7	381.4	378.0	374.6	371.2	367.6	364.0	360.4	356.7	353.0	349.2

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	50	55	60	65	70	75	80	85	90	95	100
200	------	------	------	------	------	------	------	------	------	------	------
202	------	------	------	------	------	------	------	------	------	------	------
204	259.9	------	------	------	------	------	------	------	------	------	------
206	266.6	------	------	------	------	------	------	------	------	------	------
208	272.7	259.8	------	------	------	------	------	------	------	------	------
210	278.3	266.6	253.8	------	------	------	------	------	------	------	------
212	283.4	272.8	261.3	249.4	------	------	------	------	------	------	------
214	288.3	278.5	268.0	257.2	246.8	------	------	------	------	------	------
216	292.9	283.8	274.2	264.3	254.6	246.2	240.2	------	------	------	------
218	297.2	288.8	279.9	270.8	261.8	253.7	247.3	243.3	------	------	------
220	301.4	293.5	285.2	276.8	268.4	260.7	254.2	249.7	247.3	246.9	------
222	305.3	297.9	290.2	282.3	274.6	267.2	260.9	256.1	253.1	251.9	252.3
224	309.1	302.1	294.9	287.6	280.3	273.4	267.2	262.3	258.9	257.1	256.8
226	312.8	306.2	299.4	292.5	285.7	279.2	273.3	268.3	264.6	262.4	261.5
228	316.3	310.1	303.7	297.2	290.8	284.6	279.0	274.1	270.3	267.7	266.4
230	319.7	313.8	307.8	301.7	295.6	289.8	284.4	279.6	275.8	273.0	271.3
232	323.0	317.4	311.7	305.9	300.2	294.7	289.6	285.0	281.1	278.2	276.2
234	326.3	320.9	315.5	310.0	304.6	299.4	294.5	290.0	286.2	283.2	281.1
236	329.4	324.3	319.1	314.0	308.8	303.9	299.2	294.9	291.2	288.2	285.9
238	332.4	327.6	322.6	317.7	312.9	308.2	303.7	299.6	296.0	293.0	290.7
240	335.4	330.7	326.1	321.4	316.8	312.3	308.0	304.1	300.6	297.6	295.3
242	338.3	333.8	329.4	324.9	320.5	316.3	312.2	308.4	305.0	302.1	299.7
244	341.1	336.9	332.6	328.3	324.2	320.1	316.2	312.6	309.3	306.5	304.1
246	343.9	339.8	335.7	331.7	327.7	323.8	320.1	316.6	313.5	310.7	308.4
248	346.6	342.7	338.8	334.9	331.1	327.4	323.8	320.5	317.5	314.8	312.5
250	349.2	345.5	341.7	338.0	334.4	330.8	327.5	324.3	321.3	318.7	316.5

TABLE II. - Continued. THERMODYNAMIC PROPERTY OF METHANE - NOZZLE THROAT VELOCITY, v_1, m/sec

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	100	110	120	130	140	150	160	170	180	190	200
220	------	------	------	------	------	------	------	------	------	------	------
222	252.3	------	------	------	------	------	------	------	------	------	------
224	256.8	259.9	266.3	274.4	283.5	293.0	302.6	312.1	321.4	330.5	339.4
226	261.5	263.5	268.8	276.2	284.7	293.7	302.9	312.2	321.3	330.3	339.0
228	266.4	267.3	271.7	278.2	286.1	294.6	303.5	312.5	321.4	330.2	338.8
230	271.3	271.3	274.8	280.5	287.8	295.8	304.3	313.0	321.7	330.3	338.8
232	276.2	275.5	278.1	283.1	289.7	297.3	305.4	313.7	322.2	330.6	338.9
234	281.1	279.7	281.6	285.9	291.9	298.9	306.6	314.6	322.8	331.0	339.2
236	285.9	284.0	285.2	288.9	294.3	300.8	308.1	315.7	323.6	331.6	339.6
238	290.7	288.3	288.9	292.0	296.8	302.8	309.7	317.0	324.6	332.4	340.2
240	295.3	292.6	292.7	295.2	299.5	305.1	311.5	318.5	325.8	333.3	340.9
242	299.7	296.9	296.6	298.5	302.3	307.4	313.4	320.1	327.1	334.4	341.7
244	304.1	301.1	300.4	301.9	305.2	309.9	315.5	321.8	328.5	335.5	342.7
246	308.4	305.2	304.2	305.4	308.2	312.5	317.7	323.7	330.1	336.8	343.8
248	312.5	309.3	308.1	308.8	311.3	315.1	320.0	325.6	331.8	338.3	345.0
250	316.5	313.2	311.9	312.3	314.4	317.9	322.4	327.7	333.6	339.8	346.3
Plenum temperature, K	**200**	**210**	**220**	**230**	**240**	**250**	**260**	**270**	**280**	**290**	**300**
220	------	------	------	------	------	------	------	------	------	------	------
222	------	------	------	------	------	------	------	------	------	------	------
224	339.4	348.0	356.4	364.5	372.5	380.1	387.7	395.0	402.1	------	------
226	339.0	347.5	355.9	364.0	371.8	379.5	387.0	394.3	401.4	408.4	------
228	338.8	347.2	355.5	363.5	371.3	379.0	386.4	393.7	400.8	407.7	414.5
230	338.8	347.1	355.2	363.2	371.0	378.5	385.9	393.2	400.3	407.2	413.9
232	338.9	347.1	355.1	363.0	370.7	378.2	385.6	392.8	399.8	406.7	413.4
234	339.2	347.2	355.1	362.9	370.5	378.0	385.3	392.5	399.5	406.3	413.0
236	339.6	347.5	355.3	363.0	370.5	377.9	385.2	392.3	399.2	406.0	412.7
238	340.2	347.9	355.6	363.2	370.6	377.9	385.1	392.1	399.0	405.8	412.4
240	340.9	348.5	356.0	363.4	370.8	378.0	385.1	392.1	398.9	405.6	412.2
242	341.7	349.1	356.5	363.8	371.1	378.2	385.2	392.2	398.9	405.6	412.1
244	342.7	349.9	357.1	364.3	371.5	378.5	385.5	392.3	399.0	405.6	412.1
246	343.8	350.8	357.9	364.9	371.9	378.9	385.6	392.5	399.2	405.7	412.2
248	345.0	351.8	358.7	365.6	372.5	379.4	386.1	392.8	399.4	405.9	412.3
250	346.3	352.9	359.7	366.4	373.2	379.9	386.6	393.2	399.7	406.1	412.4

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	0	10	20	30	40	50	60	70	80	90	100
250	384.7	378.0	371.2	364.0	356.7	349.2	341.7	334.4	327.5	321.3	316.5
255	388.5	382.2	375.8	369.2	362.4	355.6	348.8	342.2	336.0	330.5	326.0
260	392.3	386.4	380.3	374.2	368.0	361.7	355.6	349.6	344.0	339.1	334.9
265	396.0	390.4	384.8	379.1	373.3	367.6	362.0	356.6	351.6	347.0	343.2
270	399.7	394.4	389.1	383.8	378.5	373.2	368.1	363.2	358.6	354.5	351.1
275	403.3	398.4	393.4	388.5	383.5	378.7	374.0	369.5	365.4	361.6	358.5
280	406.9	402.3	397.6	393.0	388.4	383.9	379.6	375.5	371.7	368.4	365.5
285	410.5	406.1	401.7	397.4	393.2	389.0	385.1	381.3	377.9	374.8	372.1
290	414.0	409.9	405.8	401.7	397.8	394.0	390.3	386.9	383.7	380.9	378.5
295	417.5	413.6	409.7	406.0	402.3	398.8	395.4	392.2	389.4	386.8	384.6
300	420.9	417.3	413.7	410.1	406.7	403.4	400.3	397.4	394.8	392.4	390.4
305	424.4	420.9	417.5	414.2	411.0	408.0	405.1	402.4	400.0	397.9	396.1
310	427.8	424.5	421.3	418.2	415.2	412.4	409.8	407.3	405.1	403.2	401.5
315	431.1	428.0	425.0	422.2	419.4	416.8	414.3	412.1	410.0	408.3	406.8
320	434.4	431.5	428.7	426.0	423.4	421.0	418.8	416.7	414.8	413.2	411.9
325	437.7	435.0	432.3	429.8	427.4	425.2	423.1	421.2	419.5	418.0	416.8
330	441.0	438.4	435.9	433.6	431.3	429.3	427.3	425.6	424.0	422.7	421.6
335	444.2	441.8	439.4	437.2	435.2	433.3	431.5	429.9	428.5	427.2	426.3
340	447.4	445.1	442.9	440.9	438.9	437.2	435.5	434.1	432.8	431.7	430.8
345	450.5	448.4	446.4	444.4	442.7	441.0	439.5	438.2	437.0	436.0	435.2
350	453.6	451.6	449.7	448.0	446.3	444.8	443.4	442.2	441.1	440.3	439.6
355	456.7	454.8	453.1	451.4	449.9	448.5	447.2	446.1	445.2	444.4	443.8
360	459.8	458.0	456.4	454.9	453.4	452.2	451.0	450.0	449.2	448.5	447.9
365	462.8	461.2	459.6	458.2	456.9	455.7	454.7	453.8	453.0	452.4	452.0
370	465.8	464.3	462.9	461.6	460.4	459.3	458.3	457.5	456.9	456.3	455.9
375	468.8	467.4	466.1	464.8	463.8	462.8	461.9	461.2	460.6	460.2	459.8
380	471.8	470.4	469.2	468.1	467.1	466.2	465.4	464.8	464.3	463.9	463.7
385	474.7	473.5	472.3	471.3	470.4	469.6	468.9	468.3	467.9	467.6	467.4
390	477.6	476.5	475.4	474.5	473.6	472.9	472.3	471.8	471.5	471.2	471.1
395	480.5	479.4	478.5	477.6	476.9	476.2	475.7	475.3	475.0	474.8	474.7
400	483.3	482.4	481.5	480.7	480.0	479.5	479.0	478.7	478.4	478.3	478.3

TABLE II. - Continued. THERMODYNAMIC PROPERTY OF METHANE - NOZZLE THROAT VELOCITY, v_1, m/sec

Plenum temperature, K	Plenum pressure, N/m^2×10^{-5}										
	100	110	120	130	140	150	160	170	180	190	200
250	316.5	313.2	311.9	312.3	314.4	317.9	322.4	327.7	333.6	339.8	346.3
255	326.0	322.8	321.1	321.0	322.4	325.0	328.7	333.2	338.4	344.0	349.9
260	334.9	331.8	330.0	329.5	330.3	332.3	335.3	339.2	343.7	348.7	354.1
265	343.2	340.3	338.5	337.8	338.2	339.7	342.1	345.3	349.3	353.7	358.6
270	351.1	348.4	346.6	345.7	345.8	346.9	348.9	351.7	355.1	359.1	363.5
275	358.5	356.0	354.2	353.3	353.3	354.1	355.7	358.0	361.0	364.5	368.5
280	365.5	363.2	361.5	360.6	360.5	361.1	362.4	364.4	367.0	370.1	373.7
285	372.1	370.0	368.5	367.6	367.4	367.8	368.9	370.7	373.0	375.8	379.0
290	378.5	376.6	375.2	374.3	374.0	374.4	375.3	376.8	378.9	381.4	384.3
295	384.6	382.8	381.5	380.7	380.5	380.7	381.5	382.9	384.7	386.9	389.6
300	390.4	388.8	387.6	386.9	386.6	386.9	387.6	388.8	390.4	392.5	394.9
305	396.1	394.6	393.5	392.9	392.6	392.8	393.5	394.5	396.0	397.9	400.2
310	401.5	400.2	399.2	398.6	398.4	398.6	399.2	400.1	401.5	403.3	405.3
315	406.8	405.6	404.7	404.1	404.0	404.2	404.7	405.6	406.9	408.5	410.4
320	411.9	410.8	410.0	409.5	409.4	409.6	410.1	411.0	412.2	413.7	415.5
325	416.8	415.8	415.1	414.7	414.6	414.8	415.3	416.2	417.3	418.7	420.4
330	421.6	420.7	420.1	419.8	419.7	419.9	420.4	421.2	422.3	423.7	425.3
335	426.3	425.5	425.0	424.7	424.7	424.9	425.4	426.2	427.2	428.5	430.0
340	430.8	430.1	429.7	429.4	429.5	429.7	430.3	431.0	432.0	433.3	434.7
345	435.2	434.6	434.3	434.1	434.2	434.5	435.0	435.7	436.7	437.9	439.3
350	439.6	439.1	438.7	438.6	438.7	439.1	439.6	440.3	441.3	442.5	443.8
355	443.8	443.4	443.1	443.1	443.2	443.5	444.1	444.8	445.8	446.9	448.3
360	447.9	447.6	447.4	447.4	447.6	447.9	448.5	449.3	450.2	451.3	452.6
365	452.0	451.7	451.6	451.6	451.8	452.2	452.8	453.6	454.5	455.6	456.9
370	455.9	455.7	455.7	455.8	456.0	456.4	457.0	457.8	458.7	459.8	461.1
375	459.8	459.7	459.7	459.8	460.1	460.6	461.2	461.9	462.9	464.0	465.2
380	463.7	463.6	463.6	463.8	464.1	464.6	465.2	466.0	466.9	468.0	469.2
385	467.4	467.4	467.5	467.7	468.1	468.6	469.2	470.0	470.9	472.0	473.2
390	471.1	471.1	471.3	471.5	471.9	472.5	473.1	473.9	474.9	475.9	477.1
395	474.7	474.8	475.0	475.3	475.7	476.3	477.0	477.8	478.7	479.8	481.0
400	478.3	478.4	478.6	479.0	479.4	480.0	480.7	481.6	482.5	483.6	484.8

Plenum temperature, K	Plenum pressure, N/m^2×10^{-5}										
	200	210	220	230	240	250	260	270	280	290	300
250	346.3	352.9	359.7	366.4	373.2	379.9	386.6	393.2	399.7	406.1	412.4
255	349.9	356.1	362.4	368.8	375.2	381.7	388.1	394.5	400.8	407.0	413.2
260	354.1	359.8	365.6	371.7	377.7	383.9	390.0	396.2	402.3	408.3	414.3
265	358.6	363.8	369.3	374.9	380.7	386.5	392.3	398.2	404.1	409.9	415.8
270	363.5	368.2	373.3	378.5	383.9	389.4	395.0	400.6	406.2	411.9	417.5
275	368.5	372.9	377.5	382.4	387.5	392.6	397.9	403.3	408.7	414.1	419.5
280	373.7	377.7	382.0	386.5	391.2	396.1	401.1	406.2	411.4	416.6	421.8
285	379.0	382.6	386.6	390.8	395.2	399.8	404.5	409.4	414.3	419.3	424.3
290	384.3	387.6	391.3	395.2	399.3	403.6	408.1	412.7	417.4	422.1	427.0
295	389.6	392.7	396.0	399.7	403.5	407.6	411.8	416.2	420.6	425.2	429.8
300	394.9	397.7	400.8	404.2	407.8	411.6	415.6	419.8	424.0	428.4	432.8
305	400.2	402.7	405.6	408.8	412.2	415.8	419.5	423.5	427.5	431.6	435.9
310	405.3	407.7	410.4	413.4	416.5	419.9	423.5	427.2	431.1	435.1	439.1
315	410.4	412.7	415.2	418.0	421.0	424.2	427.5	431.1	434.7	438.5	442.4
320	415.5	417.6	419.9	422.5	425.4	428.4	431.6	434.9	438.4	442.1	445.8
325	420.4	422.4	424.6	427.1	429.7	432.6	435.7	438.9	442.2	445.7	449.2
330	425.3	427.1	429.3	431.6	434.1	436.8	439.7	442.8	446.0	449.3	452.7
335	430.0	431.8	433.8	436.0	438.5	441.1	443.8	446.7	449.8	453.0	456.2
340	434.7	436.4	438.3	440.5	442.8	445.2	447.9	450.7	453.6	456.6	459.8
345	439.3	441.0	442.8	444.8	447.0	449.4	451.9	454.6	457.4	460.3	463.4
350	443.8	445.4	447.2	449.1	451.2	453.5	455.9	458.5	461.2	464.0	467.0
355	448.3	449.8	451.5	453.4	455.4	457.6	459.9	462.4	465.0	467.7	470.6
360	452.6	454.1	455.7	457.6	459.5	461.6	463.9	466.3	468.8	471.4	474.2
365	456.9	458.3	459.9	461.7	463.6	465.6	467.8	470.1	472.6	475.1	477.8
370	461.1	462.5	464.0	465.8	467.6	469.6	471.7	474.0	476.3	478.8	481.4
375	465.2	466.6	468.1	469.8	471.6	473.5	475.6	477.8	480.0	482.4	484.9
380	469.2	470.6	472.1	473.7	475.5	477.4	479.4	481.5	483.7	486.1	488.5
385	473.2	474.6	476.0	477.6	479.4	481.2	483.2	485.2	487.4	489.7	492.0
390	477.1	478.5	479.9	481.5	483.2	485.0	486.9	488.9	491.0	493.2	495.5
395	481.0	482.3	483.7	485.3	486.9	488.7	490.6	492.5	494.6	496.8	499.0
400	484.8	486.1	487.5	489.0	490.6	492.4	494.2	496.1	498.2	500.3	502.5

TABLE II. - Continued. THERMODYNAMIC PROPERTY OF METHANE - NOZZLE THROAT VELOCITY, v_1, m/sec

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	0	10	20	30	40	50	60	70	80	90	100
400	483.3	482.4	481.5	480.7	480.0	479.5	479.0	478.7	478.4	478.3	478.3
405	486.2	485.3	484.5	483.8	483.2	482.7	482.3	482.0	481.8	481.8	481.8
410	489.0	488.2	487.4	486.8	486.3	485.9	485.5	485.3	485.2	485.2	485.3
415	491.8	491.0	490.4	489.8	489.4	489.0	488.7	488.6	488.5	488.5	488.7
420	494.5	493.9	493.3	492.8	492.4	492.1	491.9	491.8	491.8	491.9	492.0
425	497.3	496.7	496.2	495.7	495.4	495.2	495.0	495.0	495.0	495.1	495.3
430	500.0	499.5	499.0	498.7	498.4	498.2	498.1	498.1	498.2	498.3	498.6
435	502.7	502.2	501.8	501.5	501.3	501.2	501.1	501.2	501.3	501.5	501.8
440	505.4	505.0	504.6	504.4	504.2	504.2	504.2	504.3	504.4	504.7	505.0
445	508.1	507.7	507.4	507.2	507.1	507.1	507.2	507.3	507.5	507.8	508.2
450	510.7	510.4	510.2	510.1	510.0	510.0	510.1	510.3	510.5	510.9	511.3
455	513.3	513.1	512.9	512.8	512.8	512.9	513.0	513.2	513.5	513.9	514.4
460	515.9	515.8	515.6	515.6	515.6	515.7	515.9	516.2	516.5	516.9	517.4
465	518.5	518.4	518.3	518.3	518.4	518.6	518.8	519.1	519.4	519.9	520.4
470	521.1	521.0	521.0	521.1	521.2	521.4	521.6	522.0	522.4	522.8	523.4
475	523.7	523.6	523.7	523.8	523.9	524.2	524.4	524.8	525.2	525.7	526.3
480	526.2	526.2	526.3	526.4	526.6	526.9	527.2	527.6	528.1	528.6	529.2
485	528.8	528.8	528.9	529.1	529.3	529.6	530.0	530.4	530.9	531.5	532.1
490	531.3	531.4	531.5	531.7	532.0	532.4	532.8	533.2	533.7	534.3	535.0
495	533.8	533.9	534.1	534.4	534.7	535.0	535.5	536.0	536.5	537.1	537.8
500	536.3	536.4	536.7	537.0	537.3	537.7	538.2	538.7	539.3	539.9	540.6
505	538.8	539.0	539.2	539.5	539.9	540.4	540.9	541.4	542.0	542.7	543.4
510	541.2	541.5	541.8	542.1	542.5	543.0	543.5	544.1	544.7	545.4	546.1
515	543.7	543.9	544.3	544.7	545.1	545.6	546.2	546.8	547.4	548.1	548.9
520	546.1	546.4	546.8	547.2	547.7	548.2	548.8	549.4	550.1	550.8	551.6
525	548.5	548.9	549.3	549.7	550.2	550.8	551.4	552.0	552.7	553.5	554.3
530	550.9	551.3	551.7	552.2	552.8	553.3	554.0	554.6	555.4	556.1	556.9
535	553.3	553.8	554.2	554.7	555.3	555.9	556.5	557.2	558.0	558.8	559.6
540	555.7	556.2	556.7	557.2	557.8	558.4	559.1	559.8	560.6	561.4	562.2
545	558.1	558.6	559.1	559.7	560.3	560.9	561.6	562.3	563.1	564.0	564.8
550	560.5	561.0	561.5	562.1	562.7	563.4	564.1	564.9	565.7	566.5	567.4
555	562.8	563.4	563.9	564.5	565.2	565.9	566.6	567.4	568.2	569.1	570.0
560	565.2	565.7	566.3	567.0	567.6	568.4	569.1	569.9	570.8	571.6	572.6
565	567.5	568.1	568.7	569.4	570.1	570.8	571.6	572.4	573.3	574.2	575.1
570	569.8	570.4	571.1	571.8	572.5	573.2	574.0	574.9	575.8	576.7	577.6
575	572.2	572.8	573.4	574.1	574.9	575.7	576.5	577.3	578.2	579.2	580.1
580	574.5	575.1	575.8	576.5	577.3	578.1	578.9	579.8	580.7	581.7	582.6
585	576.8	577.4	578.1	578.9	579.7	580.5	581.3	582.2	583.2	584.1	585.1
590	579.0	579.7	580.5	581.2	582.0	582.9	583.7	584.7	585.6	586.6	587.6
595	581.3	582.0	582.8	583.6	584.4	585.2	586.1	587.1	588.0	589.0	590.0
600	583.6	584.3	585.1	585.9	586.7	587.6	588.5	589.5	590.4	591.4	592.5

Plenum temperature, K	Plenum pressure, N/m$^2\times10^{-5}$										
	100	110	120	130	140	150	160	170	180	190	200
400	478.3	478.4	478.6	479.0	479.4	480.0	480.7	481.6	482.5	483.6	484.8
405	481.8	482.0	482.2	482.6	483.1	483.7	484.4	485.3	486.2	487.3	488.5
410	485.3	485.5	485.8	486.2	486.7	487.3	488.1	488.9	489.9	491.0	492.2
415	488.7	488.9	489.3	489.7	490.3	490.9	491.7	492.6	493.5	494.6	495.8
420	492.0	492.3	492.7	493.2	493.8	494.4	495.2	496.1	497.1	498.2	499.3
425	495.3	495.7	496.1	496.6	497.2	497.9	498.7	499.6	500.6	501.7	502.8
430	498.6	499.0	499.4	500.0	500.6	501.3	502.1	503.0	504.0	505.1	506.3
435	501.8	502.2	502.7	503.3	503.9	504.7	505.5	506.4	507.4	508.5	509.7
440	505.0	505.5	506.0	506.6	507.2	508.0	508.9	509.8	510.8	511.9	513.1
445	508.2	508.6	509.2	509.8	510.5	511.3	512.2	513.1	514.1	515.2	516.4
450	511.3	511.8	512.3	513.0	513.7	514.5	515.4	516.4	517.4	518.5	519.7
455	514.4	514.9	515.5	516.1	516.9	517.7	518.6	519.6	520.6	521.8	523.0
460	517.4	517.9	518.6	519.3	520.0	520.9	521.8	522.8	523.8	525.0	526.2
465	520.4	521.0	521.6	522.3	523.1	524.0	524.9	525.9	527.0	528.1	529.3
470	523.4	524.0	524.6	525.4	526.2	527.1	528.0	529.0	530.1	531.2	532.5
475	526.3	526.9	527.6	528.4	529.2	530.1	531.1	532.1	533.2	534.3	535.6
480	529.2	529.9	530.6	531.4	532.2	533.1	534.1	535.1	536.2	537.4	538.6
485	532.1	532.8	533.5	534.3	535.2	536.1	537.1	538.2	539.3	540.4	541.6
490	535.0	535.7	536.4	537.3	538.1	539.1	540.1	541.1	542.2	543.4	544.6
495	537.8	538.5	539.3	540.1	541.0	542.0	543.0	544.1	545.2	546.4	547.6
500	540.6	541.3	542.2	543.0	543.9	544.9	545.9	547.0	548.1	549.3	550.6
505	543.4	544.2	545.0	545.9	546.8	547.8	548.8	549.9	551.0	552.2	553.5
510	546.1	546.9	547.8	548.7	549.6	550.6	551.7	552.8	553.9	555.1	556.3
515	548.9	549.7	550.5	551.5	552.4	553.4	554.5	555.6	556.7	558.0	559.2
520	551.6	552.4	553.3	554.2	555.2	556.2	557.3	558.4	559.6	560.8	562.0
525	554.3	555.1	556.0	557.0	557.9	559.0	560.1	561.2	562.4	563.6	564.8
530	556.9	557.8	558.7	559.7	560.7	561.7	562.8	564.0	565.1	566.4	567.6
535	559.6	560.5	561.4	562.4	563.4	564.4	565.6	566.7	567.9	569.1	570.4
540	562.2	563.1	564.1	565.0	566.1	567.1	568.3	569.4	570.6	571.8	573.1
545	564.8	565.7	566.7	567.7	568.7	569.8	571.0	572.1	573.3	574.6	575.8
550	567.4	568.4	569.3	570.3	571.4	572.5	573.6	574.8	576.0	577.2	578.5
555	570.0	570.9	571.9	573.0	574.0	575.1	576.3	577.4	578.7	579.9	581.2
560	572.6	573.5	574.5	575.6	576.6	577.7	578.9	580.1	581.3	582.6	583.9
565	575.1	576.1	577.1	578.1	579.2	580.3	581.5	582.7	583.9	585.2	586.5
570	577.6	578.6	579.6	580.7	581.8	582.9	584.1	585.3	586.5	587.8	589.1
575	580.1	581.1	582.2	583.2	584.4	585.5	586.7	587.9	589.1	590.4	591.7
580	582.6	583.6	584.7	585.8	586.9	588.0	589.2	590.4	591.7	593.0	594.3
585	585.1	586.1	587.2	588.3	589.4	590.6	591.8	593.0	594.3	595.5	596.9
590	587.6	588.6	589.7	590.8	591.9	593.1	594.3	595.5	596.8	598.1	599.4
595	590.0	591.1	592.2	593.3	594.4	595.6	596.8	598.0	599.3	600.6	601.9
600	592.5	593.5	594.6	595.7	596.9	598.1	599.3	600.6	601.8	603.1	604.5

TABLE II. - Concluded. THERMODYNAMIC PROPERTY OF METHANE - NOZZLE THROAT VELOCITY, v_1, m/sec

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	200	210	220	230	240	250	260	270	280	290	300
400	484.8	486.1	487.5	489.0	490.6	492.4	494.2	496.1	498.2	500.3	502.5
405	488.5	489.8	491.2	492.7	494.3	496.0	497.8	499.7	501.7	503.8	505.9
410	492.2	493.4	494.8	496.3	497.9	499.6	501.4	503.2	505.2	507.2	509.3
415	495.8	497.1	498.4	499.9	501.5	503.1	504.9	506.7	508.6	510.6	512.7
420	499.3	500.6	502.0	503.4	505.0	506.6	508.3	510.1	512.0	514.0	516.0
425	502.8	504.1	505.5	506.9	508.5	510.1	511.8	513.6	515.4	517.3	519.3
430	506.3	507.6	508.9	510.4	511.9	513.5	515.2	516.9	518.8	520.7	522.6
435	509.7	511.0	512.3	513.8	515.3	516.9	518.5	520.3	522.1	523.9	525.9
440	513.1	514.4	515.7	517.1	518.6	520.2	521.8	523.6	525.3	527.2	529.1
445	516.4	517.7	519.0	520.4	521.9	523.5	525.1	526.8	528.6	530.4	532.3
450	519.7	521.0	522.3	523.7	525.2	526.7	528.4	530.0	531.8	533.6	535.5
455	523.0	524.2	525.6	527.0	528.4	530.0	531.6	533.2	535.0	536.8	538.6
460	526.2	527.4	528.8	530.2	531.6	533.2	534.8	536.4	538.1	539.9	541.7
465	529.3	530.6	531.9	533.3	534.8	536.3	537.9	539.5	541.2	543.0	544.8
470	532.5	533.7	535.1	536.5	537.9	539.4	541.0	542.6	544.3	546.1	547.9
475	535.6	536.8	538.2	539.6	541.0	542.5	544.1	545.7	547.4	549.1	550.9
480	538.6	539.9	541.2	542.6	544.1	545.6	547.1	548.7	550.4	552.1	553.9
485	541.6	542.9	544.3	545.7	547.1	548.6	550.2	551.8	553.4	555.1	556.9
490	544.6	545.9	547.3	548.7	550.1	551.6	553.1	554.7	556.4	558.1	559.8
495	547.6	548.9	550.2	551.6	553.1	554.6	556.1	557.7	559.3	561.0	562.7
500	550.6	551.8	553.2	554.6	556.0	557.5	559.0	560.6	562.2	563.9	565.6
505	553.5	554.8	556.1	557.5	558.9	560.4	561.9	563.5	565.1	566.8	568.5
510	556.3	557.6	559.0	560.4	561.8	563.3	564.8	566.4	568.0	569.7	571.4
515	559.2	560.5	561.8	563.2	564.7	566.2	567.7	569.2	570.9	572.5	574.2
520	562.0	563.3	564.7	566.1	567.5	569.0	570.5	572.1	573.7	575.3	577.0
525	564.8	566.2	567.5	568.9	570.3	571.8	573.3	574.9	576.5	578.1	579.8
530	567.6	568.9	570.3	571.7	573.1	574.6	576.1	577.7	579.3	580.9	582.6
535	570.4	571.7	573.1	574.5	575.9	577.4	578.9	580.4	582.0	583.6	585.3
540	573.1	574.4	575.8	577.2	578.6	580.1	581.6	583.2	584.7	586.4	588.0
545	575.8	577.2	578.5	579.9	581.4	582.8	584.3	585.9	587.5	589.1	590.7
550	578.5	579.9	581.2	582.6	584.1	585.5	587.0	588.6	590.2	591.8	593.4
555	581.2	582.5	583.9	585.3	586.7	588.2	589.7	591.3	592.8	594.4	596.1
560	583.9	585.2	586.6	588.0	589.4	590.9	592.4	593.9	595.5	597.1	598.7
565	586.5	587.8	589.2	590.6	592.0	593.5	595.0	596.6	598.1	599.7	601.3
570	589.1	590.5	591.8	593.2	594.7	596.1	597.6	599.2	600.7	602.3	604.0
575	591.7	593.1	594.4	595.8	597.3	598.7	600.2	601.8	603.3	604.9	606.5
580	594.3	595.6	597.0	598.4	599.9	601.3	602.8	604.4	605.9	607.5	609.1
585	596.9	598.2	599.6	601.0	602.4	603.9	605.4	606.9	608.5	610.1	611.7
590	599.4	600.8	602.1	603.6	605.0	606.5	608.0	609.5	611.0	612.6	614.2
595	601.9	603.3	604.7	606.1	607.5	609.0	610.5	612.0	613.6	615.2	616.8
600	604.5	605.8	607.2	608.6	610.1	611.5	613.0	614.6	616.1	617.7	619.3

TABLE III. - THERMODYNAMIC PROPERTY OF METHANE - CRITICAL PRESSURE RATIO, p_1/p_0

Plenum temperature, K	Plenum pressure, $N\ m^2 \times 10^{-5}$										
	0	1	2	3	4	5	6	7	8	9	10
120	0.5398	------	------	------	------	------	------	------	------	------	------
122	0.5398	0.5412	------	------	------	------	------	------	------	------	------
124	0.5398	0.5412	------	------	------	------	------	------	------	------	------
126	0.5398	0.5412	------	------	------	------	------	------	------	------	------
128	0.5398	0.5412	------	------	------	------	------	------	------	------	------
130	0.5398	0.5412	0.5427	------	------	------	------	------	------	------	------
132	0.5398	0.5412	0.5427	------	------	------	------	------	------	------	------
134	0.5398	0.5412	0.5426	------	------	------	------	------	------	------	------
136	0.5398	0.5412	0.5426	0.5440	------	------	------	------	------	------	------
138	0.5398	0.5412	0.5425	0.5439	------	------	------	------	------	------	------
140	0.5398	0.5412	0.5425	0.5438	------	------	------	------	------	------	------
142	0.5398	0.5411	0.5424	0.5437	0.5451	------	------	------	------	------	------
144	0.5398	0.5411	0.5424	0.5437	0.5450	------	------	------	------	------	------
146	0.5398	0.5411	0.5423	0.5435	0.5448	0.5462	------	------	------	------	------
148	0.5398	0.5410	0.5422	0.5434	0.5447	0.5460	0.5473	------	------	------	------
150	0.5398	0.5410	0.5421	0.5433	0.5445	0.5458	0.5471	------	------	------	------
152	0.5398	0.5410	0.5421	0.5432	0.5444	0.5456	0.5468	0.5481	------	------	------
154	0.5398	0.5410	0.5420	0.5431	0.5442	0.5454	0.5466	0.5478	0.5491	------	------
156	0.5398	0.5409	0.5419	0.5430	0.5441	0.5452	0.5463	0.5475	0.5488	0.5501	------
158	0.5398	0.5409	0.5418	0.5429	0.5439	0.5450	0.5461	0.5473	0.5484	0.5497	------
160	0.5398	0.5408	0.5418	0.5428	0.5438	0.5448	0.5459	0.5470	0.5481	0.5493	0.5505
162	0.5398	0.5408	0.5417	0.5427	0.5436	0.5446	0.5456	0.5467	0.5478	0.5489	0.5501
164	0.5399	0.5408	0.5416	0.5425	0.5435	0.5444	0.5454	0.5464	0.5475	0.5485	0.5497
166	0.5399	0.5407	0.5416	0.5424	0.5433	0.5442	0.5452	0.5462	0.5471	0.5482	0.5492
168	0.5399	0.5407	0.5415	0.5423	0.5432	0.5441	0.5450	0.5459	0.5468	0.5478	0.5488
170	0.5399	0.5406	0.5415	0.5422	0.5431	0.5439	0.5448	0.5456	0.5465	0.5475	0.5484
172	0.5399	0.5406	0.5414	0.5422	0.5429	0.5437	0.5445	0.5454	0.5463	0.5471	0.5481
174	0.5399	0.5406	0.5413	0.5421	0.5428	0.5436	0.5443	0.5451	0.5460	0.5468	0.5477
176	0.5399	0.5406	0.5413	0.5420	0.5427	0.5434	0.5441	0.5449	0.5457	0.5465	0.5473
178	0.5399	0.5405	0.5412	0.5419	0.5426	0.5432	0.5440	0.5447	0.5454	0.5462	0.5470
180	0.5399	0.5405	0.5411	0.5418	0.5425	0.5432	0.5436	0.5445	0.5452	0.5459	0.5467
182	0.5399	0.5405	0.5411	0.5417	0.5423	0.5430	0.5436	0.5443	0.5449	0.5456	0.5464
184	0.5399	0.5405	0.5410	0.5416	0.5422	0.5429	0.5435	0.5441	0.5447	0.5454	0.5461
186	0.5399	0.5404	0.5410	0.5416	0.5421	0.5427	0.5433	0.5439	0.5445	0.5451	0.5458
188	0.5399	0.5404	0.5409	0.5415	0.5420	0.5426	0.5431	0.5437	0.5443	0.5449	0.5455
190	0.5399	0.5404	0.5409	0.5414	0.5419	0.5425	0.5430	0.5435	0.5441	0.5447	0.5453
192	0.5399	0.5404	0.5409	0.5413	0.5418	0.5423	0.5428	0.5434	0.5439	0.5444	0.5450
194	0.5399	0.5404	0.5408	0.5413	0.5417	0.5422	0.5427	0.5432	0.5437	0.5442	0.5447
196	0.5399	0.5404	0.5408	0.5412	0.5417	0.5421	0.5426	0.5430	0.5435	0.5440	0.5445
198	0.5400	0.5404	0.5408	0.5412	0.5416	0.5420	0.5424	0.5429	0.5433	0.5438	0.5443
200	0.5400	0.5403	0.5407	0.5411	0.5415	0.5419	0.5423	0.5427	0.5432	0.5436	0.5440

TABLE III. - Continued. THERMODYNAMIC PROPERTY OF METHANE - CRITICAL PRESSURE RATIO, p_1/p_0

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	10	12	14	16	18	20	22	24	26	28	30
160	0.5505	------	------	------	------	------	------	------	------	------	------
162	0.5501	------	------	------	------	------	------	------	------	------	------
164	0.5497	0.5521	------	------	------	------	------	------	------	------	------
166	0.5492	0.5515	0.5540	------	------	------	------	------	------	------	------
168	0.5488	0.5510	0.5533	------	------	------	------	------	------	------	------
170	0.5484	0.5505	0.5527	0.5551	------	------	------	------	------	------	------
172	0.5481	0.5500	0.5521	0.5544	------	------	------	------	------	------	------
174	0.5477	0.5495	0.5515	0.5536	0.5560	------	------	------	------	------	------
176	0.5473	0.5491	0.5509	0.5529	0.5551	0.5575	------	------	------	------	------
178	0.5470	0.5487	0.5504	0.5523	0.5543	0.5566	0.5590	------	------	------	------
180	0.5467	0.5482	0.5499	0.5517	0.5536	0.5556	0.5579	------	------	------	------
182	0.5464	0.5478	0.5494	0.5511	0.5529	0.5548	0.5569	0.5592	------	------	------
184	0.5461	0.5475	0.5489	0.5505	0.5522	0.5540	0.5559	0.5580	0.5604	------	------
186	0.5458	0.5471	0.5485	0.5500	0.5516	0.5532	0.5550	0.5570	0.5591	0.5614	------
188	0.5455	0.5467	0.5481	0.5495	0.5509	0.5525	0.5542	0.5560	0.5579	0.5600	0.5624
190	0.5453	0.5465	0.5477	0.5490	0.5504	0.5518	0.5534	0.5550	0.5568	0.5588	0.5609
192	0.5450	0.5461	0.5473	0.5486	0.5499	0.5512	0.5526	0.5542	0.5558	0.5576	0.5595
194	0.5447	0.5458	0.5469	0.5481	0.5493	0.5506	0.5520	0.5534	0.5549	0.5565	0.5582
196	0.5445	0.5455	0.5466	0.5476	0.5488	0.5500	0.5512	0.5526	0.5540	0.5555	0.5571
198	0.5443	0.5452	0.5462	0.5472	0.5483	0.5494	0.5506	0.5518	0.5531	0.5545	0.5560
200	0.5440	0.5449	0.5459	0.5468	0.5478	0.5489	0.5500	0.5511	0.5523	0.5536	0.5549

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	30	32	34	36	38	40	42	44	46	48	50
180	------	------	------	------	------	------	------	------	------	------	------
182	------	------	------	------	------	------	------	------	------	------	------
184	------	------	------	------	------	------	------	------	------	------	------
186	------	------	------	------	------	------	------	------	------	------	------
188	0.5624	------	------	------	------	------	------	------	------	------	------
190	0.5609	0.5632	------	------	------	------	------	------	------	------	------
192	0.5595	0.5615	0.5638	------	------	------	------	------	------	------	------
194	0.5582	0.5601	0.5621	0.5643	------	------	------	------	------	------	------
196	0.5571	0.5587	0.5605	0.5625	0.5646	------	------	------	------	------	------
198	0.5560	0.5575	0.5592	0.5609	0.5627	0.5647	------	------	------	------	------
200	0.5549	0.5563	0.5578	0.5595	0.5611	0.5628	0.5647	0.5666	------	------	------

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	0	5	10	15	20	25	30	35	40	45	50
200	0.5400	0.5419	0.5440	0.5463	0.5489	0.5517	0.5549	0.5586	0.5628	------	------
202	0.5400	0.5418	0.5438	0.5460	0.5484	0.5511	0.5540	0.5573	0.5611	0.5653	------
204	0.5400	0.5418	0.5436	0.5457	0.5479	0.5504	0.5531	0.5562	0.5595	0.5632	0.5671
206	0.5400	0.5417	0.5435	0.5454	0.5475	0.5498	0.5523	0.5551	0.5581	0.5614	0.5647
208	0.5400	0.5416	0.5433	0.5451	0.5470	0.5492	0.5515	0.5541	0.5568	0.5597	0.5626
210	0.5400	0.5415	0.5431	0.5448	0.5467	0.5487	0.5508	0.5531	0.5556	0.5582	0.5608
212	0.5401	0.5415	0.5430	0.5446	0.5463	0.5481	0.5501	0.5523	0.5545	0.5568	0.5591
214	0.5401	0.5414	0.5428	0.5443	0.5459	0.5476	0.5495	0.5514	0.5535	0.5555	0.5576
216	0.5401	0.5413	0.5427	0.5441	0.5456	0.5472	0.5488	0.5507	0.5525	0.5544	0.5561
218	0.5401	0.5413	0.5426	0.5439	0.5453	0.5468	0.5483	0.5499	0.5516	0.5533	0.5549
220	0.5401	0.5413	0.5425	0.5437	0.5450	0.5464	0.5478	0.5492	0.5508	0.5523	0.5537
222	0.5402	0.5412	0.5423	0.5435	0.5448	0.5460	0.5473	0.5486	0.5500	0.5513	0.5526
224	0.5402	0.5412	0.5422	0.5433	0.5445	0.5457	0.5469	0.5481	0.5492	0.5504	0.5515
226	0.5402	0.5412	0.5421	0.5432	0.5443	0.5453	0.5464	0.5475	0.5486	0.5496	0.5506
228	0.5402	0.5411	0.5421	0.5430	0.5440	0.5450	0.5460	0.5470	0.5480	0.5489	0.5497
230	0.5403	0.5411	0.5420	0.5429	0.5438	0.5447	0.5456	0.5465	0.5474	0.5482	0.5489
232	0.5403	0.5411	0.5419	0.5427	0.5435	0.5444	0.5452	0.5460	0.5468	0.5475	0.5481
234	0.5403	0.5411	0.5418	0.5426	0.5434	0.5441	0.5449	0.5456	0.5463	0.5469	0.5475
236	0.5404	0.5410	0.5418	0.5425	0.5432	0.5439	0.5446	0.5452	0.5458	0.5464	0.5468
238	0.5404	0.5410	0.5417	0.5424	0.5430	0.5436	0.5443	0.5448	0.5454	0.5458	0.5462
240	0.5404	0.5410	0.5416	0.5423	0.5429	0.5434	0.5440	0.5445	0.5450	0.5454	0.5456
242	0.5405	0.5410	0.5416	0.5422	0.5427	0.5432	0.5437	0.5442	0.5446	0.5449	0.5451
244	0.5405	0.5410	0.5416	0.5421	0.5426	0.5430	0.5435	0.5439	0.5442	0.5445	0.5446
246	0.5406	0.5410	0.5415	0.5420	0.5425	0.5429	0.5433	0.5436	0.5439	0.5441	0.5442
248	0.5406	0.5410	0.5415	0.5420	0.5423	0.5427	0.5431	0.5434	0.5436	0.5437	0.5438
250	0.5406	0.5410	0.5415	0.5419	0.5422	0.5426	0.5429	0.5431	0.5433	0.5434	0.5434

TABLE III. - Continued. THERMODYNAMIC PROPERTY OF METHANE - CRITICAL PRESSURE RATIO, p_1/p_0

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	50	55	60	65	70	75	80	85	90	95	100
200	------	------	------	------	------	------	------	------	------	------	------
202	------	------	------	------	------	------	------	------	------	------	------
204	0.5671	------	------	------	------	------	------	------	------	------	------
206	0.5647	------	------	------	------	------	------	------	------	------	------
208	0.5626	0.5652	------	------	------	------	------	------	------	------	------
210	0.5608	0.5630	0.5640	------	------	------	------	------	------	------	------
212	0.5591	0.5611	0.5622	0.5609	------	------	------	------	------	------	------
214	0.5576	0.5593	0.5604	0.5597	0.5557	------	------	------	------	------	------
216	0.5561	0.5577	0.5586	0.5583	0.5555	0.5490	0.5379	------	------	------	------
218	0.5549	0.5562	0.5571	0.5569	0.5549	0.5500	0.5414	0.5291	------	------	------
220	0.5537	0.5548	0.5556	0.5555	0.5540	0.5502	0.5435	0.5335	0.5208	0.5063	------
222	0.5526	0.5536	0.5542	0.5542	0.5530	0.5500	0.5446	0.5365	0.5257	0.5130	0.4990
224	0.5515	0.5524	0.5530	0.5529	0.5519	0.5495	0.5451	0.5384	0.5293	0.5183	0.5058
226	0.5506	0.5514	0.5518	0.5517	0.5509	0.5488	0.5452	0.5396	0.5319	0.5223	0.5112
228	0.5497	0.5504	0.5507	0.5506	0.5498	0.5481	0.5450	0.5403	0.5337	0.5254	0.5156
230	0.5489	0.5494	0.5497	0.5496	0.5488	0.5473	0.5446	0.5405	0.5349	0.5277	0.5191
232	0.5481	0.5486	0.5488	0.5486	0.5479	0.5465	0.5441	0.5406	0.5357	0.5294	0.5218
234	0.5475	0.5478	0.5479	0.5477	0.5470	0.5457	0.5436	0.5405	0.5362	0.5306	0.5239
236	0.5468	0.5470	0.5471	0.5469	0.5462	0.5450	0.5430	0.5402	0.5364	0.5315	0.5255
238	0.5462	0.5464	0.5464	0.5461	0.5454	0.5442	0.5425	0.5399	0.5365	0.5321	0.5267
240	0.5456	0.5458	0.5456	0.5454	0.5447	0.5436	0.5419	0.5396	0.5364	0.5325	0.5276
242	0.5451	0.5452	0.5451	0.5447	0.5440	0.5429	0.5414	0.5392	0.5363	0.5327	0.5283
244	0.5446	0.5446	0.5445	0.5441	0.5434	0.5423	0.5408	0.5388	0.5362	0.5329	0.5288
246	0.5442	0.5441	0.5439	0.5435	0.5428	0.5418	0.5403	0.5384	0.5360	0.5329	0.5292
248	0.5438	0.5437	0.5434	0.5430	0.5423	0.5412	0.5399	0.5381	0.5358	0.5329	0.5295
250	0.5434	0.5433	0.5430	0.5425	0.5418	0.5408	0.5394	0.5377	0.5355	0.5329	0.5297

Plenum temperature, K	Plenum pressure, N/m$^2\times10^{-5}$										
	100	110	120	130	140	150	160	170	180	190	200
220	------	------	------	------	------	------	------	------	------	------	------
222	0.4990	------	------	------	------	------	------	------	------	------	------
224	0.5058	0.4786	0.4507	0.4235	0.3978	0.3739	0.3518	0.3317	0.3133	0.2966	0.2814
226	0.5112	0.4864	0.4602	0.4343	0.4095	0.3862	0.3646	0.3447	0.3264	0.3097	0.2944
228	0.5156	0.4930	0.4685	0.4439	0.4201	0.3975	0.3763	0.3567	0.3386	0.3220	0.3067
230	0.5191	0.4986	0.4758	0.4526	0.4297	0.4079	0.3872	0.3680	0.3501	0.3336	0.3183
232	0.5218	0.5033	0.4822	0.4602	0.4384	0.4173	0.3972	0.3784	0.3608	0.3445	0.3293
234	0.5239	0.5072	0.4877	0.4670	0.4462	0.4259	0.4065	0.3881	0.3708	0.3547	0.3397
236	0.5255	0.5104	0.4925	0.4731	0.4533	0.4338	0.4150	0.3971	0.3802	0.3643	0.3494
238	0.5267	0.5131	0.4966	0.4785	0.4597	0.4410	0.4229	0.4054	0.3889	0.3733	0.3587
240	0.5276	0.5153	0.5001	0.4832	0.4654	0.4476	0.4301	0.4132	0.3971	0.3818	0.3674
242	0.5283	0.5171	0.5031	0.4873	0.4706	0.4536	0.4367	0.4204	0.4047	0.3897	0.3755
244	0.5288	0.5186	0.5057	0.4910	0.4752	0.4590	0.4428	0.4270	0.4117	0.3971	0.3832
246	0.5292	0.5198	0.5080	0.4942	0.4794	0.4639	0.4484	0.4332	0.4184	0.4041	0.3905
248	0.5295	0.5208	0.5099	0.4971	0.4831	0.4684	0.4536	0.4389	0.4245	0.4107	0.3973
250	0.5297	0.5217	0.5115	0.4996	0.4864	0.4725	0.4583	0.4442	0.4303	0.4168	0.4038

Plenum temperature, K	Plenum pressure, N/m$^2\times10^{-5}$										
	200	210	220	230	240	250	260	270	280	290	300
220	------	------	------	------	------	------	------	------	------	------	------
222	------	------	------	------	------	------	------	------	------	------	------
224	0.2814	0.2676	0.2549	0.2433	0.2327	0.2229	0.2140	0.2057	0.1981	------	------
226	0.2944	0.2804	0.2676	0.2559	0.2451	0.2352	0.2260	0.2176	0.2097	0.2025	------
228	0.3067	0.2927	0.2798	0.2679	0.2570	0.2469	0.2376	0.2289	0.2210	0.2135	0.2066
230	0.3183	0.3043	0.2913	0.2794	0.2683	0.2581	0.2487	0.2399	0.2318	0.2242	0.2171
232	0.3293	0.3153	0.3023	0.2903	0.2792	0.2689	0.2593	0.2505	0.2422	0.2344	0.2272
234	0.3397	0.3257	0.3128	0.3008	0.2896	0.2792	0.2696	0.2606	0.2522	0.2444	0.2370
236	0.3494	0.3356	0.3227	0.3107	0.2995	0.2891	0.2794	0.2703	0.2619	0.2539	0.2465
238	0.3587	0.3450	0.3321	0.3202	0.3090	0.2986	0.2888	0.2797	0.2712	0.2632	0.2557
240	0.3674	0.3538	0.3411	0.3292	0.3181	0.3076	0.2979	0.2887	0.2801	0.2721	0.2645
242	0.3755	0.3622	0.3496	0.3378	0.3267	0.3163	0.3065	0.2974	0.2887	0.2806	0.2730
244	0.3832	0.3701	0.3577	0.3460	0.3349	0.3246	0.3149	0.3057	0.2970	0.2889	0.2813
246	0.3905	0.3776	0.3653	0.3537	0.3428	0.3325	0.3228	0.3137	0.3050	0.2969	0.2892
248	0.3973	0.3846	0.3726	0.3612	0.3503	0.3401	0.3305	0.3214	0.3127	0.3046	0.2969
250	0.4038	0.3913	0.3795	0.3682	0.3575	0.3474	0.3378	0.3287	0.3201	0.3120	0.3043

TABLE III. - Continued. THERMODYNAMIC PROPERTY OF METHANE - CRITICAL PRESSURE RATIO, p_1/p_0

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	0	10	20	30	40	50	60	70	80	90	100
250	0.5406	0.5415	0.5422	0.5429	0.5433	0.5434	0.5430	0.5418	0.5394	0.5355	0.5297
255	0.5408	0.5414	0.5420	0.5425	0.5427	0.5426	0.5420	0.5407	0.5385	0.5350	0.5300
260	0.5409	0.5414	0.5419	0.5421	0.5422	0.5419	0.5412	0.5398	0.5377	0.5345	0.5301
265	0.5410	0.5414	0.5418	0.5419	0.5418	0.5413	0.5405	0.5392	0.5371	0.5342	0.5302
270	0.5411	0.5415	0.5417	0.5417	0.5414	0.5409	0.5400	0.5386	0.5366	0.5339	0.5303
275	0.5413	0.5415	0.5416	0.5415	0.5412	0.5406	0.5396	0.5382	0.5363	0.5337	0.5304
280	0.5415	0.5416	0.5416	0.5414	0.5410	0.5404	0.5393	0.5379	0.5361	0.5336	0.5306
285	0.5417	0.5418	0.5416	0.5414	0.5409	0.5402	0.5392	0.5377	0.5359	0.5336	0.5307
290	0.5419	0.5419	0.5417	0.5414	0.5409	0.5401	0.5390	0.5376	0.5359	0.5337	0.5310
295	0.5421	0.5420	0.5418	0.5414	0.5409	0.5401	0.5390	0.5376	0.5359	0.5338	0.5312
300	0.5423	0.5422	0.5419	0.5415	0.5409	0.5401	0.5390	0.5376	0.5360	0.5339	0.5315
305	0.5426	0.5424	0.5421	0.5416	0.5410	0.5401	0.5390	0.5377	0.5361	0.5341	0.5319
310	0.5428	0.5426	0.5423	0.5417	0.5411	0.5403	0.5391	0.5378	0.5362	0.5344	0.5322
315	0.5431	0.5428	0.5424	0.5419	0.5412	0.5403	0.5393	0.5380	0.5364	0.5347	0.5326
320	0.5433	0.5431	0.5426	0.5421	0.5414	0.5405	0.5395	0.5382	0.5367	0.5350	0.5330
325	0.5436	0.5433	0.5429	0.5423	0.5416	0.5407	0.5396	0.5384	0.5369	0.5353	0.5334
330	0.5439	0.5436	0.5431	0.5425	0.5418	0.5409	0.5398	0.5386	0.5372	0.5356	0.5338
335	0.5442	0.5439	0.5434	0.5428	0.5420	0.5412	0.5401	0.5389	0.5376	0.5360	0.5343
340	0.5446	0.5442	0.5437	0.5430	0.5423	0.5414	0.5404	0.5392	0.5379	0.5364	0.5348
345	0.5449	0.5445	0.5440	0.5433	0.5426	0.5417	0.5407	0.5395	0.5382	0.5368	0.5352
350	0.5452	0.5448	0.5443	0.5436	0.5429	0.5420	0.5410	0.5399	0.5386	0.5372	0.5356
355	0.5456	0.5451	0.5446	0.5439	0.5432	0.5423	0.5413	0.5402	0.5390	0.5376	0.5361
360	0.5459	0.5455	0.5449	0.5443	0.5435	0.5426	0.5417	0.5406	0.5394	0.5380	0.5366
365	0.5463	0.5458	0.5453	0.5446	0.5439	0.5430	0.5420	0.5410	0.5398	0.5385	0.5371
370	0.5467	0.5462	0.5456	0.5449	0.5442	0.5433	0.5424	0.5413	0.5402	0.5389	0.5376
375	0.5471	0.5465	0.5460	0.5453	0.5446	0.5437	0.5428	0.5417	0.5406	0.5394	0.5381
380	0.5475	0.5470	0.5463	0.5457	0.5449	0.5441	0.5432	0.5421	0.5410	0.5398	0.5385
385	0.5479	0.5473	0.5467	0.5460	0.5453	0.5445	0.5435	0.5425	0.5415	0.5403	0.5390
390	0.5483	0.5477	0.5471	0.5465	0.5457	0.5448	0.5439	0.5430	0.5419	0.5408	0.5395
395	0.5487	0.5481	0.5475	0.5468	0.5460	0.5452	0.5443	0.5434	0.5423	0.5412	0.5400
400	0.5491	0.5485	0.5479	0.5472	0.5465	0.5456	0.5447	0.5438	0.5428	0.5417	0.5405

Plenum temperature, K	Plenum pressure, N/m^2×10^{-5}										
	100	110	120	130	140	150	160	170	180	190	200
250	0.5297	0.5217	0.5115	0.4996	0.4864	0.4725	0.4583	0.4442	0.4303	0.4168	0.4038
255	0.5300	0.5233	0.5147	0.5047	0.4934	0.4812	0.4686	0.4557	0.4430	0.4305	0.4183
260	0.5301	0.5243	0.5171	0.5084	0.4987	0.4881	0.4769	0.4653	0.4537	0.4421	0.4308
265	0.5302	0.5251	0.5188	0.5113	0.5029	0.4935	0.4836	0.4732	0.4627	0.4521	0.4416
270	0.5303	0.5257	0.5202	0.5136	0.5062	0.4980	0.4891	0.4799	0.4703	0.4606	0.4509
275	0.5304	0.5263	0.5213	0.5155	0.5089	0.5016	0.4937	0.4854	0.4768	0.4679	0.4590
280	0.5306	0.5268	0.5223	0.5171	0.5112	0.5047	0.4976	0.4901	0.4823	0.4743	0.4661
285	0.5307	0.5273	0.5232	0.5185	0.5132	0.5073	0.5010	0.4942	0.4871	0.4798	0.4723
290	0.5310	0.5278	0.5240	0.5198	0.5149	0.5096	0.5039	0.4977	0.4913	0.4845	0.4777
295	0.5312	0.5283	0.5248	0.5209	0.5165	0.5117	0.5064	0.5008	0.4949	0.4888	0.4824
300	0.5315	0.5288	0.5256	0.5219	0.5179	0.5135	0.5087	0.5036	0.4982	0.4925	0.4867
305	0.5319	0.5293	0.5263	0.5229	0.5192	0.5151	0.5107	0.5060	0.5011	0.4959	0.4905
310	0.5322	0.5298	0.5270	0.5238	0.5204	0.5166	0.5126	0.5082	0.5037	0.4989	0.4939
315	0.5326	0.5303	0.5276	0.5247	0.5215	0.5180	0.5143	0.5102	0.5060	0.5016	0.4969
320	0.5330	0.5308	0.5283	0.5256	0.5226	0.5193	0.5158	0.5121	0.5081	0.5040	0.4997
325	0.5334	0.5313	0.5289	0.5264	0.5236	0.5205	0.5173	0.5138	0.5101	0.5063	0.5023
330	0.5338	0.5318	0.5296	0.5272	0.5245	0.5216	0.5186	0.5154	0.5119	0.5083	0.5046
335	0.5343	0.5323	0.5302	0.5279	0.5254	0.5227	0.5199	0.5168	0.5136	0.5103	0.5068
340	0.5348	0.5329	0.5309	0.5287	0.5263	0.5238	0.5211	0.5182	0.5152	0.5120	0.5087
345	0.5352	0.5334	0.5315	0.5294	0.5272	0.5248	0.5222	0.5195	0.5167	0.5137	0.5106
350	0.5356	0.5339	0.5321	0.5301	0.5280	0.5257	0.5232	0.5207	0.5180	0.5152	0.5123
355	0.5361	0.5345	0.5327	0.5308	0.5287	0.5265	0.5243	0.5219	0.5193	0.5167	0.5139
360	0.5366	0.5350	0.5333	0.5315	0.5295	0.5274	0.5253	0.5230	0.5206	0.5181	0.5154
365	0.5371	0.5356	0.5339	0.5322	0.5303	0.5283	0.5262	0.5240	0.5217	0.5194	0.5169
370	0.5376	0.5361	0.5345	0.5329	0.5310	0.5291	0.5271	0.5251	0.5229	0.5206	0.5182
375	0.5381	0.5366	0.5351	0.5335	0.5318	0.5300	0.5280	0.5260	0.5239	0.5218	0.5195
380	0.5385	0.5372	0.5357	0.5341	0.5325	0.5307	0.5289	0.5270	0.5249	0.5229	0.5207
385	0.5390	0.5377	0.5363	0.5348	0.5332	0.5315	0.5297	0.5279	0.5260	0.5240	0.5219
390	0.5395	0.5382	0.5368	0.5354	0.5338	0.5322	0.5305	0.5287	0.5269	0.5250	0.5230
395	0.5400	0.5388	0.5374	0.5360	0.5345	0.5329	0.5313	0.5296	0.5278	0.5260	0.5241
400	0.5405	0.5393	0.5380	0.5366	0.5351	0.5336	0.5321	0.5304	0.5287	0.5269	0.5251

TABLE III. - Continued. THERMODYNAMIC PROPERTY OF METHANE - CRITICAL PRESSURE RATIO, p_1/p_0

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	200	210	220	230	240	250	260	270	280	290	300
250	0.4038	0.3913	0.3795	0.3682	0.3575	0.3474	0.3378	0.3287	0.3201	0.3120	0.3043
255	0.4183	0.4065	0.3952	0.3844	0.3741	0.3642	0.3549	0.3459	0.3374	0.3294	0.3217
260	0.4308	0.4198	0.4091	0.3987	0.3888	0.3793	0.3702	0.3615	0.3532	0.3453	0.3377
265	0.4416	0.4313	0.4212	0.4114	0.4020	0.3928	0.3841	0.3756	0.3676	0.3598	0.3524
270	0.4509	0.4413	0.4319	0.4227	0.4137	0.4050	0.3966	0.3884	0.3806	0.3731	0.3658
275	0.4590	0.4501	0.4413	0.4327	0.4242	0.4159	0.4079	0.4001	0.3925	0.3852	0.3782
280	0.4661	0.4579	0.4497	0.4415	0.4335	0.4257	0.4181	0.4106	0.4034	0.3963	0.3895
285	0.4723	0.4647	0.4570	0.4494	0.4419	0.4345	0.4273	0.4202	0.4133	0.4065	0.3999
290	0.4777	0.4707	0.4636	0.4565	0.4495	0.4425	0.4356	0.4289	0.4223	0.4158	0.4095
295	0.4824	0.4760	0.4694	0.4629	0.4563	0.4497	0.4432	0.4368	0.4305	0.4244	0.4183
300	0.4867	0.4807	0.4746	0.4685	0.4624	0.4562	0.4501	0.4440	0.4381	0.4322	0.4264
305	0.4905	0.4849	0.4793	0.4736	0.4679	0.4621	0.4564	0.4507	0.4449	0.4394	0.4338
310	0.4939	0.4888	0.4835	0.4782	0.4728	0.4674	0.4620	0.4566	0.4513	0.4460	0.4407
315	0.4969	0.4922	0.4873	0.4823	0.4773	0.4723	0.4672	0.4621	0.4570	0.4520	0.4470
320	0.4997	0.4953	0.4908	0.4861	0.4814	0.4767	0.4719	0.4671	0.4623	0.4575	0.4528
325	0.5023	0.4982	0.4939	0.4896	0.4851	0.4807	0.4762	0.4716	0.4671	0.4626	0.4581
330	0.5046	0.5008	0.4968	0.4927	0.4886	0.4844	0.4801	0.4758	0.4715	0.4672	0.4630
335	0.5068	0.5031	0.4994	0.4956	0.4917	0.4877	0.4837	0.4797	0.4756	0.4716	0.4675
340	0.5087	0.5054	0.5019	0.4983	0.4946	0.4909	0.4871	0.4833	0.4794	0.4755	0.4717
345	0.5106	0.5074	0.5041	0.5007	0.4973	0.4937	0.4902	0.4865	0.4829	0.4792	0.4755
350	0.5123	0.5093	0.5062	0.5030	0.4997	0.4964	0.4930	0.4896	0.4861	0.4826	0.4791
355	0.5139	0.5111	0.5081	0.5051	0.5020	0.4989	0.4957	0.4924	0.4891	0.4858	0.4825
360	0.5154	0.5127	0.5100	0.5071	0.5042	0.5012	0.4981	0.4950	0.4919	0.4888	0.4856
365	0.5169	0.5143	0.5117	0.5090	0.5062	0.5033	0.5004	0.4975	0.4945	0.4915	0.4885
370	0.5182	0.5158	0.5133	0.5107	0.5080	0.5053	0.5026	0.4998	0.4969	0.4941	0.4912
375	0.5195	0.5172	0.5148	0.5123	0.5098	0.5072	0.5046	0.5019	0.4992	0.4965	0.4937
380	0.5207	0.5185	0.5162	0.5139	0.5115	0.5090	0.5065	0.5039	0.5013	0.4987	0.4961
385	0.5219	0.5198	0.5176	0.5153	0.5130	0.5107	0.5083	0.5058	0.5034	0.5008	0.4983
390	0.5230	0.5210	0.5188	0.5167	0.5145	0.5123	0.5100	0.5076	0.5052	0.5028	0.5004
395	0.5241	0.5221	0.5201	0.5181	0.5159	0.5138	0.5116	0.5093	0.5070	0.5047	0.5024
400	0.5251	0.5232	0.5213	0.5193	0.5173	0.5152	0.5131	0.5109	0.5087	0.5065	0.5043

Plenum temperature, K	Plenum pressure, N/m^2×10^{-5}										
	0	10	20	30	40	50	60	70	80	90	100
400	0.5491	0.5485	0.5479	0.5472	0.5465	0.5456	0.5447	0.5438	0.5428	0.5417	0.5405
405	0.5495	0.5489	0.5483	0.5476	0.5469	0.5461	0.5451	0.5442	0.5432	0.5421	0.5410
410	0.5499	0.5493	0.5487	0.5480	0.5473	0.5465	0.5456	0.5447	0.5436	0.5426	0.5415
415	0.5503	0.5497	0.5491	0.5484	0.5477	0.5469	0.5460	0.5451	0.5441	0.5431	0.5420
420	0.5507	0.5501	0.5495	0.5488	0.5481	0.5473	0.5465	0.5456	0.5446	0.5436	0.5424
425	0.5511	0.5505	0.5499	0.5492	0.5485	0.5477	0.5469	0.5460	0.5450	0.5441	0.5430
430	0.5515	0.5509	0.5503	0.5496	0.5489	0.5481	0.5473	0.5464	0.5455	0.5445	0.5435
435	0.5519	0.5513	0.5507	0.5500	0.5493	0.5485	0.5477	0.5469	0.5459	0.5450	0.5440
440	0.5523	0.5517	0.5511	0.5504	0.5497	0.5490	0.5482	0.5473	0.5464	0.5454	0.5444
445	0.5527	0.5521	0.5515	0.5508	0.5501	0.5494	0.5486	0.5477	0.5468	0.5459	0.5449
450	0.5531	0.5525	0.5519	0.5513	0.5505	0.5498	0.5490	0.5482	0.5473	0.5464	0.5454
455	0.5535	0.5529	0.5523	0.5517	0.5509	0.5502	0.5494	0.5486	0.5477	0.5468	0.5459
460	0.5539	0.5533	0.5527	0.5521	0.5514	0.5506	0.5498	0.5490	0.5482	0.5473	0.5463
465	0.5543	0.5537	0.5531	0.5525	0.5518	0.5510	0.5502	0.5494	0.5486	0.5477	0.5468
470	0.5547	0.5541	0.5535	0.5528	0.5522	0.5514	0.5507	0.5499	0.5490	0.5481	0.5472
475	0.5551	0.5545	0.5539	0.5532	0.5525	0.5518	0.5511	0.5503	0.5494	0.5486	0.5477
480	0.5555	0.5549	0.5543	0.5536	0.5529	0.5522	0.5515	0.5507	0.5499	0.5490	0.5481
485	0.5559	0.5553	0.5547	0.5540	0.5533	0.5526	0.5519	0.5511	0.5503	0.5494	0.5486
490	0.5562	0.5557	0.5550	0.5544	0.5537	0.5530	0.5523	0.5515	0.5507	0.5499	0.5490
495	0.5566	0.5560	0.5554	0.5548	0.5541	0.5534	0.5527	0.5519	0.5511	0.5503	0.5494
500	0.5570	0.5564	0.5558	0.5551	0.5545	0.5538	0.5530	0.5523	0.5515	0.5507	0.5499
505	0.5574	0.5568	0.5562	0.5555	0.5549	0.5542	0.5534	0.5527	0.5519	0.5511	0.5503
510	0.5577	0.5571	0.5565	0.5559	0.5552	0.5545	0.5538	0.5531	0.5523	0.5515	0.5507
515	0.5581	0.5575	0.5569	0.5562	0.5556	0.5549	0.5542	0.5534	0.5527	0.5519	0.5511
520	0.5584	0.5578	0.5572	0.5566	0.5559	0.5553	0.5546	0.5538	0.5531	0.5523	0.5515
525	0.5588	0.5582	0.5576	0.5570	0.5563	0.5556	0.5549	0.5542	0.5534	0.5527	0.5519
530	0.5591	0.5585	0.5579	0.5573	0.5566	0.5560	0.5553	0.5546	0.5538	0.5531	0.5523
535	0.5595	0.5589	0.5583	0.5576	0.5570	0.5563	0.5556	0.5549	0.5542	0.5534	0.5526
540	0.5599	0.5593	0.5586	0.5580	0.5573	0.5567	0.5560	0.5553	0.5545	0.5538	0.5530
545	0.5602	0.5596	0.5590	0.5584	0.5577	0.5570	0.5563	0.5556	0.5549	0.5542	0.5534
550	0.5605	0.5599	0.5593	0.5587	0.5581	0.5573	0.5567	0.5560	0.5552	0.5545	0.5538
555	0.5609	0.5603	0.5597	0.5590	0.5584	0.5577	0.5570	0.5563	0.5556	0.5549	0.5541
560	0.5612	0.5606	0.5600	0.5594	0.5587	0.5581	0.5574	0.5567	0.5559	0.5552	0.5545
565	0.5615	0.5609	0.5603	0.5597	0.5590	0.5584	0.5577	0.5570	0.5563	0.5556	0.5548
570	0.5618	0.5612	0.5606	0.5600	0.5594	0.5587	0.5580	0.5574	0.5567	0.5559	0.5552
575	0.5621	0.5615	0.5609	0.5603	0.5597	0.5590	0.5584	0.5577	0.5570	0.5563	0.5555
580	0.5624	0.5618	0.5612	0.5606	0.5600	0.5593	0.5587	0.5580	0.5573	0.5566	0.5559
585	0.5627	0.5621	0.5615	0.5609	0.5603	0.5596	0.5590	0.5583	0.5576	0.5569	0.5562
590	0.5630	0.5624	0.5618	0.5612	0.5606	0.5600	0.5593	0.5586	0.5579	0.5572	0.5565
595	0.5633	0.5627	0.5621	0.5615	0.5609	0.5602	0.5596	0.5589	0.5582	0.5576	0.5568
600	0.5636	0.5630	0.5624	0.5618	0.5612	0.5605	0.5599	0.5592	0.5586	0.5579	0.5572

TABLE III. - Concluded. THERMODYNAMIC PROPERTY OF METHANE - CRITICAL PRESSURE RATIO, p_1/p_0

Plenum temperature, K	Plenum pressure, N m^2×10^{-5}										
	100	110	120	130	140	150	160	170	180	190	200
400	0.5405	0.5393	0.5380	0.5366	0.5351	0.5336	0.5321	0.5304	0.5287	0.5269	0.5251
405	0.5410	0.5398	0.5385	0.5372	0.5358	0.5343	0.5328	0.5312	0.5296	0.5279	0.5261
410	0.5415	0.5403	0.5391	0.5378	0.5364	0.5350	0.5335	0.5320	0.5304	0.5287	0.5270
415	0.5420	0.5408	0.5396	0.5384	0.5370	0.5357	0.5342	0.5327	0.5312	0.5296	0.5280
420	0.5424	0.5413	0.5402	0.5389	0.5376	0.5363	0.5349	0.5335	0.5320	0.5304	0.5288
425	0.5430	0.5419	0.5407	0.5395	0.5382	0.5369	0.5356	0.5342	0.5327	0.5312	0.5297
430	0.5435	0.5424	0.5413	0.5401	0.5388	0.5375	0.5362	0.5349	0.5335	0.5320	0.5305
435	0.5440	0.5429	0.5418	0.5406	0.5394	0.5382	0.5369	0.5355	0.5342	0.5328	0.5313
440	0.5444	0.5434	0.5423	0.5412	0.5400	0.5388	0.5376	0.5363	0.5349	0.5335	0.5321
445	0.5449	0.5439	0.5428	0.5417	0.5406	0.5394	0.5382	0.5369	0.5356	0.5343	0.5329
450	0.5454	0.5444	0.5434	0.5423	0.5411	0.5400	0.5388	0.5376	0.5363	0.5350	0.5337
455	0.5459	0.5449	0.5439	0.5428	0.5417	0.5406	0.5394	0.5382	0.5370	0.5357	0.5344
460	0.5463	0.5454	0.5444	0.5433	0.5422	0.5411	0.5400	0.5388	0.5376	0.5364	0.5351
465	0.5468	0.5458	0.5448	0.5438	0.5428	0.5417	0.5406	0.5394	0.5382	0.5370	0.5358
470	0.5472	0.5463	0.5453	0.5443	0.5433	0.5422	0.5411	0.5400	0.5388	0.5377	0.5365
475	0.5477	0.5468	0.5458	0.5448	0.5438	0.5428	0.5417	0.5406	0.5395	0.5383	0.5371
480	0.5481	0.5472	0.5463	0.5453	0.5443	0.5433	0.5422	0.5412	0.5400	0.5389	0.5378
485	0.5486	0.5477	0.5467	0.5458	0.5448	0.5438	0.5428	0.5417	0.5406	0.5395	0.5384
490	0.5490	0.5481	0.5472	0.5463	0.5453	0.5443	0.5433	0.5423	0.5412	0.5401	0.5390
495	0.5494	0.5486	0.5477	0.5467	0.5458	0.5448	0.5438	0.5428	0.5417	0.5407	0.5396
500	0.5499	0.5490	0.5481	0.5472	0.5463	0.5453	0.5443	0.5433	0.5423	0.5412	0.5402
505	0.5503	0.5494	0.5485	0.5476	0.5467	0.5458	0.5448	0.5438	0.5428	0.5418	0.5407
510	0.5507	0.5498	0.5490	0.5481	0.5472	0.5463	0.5453	0.5443	0.5433	0.5423	0.5413
515	0.5511	0.5503	0.5494	0.5485	0.5476	0.5467	0.5458	0.5448	0.5438	0.5429	0.5418
520	0.5515	0.5507	0.5498	0.5490	0.5481	0.5472	0.5462	0.5453	0.5443	0.5434	0.5424
525	0.5519	0.5511	0.5502	0.5494	0.5485	0.5476	0.5467	0.5458	0.5448	0.5439	0.5429
530	0.5523	0.5515	0.5506	0.5498	0.5489	0.5481	0.5472	0.5462	0.5453	0.5444	0.5434
535	0.5526	0.5519	0.5510	0.5502	0.5494	0.5485	0.5476	0.5467	0.5458	0.5448	0.5439
540	0.5530	0.5522	0.5514	0.5506	0.5498	0.5489	0.5480	0.5472	0.5462	0.5453	0.5444
545	0.5534	0.5526	0.5518	0.5510	0.5502	0.5493	0.5485	0.5476	0.5467	0.5458	0.5449
550	0.5538	0.5530	0.5522	0.5514	0.5506	0.5497	0.5489	0.5480	0.5471	0.5462	0.5453
555	0.5541	0.5533	0.5526	0.5518	0.5510	0.5501	0.5493	0.5484	0.5476	0.5467	0.5458
560	0.5545	0.5537	0.5529	0.5521	0.5513	0.5505	0.5497	0.5489	0.5480	0.5471	0.5462
565	0.5548	0.5541	0.5533	0.5525	0.5517	0.5509	0.5501	0.5493	0.5484	0.5475	0.5467
570	0.5552	0.5544	0.5536	0.5529	0.5521	0.5513	0.5505	0.5497	0.5488	0.5480	0.5471
575	0.5555	0.5548	0.5540	0.5532	0.5524	0.5517	0.5509	0.5500	0.5492	0.5484	0.5475
580	0.5559	0.5551	0.5544	0.5536	0.5529	0.5520	0.5512	0.5504	0.5496	0.5488	0.5479
585	0.5562	0.5555	0.5547	0.5540	0.5532	0.5524	0.5517	0.5508	0.5500	0.5492	0.5483
590	0.5565	0.5558	0.5551	0.5543	0.5536	0.5528	0.5520	0.5512	0.5504	0.5495	0.5487
595	0.5568	0.5561	0.5554	0.5547	0.5539	0.5531	0.5524	0.5516	0.5508	0.5500	0.5492
600	0.5572	0.5564	0.5557	0.5550	0.5542	0.5535	0.5527	0.5519	0.5512	0.5504	0.5496

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	200	210	220	230	240	250	260	270	280	290	300
400	0.5251	0.5232	0.5213	0.5193	0.5173	0.5152	0.5131	0.5109	0.5087	0.5065	0.5043
405	0.5261	0.5243	0.5224	0.5205	0.5186	0.5166	0.5145	0.5124	0.5104	0.5082	0.5060
410	0.5270	0.5253	0.5235	0.5217	0.5198	0.5179	0.5159	0.5139	0.5119	0.5098	0.5077
415	0.5280	0.5263	0.5245	0.5228	0.5210	0.5191	0.5172	0.5153	0.5133	0.5113	0.5093
420	0.5288	0.5272	0.5255	0.5238	0.5221	0.5203	0.5185	0.5166	0.5147	0.5128	0.5109
425	0.5297	0.5281	0.5265	0.5248	0.5232	0.5214	0.5197	0.5179	0.5160	0.5142	0.5123
430	0.5305	0.5290	0.5274	0.5258	0.5242	0.5225	0.5208	0.5191	0.5173	0.5155	0.5137
435	0.5313	0.5298	0.5283	0.5268	0.5252	0.5236	0.5219	0.5202	0.5185	0.5168	0.5150
440	0.5321	0.5307	0.5292	0.5277	0.5261	0.5246	0.5230	0.5213	0.5197	0.5180	0.5163
445	0.5329	0.5315	0.5300	0.5286	0.5271	0.5255	0.5240	0.5224	0.5208	0.5192	0.5175
450	0.5337	0.5323	0.5309	0.5294	0.5280	0.5265	0.5250	0.5234	0.5219	0.5203	0.5187
455	0.5344	0.5331	0.5317	0.5303	0.5289	0.5274	0.5260	0.5244	0.5229	0.5214	0.5198
460	0.5351	0.5338	0.5325	0.5311	0.5297	0.5283	0.5269	0.5254	0.5240	0.5225	0.5209
465	0.5358	0.5345	0.5332	0.5319	0.5306	0.5292	0.5278	0.5264	0.5249	0.5235	0.5220
470	0.5365	0.5352	0.5340	0.5327	0.5313	0.5300	0.5286	0.5273	0.5259	0.5244	0.5230
475	0.5371	0.5359	0.5347	0.5334	0.5321	0.5308	0.5295	0.5281	0.5268	0.5254	0.5240
480	0.5378	0.5366	0.5354	0.5341	0.5329	0.5316	0.5303	0.5290	0.5276	0.5263	0.5249
485	0.5384	0.5372	0.5360	0.5348	0.5336	0.5324	0.5311	0.5298	0.5285	0.5272	0.5258
490	0.5390	0.5379	0.5367	0.5355	0.5343	0.5331	0.5319	0.5306	0.5293	0.5280	0.5267
495	0.5396	0.5385	0.5373	0.5362	0.5350	0.5338	0.5326	0.5314	0.5301	0.5289	0.5276
500	0.5402	0.5391	0.5380	0.5368	0.5357	0.5345	0.5333	0.5321	0.5309	0.5297	0.5284
505	0.5407	0.5397	0.5386	0.5375	0.5363	0.5352	0.5340	0.5328	0.5317	0.5304	0.5292
510	0.5413	0.5402	0.5392	0.5381	0.5370	0.5359	0.5347	0.5336	0.5324	0.5312	0.5300
515	0.5418	0.5408	0.5398	0.5387	0.5376	0.5365	0.5354	0.5342	0.5331	0.5319	0.5308
520	0.5424	0.5414	0.5403	0.5393	0.5382	0.5371	0.5360	0.5349	0.5338	0.5326	0.5315
525	0.5429	0.5419	0.5409	0.5398	0.5388	0.5377	0.5367	0.5356	0.5345	0.5333	0.5322
530	0.5434	0.5424	0.5414	0.5404	0.5394	0.5383	0.5373	0.5362	0.5351	0.5340	0.5329
535	0.5439	0.5429	0.5419	0.5410	0.5399	0.5389	0.5379	0.5368	0.5357	0.5347	0.5336
540	0.5444	0.5434	0.5425	0.5415	0.5405	0.5395	0.5385	0.5374	0.5364	0.5353	0.5342
545	0.5449	0.5439	0.5430	0.5420	0.5410	0.5400	0.5390	0.5380	0.5370	0.5359	0.5349
550	0.5453	0.5444	0.5435	0.5425	0.5416	0.5406	0.5396	0.5386	0.5376	0.5365	0.5355
555	0.5458	0.5449	0.5440	0.5430	0.5421	0.5411	0.5401	0.5391	0.5381	0.5371	0.5361
560	0.5462	0.5453	0.5444	0.5435	0.5426	0.5416	0.5407	0.5397	0.5387	0.5377	0.5367
565	0.5467	0.5458	0.5449	0.5440	0.5431	0.5421	0.5412	0.5402	0.5392	0.5383	0.5373
570	0.5471	0.5462	0.5453	0.5444	0.5435	0.5426	0.5417	0.5407	0.5398	0.5388	0.5378
575	0.5475	0.5467	0.5458	0.5449	0.5440	0.5431	0.5422	0.5412	0.5403	0.5393	0.5384
580	0.5479	0.5471	0.5462	0.5453	0.5445	0.5436	0.5426	0.5417	0.5408	0.5399	0.5389
585	0.5483	0.5475	0.5466	0.5458	0.5449	0.5440	0.5431	0.5422	0.5413	0.5404	0.5394
590	0.5487	0.5479	0.5470	0.5462	0.5453	0.5445	0.5436	0.5427	0.5418	0.5409	0.5400
595	0.5492	0.5483	0.5475	0.5466	0.5458	0.5449	0.5440	0.5431	0.5423	0.5414	0.5404
600	0.5496	0.5487	0.5479	0.5471	0.5462	0.5453	0.5445	0.5436	0.5427	0.5418	0.5409

TABLE IV. - THERMODYNAMIC PROPERTY OF METHANE - CRITICAL DENSITY RATIO, ρ_1/ρ_2

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	0	1	2	3	4	5	6	7	8	9	10
120	0.6297	------	------	------	------	------	------	------	------	------	------
122	0.6297	0.6284	------	------	------	------	------	------	------	------	------
124	0.6297	0.6285	------	------	------	------	------	------	------	------	------
126	0.6297	0.6286	------	------	------	------	------	------	------	------	------
128	0.6297	0.6286	------	------	------	------	------	------	------	------	------
130	0.6297	0.6287	0.6276	------	------	------	------	------	------	------	------
132	0.6297	0.6287	0.6277	------	------	------	------	------	------	------	------
134	0.6297	0.6288	0.6278	------	------	------	------	------	------	------	------
136	0.6297	0.6288	0.6279	0.6270	------	------	------	------	------	------	------
138	0.6297	0.6289	0.6280	0.6271	------	------	------	------	------	------	------
140	0.6297	0.6289	0.6281	0.6273	------	------	------	------	------	------	------
142	0.6297	0.6290	0.6282	0.6274	0.6266	------	------	------	------	------	------
144	0.6297	0.6290	0.6283	0.6276	0.6268	------	------	------	------	------	------
146	0.6297	0.6291	0.6284	0.6277	0.6270	0.6262	------	------	------	------	------
148	0.6297	0.6291	0.6285	0.6278	0.6272	0.6264	0.6257	------	------	------	------
150	0.6297	0.6292	0.6286	0.6280	0.6273	0.6266	0.6259	------	------	------	------
152	0.6297	0.6292	0.6286	0.6281	0.6275	0.6269	0.6262	0.6255	------	------	------
154	0.6297	0.6293	0.6287	0.6282	0.6276	0.6271	0.6264	0.6258	0.6251	------	------
156	0.6297	0.6293	0.6288	0.6283	0.6278	0.6272	0.6267	0.6261	0.6254	0.6248	------
158	0.6297	0.6293	0.6288	0.6284	0.6279	0.6274	0.6269	0.6263	0.6258	0.6251	------
160	0.6297	0.6293	0.6289	0.6285	0.6280	0.6276	0.6271	0.6266	0.6261	0.6255	0.6249
162	0.6297	0.6293	0.6289	0.6286	0.6282	0.6277	0.6273	0.6268	0.6263	0.6258	0.6253
164	0.6297	0.6293	0.6290	0.6286	0.6283	0.6279	0.6275	0.6270	0.6266	0.6261	0.6257
166	0.6297	0.6294	0.6291	0.6287	0.6284	0.6280	0.6276	0.6272	0.6268	0.6264	0.6260
168	0.6296	0.6294	0.6291	0.6288	0.6285	0.6281	0.6278	0.6274	0.6271	0.6267	0.6263
170	0.6296	0.6294	0.6291	0.6288	0.6285	0.6282	0.6279	0.6276	0.6273	0.6269	0.6266
172	0.6296	0.6294	0.6292	0.6289	0.6286	0.6283	0.6281	0.6278	0.6275	0.6272	0.6268
174	0.6296	0.6294	0.6292	0.6290	0.6287	0.6284	0.6282	0.6279	0.6276	0.6274	0.6271
176	0.6296	0.6294	0.6292	0.6290	0.6288	0.6285	0.6283	0.6281	0.6278	0.6276	0.6273
178	0.6296	0.6294	0.6292	0.6290	0.6289	0.6286	0.6284	0.6282	0.6280	0.6277	0.6275
180	0.6296	0.6294	0.6292	0.6291	0.6289	0.6287	0.6285	0.6283	0.6281	0.6279	0.6277
182	0.6296	0.6294	0.6293	0.6291	0.6289	0.6288	0.6286	0.6284	0.6282	0.6280	0.6279
184	0.6296	0.6294	0.6293	0.6291	0.6290	0.6288	0.6287	0.6285	0.6283	0.6282	0.6280
186	0.6296	0.6294	0.6293	0.6292	0.6290	0.6289	0.6288	0.6286	0.6285	0.6283	0.6282
188	0.6295	0.6294	0.6293	0.6292	0.6291	0.6289	0.6288	0.6287	0.6286	0.6285	0.6283
190	0.6295	0.6294	0.6293	0.6292	0.6291	0.6290	0.6289	0.6288	0.6287	0.6285	0.6284
192	0.6295	0.6294	0.6293	0.6292	0.6291	0.6290	0.6289	0.6288	0.6287	0.6286	0.6285
194	0.6295	0.6294	0.6293	0.6292	0.6291	0.6290	0.6289	0.6289	0.6288	0.6287	0.6286
196	0.6295	0.6294	0.6293	0.6292	0.6291	0.6291	0.6290	0.6289	0.6288	0.6288	0.6287
198	0.6295	0.6294	0.6293	0.6292	0.6292	0.6291	0.6290	0.6290	0.6289	0.6288	0.6288
200	0.6294	0.6294	0.6293	0.6292	0.6292	0.6291	0.6290	0.6290	0.6289	0.6289	0.6289

Plenum temperature, K	Plenum pressure, N/m^2×10^{-5}										
	10	12	14	16	18	20	22	24	26	28	30
160	0.6249	------	------	------	------	------	------	------	------	------	------
162	0.6253	------	------	------	------	------	------	------	------	------	------
164	0.6257	0.6246	------	------	------	------	------	------	------	------	------
166	0.6260	0.6251	0.6240	------	------	------	------	------	------	------	------
168	0.6263	0.6255	0.6245	------	------	------	------	------	------	------	------
170	0.6266	0.6258	0.6250	0.6241	------	------	------	------	------	------	------
172	0.6268	0.6262	0.6255	0.6247	------	------	------	------	------	------	------
174	0.6271	0.6265	0.6258	0.6252	0.6245	------	------	------	------	------	------
176	0.6273	0.6268	0.6262	0.6256	0.6250	0.6244	------	------	------	------	------
178	0.6275	0.6270	0.6265	0.6260	0.6255	0.6250	0.6245	------	------	------	------
180	0.6277	0.6273	0.6269	0.6264	0.6260	0.6256	0.6251	------	------	------	------
182	0.6279	0.6275	0.6271	0.6268	0.6264	0.6260	0.6257	0.6254	------	------	------
184	0.6280	0.6277	0.6274	0.6271	0.6268	0.6265	0.6262	0.6260	0.6258	------	------
186	0.6282	0.6279	0.6276	0.6274	0.6271	0.6269	0.6267	0.6265	0.6264	0.6264	------
188	0.6283	0.6281	0.6278	0.6276	0.6274	0.6272	0.6271	0.6270	0.6270	0.6270	0.6272
190	0.6284	0.6283	0.6280	0.6279	0.6277	0.6276	0.6275	0.6274	0.6274	0.6275	0.6277
192	0.6285	0.6284	0.6282	0.6281	0.6280	0.6279	0.6278	0.6278	0.6279	0.6280	0.6282
194	0.6286	0.6285	0.6284	0.6283	0.6282	0.6282	0.6282	0.6282	0.6283	0.6284	0.6287
196	0.6287	0.6286	0.6285	0.6284	0.6284	0.6284	0.6283	0.6285	0.6286	0.6288	0.6291
198	0.6288	0.6287	0.6286	0.6286	0.6285	0.6286	0.6286	0.6287	0.6289	0.6291	0.6294
200	0.6289	0.6288	0.6287	0.6287	0.6287	0.6287	0.6288	0.6289	0.6291	0.6294	0.6297

Plenum temperature, K	Plenum pressure, N/m^2×10^{-5}										
	30	32	34	36	38	40	42	44	46	48	50
180	------	------	------	------	------	------	------	------	------	------	------
182	------	------	------	------	------	------	------	------	------	------	------
184	------	------	------	------	------	------	------	------	------	------	------
186	------	------	------	------	------	------	------	------	------	------	------
188	0.6272	------	------	------	------	------	------	------	------	------	------
190	0.6277	0.6281	------	------	------	------	------	------	------	------	------
192	0.6282	0.6286	0.6291	------	------	------	------	------	------	------	------
194	0.6287	0.6291	0.6296	0.6304	------	------	------	------	------	------	------
196	0.6291	0.6295	0.6300	0.6307	0.6317	------	------	------	------	------	------
198	0.6294	0.6299	0.6304	0.6311	0.6320	0.6332	------	------	------	------	------
200	0.6297	0.6301	0.6307	0.6314	0.6323	0.6333	0.6347	0.6365	------	------	------

TABLE IV. - Continued. THERMODYNAMIC PROPERTY OF METHANE - CRITICAL DENSITY RATIO, ρ_1/ρ_2

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	0	5	10	15	20	25	30	35	40	45	50
200	0.6294	0.6291	0.6289	0.6287	0.6287	0.6290	0.6297	0.6310	0.6333	------	------
202	0.6294	0.6291	0.6289	0.6288	0.6289	0.6293	0.6300	0.6313	0.6335	0.6373	------
204	0.6294	0.6291	0.6290	0.6289	0.6290	0.6295	0.6302	0.6315	0.6336	0.6371	0.6428
206	0.6294	0.6291	0.6290	0.6290	0.6292	0.6297	0.6305	0.6317	0.6338	0.6369	0.6420
208	0.6293	0.6291	0.6291	0.6291	0.6293	0.6298	0.6306	0.6319	0.6339	0.6368	0.6413
210	0.6293	0.6292	0.6291	0.6292	0.6294	0.6300	0.6308	0.6321	0.6339	0.6367	0.6408
212	0.6293	0.6292	0.6291	0.6292	0.6295	0.6300	0.6309	0.6322	0.6340	0.6366	0.6404
214	0.6293	0.6291	0.6292	0.6293	0.6296	0.6301	0.6310	0.6323	0.6341	0.6366	0.6401
216	0.6292	0.6291	0.6292	0.6293	0.6297	0.6302	0.6311	0.6324	0.6341	0.6365	0.6397
218	0.6292	0.6291	0.6292	0.6294	0.6298	0.6303	0.6312	0.6324	0.6341	0.6364	0.6394
220	0.6292	0.6291	0.6292	0.6294	0.6298	0.6304	0.6313	0.6324	0.6341	0.6363	0.6392
222	0.6291	0.6291	0.6292	0.6294	0.6299	0.6305	0.6313	0.6325	0.6341	0.6362	0.6389
224	0.6291	0.6291	0.6292	0.6295	0.6299	0.6305	0.6314	0.6325	0.6340	0.6361	0.6387
226	0.6291	0.6291	0.6292	0.6295	0.6299	0.6305	0.6314	0.6325	0.6340	0.6360	0.6385
228	0.6290	0.6291	0.6292	0.6295	0.6299	0.6305	0.6314	0.6325	0.6340	0.6358	0.6382
230	0.6290	0.6290	0.6292	0.6295	0.6299	0.6305	0.6314	0.6325	0.6339	0.6358	0.6380
232	0.6290	0.6290	0.6292	0.6295	0.6299	0.6305	0.6314	0.6325	0.6339	0.6356	0.6378
234	0.6289	0.6290	0.6292	0.6295	0.6299	0.6305	0.6314	0.6324	0.6338	0.6355	0.6376
236	0.6289	0.6290	0.6291	0.6295	0.6299	0.6305	0.6313	0.6324	0.6337	0.6354	0.6374
238	0.6288	0.6289	0.6291	0.6295	0.6299	0.6305	0.6313	0.6324	0.6336	0.6352	0.6372
240	0.6288	0.6289	0.6291	0.6294	0.6299	0.6305	0.6313	0.6323	0.6336	0.6351	0.6370
242	0.6288	0.6289	0.6291	0.6294	0.6299	0.6305	0.6313	0.6323	0.6335	0.6350	0.6368
244	0.6287	0.6288	0.6290	0.6294	0.6298	0.6304	0.6312	0.6322	0.6334	0.6348	0.6366
246	0.6287	0.6288	0.6290	0.6294	0.6298	0.6304	0.6312	0.6321	0.6333	0.6347	0.6364
248	0.6286	0.6287	0.6290	0.6293	0.6298	0.6304	0.6311	0.6321	0.6332	0.6346	0.6362
250	0.6286	0.6287	0.6289	0.6293	0.6297	0.6303	0.6311	0.6320	0.6331	0.6344	0.6360

Plenum temperature, K	Plenum pressure, N $m^2 \times 10^{-5}$										
	50	55	60	65	70	75	80	85	90	95	100
200	------	------	------	------	------	------	------	------	------	------	------
202	------	------	------	------	------	------	------	------	------	------	------
204	0.6428	------	------	------	------	------	------	------	------	------	------
206	0.6420	------	------	------	------	------	------	------	------	------	------
208	0.6413	0.6483	------	------	------	------	------	------	------	------	------
210	0.6408	0.6469	0.6560	------	------	------	------	------	------	------	------
212	0.6404	0.6458	0.6536	0.6646	------	------	------	------	------	------	------
214	0.6401	0.6449	0.6518	0.6611	0.6735	------	------	------	------	------	------
216	0.6397	0.6442	0.6502	0.6583	0.6689	0.6820	0.6969	------	------	------	------
218	0.6394	0.6435	0.6490	0.6562	0.6653	0.6766	0.6897	0.7038	------	------	------
220	0.6392	0.6430	0.6479	0.6543	0.6624	0.6723	0.6839	0.6965	0.7095	0.7223	------
222	0.6389	0.6425	0.6470	0.6528	0.6600	0.6688	0.6790	0.6904	0.7023	0.7142	0.7257
224	0.6387	0.6420	0.6462	0.6515	0.6580	0.6658	0.6750	0.6852	0.6960	0.7071	0.7180
226	0.6385	0.6416	0.6455	0.6503	0.6563	0.6633	0.6715	0.6807	0.6907	0.7009	0.7112
228	0.6382	0.6412	0.6448	0.6493	0.6547	0.6612	0.6686	0.6769	0.6860	0.6955	0.7051
230	0.6380	0.6408	0.6442	0.6484	0.6534	0.6593	0.6660	0.6736	0.6819	0.6907	0.6997
232	0.6378	0.6404	0.6437	0.6476	0.6522	0.6576	0.6638	0.6708	0.6784	0.6865	0.6948
234	0.6376	0.6401	0.6432	0.6468	0.6511	0.6561	0.6618	0.6682	0.6752	0.6827	0.6905
236	0.6374	0.6397	0.6427	0.6461	0.6501	0.6547	0.6600	0.6659	0.6724	0.6794	0.6866
238	0.6372	0.6395	0.6422	0.6454	0.6492	0.6535	0.6584	0.6639	0.6699	0.6764	0.6831
240	0.6370	0.6392	0.6417	0.6448	0.6484	0.6524	0.6570	0.6621	0.6677	0.6737	0.6800
242	0.6368	0.6389	0.6414	0.6443	0.6476	0.6514	0.6557	0.6604	0.6656	0.6712	0.6771
244	0.6366	0.6386	0.6410	0.6437	0.6469	0.6504	0.6544	0.6589	0.6638	0.6690	0.6745
246	0.6364	0.6383	0.6406	0.6432	0.6462	0.6496	0.6533	0.6575	0.6621	0.6670	0.6722
248	0.6362	0.6380	0.6402	0.6427	0.6455	0.6487	0.6523	0.6562	0.6605	0.6651	0.6700
250	0.6360	0.6378	0.6399	0.6423	0.6450	0.6480	0.6513	0.6550	0.6591	0.6634	0.6680

TABLE IV. - Continued. THERMODYNAMIC PROPERTY OF METHANE - CRITICAL DENSITY RATIO, ρ_1/ρ_2

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	100	110	120	130	140	150	160	170	180	190	200
220	------	------	------	------	------	------	------	------	------	------	------
222	0.7257	------	------	------	------	------	------	------	------	------	------
224	0.7180	0.7378	0.7538	0.7662	0.7755	0.7826	0.7880	0.7922	0.7954	0.7980	0.8001
226	0.7112	0.7303	0.7465	0.7594	0.7693	0.7770	0.7829	0.7875	0.7912	0.7941	0.7965
228	0.7051	0.7235	0.7395	0.7527	0.7632	0.7713	0.7777	0.7828	0.7868	0.7901	0.7927
230	0.6997	0.7172	0.7330	0.7463	0.7571	0.7657	0.7726	0.7780	0.7824	0.7860	0.7889
232	0.6948	0.7115	0.7268	0.7402	0.7512	0.7602	0.7674	0.7733	0.7780	0.7818	0.7850
234	0.6905	0.7062	0.7211	0.7343	0.7455	0.7547	0.7623	0.7685	0.7735	0.7777	0.7811
236	0.6866	0.7015	0.7158	0.7288	0.7400	0.7495	0.7573	0.7638	0.7691	0.7735	0.7772
238	0.6831	0.6971	0.7109	0.7236	0.7348	0.7443	0.7524	0.7591	0.7647	0.7694	0.7733
240	0.6800	0.6932	0.7063	0.7187	0.7297	0.7394	0.7476	0.7545	0.7603	0.7652	0.7694
242	0.6771	0.6896	0.7021	0.7141	0.7250	0.7346	0.7429	0.7500	0.7560	0.7612	0.7655
244	0.6745	0.6863	0.6982	0.7098	0.7205	0.7300	0.7384	0.7456	0.7518	0.7571	0.7616
246	0.6722	0.6832	0.6946	0.7057	0.7162	0.7256	0.7340	0.7413	0.7477	0.7531	0.7578
248	0.6700	0.6804	0.6913	0.7020	0.7121	0.7215	0.7298	0.7372	0.7436	0.7492	0.7540
250	0.6680	0.6779	0.6882	0.6985	0.7083	0.7175	0.7258	0.7332	0.7397	0.7453	0.7503

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	200	210	220	230	240	250	260	270	280	290	300
220	------	------	------	------	------	------	------	------	------	------	------
222	------	------	------	------	------	------	------	------	------	------	------
224	0.8001	0.8018	0.8032	0.8044	0.8053	0.8061	0.8068	0.8074	0.8078	------	------
226	0.7965	0.7984	0.8000	0.8013	0.8024	0.8034	0.8042	0.8048	0.8054	0.8059	------
228	0.7927	0.7949	0.7967	0.7982	0.7994	0.8005	0.8014	0.8022	0.8029	0.8035	0.8040
230	0.7889	0.7913	0.7933	0.7950	0.7964	0.7977	0.7987	0.7996	0.8004	0.8010	0.8016
232	0.7850	0.7877	0.7899	0.7918	0.7934	0.7947	0.7959	0.7969	0.7978	0.7985	0.7992
234	0.7811	0.7840	0.7864	0.7885	0.7903	0.7918	0.7931	0.7942	0.7952	0.7960	0.7968
236	0.7772	0.7803	0.7830	0.7852	0.7871	0.7888	0.7902	0.7914	0.7925	0.7935	0.7943
238	0.7733	0.7766	0.7795	0.7819	0.7839	0.7857	0.7873	0.7887	0.7899	0.7909	0.7918
240	0.7694	0.7729	0.7759	0.7785	0.7807	0.7827	0.7844	0.7859	0.7872	0.7883	0.7893
242	0.7655	0.7692	0.7724	0.7752	0.7775	0.7796	0.7814	0.7831	0.7844	0.7857	0.7868
244	0.7616	0.7656	0.7689	0.7718	0.7743	0.7766	0.7785	0.7802	0.7817	0.7831	0.7843
246	0.7578	0.7619	0.7654	0.7685	0.7711	0.7735	0.7755	0.7774	0.7790	0.7804	0.7817
248	0.7540	0.7583	0.7619	0.7651	0.7679	0.7704	0.7726	0.7745	0.7762	0.7778	0.7792
250	0.7503	0.7547	0.7585	0.7618	0.7648	0.7673	0.7596	0.7717	0.7735	0.7751	0.7766

Plenum temperature, K	Plenum pressure, N/m^2×10^{-5}										
	0	10	20	30	40	50	60	70	80	90	100
250	0.6286	0.6289	0.6297	0.6311	0.6331	0.6360	0.6399	0.6450	0.6513	0.6591	0.6680
255	0.6285	0.6288	0.6296	0.6309	0.6329	0.6355	0.6391	0.6436	0.6492	0.6559	0.6637
260	0.6283	0.6287	0.6296	0.6308	0.6326	0.6351	0.6383	0.6424	0.6474	0.6533	0.6601
265	0.6281	0.6286	0.6294	0.6306	0.6324	0.6347	0.6376	0.6413	0.6458	0.6510	0.6570
270	0.6280	0.6284	0.6293	0.6304	0.6321	0.6343	0.6370	0.6404	0.6444	0.6491	0.6545
275	0.6278	0.6283	0.6291	0.6303	0.6318	0.6339	0.6364	0.6395	0.6432	0.6474	0.6522
280	0.6277	0.6282	0.6289	0.6301	0.6316	0.6335	0.6359	0.6387	0.6421	0.6459	0.6503
285	0.6275	0.6280	0.6288	0.6299	0.6313	0.6331	0.6353	0.6380	0.6411	0.6446	0.6486
290	0.6273	0.6279	0.6286	0.6297	0.6310	0.6328	0.6349	0.6373	0.6402	0.6434	0.6471
295	0.6271	0.6277	0.6284	0.6295	0.6308	0.6324	0.6344	0.6367	0.6394	0.6424	0.6457
300	0.6270	0.6275	0.6282	0.6292	0.6306	0.6321	0.6340	0.6361	0.6386	0.6414	0.6445
305	0.6268	0.6273	0.6281	0.6290	0.6303	0.6318	0.6335	0.6356	0.6379	0.6405	0.6434
310	0.6266	0.6271	0.6279	0.6288	0.6300	0.6315	0.6331	0.6351	0.6373	0.6397	0.6424
315	0.6264	0.6269	0.6277	0.6286	0.6297	0.6311	0.6327	0.6346	0.6366	0.6389	0.6415
320	0.6262	0.6267	0.6275	0.6284	0.6295	0.6308	0.6324	0.6341	0.6361	0.6382	0.6406
325	0.6260	0.6266	0.6273	0.6282	0.6293	0.6305	0.6320	0.6337	0.6355	0.6376	0.6398
330	0.6258	0.6264	0.6271	0.6280	0.6290	0.6302	0.6316	0.6333	0.6350	0.6370	0.6391
335	0.6256	0.6262	0.6269	0.6277	0.6288	0.6300	0.6313	0.6328	0.6346	0.6364	0.6384
340	0.6254	0.6260	0.6267	0.6275	0.6285	0.6297	0.6310	0.6324	0.6341	0.6359	0.6378
345	0.6252	0.6258	0.6265	0.6273	0.6283	0.6294	0.6307	0.6321	0.6336	0.6353	0.6372
350	0.6251	0.6256	0.6263	0.6271	0.6281	0.6291	0.6304	0.6318	0.6332	0.6349	0.6366
355	0.6249	0.6254	0.6261	0.6269	0.6278	0.6289	0.6301	0.6314	0.6328	0.6344	0.6361
360	0.6247	0.6252	0.6259	0.6267	0.6276	0.6286	0.6298	0.6311	0.6325	0.6340	0.6356
365	0.6245	0.6250	0.6257	0.6265	0.6274	0.6284	0.6295	0.6307	0.6321	0.6335	0.6351
370	0.6244	0.6249	0.6255	0.6263	0.6272	0.6282	0.6292	0.6304	0.6317	0.6331	0.6346
375	0.6242	0.6247	0.6253	0.6261	0.6270	0.6279	0.6290	0.6301	0.6314	0.6328	0.6342
380	0.6240	0.6245	0.6251	0.6259	0.6267	0.6277	0.6287	0.6299	0.6311	0.6324	0.6338
385	0.6238	0.6244	0.6250	0.6257	0.6265	0.6275	0.6285	0.6296	0.6308	0.6320	0.6334
390	0.6237	0.6242	0.6248	0.6256	0.6263	0.6272	0.6282	0.6293	0.6305	0.6317	0.6330
395	0.6235	0.6240	0.6247	0.6254	0.6261	0.6270	0.6280	0.6291	0.6302	0.6314	0.6327
400	0.6233	0.6239	0.6245	0.6252	0.6260	0.6268	0.6278	0.6288	0.6299	0.6311	0.6323

TABLE IV. - Continued. THERMODYNAMIC PROPERTY OF METHANE - CRITICAL DENSITY RATIO, ρ_1/ρ_2

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	100	110	120	130	140	150	160	170	180	190	200
250	0.6680	0.6779	0.6882	0.6985	0.7083	0.7175	0.7258	0.7332	0.7397	0.7453	0.7503
255	0.6637	0.6723	0.6814	0.6906	0.6997	0.7084	0.7164	0.7237	0.7303	0.7361	0.7413
260	0.6601	0.6676	0.6757	0.6840	0.6923	0.7004	0.7080	0.7151	0.7216	0.7275	0.7329
265	0.6570	0.6637	0.6709	0.6783	0.6859	0.6934	0.7006	0.7074	0.7137	0.7196	0.7250
270	0.6545	0.6604	0.6668	0.6735	0.6804	0.6873	0.6940	0.7005	0.7066	0.7124	0.7177
275	0.6522	0.6576	0.6633	0.6694	0.6756	0.6820	0.6883	0.6944	0.7002	0.7058	0.7110
280	0.6503	0.6551	0.6603	0.6658	0.6715	0.6773	0.6832	0.6889	0.6945	0.6998	0.7049
285	0.6486	0.6530	0.6577	0.6627	0.6679	0.6733	0.6787	0.6841	0.6893	0.6944	0.6993
290	0.6471	0.6511	0.6554	0.6600	0.6648	0.6697	0.6747	0.6797	0.6847	0.6896	0.6943
295	0.6457	0.6494	0.6534	0.6576	0.6620	0.6666	0.6712	0.6759	0.6806	0.6852	0.6897
300	0.6445	0.6479	0.6516	0.6554	0.6595	0.6638	0.6681	0.6725	0.6769	0.6812	0.6855
305	0.6434	0.6466	0.6499	0.6535	0.6573	0.6613	0.6653	0.6694	0.6736	0.6777	0.6818
310	0.6424	0.6453	0.6485	0.6518	0.6554	0.6590	0.6628	0.6667	0.6706	0.6745	0.6784
315	0.6415	0.6442	0.6472	0.6503	0.6536	0.6570	0.6606	0.6642	0.6679	0.6716	0.6753
320	0.6406	0.6432	0.6460	0.6489	0.6520	0.6552	0.6585	0.6619	0.6654	0.6689	0.6724
325	0.6398	0.6423	0.6449	0.6476	0.6505	0.6535	0.6567	0.6599	0.6632	0.6665	0.6698
330	0.6391	0.6414	0.6438	0.6464	0.6492	0.6520	0.6550	0.6580	0.6612	0.6643	0.6675
335	0.6384	0.6406	0.6429	0.6454	0.6480	0.6507	0.6535	0.6563	0.6593	0.6623	0.6653
340	0.6378	0.6398	0.6420	0.6444	0.6468	0.6494	0.6520	0.6548	0.6576	0.6604	0.6633
345	0.6372	0.6392	0.6413	0.6435	0.6458	0.6482	0.6507	0.6533	0.6560	0.6587	0.6615
350	0.6366	0.6385	0.6405	0.6426	0.6448	0.6471	0.6495	0.6520	0.6546	0.6572	0.6598
355	0.6361	0.6379	0.6398	0.6418	0.6439	0.6461	0.6484	0.6508	0.6532	0.6557	0.6583
360	0.6356	0.6373	0.6391	0.6410	0.6430	0.6451	0.6474	0.6497	0.6520	0.6544	0.6568
365	0.6351	0.6368	0.6385	0.6404	0.6423	0.6443	0.6464	0.6486	0.6508	0.6531	0.6554
370	0.6346	0.6362	0.6379	0.6397	0.6416	0.6435	0.6455	0.6476	0.6497	0.6519	0.6542
375	0.6342	0.6357	0.6374	0.6391	0.6409	0.6428	0.6447	0.6466	0.6487	0.6508	0.6530
380	0.6338	0.6353	0.6368	0.6385	0.6402	0.6420	0.6439	0.6458	0.6478	0.6498	0.6519
385	0.6334	0.6348	0.6364	0.6379	0.6396	0.6413	0.6431	0.6450	0.6469	0.6489	0.6508
390	0.6330	0.6344	0.6359	0.6374	0.6390	0.6407	0.6424	0.6442	0.6461	0.6479	0.6499
395	0.6327	0.6340	0.6354	0.6369	0.6385	0.6401	0.6418	0.6435	0.6453	0.6471	0.6490
400	0.6323	0.6336	0.6350	0.6364	0.6379	0.6395	0.6411	0.6428	0.6445	0.6463	0.6481

Plenum temperature, K	Plenum pressure, N m^2×10^{-5}										
	200	210	220	230	240	250	260	270	280	290	300
250	0.7503	0.7547	0.7585	0.7618	0.7648	0.7673	0.7696	0.7717	0.7735	0.7751	0.7766
255	0.7413	0.7460	0.7501	0.7537	0.7569	0.7598	0.7623	0.7646	0.7667	0.7685	0.7702
260	0.7329	0.7377	0.7420	0.7458	0.7493	0.7524	0.7552	0.7577	0.7599	0.7620	0.7638
265	0.7250	0.7299	0.7343	0.7383	0.7419	0.7452	0.7482	0.7509	0.7534	0.7556	0.7576
270	0.7177	0.7226	0.7271	0.7312	0.7349	0.7384	0.7415	0.7444	0.7470	0.7494	0.7515
275	0.7110	0.7158	0.7203	0.7245	0.7283	0.7319	0.7351	0.7381	0.7408	0.7433	0.7457
280	0.7049	0.7096	0.7141	0.7183	0.7221	0.7257	0.7290	0.7321	0.7349	0.7376	0.7400
285	0.6993	0.7040	0.7083	0.7125	0.7163	0.7199	0.7233	0.7264	0.7293	0.7320	0.7346
290	0.6943	0.6988	0.7031	0.7071	0.7109	0.7145	0.7179	0.7211	0.7240	0.7268	0.7294
295	0.6897	0.6940	0.6982	0.7022	0.7060	0.7095	0.7129	0.7161	0.7190	0.7218	0.7245
300	0.6855	0.6897	0.6937	0.6976	0.7013	0.7049	0.7082	0.7113	0.7143	0.7172	0.7198
305	0.6818	0.6858	0.6896	0.6934	0.6970	0.7005	0.7038	0.7070	0.7099	0.7128	0.7154
310	0.6784	0.6822	0.6859	0.6896	0.6931	0.6965	0.6997	0.7028	0.7058	0.7087	0.7113
315	0.6753	0.6789	0.6825	0.6860	0.6894	0.6927	0.6959	0.6990	0.7019	0.7047	0.7074
320	0.6724	0.6759	0.6794	0.6827	0.6861	0.6893	0.6924	0.6954	0.6983	0.7011	0.7037
325	0.6698	0.6732	0.6765	0.6797	0.6829	0.6861	0.6891	0.6920	0.6949	0.6976	0.7003
330	0.6675	0.6707	0.6738	0.6770	0.6801	0.6831	0.6861	0.6889	0.6917	0.6944	0.6970
335	0.6653	0.6684	0.6714	0.6744	0.6774	0.6803	0.6832	0.6860	0.6888	0.6914	0.6940
340	0.6633	0.6663	0.6692	0.6721	0.6749	0.6778	0.6806	0.6833	0.6860	0.6886	0.6911
345	0.6615	0.6643	0.6671	0.6699	0.6727	0.6754	0.6781	0.6808	0.6834	0.6859	0.6884
350	0.6598	0.6625	0.6652	0.6679	0.6705	0.6732	0.6758	0.6784	0.6810	0.6834	0.6859
355	0.6583	0.6608	0.6634	0.6660	0.6686	0.6711	0.6737	0.6762	0.6787	0.6811	0.6835
360	0.6568	0.6593	0.6617	0.6642	0.6667	0.6692	0.6717	0.6741	0.6765	0.6789	0.6812
365	0.6554	0.6578	0.6602	0.6626	0.6650	0.6674	0.6698	0.6722	0.6745	0.6768	0.6791
370	0.6542	0.6565	0.6588	0.6611	0.6634	0.6657	0.6680	0.6704	0.6726	0.6749	0.6771
375	0.6530	0.6552	0.6574	0.6596	0.6619	0.6641	0.6664	0.6686	0.6709	0.6731	0.6752
380	0.6519	0.6540	0.6561	0.6583	0.6605	0.6627	0.6648	0.6670	0.6692	0.6713	0.6734
385	0.6508	0.6529	0.6550	0.6570	0.6592	0.6613	0.6634	0.6655	0.6676	0.6697	0.6717
390	0.6499	0.6519	0.6538	0.6559	0.6579	0.6599	0.6620	0.6641	0.6661	0.6681	0.6702
395	0.6490	0.6509	0.6528	0.6548	0.6567	0.6587	0.6607	0.6627	0.6647	0.6667	0.6686
400	0.6481	0.6499	0.6518	0.6537	0.6556	0.6575	0.6595	0.6614	0.6634	0.6653	0.6672

TABLE IV. - Continued. THERMODYNAMIC PROPERTY OF METHANE - CRITICAL DENSITY RATIO, ρ_1/ρ_2

Plenum temperature, K	Plenum pressure, N m^2×10^{-5}										
	0	10	20	30	40	50	60	70	80	90	100
400	0.6233	0.6239	0.6245	0.6252	0.6260	0.6268	0.6278	0.6288	0.6299	0.6311	0.6323
405	0.6232	0.6237	0.6243	0.6250	0.6258	0.6267	0.6275	0.6285	0.6296	0.6308	0.6320
410	0.6230	0.6236	0.6242	0.6249	0.6256	0.6265	0.6274	0.6284	0.6294	0.6305	0.6317
415	0.6229	0.6234	0.6240	0.6247	0.6255	0.6263	0.6272	0.6281	0.6292	0.6302	0.6313
420	0.6227	0.6233	0.6239	0.6245	0.6253	0.6261	0.6270	0.6279	0.6289	0.6300	0.6310
425	0.6226	0.6231	0.6237	0.6244	0.6251	0.6259	0.6268	0.6277	0.6287	0.6297	0.6308
430	0.6224	0.6230	0.6236	0.6242	0.6250	0.6257	0.6266	0.6275	0.6285	0.6295	0.6305
435	0.6223	0.6228	0.6234	0.6241	0.6248	0.6256	0.6264	0.6273	0.6282	0.6292	0.6303
440	0.6221	0.6227	0.6233	0.6239	0.6246	0.6254	0.6262	0.6271	0.6280	0.6290	0.6300
445	0.6220	0.6225	0.6231	0.6238	0.6245	0.6253	0.6261	0.6269	0.6278	0.6288	0.6298
450	0.6219	0.6224	0.6230	0.6236	0.6243	0.6251	0.6259	0.6267	0.6276	0.6286	0.6295
455	0.6217	0.6223	0.6229	0.6235	0.6242	0.6249	0.6257	0.6266	0.6274	0.6284	0.6293
460	0.6216	0.6222	0.6227	0.6234	0.6241	0.6248	0.6256	0.6264	0.6272	0.6281	0.6291
465	0.6215	0.6220	0.6226	0.6232	0.6239	0.6246	0.6254	0.6262	0.6271	0.6280	0.6289
470	0.6214	0.6219	0.6225	0.6231	0.6238	0.6245	0.6253	0.6261	0.6269	0.6278	0.6287
475	0.6213	0.6218	0.6224	0.6230	0.6237	0.6244	0.6251	0.6259	0.6267	0.6276	0.6285
480	0.6211	0.6217	0.6222	0.6229	0.6235	0.6242	0.6250	0.6257	0.6265	0.6274	0.6283
485	0.6210	0.6216	0.6221	0.6227	0.6234	0.6241	0.6248	0.6256	0.6264	0.6272	0.6281
490	0.6209	0.6214	0.6220	0.6226	0.6233	0.6240	0.6247	0.6254	0.6262	0.6271	0.6279
495	0.6208	0.6213	0.6219	0.6225	0.6232	0.6238	0.6245	0.6253	0.6261	0.6269	0.6277
500	0.6207	0.6212	0.6218	0.6224	0.6230	0.6237	0.6244	0.6252	0.6259	0.6267	0.6276
505	0.6206	0.6211	0.6217	0.6223	0.6229	0.6236	0.6243	0.6250	0.6258	0.6266	0.6274
510	0.6205	0.6210	0.6216	0.6222	0.6228	0.6235	0.6242	0.6249	0.6256	0.6264	0.6272
515	0.6204	0.6209	0.6215	0.6221	0.6227	0.6234	0.6240	0.6248	0.6255	0.6263	0.6271
520	0.6203	0.6208	0.6214	0.6220	0.6226	0.6232	0.6239	0.6246	0.6254	0.6261	0.6269
525	0.6202	0.6207	0.6213	0.6219	0.6225	0.6231	0.6238	0.6245	0.6252	0.6260	0.6268
530	0.6201	0.6206	0.6212	0.6217	0.6224	0.6230	0.6237	0.6244	0.6251	0.6258	0.6266
535	0.6200	0.6205	0.6211	0.6216	0.6223	0.6229	0.6236	0.6243	0.6250	0.6257	0.6265
540	0.6199	0.6205	0.6210	0.6215	0.6222	0.6228	0.6235	0.6241	0.6248	0.6256	0.6263
545	0.6198	0.6204	0.6209	0.6215	0.6221	0.6227	0.6233	0.6240	0.6247	0.6254	0.6262
550	0.6198	0.6203	0.6208	0.6214	0.6220	0.6226	0.6232	0.6239	0.6246	0.6253	0.6261
555	0.6197	0.6202	0.6208	0.6213	0.6219	0.6225	0.6231	0.6238	0.6245	0.6252	0.6259
560	0.6196	0.6201	0.6207	0.6212	0.6218	0.6224	0.6231	0.6237	0.6244	0.6251	0.6258
565	0.6195	0.6200	0.6206	0.6212	0.6217	0.6224	0.6230	0.6236	0.6243	0.6250	0.6257
570	0.6194	0.6200	0.6205	0.6211	0.6217	0.6223	0.6229	0.6235	0.6242	0.6249	0.6256
575	0.6194	0.6199	0.6204	0.6210	0.6216	0.6222	0.6228	0.6234	0.6241	0.6248	0.6255
580	0.6193	0.6198	0.6203	0.6209	0.6215	0.6221	0.6227	0.6233	0.6240	0.6247	0.6254
585	0.6192	0.6197	0.6203	0.6208	0.6214	0.6220	0.6226	0.6232	0.6239	0.6246	0.6252
590	0.6191	0.6196	0.6202	0.6207	0.6213	0.6219	0.6225	0.6232	0.6238	0.6245	0.6251
595	0.6190	0.6196	0.6201	0.6207	0.6212	0.6218	0.6224	0.6231	0.6237	0.6244	0.6250
600	0.6190	0.6195	0.6200	0.6206	0.6212	0.6217	0.6223	0.6230	0.6236	0.6242	0.6249

Plenum temperature, K	Plenum pressure, N/m^2×10^{-5}										
	100	110	120	130	140	150	160	170	180	190	200
400	0.6323	0.6336	0.6350	0.6364	0.6379	0.6395	0.6411	0.6428	0.6445	0.6463	0.6481
405	0.6320	0.6333	0.6346	0.6360	0.6374	0.6390	0.6405	0.6421	0.6438	0.6455	0.6473
410	0.6317	0.6329	0.6342	0.6356	0.6370	0.6384	0.6400	0.6415	0.6431	0.6448	0.6465
415	0.6313	0.6325	0.6338	0.6351	0.6365	0.6379	0.6394	0.6409	0.6425	0.6441	0.6457
420	0.6310	0.6322	0.6334	0.6347	0.6361	0.6375	0.6389	0.6404	0.6419	0.6435	0.6450
425	0.6308	0.6319	0.6331	0.6343	0.6357	0.6370	0.6384	0.6398	0.6413	0.6428	0.6444
430	0.6305	0.6316	0.6328	0.6340	0.6352	0.6366	0.6379	0.6393	0.6408	0.6422	0.6437
435	0.6303	0.6314	0.6325	0.6337	0.6349	0.6362	0.6375	0.6388	0.6402	0.6417	0.6431
440	0.6300	0.6311	0.6322	0.6334	0.6346	0.6358	0.6371	0.6384	0.6397	0.6411	0.6426
445	0.6298	0.6308	0.6319	0.6330	0.6342	0.6354	0.6367	0.6380	0.6393	0.6407	0.6420
450	0.6295	0.6306	0.6316	0.6327	0.6339	0.6351	0.6363	0.6375	0.6388	0.6402	0.6415
455	0.6293	0.6303	0.6314	0.6324	0.6336	0.6347	0.6359	0.6371	0.6384	0.6397	0.6410
460	0.6291	0.6301	0.6311	0.6322	0.6333	0.6344	0.6356	0.6368	0.6380	0.6393	0.6405
465	0.6289	0.6298	0.6308	0.6319	0.6330	0.6341	0.6352	0.6364	0.6376	0.6388	0.6401
470	0.6287	0.6296	0.6306	0.6316	0.6327	0.6338	0.6349	0.6360	0.6372	0.6384	0.6397
475	0.6285	0.6294	0.6304	0.6314	0.6324	0.6335	0.6346	0.6357	0.6368	0.6380	0.6392
480	0.6283	0.6292	0.6301	0.6311	0.6321	0.6332	0.6343	0.6354	0.6365	0.6376	0.6388
485	0.6281	0.6290	0.6299	0.6309	0.6319	0.6329	0.6340	0.6350	0.6361	0.6373	0.6384
490	0.6279	0.6288	0.6297	0.6307	0.6316	0.6326	0.6337	0.6347	0.6358	0.6369	0.6381
495	0.6277	0.6286	0.6295	0.6304	0.6314	0.6324	0.6334	0.6344	0.6355	0.6366	0.6377
500	0.6276	0.6284	0.6293	0.6302	0.6312	0.6321	0.6331	0.6341	0.6352	0.6363	0.6374
505	0.6274	0.6282	0.6291	0.6300	0.6309	0.6319	0.6329	0.6339	0.6349	0.6359	0.6370
510	0.6272	0.6281	0.6289	0.6298	0.6307	0.6317	0.6326	0.6336	0.6346	0.6356	0.6367
515	0.6271	0.6279	0.6287	0.6296	0.6305	0.6314	0.6324	0.6333	0.6343	0.6354	0.6364
520	0.6269	0.6277	0.6286	0.6294	0.6303	0.6312	0.6321	0.6331	0.6341	0.6351	0.6361
525	0.6268	0.6276	0.6284	0.6292	0.6301	0.6310	0.6319	0.6329	0.6338	0.6348	0.6358
530	0.6266	0.6274	0.6282	0.6291	0.6299	0.6308	0.6317	0.6326	0.6336	0.6345	0.6355
535	0.6265	0.6272	0.6281	0.6289	0.6297	0.6306	0.6315	0.6324	0.6333	0.6343	0.6352
540	0.6263	0.6271	0.6279	0.6287	0.6295	0.6304	0.6313	0.6322	0.6331	0.6340	0.6350
545	0.6262	0.6270	0.6277	0.6285	0.6294	0.6302	0.6311	0.6320	0.6329	0.6338	0.6347
550	0.6261	0.6268	0.6276	0.6284	0.6292	0.6300	0.6309	0.6317	0.6326	0.6335	0.6345
555	0.6259	0.6267	0.6274	0.6282	0.6290	0.6298	0.6307	0.6315	0.6324	0.6333	0.6342
560	0.6258	0.6265	0.6273	0.6281	0.6289	0.6297	0.6305	0.6313	0.6322	0.6331	0.6340
565	0.6257	0.6264	0.6271	0.6279	0.6287	0.6295	0.6303	0.6311	0.6320	0.6329	0.6337
570	0.6256	0.6263	0.6270	0.6278	0.6285	0.6293	0.6301	0.6310	0.6318	0.6327	0.6335
575	0.6255	0.6262	0.6269	0.6276	0.6284	0.6292	0.6300	0.6308	0.6316	0.6324	0.6333
580	0.6254	0.6261	0.6268	0.6275	0.6283	0.6290	0.6298	0.6306	0.6314	0.6322	0.6331
585	0.6252	0.6259	0.6267	0.6274	0.6281	0.6289	0.6297	0.6304	0.6312	0.6320	0.6329
590	0.6251	0.6258	0.6265	0.6273	0.6280	0.6287	0.6295	0.6303	0.6311	0.6318	0.6327
595	0.6250	0.6257	0.6264	0.6271	0.6279	0.6286	0.6294	0.6301	0.6309	0.6317	0.6325
600	0.6249	0.6256	0.6263	0.6270	0.6277	0.6285	0.6292	0.6300	0.6307	0.6315	0.6323

TABLE IV. - Concluded. THERMODYNAMIC PROPERTY OF METHANE - CRITICAL DENSITY RATIO, ρ_1 ρ_2

Plenum temperature, K	Plenum pressure, N m^2×10^{-5}										
	200	210	220	230	240	250	260	270	280	290	300
400	0.6481	0.6499	0.6518	0.6537	0.6556	0.6575	0.6595	0.6614	0.6634	0.6653	0.6672
405	0.6473	0.6490	0.6509	0.6527	0.6546	0.6564	0.6583	0.6602	0.6621	0.6640	0.6658
410	0.6465	0.6482	0.6500	0.6518	0.6536	0.6554	0.6572	0.6591	0.6609	0.6627	0.6646
415	0.6457	0.6474	0.6491	0.6509	0.6526	0.6544	0.6562	0.6580	0.6597	0.6615	0.6633
420	0.6450	0.6467	0.6483	0.6500	0.6517	0.6534	0.6552	0.6569	0.6587	0.6604	0.6622
425	0.6444	0.6460	0.6476	0.6492	0.6509	0.6525	0.6542	0.6559	0.6576	0.6593	0.6610
430	0.6437	0.6453	0.6469	0.6484	0.6501	0.6517	0.6533	0.6550	0.6567	0.6583	0.6600
435	0.6431	0.6446	0.6462	0.6477	0.6493	0.6509	0.6525	0.6541	0.6557	0.6573	0.6590
440	0.6426	0.6440	0.6455	0.6470	0.6485	0.6501	0.6517	0.6532	0.6548	0.6564	0.6580
445	0.6420	0.6434	0.6449	0.6463	0.6478	0.6494	0.6509	0.6524	0.6540	0.6555	0.6571
450	0.6415	0.6429	0.6443	0.6457	0.6472	0.6486	0.6501	0.6516	0.6531	0.6547	0.6562
455	0.6410	0.6424	0.6438	0.6452	0.6466	0.6480	0.6495	0.6509	0.6524	0.6538	0.6553
460	0.6405	0.6419	0.6432	0.6446	0.6460	0.6474	0.6488	0.6502	0.6517	0.6531	0.6545
465	0.6401	0.6414	0.6427	0.6440	0.6454	0.6468	0.6481	0.6495	0.6510	0.6524	0.6538
470	0.6397	0.6409	0.6422	0.6435	0.6448	0.6462	0.6475	0.6489	0.6503	0.6517	0.6531
475	0.6392	0.6405	0.6417	0.6430	0.6443	0.6456	0.6469	0.6483	0.6496	0.6510	0.6524
480	0.6388	0.6400	0.6413	0.6425	0.6438	0.6451	0.6464	0.6477	0.6490	0.6503	0.6517
485	0.6384	0.6396	0.6408	0.6420	0.6433	0.6445	0.6458	0.6471	0.6484	0.6497	0.6510
490	0.6381	0.6392	0.6404	0.6416	0.6428	0.6440	0.6453	0.6466	0.6478	0.6491	0.6504
495	0.6377	0.6388	0.6400	0.6412	0.6424	0.6436	0.6448	0.6460	0.6473	0.6485	0.6498
500	0.6374	0.6385	0.6396	0.6408	0.6419	0.6431	0.6443	0.6455	0.6467	0.6480	0.6492
505	0.6370	0.6381	0.6392	0.6404	0.6415	0.6427	0.6438	0.6450	0.6462	0.6474	0.6486
510	0.6367	0.6378	0.6389	0.6400	0.6411	0.6422	0.6434	0.6446	0.6457	0.6469	0.6481
515	0.6364	0.6374	0.6385	0.6396	0.6407	0.6418	0.6430	0.6441	0.6453	0.6464	0.6476
520	0.6361	0.6371	0.6382	0.6392	0.6403	0.6414	0.6425	0.6437	0.6448	0.6459	0.6471
525	0.6358	0.6368	0.6378	0.6389	0.6400	0.6410	0.6421	0.6432	0.6443	0.6455	0.6466
530	0.6355	0.6365	0.6375	0.6386	0.6396	0.6407	0.6417	0.6428	0.6439	0.6450	0.6461
535	0.6352	0.6362	0.6372	0.6382	0.6393	0.6403	0.6414	0.6424	0.6435	0.6446	0.6457
540	0.6350	0.6359	0.6369	0.6379	0.6389	0.6400	0.6410	0.6420	0.6431	0.6442	0.6452
545	0.6347	0.6357	0.6366	0.6376	0.6386	0.6396	0.6406	0.6417	0.6427	0.6438	0.6448
550	0.6345	0.6354	0.6363	0.6373	0.6383	0.6393	0.6403	0.6413	0.6423	0.6434	0.6444
555	0.6342	0.6351	0.6361	0.6370	0.6380	0.6390	0.6400	0.6410	0.6420	0.6430	0.6440
560	0.6340	0.6349	0.6358	0.6367	0.6377	0.6387	0.6396	0.6406	0.6416	0.6426	0.6436
565	0.6337	0.6346	0.6356	0.6365	0.6374	0.6384	0.6393	0.6403	0.6413	0.6423	0.6432
570	0.6335	0.6344	0.6353	0.6362	0.6371	0.6381	0.6390	0.6400	0.6409	0.6419	0.6429
575	0.6333	0.6342	0.6351	0.6360	0.6369	0.6378	0.6387	0.6397	0.6406	0.6416	0.6425
580	0.6331	0.6339	0.6348	0.6357	0.6366	0.6375	0.6384	0.6394	0.6403	0.6412	0.6422
585	0.6329	0.6337	0.6346	0.6355	0.6363	0.6372	0.6381	0.6391	0.6400	0.6409	0.6418
590	0.6327	0.6335	0.6344	0.6352	0.6361	0.6370	0.6379	0.6388	0.6397	0.6406	0.6415
595	0.6325	0.6333	0.6341	0.635[illegible]	0.6358	0.6367	0.6376	0.6385	0.6394	0.6403	0.6412
600	0.6323	0.6331	0.6340	0.6348	0.6356	0.6365	0.6373	0.6382	0.6391	0.6400	0.6409

TABLE V. - THERMODYNAMIC PROPERTY OF METHANE - CRITICAL TEMPERATURE RATIO, T_1/T_0

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	0	1	2	3	4	5	6	7	8	9	10
120	0.8573	------	------	------	------	------	------	------	------	------	------
122	0.8573	0.8625	------	------	------	------	------	------	------	------	------
124	0.8573	0.8622	------	------	------	------	------	------	------	------	------
126	0.8573	0.8619	------	------	------	------	------	------	------	------	------
128	0.8573	0.8616	------	------	------	------	------	------	------	------	------
130	0.8573	0.8613	0.8647	------	------	------	------	------	------	------	------
132	0.8573	0.8610	0.8642	------	------	------	------	------	------	------	------
134	0.8573	0.8607	0.8638	------	------	------	------	------	------	------	------
136	0.8573	0.8605	0.8633	0.8659	------	------	------	------	------	------	------
138	0.8573	0.8602	0.8629	0.8653	------	------	------	------	------	------	------
140	0.8573	0.8600	0.8625	0.8647	------	------	------	------	------	------	------
142	0.8573	0.8598	0.8621	0.8642	0.8661	------	------	------	------	------	------
144	0.8573	0.8596	0.8617	0.8637	0.8655	------	------	------	------	------	------
146	0.8573	0.8594	0.8614	0.8632	0.8649	0.8665	------	------	------	------	------
148	0.8573	0.8592	0.8610	0.8627	0.8643	0.8658	0.8672	------	------	------	------
150	0.8573	0.8591	0.8607	0.8623	0.8638	0.8651	0.8664	------	------	------	------
152	0.8573	0.8589	0.8604	0.8619	0.8632	0.8645	0.8657	0.8669	------	------	------
154	0.8573	0.8588	0.8602	0.8615	0.8627	0.8639	0.8650	0.8661	0.8671	------	------
156	0.8573	0.8587	0.8599	0.8611	0.8623	0.8633	0.8644	0.8654	0.8663	0.8673	------
158	0.8573	0.8585	0.8597	0.8608	0.8618	0.8628	0.8638	0.8647	0.8656	0.8664	------
160	0.8573	0.8584	0.8594	0.8604	0.8614	0.8623	0.8632	0.8640	0.8649	0.8656	0.8664
162	0.8574	0.8583	0.8592	0.8601	0.8610	0.8618	0.8626	0.8634	0.8642	0.8649	0.8656
164	0.8574	0.8582	0.8591	0.8599	0.8606	0.8614	0.8621	0.8628	0.8635	0.8642	0.8648
166	0.8574	0.8581	0.8589	0.8596	0.8603	0.8610	0.8616	0.8623	0.8629	0.8635	0.8641
168	0.8574	0.8581	0.8587	0.8593	0.8600	0.8606	0.8612	0.8617	0.8623	0.8628	0.8634
170	0.8574	0.8580	0.8586	0.8591	0.8597	0.8602	0.8607	0.8612	0.8617	0.8622	0.8627
172	0.8574	0.8579	0.8584	0.8589	0.8594	0.8599	0.8603	0.8608	0.8612	0.8617	0.8621
174	0.8574	0.8579	0.8583	0.8587	0.8591	0.8595	0.8599	0.8603	0.8607	0.8611	0.8615
176	0.8575	0.8578	0.8582	0.8586	0.8589	0.8593	0.8596	0.8599	0.8603	0.8606	0.8610
178	0.8575	0.8578	0.8581	0.8584	0.8587	0.8590	0.8593	0.8596	0.8599	0.8601	0.8604
180	0.8575	0.8578	0.8580	0.8583	0.8585	0.8588	0.8590	0.8592	0.8595	0.8597	0.8600
182	0.8575	0.8577	0.8579	0.8581	0.8583	0.8585	0.8587	0.8589	0.8591	0.8593	0.8595
184	0.8576	0.8577	0.8579	0.8580	0.8582	0.8583	0.8585	0.8586	0.8588	0.8589	0.8591
186	0.8576	0.8577	0.8578	0.8579	0.8580	0.8581	0.8583	0.8584	0.8585	0.8586	0.8587
188	0.8576	0.8577	0.8578	0.8578	0.8579	0.8580	0.8581	0.8581	0.8582	0.8583	0.8584
190	0.8577	0.8577	0.8577	0.8578	0.8578	0.8578	0.8579	0.8579	0.8580	0.8580	0.8581
192	0.8577	0.8577	0.8577	0.8577	0.8577	0.8577	0.8577	0.8577	0.8577	0.8577	0.8578
194	0.8577	0.8577	0.8577	0.8576	0.8576	0.8576	0.8576	0.8575	0.8575	0.8575	0.8575
196	0.8578	0.8577	0.8576	0.8576	0.8575	0.8575	0.8574	0.8574	0.8573	0.8573	0.8572
198	0.8578	0.8577	0.8576	0.8576	0.8575	0.8574	0.8573	0.8572	0.8571	0.8571	0.8570
200	0.8579	0.8577	0.8576	0.8575	0.8574	0.8573	0.8572	0.8571	0.8570	0.8569	0.8568

TABLE V. - Continued. THERMODYNAMIC PROPERTY OF METHANE - CRITICAL TEMPERATURE RATIO, T_1/T_0

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	10	12	14	16	18	20	22	24	26	28	30
160	0.8664	------	------	------	------	------	------	------	------	------	------
162	0.8656	------	------	------	------	------	------	------	------	------	------
164	0.8648	0.8661	------	------	------	------	------	------	------	------	------
166	0.8641	0.8653	0.8664	------	------	------	------	------	------	------	------
168	0.8634	0.8644	0.8655	------	------	------	------	------	------	------	------
170	0.8627	0.8637	0.8646	0.8655	------	------	------	------	------	------	------
172	0.8621	0.8630	0.8638	0.8646	------	------	------	------	------	------	------
174	0.8615	0.8623	0.8630	0.8638	0.8645	------	------	------	------	------	------
176	0.8610	0.8616	0.8623	0.8630	0.8636	0.8644	------	------	------	------	------
178	0.8604	0.8610	0.8616	0.8622	0.8628	0.8634	0.8641	------	------	------	------
180	0.8600	0.8604	0.8609	0.8614	0.8620	0.8625	0.8631	------	------	------	------
182	0.8595	0.8599	0.8603	0.8608	0.8612	0.8617	0.8622	0.8628	------	------	------
184	0.8591	0.8594	0.8598	0.8601	0.8605	0.8609	0.8613	0.8618	0.8624	------	------
186	0.8587	0.8590	0.8592	0.8595	0.8598	0.8601	0.8605	0.8609	0.8614	0.8620	------
188	0.8584	0.8585	0.8587	0.8589	0.8592	0.8594	0.8598	0.8601	0.8605	0.8610	0.8616
190	0.8581	0.8582	0.8583	0.8584	0.8586	0.8588	0.8590	0.8593	0.8597	0.8601	0.8606
192	0.8578	0.8578	0.8579	0.8580	0.8581	0.8582	0.8584	0.8586	0.8588	0.8592	0.8596
194	0.8575	0.8575	0.8575	0.8575	0.8576	0.8576	0.8578	0.8579	0.8581	0.8583	0.8587
196	0.8572	0.8572	0.8571	0.8571	0.8571	0.8571	0.8571	0.8573	0.8574	0.8576	0.8578
198	0.8570	0.8569	0.8568	0.8567	0.8567	0.8566	0.8566	0.8567	0.8567	0.8569	0.8571
200	0.8568	0.8567	0.8565	0.8564	0.8563	0.8562	0.8561	0.8561	0.8561	0.8562	0.8563

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	30	32	34	36	38	40	42	44	46	48	50
180	------	------	------	------	------	------	------	------	------	------	------
182	------	------	------	------	------	------	------	------	------	------	------
184	------	------	------	------	------	------	------	------	------	------	------
186	------	------	------	------	------	------	------	------	------	------	------
188	0.8616	------	------	------	------	------	------	------	------	------	------
190	0.8606	0.8612	------	------	------	------	------	------	------	------	------
192	0.8596	0.8601	0.8607	------	------	------	------	------	------	------	------
194	0.8587	0.8591	0.8596	0.8603	------	------	------	------	------	------	------
196	0.8578	0.8582	0.8586	0.8591	0.8599	------	------	------	------	------	------
198	0.8571	0.8573	0.8577	0.8581	0.8587	0.8594	------	------	------	------	------
200	0.8563	0.8565	0.8568	0.8571	0.8576	0.8582	0.8590	0.8599	------	------	------

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	0	5	10	15	20	25	30	35	40	45	50
200	0.8579	0.8573	0.8568	0.8564	0.8562	0.8561	0.8563	0.8569	0.8582	------	------
202	0.8579	0.8573	0.8567	0.8562	0.8558	0.8556	0.8557	0.8561	0.8571	0.8590	------
204	0.8580	0.8572	0.8565	0.8559	0.8554	0.8551	0.8551	0.8553	0.8561	0.8576	0.8603
206	0.8580	0.8572	0.8564	0.8557	0.8551	0.8547	0.8545	0.8546	0.8551	0.8563	0.8585
208	0.8581	0.8571	0.8563	0.8555	0.8548	0.8543	0.8540	0.8540	0.8543	0.8552	0.8570
210	0.8581	0.8571	0.8562	0.8553	0.8546	0.8540	0.8536	0.8534	0.8536	0.8542	0.8556
212	0.8582	0.8571	0.8561	0.8552	0.8544	0.8537	0.8532	0.8529	0.8529	0.8534	0.8544
214	0.8583	0.8571	0.8561	0.8551	0.8542	0.8534	0.8528	0.8524	0.8523	0.8526	0.8534
216	0.8583	0.8571	0.8561	0.8550	0.8540	0.8532	0.8525	0.8520	0.8517	0.8519	0.8524
218	0.8584	0.8572	0.8560	0.8549	0.8539	0.8530	0.8522	0.8516	0.8513	0.8512	0.8516
220	0.8585	0.8572	0.8560	0.8549	0.8538	0.8528	0.8520	0.8513	0.8508	0.8507	0.8509
222	0.8586	0.8573	0.8560	0.8548	0.8537	0.8527	0.8518	0.8510	0.8505	0.8502	0.8502
224	0.8586	0.8573	0.8560	0.8548	0.8537	0.8526	0.8516	0.8508	0.8501	0.8497	0.8496
226	0.8587	0.8574	0.8561	0.8548	0.8536	0.8525	0.8515	0.8506	0.8499	0.8494	0.8492
228	0.8588	0.8575	0.8561	0.8548	0.8536	0.8524	0.8514	0.8504	0.8497	0.8490	0.8487
230	0.8589	0.8575	0.8562	0.8549	0.8536	0.8524	0.8513	0.8503	0.8494	0.8488	0.8484
232	0.8590	0.8576	0.8562	0.8549	0.8536	0.8524	0.8512	0.8502	0.8493	0.8486	0.8480
234	0.8591	0.8577	0.8563	0.8550	0.8536	0.8524	0.8512	0.8501	0.8492	0.8484	0.8478
236	0.8592	0.8578	0.8564	0.8550	0.8537	0.8524	0.8512	0.8501	0.8491	0.8483	0.8476
238	0.8593	0.8579	0.8565	0.8551	0.8537	0.8525	0.8512	0.8501	0.8491	0.8482	0.8474
240	0.8595	0.8580	0.8566	0.8552	0.8538	0.8525	0.8513	0.8501	0.8490	0.8481	0.8473
242	0.8596	0.8581	0.8567	0.8553	0.8539	0.8526	0.8513	0.8501	0.8490	0.8481	0.8472
244	0.8597	0.8582	0.8568	0.8554	0.8540	0.8527	0.8514	0.8502	0.8491	0.8481	0.8472
246	0.8598	0.8584	0.8569	0.8555	0.8541	0.8528	0.8515	0.8503	0.8491	0.8481	0.8472
248	0.8600	0.8585	0.8571	0.8557	0.8543	0.8529	0.8516	0.8504	0.8492	0.8482	0.8472
250	0.8601	0.8587	0.8572	0.8558	0.8544	0.8531	0.8518	0.8505	0.8493	0.8482	0.8472

TABLE V. - Continued. THERMODYNAMIC PROPERTY OF METHANE - CRITICAL TEMPERATURE RATIO, T_1 T_0

Plenum temperature, K	Plenum pressure, N m^2×10^{-5}										
	50	55	60	65	70	75	80	85	90	95	100
200	------	------	------	------	------	------	------	------	------	------	------
202	------	------	------	------	------	------	------	------	------	------	------
204	0.8603	------	------	------	------	------	------	------	------	------	------
206	0.8585	------	------	------	------	------	------	------	------	------	------
208	0.8570	0.8600	------	------	------	------	------	------	------	------	------
210	0.8556	0.8580	0.8619	------	------	------	------	------	------	------	------
212	0.8544	0.8563	0.8594	0.8639	------	------	------	------	------	------	------
214	0.8534	0.8549	0.8574	0.8610	0.8658	------	------	------	------	------	------
216	0.8524	0.8536	0.8556	0.8585	0.8625	0.8672	0.8722	------	------	------	------
218	0.8516	0.8525	0.8541	0.8564	0.8597	0.8637	0.8682	0.8725	------	------	------
220	0.8509	0.8515	0.8528	0.8547	0.8573	0.8607	0.8646	0.8685	0.8722	0.8753	------
222	0.8502	0.8507	0.8516	0.8532	0.8553	0.8582	0.8615	0.8650	0.8685	0.8715	0.8741
224	0.8496	0.8499	0.8506	0.8518	0.8536	0.8560	0.8588	0.8619	0.8651	0.8680	0.8706
226	0.8492	0.8493	0.8497	0.8507	0.8521	0.8541	0.8565	0.8592	0.8621	0.8648	0.8673
228	0.8487	0.8487	0.8490	0.8497	0.8508	0.8524	0.8545	0.8568	0.8594	0.8619	0.8643
230	0.8484	0.8482	0.8483	0.8488	0.8497	0.8510	0.8527	0.8547	0.8570	0.8593	0.8615
232	0.8480	0.8478	0.8478	0.8481	0.8487	0.8498	0.8512	0.8529	0.8548	0.8569	0.8590
234	0.8478	0.8474	0.8473	0.8474	0.8479	0.8487	0.8499	0.8513	0.8530	0.8548	0.8566
236	0.8476	0.8471	0.8469	0.8469	0.8472	0.8478	0.8487	0.8499	0.8513	0.8529	0.8546
238	0.8474	0.8469	0.8465	0.8464	0.8466	0.8470	0.8477	0.8487	0.8499	0.8512	0.8527
240	0.8473	0.8467	0.8462	0.8460	0.8460	0.8463	0.8468	0.8476	0.8486	0.8498	0.8510
242	0.8472	0.8465	0.8460	0.8457	0.8456	0.8457	0.8461	0.8467	0.8475	0.8485	0.8496
244	0.8472	0.8464	0.8458	0.8454	0.8452	0.8452	0.8455	0.8459	0.8465	0.8473	0.8483
246	0.8472	0.8464	0.8457	0.8452	0.8449	0.8448	0.8449	0.8452	0.8457	0.8463	0.8471
248	0.8472	0.8463	0.8456	0.8451	0.8447	0.8445	0.8445	0.8446	0.8450	0.8455	0.8461
250	0.8472	0.8464	0.8456	0.8450	0.8445	0.8442	0.8441	0.8442	0.8444	0.8448	0.8453

Plenum temperature, K	Plenum pressure, N/m^2×10^{-5}										
	100	110	120	130	140	150	160	170	180	190	200
220	------	------	------	------	------	------	------	------	------	------	------
222	0.8741	------	------	------	------	------	------	------	------	------	------
224	0.8706	0.8744	0.8764	0.8772	0.8770	0.8762	0.8750	0.8736	0.8720	0.8704	0.8687
226	0.8673	0.8712	0.8736	0.8747	0.8748	0.8743	0.8733	0.8721	0.8706	0.8691	0.8675
228	0.8643	0.8682	0.8708	0.8722	0.8726	0.8723	0.8716	0.8705	0.8692	0.8678	0.8663
230	0.8615	0.8654	0.8681	0.8697	0.8703	0.8703	0.8698	0.8689	0.8677	0.8665	0.8651
232	0.8590	0.8627	0.8654	0.8672	0.8681	0.8683	0.8679	0.8672	0.8662	0.8651	0.8638
234	0.8566	0.8601	0.8629	0.8648	0.8659	0.8663	0.8661	0.8656	0.8647	0.8637	0.8625
236	0.8546	0.8578	0.8605	0.8625	0.8637	0.8643	0.8643	0.8639	0.8632	0.8623	0.8612
238	0.8527	0.8557	0.8583	0.8603	0.8616	0.8623	0.8624	0.8622	0.8617	0.8609	0.8599
240	0.8510	0.8537	0.8562	0.8582	0.8596	0.8604	0.8607	0.8605	0.8601	0.8594	0.8586
242	0.8496	0.8520	0.8543	0.8562	0.8576	0.8585	0.8589	0.8589	0.8586	0.8580	0.8573
244	0.8483	0.8504	0.8525	0.8543	0.8557	0.8567	0.8572	0.8573	0.8571	0.8567	0.8560
246	0.8471	0.8490	0.8509	0.8526	0.8540	0.8550	0.8556	0.8558	0.8557	0.8553	0.8547
248	0.8461	0.8477	0.8494	0.8510	0.8524	0.8534	0.8540	0.8543	0.8542	0.8540	0.8535
250	0.8453	0.8466	0.8481	0.8496	0.8508	0.8518	0.8525	0.8528	0.8529	0.8527	0.8523

Plenum temperature, K	Plenum pressure, N/m^2×10^{-5}										
	200	210	220	230	240	250	260	270	280	290	300
220	------	------	------	------	------	------	------	------	------	------	------
222	------	------	------	------	------	------	------	------	------	------	------
224	0.8687	0.8669	0.8652	0.8635	0.8619	0.8602	0.8586	0.8570	0.8555	------	------
226	0.8675	0.8659	0.8642	0.8626	0.8609	0.8593	0.8578	0.8562	0.8547	0.8532	------
228	0.8663	0.8647	0.8632	0.8616	0.8600	0.8585	0.8569	0.8554	0.8539	0.8525	0.8510
230	0.8651	0.8636	0.8621	0.8606	0.8591	0.8576	0.8561	0.8546	0.8531	0.8517	0.8503
232	0.8638	0.8624	0.8610	0.8596	0.8581	0.8566	0.8552	0.8538	0.8523	0.8509	0.8495
234	0.8625	0.8612	0.8599	0.8585	0.8571	0.8557	0.8543	0.8529	0.8515	0.8502	0.8488
236	0.8612	0.8600	0.8588	0.8575	0.8561	0.8548	0.8534	0.8521	0.8507	0.8494	0.8481
238	0.8599	0.8588	0.8576	0.8564	0.8551	0.8539	0.8525	0.8512	0.8499	0.8486	0.8473
240	0.8586	0.8576	0.8565	0.8554	0.8542	0.8529	0.8517	0.8504	0.8491	0.8479	0.8466
242	0.8573	0.8564	0.8554	0.8543	0.8532	0.8520	0.8508	0.8496	0.8483	0.8471	0.8459
244	0.8560	0.8552	0.8543	0.8533	0.8522	0.8511	0.8499	0.8487	0.8476	0.8464	0.8452
246	0.8547	0.8540	0.8532	0.8522	0.8512	0.8501	0.8491	0.8479	0.8468	0.8456	0.8445
248	0.8535	0.8528	0.8521	0.8512	0.8502	0.8492	0.8482	0.8471	0.8460	0.8449	0.8438
250	0.8523	0.8517	0.8510	0.8502	0.8493	0.8484	0.8474	0.8463	0.8453	0.8442	0.8431

TABLE V. - Continued. THERMODYNAMIC PROPERTY OF METHANE - CRITICAL TEMPERATURE RATIO, T_1/T_0

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	0	10	20	30	40	50	60	70	80	90	100
250	0.8601	0.8572	0.8544	0.8518	0.8493	0.8472	0.8456	0.8445	0.8441	0.8444	0.8453
255	0.8605	0.8576	0.8548	0.8521	0.8497	0.8475	0.8457	0.8443	0.8435	0.8433	0.8436
260	0.8609	0.8580	0.8553	0.8526	0.8501	0.8479	0.8459	0.8444	0.8433	0.8427	0.8426
265	0.8613	0.8585	0.8558	0.8531	0.8507	0.8484	0.8464	0.8447	0.8434	0.8425	0.8420
270	0.8617	0.8590	0.8563	0.8537	0.8513	0.8490	0.8469	0.8451	0.8437	0.8426	0.8418
275	0.8622	0.8595	0.8569	0.8544	0.8519	0.8496	0.8476	0.8457	0.8442	0.8429	0.8419
280	0.8627	0.8601	0.8575	0.8550	0.8526	0.8504	0.8483	0.8464	0.8448	0.8434	0.8423
285	0.8632	0.8607	0.8582	0.8558	0.8534	0.8512	0.8491	0.8472	0.8455	0.8441	0.8429
290	0.8638	0.8613	0.8589	0.8565	0.8542	0.8520	0.8500	0.8481	0.8464	0.8449	0.8436
295	0.8644	0.8620	0.8596	0.8573	0.8550	0.8529	0.8509	0.8490	0.8473	0.8458	0.8444
300	0.8650	0.8626	0.8603	0.8581	0.8559	0.8538	0.8518	0.8500	0.8483	0.8467	0.8454
305	0.8656	0.8633	0.8611	0.8589	0.8568	0.8547	0.8528	0.8510	0.8493	0.8478	0.8464
310	0.8663	0.8641	0.8619	0.8597	0.8577	0.8557	0.8538	0.8520	0.8504	0.8488	0.8474
315	0.8670	0.8648	0.8627	0.8606	0.8586	0.8567	0.8548	0.8531	0.8514	0.8499	0.8485
320	0.8677	0.8656	0.8635	0.8615	0.8596	0.8577	0.8559	0.8542	0.8526	0.8510	0.8496
325	0.8684	0.8664	0.8644	0.8624	0.8605	0.8587	0.8569	0.8553	0.8537	0.8522	0.8508
330	0.8692	0.8672	0.8652	0.8633	0.8615	0.8597	0.8580	0.8564	0.8548	0.8534	0.8520
335	0.8699	0.8680	0.8661	0.8643	0.8625	0.8608	0.8591	0.8575	0.8560	0.8545	0.8532
340	0.8707	0.8688	0.8670	0.8652	0.8635	0.8618	0.8602	0.8586	0.8571	0.8557	0.8544
345	0.8715	0.8697	0.8679	0.8662	0.8645	0.8628	0.8613	0.8598	0.8583	0.8569	0.8556
350	0.8723	0.8705	0.8688	0.8671	0.8655	0.8639	0.8624	0.8609	0.8595	0.8581	0.8569
355	0.8731	0.8714	0.8697	0.8681	0.8665	0.8650	0.8635	0.8620	0.8606	0.8593	0.8581
360	0.8739	0.8723	0.8707	0.8691	0.8675	0.8660	0.8646	0.8632	0.8618	0.8605	0.8593
365	0.8748	0.8732	0.8716	0.8700	0.8685	0.8671	0.8657	0.8643	0.8630	0.8617	0.8605
370	0.8756	0.8741	0.8725	0.8710	0.8695	0.8681	0.8668	0.8654	0.8641	0.8629	0.8617
375	0.8765	0.8749	0.8735	0.8720	0.8706	0.8692	0.8678	0.8666	0.8653	0.8641	0.8630
380	0.8774	0.8759	0.8744	0.8730	0.8716	0.8702	0.8689	0.8677	0.8665	0.8653	0.8642
385	0.8782	0.8768	0.8754	0.8739	0.8726	0.8713	0.8700	0.8688	0.8676	0.8665	0.8654
390	0.8791	0.8777	0.8763	0.8749	0.8736	0.8723	0.8711	0.8699	0.8687	0.8676	0.8665
395	0.8800	0.8786	0.8772	0.8759	0.8746	0.8734	0.8722	0.8710	0.8699	0.8688	0.8677
400	0.8808	0.8795	0.8782	0.8769	0.8756	0.8744	0.8732	0.8721	0.8710	0.8699	0.8689

Plenum temperature, K	Plenum pressure, N m^{2} × 10^{-5}										
	100	110	120	130	140	150	160	170	180	190	200
250	0.8453	0.8466	0.8481	0.8496	0.8508	0.8518	0.8525	0.8528	0.8529	0.8527	0.8523
255	0.8436	0.8443	0.8454	0.8465	0.8475	0.8484	0.8491	0.8495	0.8497	0.8496	0.8494
260	0.8426	0.8428	0.8434	0.8441	0.8449	0.8457	0.8462	0.8466	0.8469	0.8469	0.8468
265	0.8420	0.8419	0.8421	0.8425	0.8439	0.8435	0.8440	0.8443	0.8445	0.8446	0.8446
270	0.8418	0.8414	0.8413	0.8414	0.8416	0.8419	0.8422	0.8425	0.8426	0.8427	0.8427
275	0.8419	0.8413	0.8409	0.8407	0.8407	0.8408	0.8410	0.8411	0.8412	0.8412	0.8412
280	0.8423	0.8415	0.8409	0.8405	0.8403	0.8402	0.8402	0.8402	0.8402	0.8402	0.8401
285	0.8429	0.8419	0.8411	0.8406	0.8402	0.8399	0.8397	0.8396	0.8395	0.8395	0.8393
290	0.8436	0.8425	0.8416	0.8409	0.8404	0.8400	0.8397	0.8394	0.8392	0.8391	0.8389
295	0.8444	0.8433	0.8423	0.8415	0.8408	0.8403	0.8399	0.8395	0.8392	0.8390	0.8388
300	0.8454	0.8441	0.8431	0.8422	0.8414	0.8408	0.8403	0.8398	0.8395	0.8392	0.8389
305	0.8464	0.8451	0.8440	0.8430	0.8422	0.8415	0.8409	0.8404	0.8399	0.8395	0.8392
310	0.8474	0.8461	0.8450	0.8440	0.8431	0.8423	0.8417	0.8411	0.8406	0.8401	0.8397
315	0.8485	0.8472	0.8461	0.8450	0.8441	0.8433	0.8426	0.8419	0.8413	0.8408	0.8404
320	0.8496	0.8484	0.8472	0.8461	0.8452	0.8443	0.8435	0.8429	0.8422	0.8417	0.8412
325	0.8508	0.8495	0.8484	0.8473	0.8463	0.8454	0.8446	0.8439	0.8432	0.8426	0.8421
330	0.8520	0.8507	0.8495	0.8485	0.8475	0.8466	0.8457	0.8450	0.8443	0.8437	0.8431
335	0.8532	0.8519	0.8508	0.8497	0.8487	0.8478	0.8469	0.8461	0.8454	0.8448	0.8442
340	0.8544	0.8532	0.8520	0.8509	0.8499	0.8490	0.8481	0.8473	0.8466	0.8459	0.8453
345	0.8556	0.8544	0.8533	0.8522	0.8512	0.8502	0.8494	0.8486	0.8478	0.8471	0.8465
350	0.8569	0.8556	0.8545	0.8534	0.8524	0.8515	0.8506	0.8498	0.8491	0.8484	0.8477
355	0.8581	0.8569	0.8558	0.8547	0.8537	0.8528	0.8519	0.8511	0.8503	0.8496	0.8490
360	0.8593	0.8581	0.8570	0.8560	0.8550	0.8541	0.8532	0.8524	0.8516	0.8509	0.8502
365	0.8605	0.8594	0.8583	0.8573	0.8563	0.8553	0.8545	0.8537	0.8529	0.8522	0.8515
370	0.8617	0.8606	0.8596	0.8586	0.8576	0.8567	0.8558	0.8550	0.8542	0.8535	0.8528
375	0.8630	0.8619	0.8608	0.8598	0.8589	0.8580	0.8571	0.8563	0.8555	0.8548	0.8541
380	0.8642	0.8631	0.8620	0.8611	0.8601	0.8592	0.8584	0.8576	0.8568	0.8561	0.8554
385	0.8654	0.8643	0.8633	0.8623	0.8614	0.8605	0.8597	0.8589	0.8581	0.8574	0.8567
390	0.8665	0.8655	0.8645	0.8636	0.8627	0.8618	0.8610	0.8602	0.8594	0.8587	0.8580
395	0.8677	0.8667	0.8657	0.8648	0.8639	0.8630	0.8622	0.8614	0.8607	0.8600	0.8593
400	0.8689	0.8679	0.8669	0.8660	0.8651	0.8643	0.8635	0.8627	0.8620	0.8613	0.8606

TABLE V. - Continued. THERMODYNAMIC PROPERTY OF METHANE - CRITICAL TEMPERATURE RATIO, T_1/T_0

Plenum temperature, K	Plenum pressure, $N/m^2 \times 10^{-5}$										
	200	210	220	230	240	250	260	270	280	290	300
250	0.8523	0.8517	0.8510	0.8502	0.8493	0.8484	0.8474	0.8463	0.8453	0.8442	0.8431
255	0.8494	0.8490	0.8484	0.8478	0.8470	0.8462	0.8454	0.8445	0.8435	0.8425	0.8415
260	0.8468	0.8465	0.8461	0.8456	0.8450	0.8443	0.8435	0.8427	0.8419	0.8410	0.8401
265	0.8446	0.8444	0.8441	0.8436	0.8431	0.8425	0.8419	0.8412	0.8404	0.8396	0.8388
270	0.8427	0.8425	0.8423	0.8420	0.8415	0.8410	0.8405	0.8398	0.8392	0.8384	0.8377
275	0.8412	0.8411	0.8409	0.8406	0.8402	0.8398	0.8393	0.8387	0.8381	0.8375	0.8368
280	0.8401	0.8400	0.8398	0.8395	0.8392	0.8388	0.8383	0.8378	0.8373	0.8367	0.8361
285	0.8393	0.8392	0.8390	0.8387	0.8384	0.8380	0.8376	0.8372	0.8367	0.8361	0.8356
290	0.8389	0.8387	0.8385	0.8382	0.8379	0.8376	0.8372	0.8368	0.8363	0.8358	0.8353
295	0.8388	0.8385	0.8383	0.8380	0.8377	0.8373	0.8370	0.8366	0.8361	0.8357	0.8351
300	0.8389	0.8386	0.8383	0.8380	0.8377	0.8374	0.8370	0.8366	0.8361	0.8357	0.8352
305	0.8392	0.8389	0.8385	0.8382	0.8379	0.8375	0.8372	0.8368	0.8364	0.8359	0.8355
310	0.8397	0.8393	0.8390	0.8386	0.8383	0.8379	0.8375	0.8371	0.8367	0.8363	0.8359
315	0.8404	0.8400	0.8396	0.8392	0.8388	0.8384	0.8380	0.8376	0.8372	0.8368	0.8364
320	0.8412	0.8407	0.8403	0.8399	0.8395	0.8391	0.8387	0.8383	0.8379	0.8375	0.8370
325	0.8421	0.8416	0.8411	0.8407	0.8403	0.8399	0.8395	0.8390	0.8386	0.8382	0.8378
330	0.8431	0.8426	0.8421	0.8416	0.8412	0.8407	0.8403	0.8399	0.8395	0.8391	0.8386
335	0.8442	0.8436	0.8431	0.8426	0.8422	0.8417	0.8413	0.8408	0.8404	0.8400	0.8396
340	0.8453	0.8447	0.8442	0.8437	0.8432	0.8427	0.8423	0.8419	0.8414	0.8410	0.8406
345	0.8465	0.8459	0.8454	0.8448	0.8443	0.8438	0.8434	0.8429	0.8425	0.8420	0.8416
350	0.8477	0.8471	0.8465	0.8460	0.8455	0.8450	0.8445	0.8440	0.8436	0.8432	0.8427
355	0.8490	0.8483	0.8478	0.8472	0.8467	0.8462	0.8457	0.8452	0.8448	0.8443	0.8439
360	0.8502	0.8496	0.8490	0.8484	0.8479	0.8474	0.8469	0.8464	0.8459	0.8455	0.8450
365	0.8515	0.8509	0.8503	0.8497	0.8491	0.8486	0.8481	0.8476	0.8472	0.8467	0.8462
370	0.8528	0.8522	0.8515	0.8510	0.8504	0.8499	0.8494	0.8489	0.8484	0.8479	0.8475
375	0.8541	0.8535	0.8528	0.8522	0.8517	0.8511	0.8506	0.8501	0.8496	0.8492	0.8487
380	0.8554	0.8547	0.8541	0.8535	0.8530	0.8524	0.8519	0.8514	0.8509	0.8504	0.8500
385	0.8567	0.8560	0.8554	0.8548	0.8543	0.8537	0.8532	0.8527	0.8522	0.8517	0.8512
390	0.8580	0.8574	0.8567	0.8561	0.8555	0.8550	0.8545	0.8540	0.8535	0.8530	0.8525
395	0.8593	0.8586	0.8580	0.8574	0.8568	0.8563	0.8558	0.8552	0.8547	0.8543	0.8538
400	0.8606	0.8599	0.8593	0.8587	0.8581	0.8576	0.8570	0.8565	0.8560	0.8555	0.8551

Plenum temperature, K	Plenum pressure, $\mathrm{N\ m^2 \times 10^{-5}}$										
	0	10	20	30	40	50	60	70	80	90	100
400	0.8808	0.8795	0.8782	0.8769	0.8756	0.8744	0.8732	0.8721	0.8710	0.8699	0.8689
405	0.8817	0.8804	0.8791	0.8779	0.8767	0.8755	0.8743	0.8732	0.8721	0.8711	0.8701
410	0.8826	0.8813	0.8801	0.8788	0.8777	0.8765	0.8754	0.8743	0.8732	0.8722	0.8712
415	0.8834	0.8822	0.8810	0.8798	0.8786	0.8775	0.8764	0.8754	0.8743	0.8733	0.8723
420	0.8843	0.8831	0.8819	0.8808	0.8796	0.8785	0.8775	0.8764	0.8754	0.8744	0.8735
425	0.8852	0.8840	0.8829	0.8817	0.8806	0.8795	0.8785	0.8775	0.8765	0.8755	0.8746
430	0.8860	0.8849	0.8838	0.8826	0.8816	0.8805	0.8795	0.8785	0.8775	0.8766	0.8757
435	0.8869	0.8858	0.8847	0.8836	0.8825	0.8815	0.8805	0.8795	0.8786	0.8777	0.8768
440	0.8877	0.8866	0.8856	0.8845	0.8835	0.8825	0.8815	0.8806	0.8796	0.8787	0.8779
445	0.8886	0.8875	0.8865	0.8854	0.8844	0.8835	0.8825	0.8816	0.8807	0.8798	0.8789
450	0.8894	0.8884	0.8873	0.8863	0.8854	0.8844	0.8835	0.8826	0.8817	0.8808	0.8800
455	0.8903	0.8892	0.8882	0.8872	0.8863	0.8854	0.8844	0.8836	0.8827	0.8818	0.8810
460	0.8911	0.8901	0.8891	0.8881	0.8872	0.8863	0.8854	0.8845	0.8837	0.8828	0.8820
465	0.8919	0.8909	0.8900	0.8890	0.8881	0.8872	0.8863	0.8855	0.8847	0.8838	0.8831
470	0.8927	0.8918	0.8908	0.8899	0.8890	0.8881	0.8873	0.8864	0.8856	0.8848	0.8840
475	0.8935	0.8926	0.8917	0.8908	0.8899	0.8890	0.8882	0.8874	0.8866	0.8858	0.8850
480	0.8943	0.8934	0.8925	0.8916	0.8908	0.8899	0.8891	0.8883	0.8875	0.8867	0.8860
485	0.8951	0.8942	0.8933	0.8925	0.8916	0.8908	0.8900	0.8892	0.8884	0.8877	0.8869
490	0.8959	0.8950	0.8941	0.8933	0.8925	0.8917	0.8909	0.8901	0.8893	0.8886	0.8879
495	0.8966	0.8958	0.8949	0.8941	0.8933	0.8925	0.8917	0.8910	0.8902	0.8895	0.8888
500	0.8974	0.8965	0.8957	0.8949	0.8941	0.8933	0.8926	0.8918	0.8911	0.8904	0.8897
505	0.8981	0.8973	0.8965	0.8957	0.8949	0.8942	0.8934	0.8927	0.8920	0.8913	0.8906
510	0.8989	0.8981	0.8973	0.8965	0.8957	0.8950	0.8943	0.8935	0.8928	0.8922	0.8915
515	0.8996	0.8988	0.8980	0.8973	0.8965	0.8958	0.8951	0.8944	0.8937	0.8930	0.8924
520	0.9003	0.8995	0.8988	0.8980	0.8973	0.8966	0.8959	0.8952	0.8945	0.8939	0.8932
525	0.9010	0.9003	0.8995	0.8988	0.8981	0.8974	0.8967	0.8960	0.8953	0.8947	0.8940
530	0.9017	0.9010	0.9002	0.8995	0.8988	0.8981	0.8974	0.8968	0.8961	0.8955	0.8949
535	0.9024	0.9017	0.9010	0.9002	0.8996	0.8989	0.8982	0.8976	0.8969	0.8963	0.8957
540	0.9031	0.9024	0.9017	0.9010	0.9003	0.8996	0.8990	0.8983	0.8977	0.8971	0.8965
545	0.9038	0.9031	0.9024	0.9017	0.9010	0.9004	0.8997	0.8991	0.8985	0.8979	0.8973
550	0.9044	0.9037	0.9031	0.9024	0.9017	0.9011	0.9004	0.8998	0.8992	0.8986	0.8980
555	0.9051	0.9044	0.9037	0.9031	0.9024	0.9018	0.9012	0.9006	0.9000	0.8994	0.8988
560	0.9057	0.9051	0.9044	0.9038	0.9031	0.9025	0.9019	0.9013	0.9007	0.9001	0.8995
565	0.9064	0.9057	0.9051	0.9044	0.9038	0.9032	0.9026	0.9020	0.9014	0.9008	0.9003
570	0.9070	0.9063	0.9057	0.9051	0.9045	0.9039	0.9033	0.9027	0.9021	0.9016	0.9010
575	0.9076	0.9070	0.9063	0.9057	0.9051	0.9045	0.9039	0.9034	0.9028	0.9023	0.9017
580	0.9082	0.9076	0.9070	0.9064	0.9058	0.9052	0.9046	0.9041	0.9035	0.9030	0.9024
585	0.9088	0.9082	0.9076	0.9070	0.9064	0.9058	0.9053	0.9047	0.9042	0.9036	0.9031
590	0.9094	0.9088	0.9082	0.9076	0.9070	0.9065	0.9059	0.9054	0.9048	0.9043	0.9038
595	0.9100	0.9094	0.9088	0.9082	0.9077	0.9071	0.9065	0.9060	0.9055	0.9050	0.9045
600	0.9105	0.9100	0.9094	0.9088	0.9083	0.9077	0.9072	0.9066	0.9061	0.9056	0.9051

TABLE V. - Concluded. THERMODYNAMIC PROPERTY OF METHANE - CRITICAL TEMPERATURE RATIO, T_1/T_0

Plenum temperature, K	Plenum pressure, N m^2 × 10^{-5}										
	100	110	120	130	140	150	160	170	180	190	200
400	0.8689	0.8679	0.8669	0.8660	0.8651	0.8643	0.8635	0.8627	0.8620	0.8613	0.8606
405	0.8701	0.8691	0.8681	0.8672	0.8664	0.8655	0.8647	0.8640	0.8632	0.8625	0.8619
410	0.8712	0.8702	0.8693	0.8684	0.8676	0.8668	0.8660	0.8652	0.8645	0.8638	0.8631
415	0.8723	0.8714	0.8705	0.8696	0.8688	0.8680	0.8672	0.8665	0.8657	0.8650	0.8644
420	0.8735	0.8725	0.8717	0.8708	0.8700	0.8692	0.8684	0.8677	0.8670	0.8663	0.8656
425	0.8746	0.8737	0.8728	0.8720	0.8712	0.8704	0.8696	0.8689	0.8682	0.8675	0.8668
430	0.8757	0.8748	0.8740	0.8731	0.8723	0.8715	0.8708	0.8701	0.8694	0.8687	0.8681
435	0.8768	0.8759	0.8751	0.8743	0.8735	0.8727	0.8720	0.8713	0.8706	0.8699	0.8693
440	0.8779	0.8770	0.8762	0.8754	0.8746	0.8739	0.8732	0.8725	0.8718	0.8711	0.8705
445	0.8789	0.8781	0.8773	0.8765	0.8758	0.8750	0.8743	0.8736	0.8729	0.8723	0.8717
450	0.8800	0.8792	0.8784	0.8776	0.8769	0.8761	0.8754	0.8747	0.8741	0.8734	0.8728
455	0.8810	0.8802	0.8794	0.8787	0.8780	0.8772	0.8765	0.8759	0.8752	0.8746	0.8740
460	0.8820	0.8813	0.8805	0.8798	0.8790	0.8783	0.8776	0.8770	0.8763	0.8757	0.8751
465	0.8831	0.8823	0.8815	0.8808	0.8801	0.8794	0.8787	0.8781	0.8774	0.8768	0.8762
470	0.8840	0.8833	0.8826	0.8818	0.8811	0.8805	0.8798	0.8792	0.8785	0.8779	0.8773
475	0.8850	0.8843	0.8836	0.8829	0.8822	0.8815	0.8808	0.8802	0.8796	0.8790	0.8784
480	0.8860	0.8853	0.8846	0.8839	0.8832	0.8825	0.8819	0.8813	0.8806	0.8801	0.8795
485	0.8869	0.8862	0.8855	0.8849	0.8842	0.8835	0.8829	0.8823	0.8817	0.8811	0.8805
490	0.8879	0.8872	0.8865	0.8858	0.8852	0.8845	0.8839	0.8833	0.8827	0.8821	0.8816
495	0.8888	0.8881	0.8874	0.8868	0.8861	0.8855	0.8849	0.8843	0.8837	0.8831	0.8826
500	0.8897	0.8890	0.8884	0.8877	0.8871	0.8865	0.8859	0.8853	0.8847	0.8841	0.8836
505	0.8906	0.8899	0.8893	0.8887	0.8880	0.8874	0.8868	0.8862	0.8857	0.8851	0.8846
510	0.8915	0.8908	0.8902	0.8896	0.8890	0.8884	0.8878	0.8872	0.8866	0.8861	0.8855
515	0.8924	0.8917	0.8911	0.8905	0.8899	0.8893	0.8887	0.8881	0.8876	0.8870	0.8865
520	0.8932	0.8926	0.8920	0.8914	0.8908	0.8902	0.8896	0.8890	0.8885	0.8880	0.8874
525	0.8940	0.8934	0.8928	0.8922	0.8916	0.8911	0.8905	0.8900	0.8894	0.8889	0.8884
530	0.8949	0.8943	0.8937	0.8931	0.8925	0.8919	0.8914	0.8908	0.8903	0.8898	0.8893
535	0.8957	0.8951	0.8945	0.8939	0.8933	0.8928	0.8922	0.8917	0.8912	0.8907	0.8902
540	0.8965	0.8959	0.8953	0.8947	0.8942	0.8936	0.8931	0.8926	0.8921	0.8915	0.8910
545	0.8973	0.8967	0.8961	0.8956	0.8950	0.8945	0.8939	0.8934	0.8929	0.8924	0.8919
550	0.8980	0.8975	0.8969	0.8963	0.8958	0.8953	0.8948	0.8942	0.8937	0.8932	0.8928
555	0.8988	0.8982	0.8977	0.8971	0.8966	0.8961	0.8956	0.8951	0.8946	0.8941	0.8936
560	0.8995	0.8990	0.8984	0.8979	0.8974	0.8969	0.8964	0.8959	0.8954	0.8949	0.8944
565	0.9003	0.8997	0.8992	0.8987	0.8981	0.8976	0.8971	0.8966	0.8962	0.8957	0.8952
570	0.9010	0.9005	0.8999	0.8994	0.8989	0.8984	0.8979	0.8974	0.8969	0.8965	0.8960
575	0.9017	0.9012	0.9007	0.9001	0.8996	0.8991	0.8986	0.8982	0.8977	0.8972	0.8968
580	0.9024	0.9019	0.9014	0.9009	0.9004	0.8999	0.8994	0.8989	0.8985	0.8980	0.8975
585	0.9031	0.9026	0.9021	0.9016	0.9011	0.9006	0.9001	0.8997	0.8992	0.8987	0.8983
590	0.9038	0.9033	0.9028	0.9023	0.9018	0.9013	0.9009	0.9004	0.8999	0.8995	0.8990
595	0.9045	0.9040	0.9035	0.9030	0.9025	0.9020	0.9016	0.9011	0.9007	0.9002	0.8998
600	0.9051	0.9046	0.9041	0.9036	0.9032	0.9027	0.9023	0.9018	0.9014	0.9009	0.9005

Plenum temperature, K	Plenum pressure, N $m^2 \times 10^{-5}$										
	200	210	220	230	240	250	260	270	280	290	300
400	0.8606	0.8599	0.8593	0.8587	0.8581	0.8576	0.8570	0.8565	0.8560	0.8555	0.8551
405	0.8619	0.8612	0.8606	0.8600	0.8594	0.8589	0.8583	0.8578	0.8573	0.8568	0.8563
410	0.8631	0.8625	0.8619	0.8613	0.8607	0.8601	0.8596	0.8591	0.8586	0.8581	0.8576
415	0.8644	0.8637	0.8631	0.8625	0.8619	0.8614	0.8609	0.8603	0.8598	0.8593	0.8589
420	0.8656	0.8650	0.8644	0.8638	0.8632	0.8627	0.8621	0.8616	0.8611	0.8606	0.8601
425	0.8668	0.8662	0.8656	0.8650	0.8645	0.8639	0.8634	0.8629	0.8623	0.8619	0.8614
430	0.8681	0.8674	0.8668	0.8663	0.8657	0.8651	0.8646	0.8641	0.8636	0.8631	0.8626
435	0.8693	0.8687	0.8681	0.8675	0.8669	0.8664	0.8658	0.8653	0.8648	0.8643	0.8639
440	0.8705	0.8698	0.8693	0.8687	0.8681	0.8676	0.8670	0.8665	0.8660	0.8656	0.8651
445	0.8717	0.8710	0.8704	0.8699	0.8693	0.8688	0.8682	0.8677	0.8672	0.8668	0.8663
450	0.8728	0.8722	0.8716	0.8710	0.8705	0.8700	0.8694	0.8689	0.8684	0.8680	0.8675
455	0.8740	0.8734	0.8728	0.8722	0.8717	0.8711	0.8706	0.8701	0.8696	0.8691	0.8687
460	0.8751	0.8745	0.8739	0.8734	0.8728	0.8723	0.8718	0.8713	0.8708	0.8703	0.8698
465	0.8762	0.8756	0.8751	0.8745	0.8740	0.8734	0.8729	0.8724	0.8720	0.8715	0.8710
470	0.8773	0.8767	0.8762	0.8756	0.8751	0.8746	0.8741	0.8736	0.8731	0.8726	0.8722
475	0.8784	0.8778	0.8773	0.8767	0.8762	0.8757	0.8752	0.8747	0.8742	0.8737	0.8733
480	0.8795	0.8789	0.8784	0.8778	0.8773	0.8768	0.8763	0.8758	0.8753	0.8749	0.8744
485	0.8805	0.8800	0.8794	0.8789	0.8784	0.8779	0.8774	0.8769	0.8764	0.8760	0.8755
490	0.8816	0.8810	0.8805	0.8799	0.8794	0.8789	0.8784	0.8780	0.8775	0.8770	0.8766
495	0.8826	0.8820	0.8815	0.8810	0.8805	0.8800	0.8795	0.8790	0.8786	0.8781	0.8776
500	0.8836	0.8830	0.8825	0.8820	0.8815	0.8810	0.8805	0.8801	0.8796	0.8791	0.8787
505	0.8846	0.8840	0.8835	0.8830	0.8825	0.8820	0.8816	0.8811	0.8806	0.8802	0.8797
510	0.8855	0.8850	0.8845	0.8840	0.8835	0.8830	0.8826	0.8821	0.8816	0.8812	0.8808
515	0.8865	0.8860	0.8855	0.8850	0.8845	0.8840	0.8835	0.8831	0.8826	0.8822	0.8818
520	0.8874	0.8869	0.8864	0.8859	0.8855	0.8850	0.8845	0.8841	0.8836	0.8832	0.8828
525	0.8884	0.8879	0.8874	0.8869	0.8864	0.8859	0.8855	0.8850	0.8846	0.8842	0.8837
530	0.8893	0.8888	0.8883	0.8878	0.8873	0.8869	0.8864	0.8860	0.8855	0.8851	0.8847
535	0.8902	0.8897	0.8892	0.8887	0.8882	0.8878	0.8873	0.8869	0.8865	0.8860	0.8856
540	0.8910	0.8906	0.8901	0.8896	0.8891	0.8887	0.8883	0.8878	0.8874	0.8870	0.8866
545	0.8919	0.8914	0.8910	0.8905	0.8900	0.8896	0.8891	0.8887	0.8883	0.8879	0.8875
550	0.8928	0.8923	0.8918	0.8914	0.8909	0.8905	0.8900	0.8896	0.8892	0.8888	0.8884
555	0.8936	0.8931	0.8927	0.8922	0.8918	0.8913	0.8909	0.8905	0.8901	0.8896	0.8892
560	0.8944	0.8939	0.8935	0.8930	0.8926	0.8922	0.8917	0.8913	0.8909	0.8905	0.8901
565	0.8952	0.8948	0.8943	0.8939	0.8934	0.8930	0.8926	0.8922	0.8918	0.8914	0.8910
570	0.8960	0.8956	0.8951	0.8947	0.8942	0.8938	0.8934	0.8930	0.8926	0.8922	0.8918
575	0.8968	0.8963	0.8959	0.8955	0.8950	0.8946	0.8942	0.8938	0.8934	0.8930	0.8926
580	0.8975	0.8971	0.8967	0.8962	0.8958	0.8954	0.8950	0.8946	0.8942	0.8938	0.8934
585	0.8983	0.8979	0.8974	0.8970	0.8966	0.8962	0.8958	0.8954	0.8950	0.8946	0.8942
590	0.8990	0.8986	0.8982	0.8978	0.8973	0.8969	0.8965	0.8962	0.8958	0.8954	0.8950
595	0.8998	0.8993	0.8989	0.8985	0.8981	0.8977	0.8973	0.8969	0.8965	0.8961	0.8958
600	0.9005	0.9001	0.8997	0.8992	0.8988	0.8984	0.8980	0.8977	0.8973	0.8969	0.8965

TABLE VI. - THERMODYNAMIC PROPERTY OF METHANE - COMPRESSIBILITY FACTOR, Z_0

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	0	1	2	3	4	5	6	7	8	9	10
120	1.0000	0.9640	------	------	------	------	------	------	------	------	------
122	1.0000	0.9665	0.9299	------	------	------	------	------	------	------	------
124	1.0000	0.9688	0.9349	------	------	------	------	------	------	------	------
126	1.0000	0.9708	0.9394	------	------	------	------	------	------	------	------
128	1.0000	0.9726	0.9434	0.9117	------	------	------	------	------	------	------
130	1.0000	0.9743	0.9470	0.9176	------	------	------	------	------	------	------
132	1.0000	0.9758	0.9502	0.9229	0.8934	------	------	------	------	------	------
134	1.0000	0.9772	0.9532	0.9276	0.9003	------	------	------	------	------	------
136	1.0000	0.9785	0.9559	0.9319	0.9065	0.8792	------	------	------	------	------
138	1.0000	0.9796	0.9583	0.9358	0.9120	0.8867	------	------	------	------	------
140	1.0000	0.9807	0.9605	0.9394	0.9171	0.8935	0.8682	------	------	------	------
142	1.0000	0.9817	0.9626	0.9426	0.9217	0.8996	0.8761	0.8511	------	------	------
144	1.0000	0.9826	0.9645	0.9456	0.9259	0.9051	0.8832	0.8600	------	------	------
146	1.0000	0.9834	0.9662	0.9483	0.9297	0.9102	0.8897	0.8680	0.8450	------	------
148	1.0000	0.9842	0.9678	0.9508	0.9332	0.9148	0.8955	0.8753	0.8539	0.8311	------
150	1.0000	0.9849	0.9693	0.9532	0.9364	0.9190	0.9009	0.8819	0.8619	0.8407	0.8183
152	1.0000	0.9856	0.9707	0.9553	0.9394	0.9229	0.9058	0.8879	0.8692	0.8495	0.8286
154	1.0000	0.9862	0.9720	0.9573	0.9422	0.9265	0.9103	0.8934	0.8758	0.8574	0.8380
156	1.0000	0.9868	0.9732	0.9592	0.9447	0.9298	0.9144	0.8985	0.8819	0.8646	0.8465
158	1.0000	0.9873	0.9743	0.9609	0.9471	0.9329	0.9183	0.9032	0.8875	0.8712	0.8542
160	1.0000	0.9878	0.9753	0.9625	0.9493	0.9358	0.9219	0.9075	0.8926	0.8772	0.8612
162	1.0000	0.9883	0.9763	0.9640	0.9514	0.9385	0.9252	0.9115	0.8974	0.8828	0.8677
164	1.0000	0.9887	0.9772	0.9654	0.9533	0.9410	0.9283	0.9153	0.9018	0.8880	0.8737
166	1.0000	0.9891	0.9781	0.9667	0.9552	0.9433	0.9312	0.9187	0.9060	0.8928	0.8792
168	1.0000	0.9895	0.9789	0.9680	0.9569	0.9455	0.9339	0.9220	0.9098	0.8973	0.8844
170	1.0000	0.9899	0.9796	0.9692	0.9585	0.9476	0.9364	0.9251	0.9134	0.9014	0.8892
172	1.0000	0.9903	0.9804	0.9703	0.9600	0.9495	0.9388	0.9279	0.9168	0.9053	0.8936
174	1.0000	0.9906	0.9811	0.9713	0.9614	0.9514	0.9411	0.9306	0.9199	0.9090	0.8978
176	1.0000	0.9909	0.9817	0.9723	0.9628	0.9531	0.9432	0.9332	0.9229	0.9124	0.9018
178	1.0000	0.9912	0.9823	0.9733	0.9641	0.9547	0.9452	0.9356	0.9257	0.9157	0.9054
180	1.0000	0.9915	0.9829	0.9742	0.9653	0.9563	0.9472	0.9378	0.9284	0.9187	0.9089
182	1.0000	0.9918	0.9835	0.9750	0.9665	0.9578	0.9490	0.9400	0.9309	0.9216	0.9122
184	1.0000	0.9921	0.9840	0.9758	0.9676	0.9592	0.9507	0.9420	0.9333	0.9244	0.9153
186	1.0000	0.9923	0.9845	0.9766	0.9686	0.9605	0.9523	0.9440	0.9355	0.9269	0.9182
188	1.0000	0.9925	0.9850	0.9774	0.9696	0.9618	0.9539	0.9458	0.9377	0.9294	0.9210
190	1.0000	0.9928	0.9855	0.9781	0.9706	0.9630	0.9553	0.9476	0.9397	0.9318	0.9237

Temperature, K	Pressure, N m^2·10^{-5}										
	10	12	14	16	18	20	22	24	26	28	30
150	0.8183	------	------	------	------	------	------	------	------	------	------
152	0.8286	------	------	------	------	------	------	------	------	------	------
154	0.8380	0.7957	------	------	------	------	------	------	------	------	------
156	0.8465	0.8073	------	------	------	------	------	------	------	------	------
158	0.8542	0.8177	0.7770	------	------	------	------	------	------	------	------
160	0.8612	0.8271	0.7895	0.7469	------	------	------	------	------	------	------
162	0.8677	0.8357	0.8007	0.7617	------	------	------	------	------	------	------
164	0.8737	0.8436	0.8109	0.7743	0.7345	------	------	------	------	------	------
166	0.8792	0.8508	0.8201	0.7868	0.7498	0.7076	------	------	------	------	------
168	0.8844	0.8574	0.8286	0.7975	0.7634	0.7252	------	------	------	------	------
170	0.8892	0.8636	0.8364	0.8072	0.7756	0.7407	0.7013	------	------	------	------
172	0.8936	0.8693	0.8436	0.8161	0.7866	0.7545	0.7188	0.6780	------	------	------
174	0.8978	0.8747	0.8502	0.8244	0.7967	0.7669	0.7342	0.6977	0.6555	------	------
176	0.9018	0.8796	0.8564	0.8319	0.8059	0.7781	0.7479	0.7148	0.6775	0.6338	------
178	0.9054	0.8843	0.8622	0.8393	0.8145	0.7884	0.7603	0.7299	0.6963	0.6582	0.6131
180	0.9089	0.8887	0.8676	0.8455	0.8223	0.7978	0.7716	0.7435	0.7129	0.6789	0.6401
182	0.9122	0.8928	0.8727	0.8517	0.8296	0.8065	0.7820	0.7558	0.7276	0.6968	0.6625
184	0.9153	0.8967	0.8774	0.8574	0.8365	0.8145	0.7915	0.7670	0.7409	0.7127	0.6818
186	0.9182	0.9004	0.8819	0.8628	0.8428	0.8220	0.8002	0.7773	0.7529	0.7269	0.6988
188	0.9210	0.9039	0.8862	0.8678	0.8488	0.8291	0.8084	0.7868	0.7640	0.7398	0.7139
190	0.9237	0.9072	0.8902	0.8726	0.8544	0.8356	0.8160	0.7956	0.7741	0.7515	0.7276

Temperature, K	Pressure, N m^2×10^{-5}										
	30	32	34	36	38	40	42	44	46	48	50
170	------	------	------	------	------	------	------	------	------	------	------
172	------	------	------	------	------	------	------	------	------	------	------
174	------	------	------	------	------	------	------	------	------	------	------
176	------	------	------	------	------	------	------	------	------	------	------
178	0.6131	------	------	------	------	------	------	------	------	------	------
180	0.6401	0.5935	------	------	------	------	------	------	------	------	------
182	0.6625	0.6232	0.5753	------	------	------	------	------	------	------	------
184	0.6818	0.6474	0.6076	0.5589	------	------	------	------	------	------	------
186	0.6988	0.6680	0.6336	0.5937	0.5445	0.4725	------	------	------	------	------
188	0.7139	0.6860	0.6554	0.6212	0.5815	0.5326	0.4613	------	------	------	------
190	0.7276	0.7020	0.6743	0.6441	0.6103	0.5712	0.5234	0.4556	------	------	------

TABLE VI. - Continued. THERMODYNAMIC PROPERTY OF METHANE - COMPRESSIBILITY FACTOR, Z_0

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	0	5	10	15	20	25	30	35	40	45	50
190	1.0000	0.9630	0.9237	0.8815	0.8356	0.7850	0.7276	0.6596	0.5712	0.3946	------
192	1.0000	0.9642	0.9262	0.8856	0.8418	0.7937	0.7400	0.6778	0.6009	0.4888	0.2347
194	1.0000	0.9653	0.9286	0.8895	0.8476	0.8019	0.7514	0.6939	0.6255	0.5359	0.3720
196	1.0000	0.9663	0.9309	0.8933	0.8530	0.8096	0.7619	0.7085	0.6466	0.5703	0.4622
198	1.0000	0.9674	0.9331	0.8968	0.8582	0.8167	0.7716	0.7217	0.6650	0.5979	0.5122
200	1.0000	0.9683	0.9351	0.9002	0.8631	0.8235	0.7807	0.7338	0.6815	0.6213	0.5487
202	1.0000	0.9693	0.9371	0.9034	0.8677	0.8298	0.7891	0.7450	0.6964	0.6416	0.5780
204	1.0000	0.9702	0.9391	0.9065	0.8721	0.8358	0.7971	0.7554	0.7099	0.6596	0.6027
206	1.0000	0.9710	0.9409	0.9094	0.8763	0.8415	0.8045	0.7650	0.7223	0.6757	0.6241
208	1.0000	0.9719	0.9427	0.9122	0.8803	0.8469	0.8115	0.7740	0.7338	0.6904	0.6430
210	1.0000	0.9727	0.9443	0.9149	0.8842	0.8520	0.8182	0.7825	0.7445	0.7038	0.6600
212	1.0000	0.9734	0.9460	0.9175	0.8878	0.8569	0.8245	0.7904	0.7544	0.7162	0.6754
214	1.0000	0.9742	0.9475	0.9199	0.8913	0.8615	0.8304	0.7979	0.7637	0.7276	0.6895
216	1.0000	0.9749	0.9490	0.9223	0.8946	0.8659	0.8361	0.8050	0.7724	0.7383	0.7025
218	1.0000	0.9756	0.9505	0.9246	0.8978	0.8702	0.8415	0.8117	0.7806	0.7483	0.7145
220	1.0000	0.9763	0.9519	0.9268	0.9009	0.8742	0.8466	0.8180	0.7884	0.7576	0.7257
222	1.0000	0.9769	0.9532	0.9289	0.9038	0.8781	0.8515	0.8241	0.7957	0.7664	0.7361
224	1.0000	0.9775	0.9545	0.9309	0.9067	0.8818	0.8562	0.8298	0.8027	0.7747	0.7460
226	1.0000	0.9781	0.9558	0.9329	0.9094	0.8853	0.8606	0.8353	0.8093	0.7826	0.7552
228	1.0000	0.9787	0.9570	0.9347	0.9120	0.8887	0.8649	0.8405	0.8155	0.7900	0.7639
230	1.0000	0.9793	0.9581	0.9366	0.9145	0.8920	0.8690	0.8455	0.8215	0.7970	0.7721
232	1.0000	0.9798	0.9593	0.9383	0.9169	0.8952	0.8729	0.8503	0.8272	0.8037	0.7799
234	1.0000	0.9804	0.9604	0.9400	0.9193	0.8982	0.8767	0.8549	0.8327	0.8101	0.7873
236	1.0000	0.9809	0.9614	0.9416	0.9215	0.9011	0.8804	0.8593	0.8379	0.8162	0.7943
238	1.0000	0.9814	0.9624	0.9432	0.9237	0.9039	0.8838	0.8635	0.8429	0.8220	0.8010
240	1.0000	0.9818	0.9634	0.9448	0.9258	0.9066	0.8872	0.8675	0.8477	0.8276	0.8074
242	1.0000	0.9823	0.9644	0.9462	0.9279	0.9093	0.8904	0.8714	0.8523	0.8329	0.8135
244	1.0000	0.9828	0.9653	0.9477	0.9298	0.9118	0.8936	0.8752	0.8567	0.8380	0.8193
246	1.0000	0.9832	0.9662	0.9491	0.9317	0.9142	0.8966	0.8788	0.8609	0.8429	0.8249
248	1.0000	0.9836	0.9671	0.9504	0.9336	0.9166	0.8995	0.8823	0.8650	0.8476	0.8303
250	1.0000	0.9840	0.9679	0.9517	0.9353	0.9188	0.9023	0.8856	0.8689	0.8522	0.8354

Temperature, K	Pressure, N m$^{2}\times10^{-5}$										
	50	55	60	65	70	75	80	85	90	95	100
190	------	------	------	------	------	------	------	------	------	------	------
192	0.2347	0.2314	0.2402	0.2517	0.2642	0.2773	0.2907	0.3043	0.3179	0.3316	0.3452
194	0.3720	0.2513	0.2515	0.260[illegible]	0.2709	0.2830	0.2957	0.3086	0.3218	0.3351	0.3485
196	0.4622	0.3000	0.2693	0.2713	0.2795	0.2900	0.3016	0.3138	0.3264	0.3393	0.3522
198	0.5122	0.3893	0.3004	0.2875	0.2907	0.2987	0.3088	0.3200	0.3319	0.3441	0.3566
200	0.5487	0.4553	0.3528	0.3118	0.3057	0.3097	0.3176	0.3274	0.3382	0.3497	0.3616
202	0.5780	0.5013	0.4120	0.3474	0.3263	0.3239	0.3284	0.3362	0.3457	0.3562	0.3674
204	0.6027	0.5369	0.4615	0.3914	0.3537	0.3420	0.3418	0.3468	0.3545	0.3638	0.3740
206	0.6241	0.5660	0.5011	0.4354	0.3873	0.3648	0.3582	0.3595	0.3649	0.3725	0.3816
208	0.6430	0.5909	0.5337	0.4745	0.4234	0.3918	0.3779	0.3746	0.3770	0.3826	0.3902
210	0.6600	0.6126	0.5614	0.5081	0.4585	0.4215	0.4007	0.3921	0.3909	0.3941	0.4000
212	0.6754	0.6318	0.5854	0.5372	0.4906	0.4518	0.4258	0.4120	0.4069	0.4073	0.4111
214	0.6895	0.6491	0.6066	0.5626	0.5193	0.4810	0.4519	0.4337	0.4246	0.4219	0.4234
216	0.7025	0.6649	0.6256	0.5852	0.5451	0.5081	0.4778	0.4565	0.4438	0.4380	0.4370
218	0.7145	0.6793	0.6428	0.6054	0.5682	0.5331	0.5028	0.4795	0.4639	0.4552	0.4518
220	0.7257	0.6926	0.6585	0.6237	0.5890	0.5559	0.5263	0.5021	0.4845	0.4733	0.4675
222	0.7361	0.7049	0.6729	0.6404	0.6080	0.5768	0.5482	0.5239	0.5050	0.4918	0.4839
224	0.7460	0.7164	0.6863	0.6559	0.6254	0.5959	0.5686	0.5445	0.5250	0.5104	0.5007
226	0.7552	0.7272	0.6987	0.6703	0.6414	0.6136	0.5875	0.5640	0.5442	0.5288	0.5177
228	0.7639	0.7373	0.7103	0.6832	0.6562	0.6299	0.6050	0.5823	0.5627	0.5467	0.5346
230	0.7721	0.7468	0.7212	0.6955	0.6700	0.6451	0.6214	0.5995	0.5802	0.5640	0.5512
232	0.7799	0.7557	0.7314	0.7070	0.6828	0.6592	0.6366	0.6156	0.5967	0.5805	0.5674
234	0.7873	0.7642	0.7410	0.7178	0.6948	0.6724	0.6509	0.6307	0.6124	0.5964	0.5830
236	0.7943	0.7722	0.7501	0.728[illegible]	0.7061	0.6848	0.6642	0.6449	0.6272	0.6114	0.5980
238	0.8010	0.7799	0.7587	0.7376	0.7168	0.6964	0.6768	0.6583	0.6411	0.6258	0.6125
240	0.8074	0.7871	0.7669	0.7467	0.7268	0.7074	0.6887	0.6709	0.6544	0.6394	0.6263
242	0.8135	0.7940	0.7746	0.7553	0.7363	0.7178	0.6999	0.6828	0.6669	0.6524	0.6395
244	0.8193	0.8006	0.7820	0.7635	0.7454	0.7276	0.7104	0.6941	0.6788	0.6647	0.6520
246	0.8249	0.8070	0.7891	0.7714	0.7539	0.7369	0.7205	0.7048	0.6900	0.6764	0.6641
248	0.8303	0.8130	0.7958	0.7788	0.7621	0.7458	0.7300	0.7149	0.7007	0.6875	0.6755
250	0.8354	0.8188	0.8022	0.7859	0.7699	0.7542	0.7391	0.7246	0.7109	0.6982	0.6865

TABLE VI. - Continued. THERMODYNAMIC PROPERTY OF METHANE - COMPRESSIBILITY FACTOR, Z_0

Temperature, K	Pressure, N m^2×10^{-5}										
	100	110	120	130	140	150	160	170	180	190	200
190	------	------	------	------	------	------	------	------	------	------	------
192	0.3452	0.3725	0.3997	0.4268	0.4536	0.4803	0.5068	0.5331	0.5593	0.5852	0.6111
194	0.3485	0.3753	0.4020	0.4287	0.4552	0.4815	0.5077	0.5338	0.5597	0.5854	0.6109
196	0.3522	0.3784	0.4046	0.4309	0.4570	0.4830	0.5089	0.5347	0.5603	0.5857	0.6110
198	0.3566	0.3820	0.4077	0.4334	0.4591	0.4848	0.5104	0.5358	0.5611	0.5863	0.6113
200	0.3616	0.3861	0.4111	0.4363	0.4616	0.4868	0.5120	0.5371	0.5621	0.5870	0.6118
202	0.3674	0.3908	0.4150	0.4396	0.4644	0.4892	0.5140	0.5387	0.5634	0.5880	0.6125
204	0.3740	0.3961	0.4194	0.4433	0.4675	0.4918	0.5162	0.5406	0.5649	0.5892	0.6134
206	0.3816	0.4020	0.4243	0.4474	0.4710	0.4948	0.5187	0.5427	0.5667	0.5906	0.6145
208	0.3902	0.4087	0.4297	0.4519	0.4748	0.4981	0.5215	0.5451	0.5687	0.5923	0.6158
210	0.4000	0.4163	0.4358	0.4570	0.4791	0.5017	0.5246	0.5477	0.5709	0.5941	0.6173
212	0.4111	0.4246	0.4425	0.4625	0.4837	0.5057	0.5280	0.5506	0.5734	0.5962	0.6191
214	0.4234	0.4339	0.4498	0.4685	0.4888	0.5100	0.5317	0.5538	0.5761	0.5986	0.6210
216	0.4370	0.4441	0.4579	0.4751	0.4943	0.5147	0.5358	0.5573	0.5791	0.6011	0.6232
218	0.4518	0.4552	0.4666	0.4823	0.5003	0.5198	0.5402	0.5611	0.5824	0.6039	0.6256
220	0.4675	0.4672	0.4761	0.4900	0.5068	0.5253	0.5449	0.5652	0.5859	0.6070	0.6283
222	0.4839	0.4799	0.4862	0.4982	0.5136	0.5311	0.5499	0.5695	0.5897	0.6103	0.6311
224	0.5007	0.4933	0.4969	0.5070	0.5210	0.5373	0.5552	0.5741	0.5937	0.6138	0.6342
226	0.5177	0.5073	0.5082	0.5163	0.5287	0.5439	0.5609	0.5791	0.5980	0.6175	0.6374
228	0.5346	0.5215	0.5199	0.5260	0.5369	0.5509	0.5669	0.5843	0.6026	0.6215	0.6409
230	0.5512	0.5359	0.5320	0.5361	0.5454	0.5582	0.5732	0.5897	0.6074	0.6257	0.6446
232	0.5674	0.5504	0.5444	0.5466	0.5543	0.5658	0.5798	0.5955	0.6124	0.6301	0.6485
234	0.5830	0.5647	0.5569	0.5573	0.5635	0.5737	0.5866	0.6015	0.6176	0.6348	0.6526
236	0.5980	0.5789	0.5695	0.5682	0.5729	0.5819	0.5937	0.6077	0.6231	0.6396	0.6569
238	0.6125	0.5927	0.5820	0.5793	0.5826	0.5902	0.6011	0.6141	0.6288	0.6446	0.6613
240	0.6263	0.6061	0.5945	0.5904	0.5923	0.5988	0.6086	0.6208	0.6347	0.6498	0.6659
242	0.6395	0.6192	0.6067	0.6015	0.6022	0.6075	0.6163	0.6276	0.6407	0.6552	0.6707
244	0.6520	0.6318	0.6187	0.6125	0.6121	0.6164	0.6242	0.6346	0.6469	0.6607	0.6757
246	0.6641	0.6440	0.6305	0.6234	0.6221	0.6253	0.6321	0.6417	0.6533	0.6664	0.6808
248	0.6755	0.6557	0.6419	0.6342	0.6319	0.6342	0.6402	0.6489	0.6597	0.6722	0.6860
250	0.6865	0.6670	0.6531	0.6448	0.6417	0.6432	0.6482	0.6562	0.6663	0.6781	0.6913

Temperature, K	Pressure, N m^2×10^{-5}										
	200	210	220	230	240	250	260	270	280	290	300
190	------	------	------	------	------	------	------	------	------	------	------
192	0.6111	0.6367	0.6623	0.6876	0.7129	0.7380	0.7630	0.7878	0.8126	0.8372	0.8617
194	0.6109	0.6364	0.6616	0.6868	0.7118	0.7367	0.7614	0.7860	0.8106	0.8350	0.8592
196	0.6110	0.6362	0.6612	0.6861	0.7109	0.7355	0.7600	0.7844	0.8087	0.8329	0.8570
198	0.6113	0.6362	0.6610	0.6856	0.7102	0.7346	0.7589	0.7830	0.8071	0.8310	0.8549
200	0.6118	0.6364	0.6609	0.6853	0.7096	0.7338	0.7578	0.7818	0.8056	0.8293	0.8530
202	0.6125	0.6368	0.6611	0.6852	0.7093	0.7332	0.7570	0.7807	0.8043	0.8278	0.8512
204	0.6134	0.6375	0.6614	0.6853	0.7091	0.7328	0.7563	0.7798	0.8032	0.8265	0.8496
206	0.6145	0.6383	0.6620	0.6856	0.7091	0.7325	0.7559	0.7791	0.8022	0.8253	0.8482
208	0.6158	0.6393	0.6627	0.6860	0.7093	0.7325	0.7555	0.7785	0.8014	0.8243	0.8470
210	0.6173	0.6405	0.6636	0.6867	0.7097	0.7326	0.7554	0.7782	0.8008	0.8234	0.8459
212	0.6191	0.6419	0.6647	0.6875	0.7102	0.7329	0.7554	0.7779	0.8004	0.8227	0.8450
214	0.6210	0.6436	0.6661	0.6885	0.7109	0.7333	0.7556	0.7779	0.8001	0.8222	0.8442
216	0.6232	0.6454	0.6676	0.6897	0.7119	0.7340	0.7560	0.7780	0.7999	0.8218	0.8436
218	0.6256	0.6474	0.6693	0.6911	0.7129	0.7348	0.7565	0.7783	0.8000	0.8216	0.8432
220	0.6283	0.6497	0.6711	0.6927	0.7142	0.7357	0.7572	0.7787	0.8001	0.8215	0.8429
222	0.6311	0.6521	0.6732	0.6944	0.7156	0.7369	0.7581	0.7793	0.8005	0.8216	0.8427
224	0.6342	0.6548	0.6755	0.6963	0.7172	0.7382	0.7591	0.7801	0.8010	0.8219	0.8427
226	0.6374	0.6576	0.6780	0.6984	0.7190	0.7396	0.7603	0.7810	0.8016	0.8222	0.8429
228	0.6409	0.6606	0.6806	0.7007	0.7210	0.7413	0.7616	0.7820	0.8024	0.8228	0.8431
230	0.6446	0.6639	0.6834	0.7032	0.7231	0.7430	0.7631	0.7832	0.8033	0.8234	0.8436
232	0.6485	0.6673	0.6864	0.7058	0.7253	0.7450	0.7647	0.7845	0.8044	0.8242	0.8441
234	0.6526	0.6709	0.6896	0.7086	0.7277	0.7471	0.7665	0.7860	0.8056	0.8252	0.8448
236	0.6569	0.6747	0.6929	0.7115	0.7303	0.7493	0.7684	0.7876	0.8069	0.8262	0.8456
238	0.6613	0.6786	0.6964	0.7146	0.7330	0.7517	0.7705	0.7894	0.8084	0.8274	0.8465
240	0.6659	0.6828	0.7001	0.7178	0.7359	0.7542	0.7727	0.7913	0.8100	0.8288	0.8476
242	0.6707	0.6870	0.7039	0.7212	0.7389	0.7568	0.7750	0.7933	0.8117	0.8302	0.8488
244	0.6757	0.6914	0.7078	0.7247	0.7420	0.7596	0.7774	0.7954	0.8135	0.8318	0.8501
246	0.6808	0.6960	0.7119	0.7284	0.7453	0.7625	0.7800	0.7976	0.8155	0.8334	0.8515
248	0.6860	0.7007	0.7161	0.7322	0.7486	0.7655	0.7826	0.8000	0.8175	0.8352	0.8530
250	0.6913	0.7055	0.7204	0.736[illegible]	0.7521	0.7686	0.7854	0.8024	0.8197	0.8371	0.8546

TABLE VI. - Continued. THERMODYNAMIC PROPERTY OF METHANE - COMPRESSIBILITY FACTOR, Z_0

Temperature, K	Pressure, $N\ m^{2} \cdot 10^{-5}$										
	0	10	20	30	40	50	60	70	80	90	100
250	1.0000	0.9679	0.9353	0.9023	0.8689	0.8354	0.8022	0.7699	0.7391	0.7109	0.6865
255	1.0000	0.9699	0.9395	0.9089	0.8781	0.8474	0.8172	0.7878	0.7599	0.7343	0.7118
260	1.0000	0.9718	0.9434	0.9149	0.8865	0.8583	0.8306	0.8039	0.7786	0.7552	0.7346
265	1.0000	0.9735	0.9470	0.9205	0.8942	0.8682	0.8428	0.8184	0.7953	0.7740	0.7550
270	1.0000	0.9752	0.9504	0.9257	0.9013	0.8773	0.8540	0.8316	0.8104	0.7909	0.7735
275	1.0000	0.9767	0.9535	0.9304	0.9078	0.8856	0.8641	0.8436	0.8242	0.8063	0.7903
280	1.0000	0.9781	0.9563	0.9349	0.9138	0.8933	0.8735	0.8545	0.8368	0.8203	0.8056
285	1.0000	0.9794	0.9590	0.9390	0.9194	0.9004	0.8821	0.8646	0.8483	0.8332	0.8196
290	1.0000	0.9806	0.9616	0.9428	0.9246	0.9069	0.8900	0.8739	0.8588	0.8450	0.8324
295	1.0000	0.9818	0.9639	0.9464	0.9294	0.9130	0.8973	0.8825	0.8686	0.8558	0.8443
300	1.0000	0.9829	0.9661	0.9498	0.9339	0.9187	0.9042	0.8904	0.8776	0.8658	0.8552
305	1.0000	0.9839	0.9682	0.9529	0.9381	0.9240	0.9105	0.8978	0.8859	0.8751	0.8653
310	1.0000	0.9849	0.9701	0.9558	0.9421	0.9289	0.9164	0.9046	0.8937	0.8837	0.8747
315	1.0000	0.9858	0.9719	0.9586	0.9457	0.9335	0.9219	0.9110	0.9009	0.8917	0.8834
320	1.0000	0.9866	0.9736	0.9612	0.9492	0.9378	0.9270	0.9169	0.9076	0.8991	0.8915
325	1.0000	0.9874	0.9753	0.9636	0.9524	0.9418	0.9318	0.9225	0.9139	0.9060	0.8990
330	1.0000	0.9882	0.9768	0.9658	0.9554	0.9456	0.9363	0.9277	0.9197	0.9125	0.9061
335	1.0000	0.9889	0.9782	0.9680	0.9583	0.9491	0.9405	0.9325	0.9252	0.9186	0.9127
340	1.0000	0.9896	0.9796	0.9700	0.9609	0.9524	0.9445	0.9371	0.9303	0.9243	0.9189
345	1.0000	0.9902	0.9808	0.9719	0.9635	0.9555	0.9482	0.9414	0.9352	0.9296	0.9247
350	1.0000	0.9908	0.9820	0.9737	0.9658	0.9585	0.9517	0.9454	0.9397	0.9346	0.9301
355	1.0000	0.9914	0.9832	0.9754	0.9681	0.9613	0.9550	0.9492	0.9439	0.9393	0.9352
360	1.0000	0.9919	0.9842	0.9770	0.9702	0.9639	0.9581	0.9527	0.9479	0.9437	0.9400
365	1.0000	0.9924	0.9853	0.9785	0.9722	0.9664	0.9610	0.9561	0.9517	0.9479	0.9445
370	1.0000	0.9929	0.9862	0.9799	0.9741	0.9687	0.9637	0.9593	0.9553	0.9518	0.9488
375	1.0000	0.9934	0.9871	0.9813	0.9759	0.9709	0.9663	0.9623	0.9586	0.9555	0.9528
380	1.0000	0.9938	0.9880	0.9826	0.9776	0.9730	0.9688	0.9651	0.9618	0.9590	0.9566
385	1.0000	0.9942	0.9888	0.9838	0.9792	0.9750	0.9711	0.9678	0.9648	0.9623	0.9602
390	1.0000	0.9946	0.9896	0.9850	0.9807	0.9768	0.9734	0.9703	0.9676	0.9654	0.9636
395	1.0000	0.9950	0.9903	0.9860	0.9821	0.9786	0.9754	0.9727	0.9703	0.9684	0.9668
400	1.0000	0.9953	0.9910	0.9871	0.9835	0.9803	0.9774	0.9750	0.9729	0.9712	0.9698

Temperature, K	Pressure, N m$^{2}\cdot 10^{-5}$										
	100	110	120	130	140	150	160	170	180	190	200
250	0.6865	0.6670	0.6531	0.6448	0.6417	0.6432	0.6482	0.6562	0.6663	0.6781	0.6913
255	0.7118	0.6933	0.6794	0.6702	0.6657	0.6654	0.6685	0.6746	0.6830	0.6933	0.7050
260	0.7346	0.7172	0.7036	0.6941	0.6887	0.6870	0.6886	0.6931	0.7000	0.7088	0.7192
265	0.7550	0.7388	0.7258	0.7163	0.7103	0.7077	0.7082	0.7114	0.7170	0.7245	0.7336
270	0.7735	0.7584	0.7462	0.7369	0.7307	0.7275	0.7271	0.7293	0.7337	0.7400	0.7480
275	0.7903	0.7763	0.7648	0.7559	0.7497	0.7461	0.7451	0.7465	0.7500	0.7553	0.7623
280	0.8056	0.7927	0.7819	0.7734	0.7673	0.7636	0.7622	0.7630	0.7657	0.7703	0.7764
285	0.8196	0.8077	0.7977	0.7897	0.7838	0.7800	0.7783	0.7787	0.7808	0.7847	0.7901
290	0.8324	0.8215	0.8122	0.8047	0.7990	0.7953	0.7935	0.7936	0.7953	0.7986	0.8034
295	0.8443	0.8341	0.8255	0.8185	0.8133	0.8097	0.8078	0.8076	0.8091	0.8119	0.8162
300	0.8552	0.8459	0.8379	0.8314	0.8265	0.8231	0.8212	0.8209	0.8221	0.8246	0.8285
305	0.8653	0.8567	0.8494	0.8434	0.8388	0.8356	0.8338	0.8335	0.8345	0.8367	0.8402
310	0.8747	0.8668	0.8600	0.8545	0.8502	0.8473	0.8456	0.8453	0.8462	0.8482	0.8515
315	0.8834	0.8761	0.8699	0.8648	0.8609	0.8582	0.8567	0.8564	0.8572	0.8591	0.8621
320	0.8915	0.8848	0.8791	0.8745	0.8709	0.8685	0.8671	0.8668	0.8676	0.8695	0.8723
325	0.8990	0.8929	0.8877	0.8835	0.8803	0.8780	0.8768	0.8766	0.8775	0.8792	0.8819
330	0.9061	0.9005	0.8958	0.8919	0.8890	0.8870	0.8860	0.8859	0.8867	0.8885	0.8911
335	0.9127	0.9076	0.9033	0.8598	0.8972	0.8955	0.8946	0.8946	0.8955	0.8972	0.8997
340	0.9189	0.9142	0.9103	0.9072	0.9049	0.9034	0.9027	0.9028	0.9038	0.9055	0.9080
345	0.9247	0.9204	0.9169	0.9141	0.9121	0.9108	0.9103	0.9105	0.9116	0.9133	0.9158
350	0.9301	0.9263	0.9231	0.9206	0.9189	0.9178	0.9175	0.9178	0.9189	0.9207	0.9231
355	0.9352	0.9318	0.9289	0.9268	0.9252	0.9244	0.9242	0.9247	0.9259	0.9277	0.9301
360	0.9400	0.9369	0.9344	0.9325	0.9312	0.9306	0.9306	0.9312	0.9324	0.9343	0.9368
365	0.9445	0.9418	0.9396	0.9379	0.9369	0.9365	0.9366	0.9373	0.9387	0.9406	0.9430
370	0.9488	0.9463	0.9444	0.9431	0.9422	0.9420	0.9423	0.9431	0.9445	0.9465	0.9490
375	0.9528	0.9507	0.9490	0.9479	0.9473	0.9472	0.9476	0.9486	0.9501	0.9521	0.9546
380	0.9566	0.9547	0.9533	0.9524	0.9520	0.9521	0.9527	0.9538	0.9554	0.9574	0.9600
385	0.9602	0.9586	0.9574	0.9567	0.9565	0.9568	0.9575	0.9587	0.9603	0.9625	0.9651
390	0.9636	0.9622	0.9613	0.9608	0.9607	0.9612	0.9620	0.9633	0.9651	0.9673	0.9699
395	0.9668	0.9657	0.9649	0.9646	0.9648	0.9653	0.9663	0.9677	0.9695	0.9718	0.9744
400	0.9698	0.9689	0.9684	0.9683	0.9686	0.9693	0.9704	0.9719	0.9738	0.9761	0.9788

TABLE VI. - Continued. THERMODYNAMIC PROPERTY OF METHANE - COMPRESSIBILITY FACTOR, Z_0

Temperature, K	Pressure, N m^2×10^{-5}										
	200	210	220	230	240	250	260	270	280	290	300
250	0.6913	0.7055	0.7204	0.7360	0.7521	0.7686	0.7854	0.8024	0.8197	0.8371	0.8546
255	0.7050	0.7179	0.7317	0.7462	0.7613	0.7768	0.7928	0.8090	0.8255	0.8422	0.8590
260	0.7192	0.7308	0.7434	0.7569	0.7710	0.7856	0.8007	0.8161	0.8319	0.8478	0.8640
265	0.7336	0.7440	0.7555	0.7679	0.7811	0.7948	0.8090	0.8237	0.8387	0.8539	0.8694
270	0.7480	0.7573	0.7678	0.7792	0.7915	0.8043	0.8177	0.8316	0.8459	0.8604	0.8753
275	0.7623	0.7707	0.7802	0.7907	0.8020	0.8141	0.8267	0.8398	0.8534	0.8673	0.8815
280	0.7764	0.7839	0.7925	0.8022	0.8127	0.8240	0.8358	0.8482	0.8611	0.8743	0.8879
285	0.7901	0.7968	0.8047	0.8136	0.8234	0.8339	0.8451	0.8568	0.8690	0.8816	0.8946
290	0.8034	0.8094	0.8166	0.8248	0.8339	0.8438	0.8543	0.8654	0.8770	0.8890	0.9013
295	0.8162	0.8217	0.8283	0.8359	0.8443	0.8536	0.8635	0.8739	0.8849	0.8964	0.9082
300	0.8285	0.8335	0.8396	0.8466	0.8545	0.8632	0.8725	0.8825	0.8929	0.9038	0.9151
305	0.8402	0.8449	0.8505	0.8571	0.8645	0.8726	0.8814	0.8908	0.9008	0.9112	0.9220
310	0.8515	0.8557	0.8610	0.8671	0.8741	0.8818	0.8902	0.8991	0.9086	0.9185	0.9289
315	0.8621	0.8661	0.8711	0.8769	0.8834	0.8907	0.8986	0.9072	0.9162	0.9257	0.9356
320	0.8723	0.8761	0.8807	0.8862	0.8924	0.8993	0.9069	0.9150	0.9237	0.9328	0.9423
325	0.8819	0.8855	0.8899	0.8951	0.9011	0.9077	0.9149	0.9227	0.9309	0.9397	0.9488
330	0.8911	0.8945	0.8987	0.9037	0.9094	0.9157	0.9226	0.9301	0.9380	0.9464	0.9552
335	0.8997	0.9031	0.9071	0.9119	0.9174	0.9234	0.9301	0.9372	0.9449	0.9529	0.9614
340	0.9080	0.9112	0.9151	0.9197	0.9250	0.9308	0.9372	0.9441	0.9515	0.9593	0.9675
345	0.9158	0.9189	0.9227	0.9272	0.9323	0.9379	0.9441	0.9508	0.9579	0.9654	0.9734
350	0.9231	0.9262	0.9300	0.9343	0.9393	0.9447	0.9507	0.9571	0.9640	0.9713	0.9790
355	0.9301	0.9332	0.9369	0.9411	0.9459	0.9512	0.9570	0.9633	0.9700	0.9771	0.9845
360	0.9368	0.9398	0.9434	0.9476	0.9522	0.9574	0.9631	0.9692	0.9757	0.9825	0.9898
365	0.9430	0.9461	0.9496	0.9537	0.9583	0.9634	0.9689	0.9748	0.9811	0.9878	0.9949
370	0.9490	0.9520	0.9555	0.9596	0.9641	0.9690	0.9744	0.9802	0.9864	0.9929	0.9998
375	0.9546	0.9577	0.9612	0.9651	0.9696	0.9744	0.9797	0.9854	0.9914	0.9978	1.0045
380	0.9600	0.9630	0.9665	0.9704	0.9748	0.9796	0.9848	0.9903	0.9962	1.0025	1.0090
385	0.9651	0.9681	0.9716	0.9755	0.9798	0.9845	0.9896	0.9950	1.0008	1.0070	1.0134
390	0.9699	0.9729	0.9764	0.9803	0.9845	0.9892	0.9942	0.9996	1.0052	1.0113	1.0176
395	0.9744	0.9775	0.9810	0.9848	0.9891	0.9937	0.9986	1.0039	1.0095	1.0154	1.0216
400	0.9788	0.9819	0.9853	0.9892	0.9934	0.9979	1.0028	1.0080	1.0135	1.0193	1.0254

Temperature, K	Pressure, N m^2×10^{-5}										
	0	10	20	30	40	50	60	70	80	90	100
400	1.0000	0.9953	0.9910	0.9871	0.9835	0.9803	0.9774	0.9750	0.9729	0.9712	0.9698
405	1.0000	0.9957	0.9917	0.9881	0.9848	0.9819	0.9793	0.9771	0.9753	0.9738	0.9727
410	1.0000	0.9960	0.9923	0.9890	0.9860	0.9834	0.9811	0.9792	0.9776	0.9763	0.9755
415	1.0000	0.9963	0.9929	0.9899	0.9872	0.9848	0.9828	0.9811	0.9797	0.9787	0.9780
420	1.0000	0.9966	0.9935	0.9908	0.9883	0.9862	0.9844	0.9829	0.9818	0.9810	0.9805
425	1.0000	0.9969	0.9941	0.9916	0.9894	0.9875	0.9859	0.9847	0.9838	0.9831	0.9828
430	1.0000	0.9971	0.9946	0.9923	0.9904	0.9887	0.9874	0.9864	0.9856	0.9852	0.9850
435	1.0000	0.9974	0.9951	0.9931	0.9914	0.9899	0.9888	0.9879	0.9874	0.9871	0.9872
440	1.0000	0.9976	0.9956	0.9938	0.9923	0.9911	0.9901	0.9894	0.9891	0.9890	0.9892
445	1.0000	0.9979	0.9960	0.9945	0.9932	0.9921	0.9914	0.9909	0.9907	0.9907	0.9911
450	1.0000	0.9981	0.9965	0.9951	0.9940	0.9931	0.9926	0.9923	0.9922	0.9924	0.9929
455	1.0000	0.9983	0.9969	0.9957	0.9948	0.9941	0.9937	0.9936	0.9937	0.9940	0.9946
460	1.0000	0.9985	0.9973	0.9963	0.9955	0.9950	0.9948	0.9948	0.9950	0.9955	0.9963
465	1.0000	0.9987	0.9976	0.9968	0.9963	0.9959	0.9958	0.9960	0.9964	0.9970	0.9978
470	1.0000	0.9989	0.9980	0.9974	0.9970	0.9968	0.9968	0.9971	0.9976	0.9984	0.9993
475	1.0000	0.9991	0.9984	0.9979	0.9976	0.9976	0.9978	0.9982	0.9988	0.9997	1.0008
480	1.0000	0.9992	0.9987	0.9984	0.9982	0.9984	0.9987	0.9992	1.0000	1.0009	1.0021
485	1.0000	0.9994	0.9990	0.9988	0.9989	0.9991	0.9996	1.0002	1.0011	1.0022	1.0034
490	1.0000	0.9995	0.9993	0.9993	0.9994	0.9998	1.0004	1.0012	1.0021	1.0033	1.0047
495	1.0000	0.9997	0.9996	0.9997	1.0000	1.0005	1.0012	1.0021	1.0031	1.0044	1.0059
500	1.0000	0.9998	0.9999	1.0001	1.0005	1.0011	1.0019	1.0029	1.0041	1.0054	1.0070
505	1.0000	1.0000	1.0001	1.0005	1.0010	1.0017	1.0026	1.0037	1.0050	1.0065	1.0081
510	1.0000	1.0001	1.0004	1.0008	1.0015	1.0023	1.0033	1.0045	1.0059	1.0074	1.0091
515	1.0000	1.0002	1.0006	1.0012	1.0020	1.0029	1.0040	1.0053	1.0067	1.0083	1.0101
520	1.0000	1.0003	1.0009	1.0015	1.0024	1.0034	1.0046	1.0060	1.0075	1.0092	1.0111
525	1.0000	1.0005	1.0011	1.0019	1.0028	1.0040	1.0052	1.0067	1.0083	1.0101	1.0120
530	1.0000	1.0006	1.0013	1.0022	1.0032	1.0045	1.0058	1.0073	1.0090	1.0109	1.0128
535	1.0000	1.0007	1.0015	1.0025	1.0036	1.0049	1.0064	1.0080	1.0097	1.0116	1.0137
540	1.0000	1.0008	1.0017	1.0028	1.0040	1.0054	1.0069	1.0086	1.0104	1.0124	1.0145
545	1.0000	1.0009	1.0019	1.0031	1.0044	1.0058	1.0074	1.0092	1.0111	1.0131	1.0152
550	1.0000	1.0010	1.0021	1.0033	1.0047	1.0062	1.0079	1.0097	1.0117	1.0138	1.0160
555	1.0000	1.0011	1.0022	1.0036	1.0050	1.0067	1.0084	1.0103	1.0123	1.0144	1.0167
560	1.0000	1.0011	1.0024	1.0038	1.0054	1.0070	1.0088	1.0108	1.0128	1.0150	1.0173
565	1.0000	1.0012	1.0026	1.0041	1.0057	1.0074	1.0093	1.0113	1.0134	1.0156	1.0180
570	1.0000	1.0013	1.0027	1.0043	1.0060	1.0078	1.0097	1.0117	1.0139	1.0162	1.0186
575	1.0000	1.0014	1.0029	1.0045	1.0062	1.0081	1.0101	1.0122	1.0144	1.0167	1.0192
580	1.0000	1.0014	1.0030	1.0047	1.0065	1.0084	1.0105	1.0126	1.0149	1.0173	1.0198
585	1.0000	1.0015	1.0032	1.0049	1.0068	1.0088	1.0108	1.0130	1.0154	1.0178	1.0203
590	1.0000	1.0016	1.0033	1.0051	1.0070	1.0091	1.0112	1.0134	1.0158	1.0183	1.0208
595	1.0000	1.0017	1.0034	1.0053	1.0073	1.0093	1.0115	1.0138	1.0162	1.0187	1.0213
600	1.0000	1.0017	1.0035	1.0055	1.0075	1.0096	1.0119	1.0142	1.0166	1.0192	1.0218

TABLE VI. - Concluded. THERMODYNAMIC PROPERTY OF METHANE - COMPRESSIBILITY FACTOR, Z_0

Temperature, K	Pressure, N $m^2 \times 10^{-5}$										
	100	110	120	130	140	150	160	170	180	190	200
400	0.9698	0.9689	0.9684	0.9683	0.9686	0.9693	0.9704	0.9719	0.9738	0.9761	0.9788
405	0.9727	0.9720	0.9717	0.9717	0.9722	0.9730	0.9742	0.9758	0.9778	0.9802	0.9829
410	0.9755	0.9749	0.9748	0.9750	0.9756	0.9765	0.9779	0.9796	0.9816	0.9841	0.9868
415	0.9780	0.9777	0.9777	0.9781	0.9788	0.9799	0.9813	0.9831	0.9853	0.9877	0.9906
420	0.9805	0.9803	0.9805	0.9811	0.9819	0.9831	0.9846	0.9865	0.9887	0.9912	0.9941
425	0.9828	0.9828	0.9832	0.9838	0.9848	0.9861	0.9878	0.9897	0.9920	0.9946	0.9975
430	0.9850	0.9852	0.9857	0.9865	0.9876	0.9890	0.9907	0.9928	0.9951	0.9977	1.0007
435	0.9872	0.9875	0.9881	0.9890	0.9902	0.9918	0.9936	0.9957	0.9981	1.0007	1.0037
440	0.9892	0.9896	0.9904	0.9914	0.9927	0.9944	0.9962	0.9984	1.0009	1.0036	1.0066
445	0.9911	0.9917	0.9926	0.9937	0.9951	0.9968	0.9988	1.0010	1.0036	1.0063	1.0094
450	0.9929	0.9936	0.9946	0.9959	0.9974	0.9992	1.0012	1.0035	1.0061	1.0089	1.0120
455	0.9946	0.9955	0.9966	0.9979	0.9996	1.0014	1.0036	1.0059	1.0085	1.0114	1.0145
460	0.9963	0.9972	0.9985	0.9999	1.0016	1.0036	1.0058	1.0082	1.0109	1.0138	1.0169
465	0.9978	0.9989	1.0002	1.0018	1.0036	1.0056	1.0079	1.0103	1.0131	1.0160	1.0192
470	0.9993	1.0005	1.0019	1.0036	1.0055	1.0075	1.0099	1.0124	1.0152	1.0181	1.0213
475	1.0008	1.0021	1.0036	1.0053	1.0072	1.0094	1.0118	1.0144	1.0172	1.0202	1.0234
480	1.0021	1.0035	1.0051	1.0069	1.0089	1.0112	1.0136	1.0162	1.0191	1.0221	1.0254
485	1.0034	1.0049	1.0066	1.0085	1.0106	1.0128	1.0153	1.0180	1.0209	1.0240	1.0273
490	1.0047	1.0062	1.0080	1.0100	1.0121	1.0145	1.0170	1.0197	1.0226	1.0258	1.0291
495	1.0059	1.0075	1.0093	1.0114	1.0136	1.0160	1.0186	1.0214	1.0243	1.0274	1.0308
500	1.0070	1.0087	1.0106	1.0127	1.0150	1.0175	1.0201	1.0229	1.0259	1.0291	1.0324
505	1.0081	1.0099	1.0119	1.0140	1.0164	1.0189	1.0215	1.0244	1.0274	1.0306	1.0340
510	1.0091	1.0110	1.0130	1.0153	1.0176	1.0202	1.0229	1.0258	1.0289	1.0321	1.0355
515	1.0101	1.0121	1.0142	1.0164	1.0189	1.0215	1.0242	1.0272	1.0302	1.0335	1.0369
520	1.0111	1.0131	1.0152	1.0176	1.0201	1.0227	1.0255	1.0285	1.0316	1.0348	1.0383
525	1.0120	1.0140	1.0163	1.0186	1.0212	1.0239	1.0267	1.0297	1.0328	1.0361	1.0396
530	1.0128	1.0150	1.0173	1.0197	1.0223	1.0250	1.0279	1.0309	1.0340	1.0374	1.0408
535	1.0137	1.0159	1.0182	1.0207	1.0233	1.0261	1.0290	1.0320	1.0352	1.0385	1.0420
540	1.0145	1.0167	1.0191	1.0216	1.0243	1.0271	1.0300	1.0331	1.0363	1.0397	1.0431
545	1.0152	1.0175	1.0200	1.0225	1.0252	1.0281	1.0310	1.0341	1.0374	1.0407	1.0442
550	1.0160	1.0183	1.0208	1.0234	1.0261	1.0290	1.0320	1.0351	1.0384	1.0418	1.0453
555	1.0167	1.0191	1.0216	1.0242	1.0270	1.0299	1.0329	1.0361	1.0393	1.0427	1.0463
560	1.0173	1.0198	1.0223	1.0250	1.0278	1.0308	1.0338	1.0370	1.0403	1.0437	1.0472
565	1.0180	1.0205	1.0231	1.0258	1.0286	1.0316	1.0347	1.0378	1.0412	1.0446	1.0481
570	1.0186	1.0211	1.0238	1.0265	1.0294	1.0324	1.0355	1.0387	1.0420	1.0454	1.0490
575	1.0192	1.0218	1.0244	1.0272	1.0301	1.0331	1.0362	1.0395	1.0428	1.0463	1.0498
580	1.0198	1.0224	1.0251	1.0279	1.0308	1.0338	1.0370	1.0402	1.0436	1.0471	1.0506
585	1.0203	1.0229	1.0257	1.0285	1.0315	1.0345	1.0377	1.0410	1.0443	1.0478	1.0514
590	1.0208	1.0235	1.0263	1.0291	1.0321	1.0352	1.0384	1.0417	1.0451	1.0485	1.0521
595	1.0213	1.0240	1.0268	1.0297	1.0327	1.0358	1.0390	1.0423	1.0457	1.0492	1.0528
600	1.0218	1.0245	1.0274	1.0303	1.0333	1.0365	1.0397	1.0430	1.0464	1.0499	1.0535

Temperature, K	Pressure, N/m^2×10^{-5}										
	200	210	220	230	240	250	260	270	280	290	300
400	0.9788	0.9819	0.9853	0.9892	0.9934	0.9979	1.0028	1.0080	1.0135	1.0193	1.0254
405	0.9829	0.9860	0.9895	0.9933	0.9975	1.0020	1.0068	1.0119	1.0174	1.0231	1.0290
410	0.9868	0.9900	0.9934	0.9973	1.0014	1.0059	1.0106	1.0157	1.0211	1.0267	1.0326
415	0.9906	0.9937	0.9972	1.0010	1.0051	1.0096	1.0143	1.0193	1.0246	1.0301	1.0359
420	0.9941	0.9973	1.0008	1.0046	1.0087	1.0131	1.0178	1.0227	1.0279	1.0334	1.0391
425	0.9975	1.0007	1.0042	1.0080	1.0121	1.0164	1.0211	1.0260	1.0311	1.0366	1.0422
430	1.0007	1.0039	1.0074	1.0112	1.0153	1.0196	1.0242	1.0291	1.0342	1.0396	1.0451
435	1.0037	1.0070	1.0105	1.0143	1.0184	1.0227	1.0273	1.0321	1.0371	1.0424	1.0479
440	1.0066	1.0099	1.0134	1.0172	1.0213	1.0256	1.0301	1.0349	1.0399	1.0452	1.0506
445	1.0094	1.0127	1.0162	1.0200	1.0241	1.0284	1.0329	1.0376	1.0426	1.0478	1.0532
450	1.0120	1.0153	1.0189	1.0227	1.0267	1.0310	1.0355	1.0402	1.0452	1.0503	1.0556
455	1.0145	1.0178	1.0214	1.0252	1.0293	1.0335	1.0380	1.0427	1.0476	1.0527	1.0580
460	1.0169	1.0203	1.0238	1.0277	1.0317	1.0359	1.0404	1.0451	1.0499	1.0550	1.0602
465	1.0192	1.0225	1.0262	1.0300	1.0340	1.0382	1.0427	1.0473	1.0522	1.0572	1.0624
470	1.0213	1.0247	1.0284	1.0322	1.0362	1.0404	1.0449	1.0495	1.0543	1.0592	1.0644
475	1.0234	1.0268	1.0305	1.0343	1.0383	1.0425	1.0469	1.0515	1.0563	1.0612	1.0663
480	1.0254	1.0288	1.0325	1.0363	1.0403	1.0445	1.0489	1.0535	1.0582	1.0631	1.0682
485	1.0273	1.0307	1.0344	1.0382	1.0422	1.0464	1.0508	1.0554	1.0601	1.0649	1.0700
490	1.0291	1.0325	1.0362	1.0400	1.0441	1.0482	1.0526	1.0571	1.0618	1.0667	1.0717
495	1.0308	1.0343	1.0379	1.0418	1.0458	1.0500	1.0543	1.0588	1.0635	1.0683	1.0733
500	1.0324	1.0359	1.0396	1.0435	1.0475	1.0516	1.0560	1.0605	1.0651	1.0699	1.0748
505	1.0340	1.0375	1.0412	1.0450	1.0491	1.0532	1.0575	1.0620	1.0666	1.0714	1.0763
510	1.0355	1.0390	1.0427	1.0466	1.0506	1.0547	1.0590	1.0635	1.0681	1.0728	1.0777
515	1.0369	1.0404	1.0442	1.0480	1.0520	1.0562	1.0605	1.0649	1.0695	1.0742	1.0791
520	1.0383	1.0418	1.0455	1.0494	1.0534	1.0576	1.0618	1.0663	1.0708	1.0755	1.0803
525	1.0396	1.0431	1.0469	1.0507	1.0547	1.0589	1.0632	1.0676	1.0721	1.0768	1.0816
530	1.0408	1.0444	1.0481	1.0520	1.0560	1.0601	1.0644	1.0688	1.0733	1.0780	1.0827
535	1.0420	1.0456	1.0493	1.0532	1.0572	1.0613	1.0656	1.0700	1.0745	1.0791	1.0838
540	1.0431	1.0467	1.0505	1.0544	1.0584	1.0625	1.0667	1.0711	1.0756	1.0802	1.0849
545	1.0442	1.0478	1.0516	1.0555	1.0595	1.0636	1.0678	1.0722	1.0766	1.0812	1.0859
550	1.0453	1.0489	1.0526	1.0565	1.0605	1.0646	1.0689	1.0732	1.0776	1.0822	1.0869
555	1.0463	1.0499	1.0536	1.0575	1.0615	1.0656	1.0698	1.0742	1.0786	1.0832	1.0878
560	1.0472	1.0509	1.0546	1.0585	1.0625	1.0666	1.0708	1.0751	1.0795	1.0841	1.0887
565	1.0481	1.0518	1.0555	1.0594	1.0634	1.0675	1.0717	1.0760	1.0804	1.0849	1.0895
570	1.0490	1.0526	1.0564	1.0603	1.0643	1.0684	1.0725	1.0768	1.0812	1.0857	1.0903
575	1.0498	1.0535	1.0573	1.0611	1.0651	1.0692	1.0734	1.0777	1.0820	1.0865	1.0911
580	1.0506	1.0543	1.0581	1.0619	1.0659	1.0700	1.0742	1.0784	1.0828	1.0872	1.0918
585	1.0514	1.0551	1.0588	1.0627	1.0667	1.0707	1.0749	1.0792	1.0835	1.0880	1.0925
590	1.0521	1.0558	1.0596	1.0634	1.0674	1.0715	1.0756	1.0799	1.0842	1.0886	1.0931
595	1.0528	1.0565	1.0603	1.0641	1.0681	1.0722	1.0763	1.0805	1.0849	1.0893	1.0938
600	1.0535	1.0572	1.0609	1.0648	1.0688	1.0728	1.0770	1.0812	1.0855	1.0899	1.0944

TABLE VII. - THERMODYNAMIC PROPERTY OF METHANE - ENTHALPY, H_0 R, K

Temperature, K	Pressure, N m^2×10^{-5}										
	0	1	2	3	4	5	6	7	8	9	10
120	478.27	459.97	------	------	------	------	------	------	------	------	------
122	486.28	469.24	450.61	------	------	------	------	------	------	------	------
124	494.29	478.39	461.13	------	------	------	------	------	------	------	------
126	502.29	487.44	471.40	------	------	------	------	------	------	------	------
128	510.30	496.39	481.45	465.25	------	------	------	------	------	------	------
130	518.31	505.26	491.31	476.28	------	------	------	------	------	------	------
132	526.31	514.05	501.00	487.01	471.88	------	------	------	------	------	------
134	534.32	522.78	510.54	497.48	483.45	------	------	------	------	------	------
136	542.33	531.44	519.94	507.72	494.66	480.59	------	------	------	------	------
138	550.34	540.05	529.21	517.75	505.56	492.50	------	------	------	------	------
140	558.34	548.60	538.38	527.60	516.19	504.03	490.98	------	------	------	------
142	566.35	557.12	547.45	537.29	526.57	515.20	503.08	490.05	------	------	------
144	574.36	565.59	556.42	544.83	536.74	526.08	514.77	502.70	------	------	------
146	582.37	574.02	565.32	556.23	546.71	536.69	526.11	514.87	502.85	------	------
148	590.38	582.42	574.14	565.52	556.51	547.07	537.13	526.62	515.46	503.50	------
150	598.39	590.79	582.90	574.70	566.16	557.23	547.87	538.02	527.60	516.51	504.64
152	606.40	599.13	591.60	583.79	575.67	567.21	558.37	549.10	539.33	529.01	518.02
154	614.41	607.45	600.25	592.79	585.06	577.03	568.65	559.90	550.72	541.05	530.83
156	622.43	615.74	608.84	601.72	594.34	586.69	578.74	570.45	561.79	552.71	543.15
158	630.44	624.01	617.40	610.57	603.52	596.22	588.65	580.79	572.59	564.03	555.05
160	638.45	632.27	625.91	619.36	612.61	605.63	598.41	590.93	583.15	575.05	566.59
162	646.47	640.51	634.39	628.10	621.62	614.93	608.03	600.90	593.50	585.82	577.82
164	654.48	648.73	642.84	636.78	630.55	624.14	617.53	610.71	603.66	596.35	588.76
166	662.50	656.95	651.25	645.41	639.42	633.26	626.92	620.38	613.64	606.67	599.46
168	670.52	665.14	659.64	654.00	648.23	642.29	636.20	629.93	623.47	616.81	609.93
170	678.54	673.33	668.01	662.56	656.98	651.26	645.39	639.37	633.17	626.79	620.22
172	686.56	681.51	676.35	671.08	665.68	660.16	654.50	648.70	642.74	636.62	630.32
174	694.59	689.68	684.68	679.57	674.34	669.00	663.54	657.94	652.21	646.32	640.27
176	702.61	697.85	692.98	688.02	682.96	677.79	672.51	667.10	661.57	655.90	650.09
178	710.64	706.00	701.28	696.46	691.55	686.54	681.42	676.19	670.85	665.38	659.77
180	718.67	714.15	709.55	704.87	700.10	695.23	690.27	685.21	680.04	674.75	669.35
182	726.70	722.30	717.82	713.26	708.62	703.89	699.08	694.17	689.16	684.04	678.82
184	734.74	730.44	726.07	721.63	717.11	712.52	707.84	703.07	698.21	693.25	688.20
186	742.77	738.58	734.31	729.99	725.58	721.11	716.55	711.92	707.20	702.39	697.50
188	750.81	746.71	742.55	738.32	734.03	729.67	725.23	720.73	716.14	711.47	706.72
190	758.86	754.85	750.78	746.65	742.46	738.20	733.88	729.49	725.03	720.49	715.87

Temperature, K	Pressure, N m$^{2}\times10^{-5}$										
	10	12	14	16	18	20	22	24	26	28	30
150	504.64	------	------	------	------	------	------	------	------	------	------
152	518.02	------	------	------	------	------	------	------	------	------	------
154	530.83	508.29	------	------	------	------	------	------	------	------	------
156	543.15	522.27	------	------	------	------	------	------	------	------	------
158	555.05	535.61	513.60	------	------	------	------	------	------	------	------
160	566.59	548.40	528.06	504.72	------	------	------	------	------	------	------
162	577.82	560.72	541.80	520.43	------	------	------	------	------	------	------
164	588.76	572.62	554.93	535.21	512.68	------	------	------	------	------	------
166	599.46	584.18	567.56	549.23	528.62	504.75	------	------	------	------	------
168	609.93	595.43	579.75	562.61	543.59	521.99	------	------	------	------	------
170	620.22	606.40	591.56	575.46	557.77	538.01	515.32	------	------	------	------
172	630.32	617.13	603.03	587.84	571.31	553.05	532.49	508.61	------	------	------
174	640.27	627.65	614.22	599.84	584.29	567.30	548.45	527.04	501.85	------	------
176	650.09	637.98	625.15	611.48	596.81	580.91	563.46	543.99	521.70	495.10	------
178	659.77	648.14	635.86	622.83	608.92	593.96	577.70	559.80	539.71	516.51	488.41
180	669.35	658.14	646.36	633.91	620.69	606.55	591.31	574.70	556.34	535.64	511.54
182	678.82	668.01	656.68	644.76	632.15	618.73	604.37	588.86	571.92	553.14	531.85
184	688.20	677.76	666.85	655.40	643.34	630.57	616.98	602.41	586.65	569.40	550.22
186	697.50	687.40	676.87	665.85	654.29	642.10	629.19	615.44	600.68	584.70	567.18
188	706.72	696.94	686.76	676.14	665.03	653.36	641.06	628.03	614.13	599.21	583.03
190	715.87	706.38	696.53	686.28	675.59	664.39	652.63	640.23	627.09	613.07	598.02

Temperature, K	Pressure, N m$^{2}\times10^{-5}$										
	30	32	34	36	38	40	42	44	46	48	50
170	------	------	------	------	------	------	------	------	------	------	------
172	------	------	------	------	------	------	------	------	------	------	------
174	------	------	------	------	------	------	------	------	------	------	------
176	------	------	------	------	------	------	------	------	------	------	------
178	488.41	------	------	------	------	------	------	------	------	------	------
180	511.54	481.89	------	------	------	------	------	------	------	------	------
182	531.85	506.87	475.71	------	------	------	------	------	------	------	------
184	550.22	528.39	502.63	470.09	------	------	------	------	------	------	------
186	567.18	547.65	525.37	498.95	465.31	413.47	------	------	------	------	------
188	583.03	565.29	545.49	522.86	495.97	461.66	408.82	------	------	------	------
190	598.02	581.70	563.78	543.79	520.95	493.84	459.41	407.76	------	------	------

TABLE VII. - Continued. THERMODYNAMIC PROPERTY OF METHANE - ENTHALPY, H_0 R, K

Temperature, K	Pressure, N m^2·10^{-5}										
	0	5	10	15	20	25	30	35	40	45	50
190	758.86	738.20	715.87	691.46	664.39	633.76	598.02	554.09	493.84	357.43	------
192	766.90	746.72	724.96	701.29	675.21	645.96	612.29	571.94	519.73	437.21	167.36
194	774.95	755.21	734.00	711.02	685.84	657.83	625.97	588.54	542.04	477.10	338.72
196	783.00	763.68	742.98	720.65	696.31	669.41	639.15	604.17	562.01	507.10	421.54
198	791.06	772.13	751.92	730.2[illegible]	706.62	680.75	651.89	619.01	580.28	532.12	465.81
200	799.12	780.57	760.82	739.66	716.89	691.86	664.27	633.19	597.26	554.05	498.55
202	807.18	788.99	769.68	749.05	726.86	702.78	676.32	646.83	613.25	573.85	525.51
204	815.25	797.41	778.51	758.38	736.81	713.52	688.10	660.00	628.42	592.08	548.91
206	823.32	805.81	787.30	767.65	746.67	724.10	699.62	672.77	642.91	609.10	569.89
208	831.40	814.20	796.07	776.87	756.43	734.54	710.92	685.19	656.85	625.16	589.10
210	839.48	822.59	804.81	786.03	766.11	744.85	722.02	697.31	670.30	640.44	606.96
212	847.57	830.96	813.53	795.16	775.72	755.05	732.95	709.16	683.35	655.06	623.75
214	855.67	839.34	822.23	804.24	785.26	765.15	743.72	720.78	696.03	669.14	639.67
216	863.76	847.70	830.91	813.28	794.74	775.15	754.35	732.18	708.40	682.75	654.87
218	871.87	856.07	839.57	822.30	804.16	785.06	764.86	743.40	720.50	695.95	669.47
220	879.98	864.43	848.22	831.28	813.54	794.90	775.24	754.45	732.36	708.79	683.55
222	888.10	872.79	856.85	840.24	822.87	804.66	785.52	765.34	744.00	721.33	697.19
224	896.22	881.14	865.48	849.17	832.15	814.36	795.71	776.10	755.44	733.60	710.45
226	904.35	889.50	874.09	858.08	841.40	824.00	805.81	786.74	766.71	745.62	723.38
228	912.49	897.86	882.70	866.96	850.61	833.59	815.83	797.27	777.83	757.43	736.00
230	920.64	906.22	891.29	875.84	859.89	843.13	825.78	807.69	788.80	769.05	748.37
232	928.79	914.58	899.89	884.69	868.95	852.62	835.66	818.02	799.65	780.49	760.50
234	936.95	922.94	908.47	893.53	878.08	862.07	845.48	828.26	810.37	791.77	772.42
236	945.12	931.30	917.06	902.36	887.19	871.49	855.25	838.43	821.00	802.92	784.15
238	953.30	939.67	925.64	911.19	896.26	880.87	864.97	848.53	831.53	813.93	795.72
240	961.49	948.04	934.22	919.98	905.33	890.22	874.64	858.56	841.97	824.83	807.13
242	969.69	956.42	942.79	928.78	914.37	899.54	884.27	868.54	852.32	835.62	818.40
244	977.90	964.80	951.37	937.58	923.40	908.84	893.86	878.46	862.61	846.31	829.55
246	986.11	973.19	959.95	946.36	932.42	918.11	903.42	888.33	872.83	856.91	840.57
248	994.34	981.59	968.53	955.14	941.43	927.36	912.94	898.15	882.98	867.43	851.50
250	1002.58	989.99	977.11	963.92	950.42	936.60	922.44	907.93	893.08	877.88	862.33

Temperature, K	Pressure, N m^2×10^{-5}										
	50	55	60	65	70	75	80	85	90	95	100
190	------	------	------	------	------	------	------	------	------	------	------
192	167.36	127.33	109.02	96.96	88.04	81.03	75.33	70.57	66.55	63.09	60.11
194	338.72	174.23	142.70	125.49	113.68	104.77	97.71	91.92	87.07	82.95	79.41
196	421.54	252.79	184.09	157.63	141.48	129.99	121.17	114.09	108.26	103.34	99.15
198	465.81	355.06	239.30	195.12	172.18	157.05	145.92	137.24	130.19	124.34	119.39
200	498.55	419.17	310.26	240.28	206.70	186.40	172.23	161.50	152.99	146.01	140.17
202	525.51	462.17	376.50	293.67	245.97	218.56	200.36	187.06	176.75	168.44	161.56
204	548.91	495.38	426.85	349.24	289.98	253.86	230.56	214.07	201.58	191.68	183.60
206	569.89	523.07	465.79	398.77	336.29	292.09	262.94	242.63	227.56	215.82	206.34
208	589.10	547.20	497.66	440.11	380.87	332.02	297.24	272.74	254.73	240.87	229.80
210	606.96	568.85	524.95	474.74	421.02	371.57	332.71	304.16	283.01	266.82	254.00
212	623.75	588.68	549.06	504.49	456.25	408.88	368.18	336.37	312.19	293.58	278.88
214	639.67	607.09	570.87	530.69	487.20	443.03	402.47	368.66	341.92	320.98	304.36
216	654.87	624.39	590.92	554.25	514.72	473.91	434.77	400.26	371.71	348.75	330.29
218	669.47	640.78	609.60	575.79	539.55	501.88	464.75	430.58	401.06	376.54	356.46
220	683.55	656.41	627.18	595.74	562.26	527.37	492.42	459.27	429.54	404.02	382.63
222	697.19	671.41	643.85	614.43	583.26	550.80	517.99	486.19	456.83	430.86	408.54
224	710.45	685.88	659.76	632.07	602.89	572.54	541.71	511.41	482.80	456.82	433.96
226	723.38	699.87	675.04	648.85	621.38	592.88	563.84	535.04	507.39	481.76	458.70
228	736.00	713.47	689.77	664.90	638.92	612.04	584.62	557.26	530.68	505.61	482.65
230	748.37	726.71	704.03	680.32	655.66	630.20	604.24	578.22	552.73	528.38	505.72
232	760.50	739.63	717.87	695.21	671.72	647.53	622.86	598.09	573.67	550.11	527.90
234	772.42	752.29	731.36	709.64	687.19	664.13	640.63	617.00	593.60	570.86	549.20
236	784.15	764.69	744.52	723.66	702.15	680.10	657.66	635.08	612.64	590.71	569.65
238	795.72	776.88	757.40	737.32	716.66	695.53	674.05	652.42	630.89	609.75	589.32
240	807.13	788.86	770.03	750.66	730.78	710.48	689.87	669.12	648.43	628.05	608.24
242	818.40	800.67	782.44	763.72	744.55	725.01	705.20	685.25	665.34	645.68	626.50
244	829.55	812.32	794.64	776.52	758.01	739.17	720.08	700.87	681.69	662.71	644.13
246	840.57	823.82	806.65	789.10	771.19	752.99	734.58	716.05	697.54	679.21	661.21
248	851.50	835.18	818.50	801.46	784.12	766.52	748.72	730.83	712.95	695.21	677.77
250	862.33	846.43	830.19	813.65	796.82	779.77	762.55	745.24	727.95	710.78	693.87

TABLE VII. - Continued. THERMODYNAMIC PROPERTY OF METHANE - ENTHALPY, H_0 R, K

Temperature, K	Pressure, N m^2×10^{-5}										
	100	110	120	130	140	150	160	170	180	190	200
190	------	------	------	------	------	------	------	------	------	------	------
192	60.11	55.26	51.54	48.69	46.52	44.91	43.75	42.98	42.54	42.38	42.47
194	79.41	73.66	69.26	65.87	63.26	61.27	59.79	58.74	58.05	57.68	57.57
196	99.15	92.39	87.22	83.23	80.13	77.74	75.92	74.57	73.62	73.02	72.71
198	119.39	111.46	105.44	100.79	97.16	94.33	92.14	90.48	89.26	88.41	87.89
200	140.17	130.92	123.95	118.56	114.35	111.05	108.46	106.46	104.95	103.85	103.11
202	161.56	150.79	142.74	136.56	131.72	127.90	124.89	122.53	120.71	119.35	118.36
204	183.60	171.10	161.86	154.79	149.26	144.90	141.43	138.70	136.55	134.90	133.67
206	206.34	191.87	181.30	173.26	167.00	162.04	158.09	154.95	152.46	150.51	149.02
208	229.80	213.13	201.09	192.03	184.93	179.34	174.87	171.30	168.45	166.18	164.42
210	254.00	234.88	221.23	210.99	203.05	196.78	191.78	187.75	184.51	181.92	179.87
212	278.88	257.12	241.72	230.24	221.38	214.39	208.80	204.30	200.66	197.72	195.37
214	304.36	279.81	262.54	249.74	239.90	232.15	225.95	220.94	216.88	213.59	210.93
216	330.29	302.90	283.68	269.49	258.61	250.06	243.22	237.69	233.19	229.52	226.54
218	356.46	326.32	305.10	289.46	277.50	268.11	260.60	254.52	249.57	245.52	242.21
220	382.63	349.95	326.75	309.63	296.55	286.30	278.10	271.45	266.03	261.58	257.92
222	408.54	373.67	348.57	329.97	315.75	304.60	295.69	288.47	282.56	277.69	273.69
224	433.96	397.33	370.47	350.43	335.07	323.02	313.38	305.56	299.15	293.87	289.50
226	458.70	420.80	392.38	370.96	354.48	341.52	331.14	322.72	315.80	310.09	305.35
228	482.65	443.93	414.20	391.51	373.94	360.08	348.97	339.93	332.51	326.36	321.25
230	505.72	466.62	435.86	412.02	393.42	378.69	366.85	357.20	349.25	342.67	337.17
232	527.90	488.78	457.25	432.43	412.87	397.30	384.75	374.49	366.03	359.00	353.13
234	549.20	510.36	478.33	452.68	432.26	415.90	402.65	391.80	382.83	375.36	369.11
236	569.65	531.31	499.03	472.73	451.55	434.46	420.54	409.11	399.64	391.74	385.10
238	589.32	551.63	519.30	492.53	470.70	452.93	438.40	426.41	416.45	408.11	401.10
240	608.24	571.33	539.12	512.03	489.67	471.31	456.19	443.68	433.24	424.48	417.10
242	626.50	590.42	558.48	531.21	508.43	489.55	473.91	460.89	450.00	440.84	433.09
244	644.13	608.94	577.37	550.05	526.96	507.64	491.52	478.04	466.72	457.17	449.06
246	661.21	626.90	595.79	568.54	545.23	525.55	509.02	495.11	483.39	473.46	465.01
248	677.77	644.36	613.76	586.66	563.23	543.27	526.38	512.09	499.99	489.70	480.93
250	693.87	661.33	631.30	604.42	580.96	560.79	543.59	528.96	516.51	505.89	496.80

Temperature, K	Pressure, N $m^2 \times 10^{-5}$										
	200	210	220	230	240	250	260	270	280	290	300
190	------	------	------	------	------	------	------	------	------	------	------
192	42.47	42.77	43.28	43.95	44.79	45.76	46.86	48.08	49.41	50.84	52.36
194	57.57	57.71	58.05	58.59	59.29	60.14	61.14	62.25	63.49	64.82	66.26
196	72.71	72.67	72.85	73.23	73.80	74.53	75.40	76.41	77.55	78.79	80.14
198	87.89	87.65	87.66	87.89	88.31	88.91	89.67	90.57	91.60	92.75	94.00
200	103.11	102.67	102.50	102.56	102.83	103.30	103.93	104.71	105.64	106.69	107.85
202	118.36	117.71	117.35	117.25	117.37	117.69	118.19	118.86	119.67	120.62	121.69
204	133.67	132.80	132.24	131.96	131.92	132.09	132.46	133.00	133.70	134.54	135.51
206	149.02	147.92	147.15	146.69	146.48	146.50	146.73	147.14	147.73	148.46	149.33
208	164.42	163.08	162.10	161.44	161.06	160.92	161.01	161.29	161.75	162.37	163.14
210	179.87	178.28	177.08	176.22	175.66	175.36	175.30	175.44	175.78	176.29	176.95
212	195.37	193.52	192.09	191.02	190.28	189.81	189.60	189.61	189.81	190.20	190.75
214	210.93	208.81	207.14	205.86	204.92	204.28	203.91	203.77	203.85	204.12	204.56
216	226.54	224.14	222.22	220.72	219.59	218.77	218.24	217.95	217.89	218.03	218.36
218	242.21	239.51	237.34	235.61	234.27	233.28	232.58	232.14	231.94	231.96	232.16
220	257.92	254.93	252.49	250.53	248.99	247.80	246.93	246.34	246.00	245.89	245.97
222	273.69	270.39	267.68	265.48	263.72	262.35	261.30	260.55	260.07	259.82	259.78
224	289.50	285.88	282.90	280.46	278.48	276.91	275.69	274.78	274.15	273.76	273.60
226	305.35	301.42	298.15	295.46	293.26	291.49	290.09	289.01	288.23	287.71	287.42
228	321.25	316.98	313.44	310.49	308.07	306.09	304.50	303.26	302.33	301.67	301.25
230	337.17	332.58	328.74	325.54	322.89	320.71	318.93	317.52	316.43	315.63	315.08
232	353.13	348.20	344.07	340.61	337.73	335.34	333.38	331.80	330.55	329.60	328.92
234	369.11	363.85	359.42	355.70	352.58	349.98	347.83	346.08	344.67	343.58	342.77
236	385.10	379.51	374.79	370.80	367.45	364.63	362.29	360.37	358.80	357.57	356.62
238	401.10	395.17	390.16	385.91	382.32	379.30	376.77	374.66	372.94	371.56	370.47
240	417.10	410.84	405.54	401.03	397.21	393.97	391.24	388.97	387.08	385.55	384.33
242	433.09	426.51	420.92	416.15	412.09	408.64	405.72	403.27	401.23	399.55	398.19
244	449.06	442.17	436.29	431.26	426.97	423.32	420.21	417.58	415.38	413.55	412.06
246	465.01	457.81	451.65	446.37	441.85	437.99	434.69	431.89	429.52	427.55	425.92
248	480.93	473.43	466.99	461.47	456.72	452.65	449.17	446.19	443.67	441.55	439.79
250	496.80	489.01	482.32	476.55	471.58	467.31	463.64	460.49	457.81	455.55	453.65

TABLE VII. - Continued. THERMODYNAMIC PROPERTY OF METHANE - ENTHALPY, H_0/R, K

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	0	10	20	30	40	50	60	70	80	90	100
250	1002.58	977.11	950.42	922.44	893.08	862.33	830.19	796.82	762.55	727.95	693.87
255	1023.22	998.57	972.87	946.06	918.11	889.03	858.85	827.73	795.95	763.95	732.35
260	1043.94	1020.07	995.28	969.56	942.88	915.28	886.81	857.63	827.97	798.17	768.73
265	1064.73	1041.60	1017.67	992.95	967.43	941.16	914.21	886.72	858.88	830.99	803.42
270	1085.60	1063.17	1040.06	1016.26	991.81	966.75	941.15	915.14	888.91	862.68	836.76
275	1106.56	1084.80	1062.45	1039.53	1016.05	992.09	967.71	943.03	918.21	893.45	868.99
280	1127.61	1106.49	1084.86	1062.75	1040.19	1017.23	993.96	970.48	946.92	923.46	900.30
285	1148.76	1128.25	1107.31	1085.96	1064.24	1042.22	1019.96	997.56	975.14	952.85	930.86
290	1170.00	1150.08	1129.79	1109.16	1088.24	1067.08	1045.75	1024.34	1002.95	981.72	960.79
295	1191.35	1171.99	1152.32	1132.38	1112.20	1091.84	1071.37	1050.87	1030.43	1010.16	990.19
300	1212.81	1193.99	1174.91	1155.62	1136.14	1116.53	1096.86	1077.19	1057.62	1038.23	1019.14
305	1234.38	1216.08	1197.57	1178.89	1160.07	1141.16	1122.23	1103.34	1084.57	1066.00	1047.72
310	1256.07	1238.27	1220.30	1202.20	1184.01	1165.76	1147.53	1129.36	1111.33	1093.51	1075.98
315	1277.88	1260.56	1243.12	1225.57	1207.97	1190.35	1172.76	1155.27	1137.93	1120.81	1103.98
320	1299.82	1282.97	1266.02	1249.00	1231.96	1214.93	1197.96	1181.09	1164.40	1147.93	1131.75
325	1321.88	1305.48	1289.01	1272.50	1255.99	1239.52	1223.12	1206.86	1190.77	1174.90	1159.33
330	1344.08	1328.11	1312.10	1296.07	1280.07	1264.13	1248.28	1232.58	1217.05	1201.76	1186.75
335	1366.41	1350.86	1335.29	1319.73	1304.22	1288.77	1273.45	1258.27	1243.28	1228.53	1214.05
340	1388.88	1373.73	1358.59	1343.48	1328.43	1313.46	1298.63	1283.95	1269.47	1255.22	1241.25
345	1411.49	1396.73	1382.00	1367.32	1352.71	1338.21	1323.84	1309.63	1295.63	1281.87	1268.37
350	1434.25	1419.87	1405.53	1391.26	1377.08	1363.01	1349.08	1335.33	1321.79	1308.47	1295.42
355	1457.15	1443.14	1429.18	1415.31	1401.53	1387.88	1374.38	1361.06	1347.94	1335.06	1322.44
360	1480.20	1466.55	1452.96	1439.46	1426.08	1412.83	1399.73	1386.82	1374.12	1361.64	1349.43
365	1503.41	1490.10	1476.87	1463.74	1450.73	1437.86	1425.15	1412.63	1400.32	1388.23	1376.40
370	1526.77	1513.79	1500.90	1488.13	1475.48	1462.98	1450.64	1438.49	1426.55	1414.84	1403.38
375	1550.29	1537.63	1525.08	1512.64	1500.34	1488.19	1476.21	1464.42	1452.84	1441.48	1430.37
380	1573.96	1561.62	1549.39	1537.28	1525.31	1513.50	1501.87	1490.42	1479.18	1468.16	1457.38
385	1597.80	1585.76	1573.84	1562.05	1550.41	1538.92	1527.61	1516.49	1505.58	1494.89	1484.43
390	1621.80	1610.06	1598.44	1586.96	1575.62	1564.45	1553.46	1542.65	1532.05	1521.67	1511.52
395	1645.97	1634.51	1623.18	1612.00	1600.96	1590.09	1579.40	1568.90	1558.60	1548.52	1538.66
400	1670.30	1659.12	1648.08	1637.18	1626.43	1615.85	1605.46	1595.25	1585.24	1575.44	1565.86

Temperature, K	Pressure, N/m^2×10^{-5}										
	100	110	120	130	140	150	160	170	180	190	200
250	693.87	661.33	631.30	604.42	580.96	560.79	543.59	528.96	516.51	505.89	496.80
255	732.35	701.90	673.35	647.28	624.01	603.59	585.87	570.57	557.40	546.05	536.26
260	768.73	740.19	713.14	688.06	665.29	644.95	627.00	611.29	597.59	585.66	575.29
265	803.42	776.60	750.99	726.98	704.88	684.86	666.93	651.02	636.98	624.64	613.81
270	836.76	811.49	787.22	764.28	742.95	723.38	705.65	689.73	675.52	662.91	651.74
275	868.99	845.10	822.07	800.18	779.65	760.64	743.23	727.43	713.20	700.44	689.05
280	900.30	877.67	855.78	834.88	815.15	796.74	779.73	764.17	750.02	737.22	725.71
285	930.86	909.36	888.52	868.55	849.61	831.82	815.27	800.00	786.02	773.28	761.73
290	960.79	940.31	920.45	901.35	883.16	865.99	849.92	835.00	821.25	808.63	797.12
295	990.19	970.65	951.67	933.39	915.92	899.36	883.79	869.25	855.77	843.32	831.90
300	1019.14	1000.47	982.31	964.79	948.00	932.03	916.96	902.81	889.63	877.40	866.12
305	1047.72	1029.84	1012.44	995.63	979.49	964.09	949.50	935.77	922.90	910.92	899.80
310	1075.98	1058.83	1042.14	1025.99	1010.46	995.62	981.50	968.17	955.63	943.91	932.99
315	1103.98	1087.51	1071.48	1055.95	1041.00	1026.67	1013.02	1000.09	987.89	976.43	965.73
320	1131.75	1115.91	1100.50	1085.55	1071.14	1057.32	1044.11	1031.57	1019.71	1008.53	998.06
325	1159.33	1144.09	1129.25	1114.85	1100.96	1087.61	1074.83	1062.67	1051.14	1040.25	1030.01
330	1186.75	1172.07	1157.77	1143.90	1130.49	1117.59	1105.23	1093.44	1082.23	1071.63	1061.63
335	1214.05	1199.90	1186.10	1172.72	1159.77	1147.30	1135.34	1123.91	1113.02	1102.70	1092.94
340	1241.25	1227.59	1214.28	1201.35	1188.84	1176.78	1165.20	1154.11	1143.54	1133.50	1123.98
345	1268.37	1255.17	1242.31	1229.82	1217.73	1206.06	1194.85	1184.10	1173.83	1164.06	1154.78
350	1295.42	1282.67	1270.24	1258.16	1246.47	1235.18	1224.31	1213.88	1203.91	1194.40	1185.37
355	1322.44	1310.10	1298.08	1286.40	1275.08	1264.14	1253.61	1243.49	1233.81	1224.56	1215.76
360	1349.43	1337.49	1325.85	1314.55	1303.59	1292.99	1282.78	1272.96	1263.56	1254.57	1246.00
365	1376.40	1364.84	1353.58	1342.63	1332.01	1321.74	1311.84	1302.31	1293.17	1284.43	1276.08
370	1403.38	1392.18	1381.27	1370.66	1360.37	1350.41	1340.80	1331.56	1322.68	1314.17	1306.05
375	1430.37	1419.51	1408.94	1398.65	1388.67	1379.02	1369.70	1360.72	1352.09	1343.82	1335.91
380	1457.38	1446.85	1436.60	1426.63	1416.95	1407.58	1398.53	1389.81	1381.43	1373.38	1365.68
385	1484.43	1474.22	1464.27	1454.59	1445.20	1436.11	1427.33	1418.85	1410.70	1402.88	1395.39
390	1511.52	1501.61	1491.95	1482.56	1473.45	1464.62	1456.09	1447.86	1439.94	1432.33	1425.03
395	1538.66	1529.04	1519.67	1510.55	1501.70	1493.13	1484.84	1476.84	1469.14	1461.74	1454.64
400	1565.86	1556.52	1547.42	1538.57	1529.97	1521.65	1513.59	1505.82	1498.33	1491.12	1484.21

TABLE VII. - Continued. THERMODYNAMIC PROPERTY OF METHANE - ENTHALPY, H_0 R, K

Temperature, K	Pressure, N $m^2 \cdot 10^{-5}$										
	200	210	220	230	240	250	260	270	280	290	300
250	496.80	489.01	482.32	476.55	471.58	467.31	463.64	460.49	457.81	455.55	453.65
255	536.26	527.80	520.48	514.15	508.65	503.89	499.77	496.21	493.14	490.52	488.29
260	575.29	566.26	558.39	551.54	545.55	540.34	535.79	531.84	528.41	525.44	522.89
265	613.81	604.30	595.97	588.65	582.23	576.60	571.66	567.34	563.57	560.28	557.42
270	651.74	641.87	633.14	625.44	618.64	612.64	607.35	602.69	598.59	595.00	591.86
275	689.05	678.90	669.87	661.85	654.73	648.41	642.81	637.84	633.46	629.58	626.18
280	725.71	715.38	706.13	697.86	690.47	683.88	678.01	672.78	668.13	664.01	660.36
285	761.73	751.30	741.89	733.44	725.84	719.03	712.93	707.47	702.60	698.25	694.38
290	797.12	786.65	777.16	768.58	760.83	753.84	747.56	741.91	736.84	732.29	728.23
295	831.90	821.46	811.94	803.28	795.42	788.31	781.88	776.07	770.84	766.13	761.90
300	866.12	855.74	846.24	837.55	829.63	822.43	815.89	809.96	804.60	799.75	795.38
305	899.80	889.54	880.08	871.41	863.47	856.21	849.60	843.58	838.11	833.14	828.65
310	932.99	922.86	913.50	904.87	896.94	889.66	883.00	876.92	871.37	866.32	861.73
315	965.73	955.76	946.51	937.96	930.06	922.79	916.11	909.99	904.39	899.27	894.61
320	998.06	988.27	979.15	970.69	962.85	955.61	948.94	942.81	937.17	932.01	927.29
325	1030.01	1020.41	1011.45	1003.12	995.34	988.15	981.51	975.38	969.73	964.54	959.79
330	1061.63	1052.23	1043.43	1035.20	1027.54	1020.42	1013.82	1007.71	1002.07	996.87	992.10
335	1092.94	1083.75	1075.11	1067.03	1059.47	1052.44	1045.89	1039.82	1034.21	1029.02	1024.23
340	1123.98	1115.00	1106.54	1098.60	1091.17	1084.22	1077.75	1071.73	1066.15	1060.98	1056.20
345	1154.78	1146.01	1137.73	1129.94	1122.64	1115.80	1109.41	1103.45	1097.91	1092.77	1088.01
350	1185.37	1176.80	1168.71	1161.08	1153.91	1147.17	1140.88	1134.99	1129.51	1124.41	1119.68
355	1215.76	1207.41	1199.50	1192.03	1184.99	1178.38	1172.18	1166.37	1160.95	1155.90	1151.21
360	1246.00	1237.85	1230.12	1222.81	1215.92	1209.43	1203.33	1197.61	1192.26	1187.27	1182.62
365	1276.08	1268.14	1260.60	1253.45	1246.70	1240.33	1234.34	1228.71	1223.44	1218.51	1213.91
370	1306.05	1298.31	1290.95	1283.96	1277.35	1271.11	1265.23	1259.70	1254.51	1249.65	1245.11
375	1335.91	1328.36	1321.18	1314.36	1307.90	1301.78	1296.02	1290.59	1285.48	1280.69	1276.21
380	1365.68	1358.33	1351.33	1344.67	1338.35	1332.36	1326.71	1321.38	1316.36	1311.65	1307.24
385	1395.39	1388.22	1381.39	1374.89	1368.71	1362.86	1357.32	1352.09	1347.17	1342.54	1338.19
390	1425.03	1418.05	1411.39	1405.05	1399.01	1393.29	1387.87	1382.75	1377.91	1373.36	1369.09
395	1454.64	1447.84	1441.34	1435.15	1429.26	1423.66	1418.36	1413.34	1408.60	1404.14	1399.94
400	1484.21	1477.59	1471.26	1465.22	1459.46	1453.99	1448.81	1443.89	1439.25	1434.87	1430.75

Temperature, K	Pressure, N m^{2}×10^{-5}										
	0	10	20	30	40	50	60	70	80	90	100
400	1670.30	1659.12	1648.08	1637.18	1626.43	1615.85	1605.46	1595.25	1585.24	1575.44	1565.86
405	1694.81	1683.90	1673.12	1662.50	1652.03	1641.74	1631.62	1621.69	1611.96	1602.44	1593.13
410	1719.48	1708.83	1698.32	1687.97	1677.77	1667.75	1657.90	1648.24	1638.78	1629.52	1620.48
415	1744.32	1733.93	1723.68	1713.58	1703.65	1693.89	1684.30	1674.90	1665.70	1656.69	1647.90
420	1769.34	1759.19	1749.19	1739.35	1729.67	1720.16	1710.82	1701.67	1692.72	1683.96	1675.41
425	1794.53	1784.62	1774.86	1765.26	1755.83	1746.56	1737.47	1728.57	1719.85	1711.33	1703.01
430	1819.89	1810.22	1800.70	1791.33	1782.13	1773.10	1764.25	1755.58	1747.09	1738.80	1730.71
435	1845.43	1835.99	1826.69	1817.56	1808.59	1799.79	1791.16	1782.72	1774.46	1766.38	1758.51
440	1871.15	1861.93	1852.85	1843.94	1835.19	1826.62	1818.21	1809.98	1801.94	1794.08	1786.41
445	1897.05	1888.04	1879.18	1870.48	1861.95	1853.59	1845.39	1837.38	1829.54	1821.89	1814.42
450	1923.12	1914.32	1905.67	1897.19	1888.86	1880.71	1872.72	1864.91	1857.27	1849.82	1842.55
455	1949.37	1940.78	1932.33	1924.05	1915.93	1907.97	1900.19	1892.57	1895.13	1877.87	1870.79
460	1975.81	1967.41	1959.16	1951.08	1943.15	1935.39	1927.80	1920.38	1913.13	1906.05	1899.15
465	2002.42	1994.21	1986.16	1978.27	1970.53	1962.96	1955.56	1948.32	1941.25	1934.36	1927.64
470	2029.21	2021.19	2013.33	2005.62	1998.07	1990.69	1983.47	1976.41	1969.52	1962.80	1956.25
475	2056.19	2048.35	2040.67	2033.14	2025.77	2018.57	2011.52	2004.64	1997.92	1991.37	1984.99
480	2083.34	2075.68	2068.18	2060.83	2053.64	2046.60	2039.73	2033.02	2026.46	2020.08	2013.85
485	2110.68	2103.19	2095.86	2088.68	2081.66	2074.80	2068.09	2061.54	2055.15	2048.92	2042.85
490	2138.20	2130.88	2123.72	2116.71	2109.85	2103.15	2096.60	2090.21	2083.98	2077.91	2071.99
495	2165.90	2158.75	2151.75	2144.90	2138.20	2131.66	2125.27	2119.04	2112.96	2107.03	2101.26
500	2193.78	2186.79	2179.95	2173.26	2166.72	2160.33	2154.09	2148.01	2142.08	2136.30	2130.67
505	2221.84	2215.01	2208.32	2201.79	2195.40	2189.16	2183.07	2177.14	2171.35	2165.71	2160.22
510	2250.09	2243.41	2236.87	2230.49	2224.25	2218.16	2212.21	2206.42	2200.77	2195.27	2189.92
515	2278.52	2271.98	2265.60	2259.35	2253.26	2247.31	2241.51	2235.85	2230.34	2224.97	2219.75
520	2307.12	2300.73	2294.49	2288.39	2282.44	2276.63	2270.96	2265.44	2260.06	2254.83	2249.73
525	2335.91	2329.67	2323.56	2317.60	2311.79	2306.11	2300.58	2295.19	2289.94	2284.83	2279.86
530	2364.88	2358.77	2352.81	2346.98	2341.30	2335.76	2330.35	2325.09	2319.96	2314.98	2310.13
535	2394.03	2388.06	2382.23	2376.54	2370.98	2365.57	2360.29	2355.15	2350.14	2345.28	2340.54
540	2423.36	2417.52	2411.82	2406.26	2400.83	2395.54	2390.39	2385.37	2380.48	2375.73	2371.11
545	2452.88	2447.16	2441.59	2436.15	2430.85	2425.68	2420.64	2415.74	2410.97	2406.33	2401.82
550	2482.57	2476.98	2471.53	2466.21	2461.03	2455.98	2451.06	2446.27	2441.62	2437.09	2432.69
555	2512.44	2506.97	2501.64	2496.45	2491.38	2486.45	2481.64	2476.97	2472.42	2468.00	2463.70
560	2542.49	2537.14	2531.93	2526.85	2521.90	2517.08	2512.39	2507.82	2503.38	2499.06	2494.87
565	2572.72	2567.49	2562.39	2557.43	2552.59	2547.88	2543.29	2538.83	2534.49	2530.28	2526.19
570	2603.13	2598.01	2593.03	2588.17	2583.44	2578.84	2574.36	2570.00	2565.77	2561.65	2557.66
575	2633.71	2628.71	2623.84	2619.09	2614.47	2609.97	2605.59	2601.33	2597.20	2593.18	2589.28
580	2664.48	2659.59	2654.82	2650.18	2645.66	2641.26	2636.99	2632.83	2628.79	2624.87	2621.06
585	2695.42	2690.64	2685.97	2681.44	2677.02	2672.72	2668.54	2664.48	2660.54	2656.71	2653.00
590	2726.54	2721.86	2717.30	2712.87	2708.55	2704.35	2700.27	2696.30	2692.45	2688.71	2685.08
595	2757.84	2753.26	2748.81	2744.47	2740.25	2736.14	2732.15	2728.28	2724.52	2720.87	2717.33
600	2789.32	2784.84	2780.48	2776.24	2772.12	2768.10	2764.21	2760.42	2756.75	2753.18	2749.73

TABLE VII. - Concluded. THERMODYNAMIC PROPERTY OF METHANE - ENTHALPY, H_0/R, K

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	100	110	120	130	140	150	160	170	180	190	200
400	1565.86	1556.52	1547.42	1538.57	1529.97	1521.65	1513.59	1505.82	1498.33	1491.12	1484.21
405	1593.13	1584.06	1575.21	1566.61	1558.27	1550.17	1542.35	1534.79	1527.50	1520.49	1513.76
410	1620.48	1611.66	1603.06	1594.71	1586.59	1578.73	1571.12	1563.77	1556.69	1549.87	1543.31
415	1647.90	1639.33	1630.97	1622.85	1614.97	1607.32	1599.92	1592.77	1585.88	1579.24	1572.86
420	1675.41	1667.07	1658.95	1651.06	1643.39	1635.95	1628.76	1621.81	1615.10	1608.64	1602.43
425	1703.01	1694.90	1687.00	1679.32	1671.87	1664.64	1657.64	1650.88	1644.35	1638.06	1632.01
430	1730.71	1722.82	1715.14	1707.67	1700.41	1693.38	1686.57	1679.99	1673.64	1667.52	1661.63
435	1758.51	1750.83	1743.35	1736.09	1729.03	1722.19	1715.56	1709.16	1702.98	1697.02	1691.28
440	1786.41	1778.94	1771.66	1764.59	1757.72	1751.07	1744.62	1738.39	1732.37	1726.56	1720.98
445	1814.42	1807.15	1800.07	1793.18	1786.50	1780.02	1773.75	1767.68	1761.82	1756.17	1750.73
450	1842.55	1835.47	1828.57	1821.87	1815.37	1809.06	1802.95	1797.04	1791.34	1785.83	1780.54
455	1870.79	1863.89	1857.18	1850.66	1844.32	1838.18	1832.23	1826.48	1820.93	1815.57	1810.41
460	1899.15	1892.43	1885.90	1879.54	1873.38	1867.40	1861.60	1856.00	1850.59	1845.37	1840.35
465	1927.64	1921.09	1914.72	1908.54	1902.53	1896.71	1891.07	1885.61	1880.34	1875.26	1870.36
470	1956.25	1949.87	1943.67	1937.64	1931.79	1926.12	1920.62	1915.31	1910.18	1905.23	1900.46
475	1984.99	1978.77	1972.73	1966.85	1961.15	1955.63	1950.28	1945.10	1940.10	1935.28	1930.64
480	2013.85	2007.80	2001.91	1996.18	1990.63	1985.25	1980.04	1975.00	1970.13	1965.43	1960.90
485	2042.85	2036.95	2031.21	2025.63	2020.22	2014.98	2009.90	2004.99	2000.25	1995.67	1991.26
490	2071.99	2066.23	2060.64	2055.21	2049.93	2044.82	2039.87	2035.09	2030.47	2026.01	2021.71
495	2101.26	2095.65	2090.20	2084.90	2079.76	2074.78	2069.96	2065.30	2060.79	2056.45	2052.27
500	2130.67	2125.20	2119.88	2114.72	2109.71	2104.86	2100.16	2095.62	2091.23	2087.00	2082.92
505	2160.22	2154.89	2149.70	2144.67	2139.79	2135.06	2130.48	2126.05	2121.78	2117.65	2113.68
510	2189.92	2184.71	2179.66	2174.75	2169.99	2165.38	2160.92	2156.60	2152.44	2148.42	2144.55
515	2219.75	2214.68	2209.75	2204.96	2200.32	2195.83	2191.48	2187.27	2183.21	2179.30	2175.53
520	2249.73	2244.78	2239.97	2235.30	2230.78	2226.40	2222.16	2218.06	2214.11	2210.29	2206.62
525	2279.86	2275.03	2270.34	2265.78	2261.37	2257.10	2252.97	2248.98	2245.12	2241.41	2237.83
530	2310.13	2305.41	2300.84	2296.40	2292.10	2287.94	2283.91	2280.02	2276.26	2272.64	2269.15
535	2340.54	2335.95	2331.48	2327.16	2322.96	2318.90	2314.97	2311.18	2307.52	2303.99	2300.59
540	2371.11	2366.62	2362.27	2358.05	2353.96	2350.00	2346.17	2342.48	2338.91	2335.47	2332.16
545	2401.82	2397.45	2393.20	2389.08	2385.09	2381.23	2377.50	2373.90	2370.42	2367.07	2363.85
550	2432.69	2428.42	2424.27	2420.26	2416.37	2412.61	2408.97	2405.45	2402.07	2398.80	2395.66
555	2463.70	2459.54	2455.49	2451.58	2447.78	2444.11	2440.57	2437.14	2433.84	2430.66	2427.60
560	2494.87	2490.80	2486.86	2483.04	2479.34	2475.76	2472.30	2468.97	2465.75	2462.65	2459.67
565	2526.19	2522.22	2518.37	2514.64	2511.04	2507.55	2504.18	2500.92	2497.79	2494.77	2491.87
570	2557.66	2553.79	2550.03	2546.39	2542.88	2539.47	2536.19	2533.02	2529.96	2527.02	2524.20
575	2589.28	2585.50	2581.84	2578.29	2574.86	2571.54	2568.34	2565.25	2562.28	2559.41	2556.66
580	2621.06	2617.37	2613.80	2610.34	2606.99	2603.76	2600.63	2597.62	2594.72	2591.93	2589.25
585	2653.00	2649.39	2645.91	2642.53	2639.27	2636.11	2633.07	2630.13	2627.31	2624.59	2621.98
590	2685.08	2681.57	2678.17	2674.87	2671.69	2668.61	2665.65	2662.79	2660.04	2657.39	2654.85
595	2717.33	2713.90	2710.58	2707.36	2704.26	2701.26	2698.37	2695.58	2692.90	2690.33	2687.86
600	2749.73	2746.38	2743.14	2740.01	2736.98	2734.06	2731.24	2728.53	2725.91	2723.41	2721.00

Temperature, K	Pressure, N/m^2×10^{-5}										
	200	210	220	230	240	250	260	270	280	290	300
400	1484.21	1477.59	1471.26	1465.22	1459.46	1453.99	1448.81	1443.89	1439.25	1434.87	1430.75
405	1513.76	1507.31	1501.14	1495.25	1489.64	1484.29	1479.22	1474.42	1469.87	1465.58	1461.53
410	1543.31	1537.03	1531.01	1525.27	1519.79	1514.57	1509.61	1504.91	1500.46	1496.26	1492.29
415	1572.86	1566.74	1560.88	1555.28	1549.93	1544.84	1539.99	1535.40	1531.04	1526.93	1523.04
420	1602.43	1596.47	1590.75	1585.29	1580.07	1575.10	1570.37	1565.88	1561.62	1557.59	1553.79
425	1632.01	1626.21	1620.64	1615.31	1610.22	1605.37	1600.75	1596.36	1592.20	1588.26	1584.53
430	1661.63	1655.97	1650.55	1645.35	1640.39	1635.66	1631.15	1626.86	1622.79	1618.94	1615.29
435	1691.28	1685.77	1680.49	1675.42	1670.58	1665.96	1661.56	1657.38	1653.40	1649.63	1646.07
440	1720.98	1715.61	1710.46	1705.53	1700.81	1696.30	1692.01	1687.92	1684.04	1680.36	1676.87
445	1750.73	1745.50	1740.48	1735.67	1731.07	1726.68	1722.48	1718.50	1714.70	1711.11	1707.71
450	1780.54	1775.44	1770.55	1765.86	1761.38	1757.09	1753.00	1749.11	1745.41	1741.90	1738.58
455	1810.41	1805.45	1800.68	1796.11	1791.74	1787.56	1783.57	1779.77	1776.16	1772.74	1769.49
460	1840.35	1835.51	1830.87	1826.42	1822.16	1818.08	1814.19	1810.49	1806.97	1803.62	1800.45
465	1870.36	1865.65	1861.13	1856.79	1852.64	1848.66	1844.87	1841.26	1837.82	1834.56	1831.47
470	1900.46	1895.87	1891.46	1887.23	1883.18	1879.31	1875.62	1872.09	1868.74	1865.56	1862.54
475	1930.64	1926.17	1921.87	1917.75	1913.81	1910.03	1906.43	1902.99	1899.73	1896.62	1893.68
480	1960.90	1956.55	1952.36	1948.35	1944.50	1940.83	1937.31	1933.97	1930.78	1927.75	1924.89
485	1991.26	1987.02	1982.94	1979.03	1975.28	1971.70	1968.28	1965.01	1961.91	1958.96	1956.16
490	2021.71	2017.58	2013.61	2009.80	2006.15	2002.66	1999.32	1996.14	1993.12	1990.24	1987.52
495	2052.27	2048.24	2044.37	2040.66	2037.10	2033.70	2030.45	2027.35	2024.41	2021.61	2018.95
500	2082.92	2079.00	2075.23	2071.61	2068.15	2064.83	2061.67	2058.65	2055.78	2053.05	2050.47
505	2113.68	2109.86	2106.19	2102.66	2099.29	2096.06	2092.98	2090.04	2087.24	2084.59	2082.07
510	2144.55	2140.83	2137.25	2133.82	2130.53	2127.39	2124.38	2121.52	2118.80	2116.21	2113.76
515	2175.53	2171.90	2168.42	2165.07	2161.87	2158.81	2155.89	2153.10	2150.45	2147.93	2145.55
520	2206.62	2203.09	2199.69	2196.44	2193.32	2190.34	2187.49	2184.78	2182.20	2179.75	2177.43
525	2237.83	2234.38	2231.08	2227.91	2224.87	2221.97	2219.20	2216.56	2214.05	2211.67	2209.41
530	2269.15	2265.80	2262.58	2259.49	2256.54	2253.71	2251.01	2248.45	2246.00	2243.69	2241.49
535	2300.59	2297.33	2294.19	2291.19	2288.31	2285.56	2282.94	2280.44	2278.06	2275.81	2273.67
540	2332.16	2328.98	2325.93	2323.00	2320.20	2317.52	2314.97	2312.54	2310.23	2308.04	2305.96
545	2363.85	2360.75	2357.78	2354.93	2352.20	2349.60	2347.11	2344.75	2342.50	2340.37	2338.36
550	2395.66	2392.65	2389.75	2386.98	2384.32	2381.79	2379.37	2377.07	2374.89	2372.82	2370.87
555	2427.60	2424.66	2421.85	2419.15	2416.56	2414.10	2411.75	2409.51	2407.39	2405.38	2403.48
560	2459.67	2456.81	2454.07	2451.44	2448.93	2446.53	2444.24	2442.07	2440.01	2438.06	2436.22
565	2491.87	2489.08	2486.41	2483.86	2481.41	2479.08	2476.86	2474.75	2472.74	2470.85	2469.06
570	2524.20	2521.49	2518.89	2516.40	2514.02	2511.75	2509.59	2507.54	2505.60	2503.76	2502.03
575	2556.66	2554.02	2551.49	2549.07	2546.76	2544.55	2542.45	2540.46	2538.57	2536.79	2535.11
580	2589.25	2586.68	2584.22	2581.87	2579.62	2577.48	2575.44	2573.50	2571.67	2569.94	2568.31
585	2621.98	2619.48	2617.09	2614.80	2612.61	2610.53	2608.55	2606.67	2604.89	2603.22	2601.64
590	2654.85	2652.42	2650.09	2647.86	2645.73	2643.71	2641.79	2639.97	2638.24	2636.62	2635.09
595	2687.86	2685.49	2683.22	2681.05	2678.99	2677.02	2675.16	2673.39	2671.72	2670.14	2668.66
600	2721.00	2718.69	2716.49	2714.38	2712.38	2710.47	2708.66	2706.94	2705.32	2703.80	2702.36

TABLE VIII. - THERMODYNAMIC PROPERTY OF METHANE - ENTROPY, S_0 R

Temperature, K	Pressure, N m^{2}· 10^{-5}										
	(a)	1	2	3	4	5	6	7	8	9	10
120	18.7077	18.5905	------	------	------	------	------	------	------	------	------
122	18.7739	18.6671	17.8555	------	------	------	------	------	------	------	------
124	18.8390	18.7415	17.9410	------	------	------	------	------	------	------	------
126	18.9030	18.8139	18.0231	------	------	------	------	------	------	------	------
128	18.9661	18.8844	18.1023	17.5991	------	------	------	------	------	------	------
130	19.0281	18.9531	18.1788	17.6846	------	------	------	------	------	------	------
132	19.0893	19.0202	18.2527	17.7666	17.3904	------	------	------	------	------	------
134	19.1495	19.0858	18.3244	17.8453	17.4774	------	------	------	------	------	------
136	19.2088	19.1500	18.3941	17.9211	17.5605	17.2576	------	------	------	------	------
138	19.2672	19.2128	18.4618	17.9944	17.6400	17.3446		------	------	------	------
140	19.3248	19.2744	18.5277	18.0652	17.7165	17.4275	17.1736	------	------	------	------
142	19.3816	19.3347	18.5920	18.1339	17.7901	17.5067	17.2594	17.0344	------	------	------
144	19.4376	19.3940	18.6548	18.2006	17.8612	17.5828	17.3412	17.1229	------	------	------
146	19.4929	19.4521	18.7161	18.2655	17.9300	17.6560	17.4194	17.2068	17.0101	------	------
148	19.5474	19.5093	18.7762	18.3287	17.9967	17.7266	17.4943	17.2868	17.0959	16.9158	------
150	19.6011	19.5654	18.8350	18.3903	18.0614	17.7948	17.5664	17.3633	17.1773	17.0032	16.8366
152	19.6542	19.6207	18.8926	18.4505	18.1244	17.8609	17.6360	17.4367	17.2551	17.0859	16.9252
154	19.7066	19.6750	18.9491	18.5093	18.1858	17.9250	17.7032	17.5073	17.3295	17.1646	17.0089
156	19.7583	19.7286	19.0045	18.5669	18.2457	17.9874	17.7682	17.5753	17.4009	17.2398	17.0884
158	19.8093	19.7813	19.0590	18.6233	18.3041	18.0481	17.8314	17.6412	17.4697	17.3119	17.1642
160	19.8597	19.8332	19.1126	18.6786	18.3613	18.1073	17.8928	17.7050	17.5362	17.3813	17.2368
162	19.9095	19.8844	19.1652	18.7328	18.4172	18.1651	17.9525	17.7669	17.6004	17.4481	17.3065
164	19.9587	19.9348	19.2170	18.7861	18.4720	18.2215	18.0108	17.8271	17.6627	17.5127	17.3737
166	20.0073	19.9846	19.2681	18.8384	18.5258	18.2768	18.0677	17.8857	17.7232	17.5753	17.4385
168	20.0553	20.0337	19.3183	18.8899	18.5785	18.3309	18.1233	17.9429	17.7821	17.6361	17.5012
170	20.1027	20.0821	19.3678	18.9405	18.6303	18.3840	18.1777	17.9987	17.8395	17.6951	17.5621
172	20.1497	20.1300	19.4166	18.9903	18.6812	18.4360	18.2310	18.0533	17.8955	17.7526	17.6212
174	20.1960	20.1772	19.4647	19.0394	18.7313	18.4871	18.2832	18.1067	17.9502	17.8086	17.6787
176	20.2419	20.2238	19.5122	19.0877	18.7805	18.5374	18.3344	18.1591	18.0037	17.8634	17.7348
178	20.2872	20.2699	19.5590	19.1354	18.8290	18.5868	18.3848	18.2104	18.0561	17.9169	17.7895
180	20.3321	20.3155	19.6053	19.1824	18.8768	18.6354	18.4342	18.2608	18.1075	17.9693	17.8430
182	20.3765	20.3605	19.6509	19.2287	18.9239	18.6832	18.4829	18.3103	18.1578	18.0206	17.8953
184	20.4204	20.4050	19.6960	19.2745	18.9703	18.7303	18.5307	18.3589	18.2073	18.0710	17.9466
186	20.4638	20.4489	19.7406	19.3196	19.0161	18.7767	18.5779	18.4068	18.2559	18.1204	17.9968
188	20.5068	20.4924	19.7846	19.3642	19.0613	18.8225	18.6243	18.4539	18.3037	18.1689	18.0461
190	20.5494	20.5355	19.8282	19.4083	19.1059	18.8677	18.6700	18.5003	18.3507	18.2166	18.0946

[a] For these cases, the entropy function is that of the ideal gas at a pressure of 1×10^5 N m^2.

Temperature, K	Pressure, N m^2×10^{-5}										
	10	12	14	16	18	20	22	24	26	28	30
150	16.8366	------	------	------	------	------	------	------	------	------	------
152	16.9252	------	------	------	------	------	------	------	------	------	------
154	17.0089	16.7134	------	------	------	------	------	------	------	------	------
156	17.0884	16.8037	------	------	------	------	------	------	------	------	------
158	17.1642	16.8886	16.6262	------	------	------	------	------	------	------	------
160	17.2368	16.9690	16.7172	16.4686	------	------	------	------	------	------	------
162	17.3065	17.0455	16.8025	16.5662	------	------	------	------	------	------	------
164	17.3737	17.1186	16.8831	16.6569	16.4305	------	------	------	------	------	------
166	17.4385	17.1886	16.9596	16.7418	16.5271	16.3064	------	------	------	------	------
168	17.5012	17.2560	17.0326	16.8229	16.6168	16.4097	------	------	------	------	------
170	17.5621	17.3209	17.1025	16.8980	16.7007	16.5045	16.3023	------	------	------	------
172	17.6212	17.3837	17.1696	16.9704	16.7798	16.5925	16.4026	16.2030	------	------	------
174	17.6787	17.4445	17.2343	17.0398	16.8549	16.6749	16.4949	16.3095	16.1105	------	------
176	17.7348	17.5035	17.2968	17.1063	16.9264	16.7526	16.5807	16.4064	16.2240	16.0242	------
178	17.7895	17.5609	17.3572	17.1704	16.9949	16.8263	16.6612	16.4957	16.3257	16.1452	15.9433
180	17.8430	17.6168	17.4159	17.2323	17.0606	16.8967	16.7372	16.5790	16.4187	16.2520	16.0726
182	17.8953	17.6713	17.4730	17.2923	17.1239	16.9640	16.8093	16.6572	16.5047	16.3487	16.1848
184	17.9466	17.7246	17.5285	17.3504	17.1851	17.0287	16.8782	16.7312	16.5852	16.4376	16.2852
186	17.9968	17.7767	17.5827	17.4069	17.2443	17.0910	16.9443	16.8017	16.6611	16.5203	16.3769
188	18.0461	17.8277	17.6356	17.4619	17.3017	17.1512	17.0077	16.8690	16.7330	16.5979	16.4617
190	18.0946	17.8777	17.6873	17.5156	17.3576	17.2096	17.0690	16.9336	16.8016	16.6712	16.5410

Temperature, K	Pressure, N m^2×10^{-5}										
	30	32	34	36	38	40	42	44	46	48	50
170	------	------	------	------	------	------	------	------	------	------	------
172	------	------	------	------	------	------	------	------	------	------	------
174	------	------	------	------	------	------	------	------	------	------	------
176	------	------	------	------	------	------	------	------	------	------	------
178	15.9433	------	------	------	------	------	------	------	------	------	------
180	16.0726	15.8680	------	------	------	------	------	------	------	------	------
182	16.1848	16.0060	15.7984	------	------	------	------	------	------	------	------
184	16.2852	16.1237	15.9456	15.7353	------	------	------	------	------	------	------
186	16.3769	16.2278	16.0685	15.8913	15.6796	15.3747	------	------	------	------	------
188	16.4617	16.3221	16.1761	16.0192	15.8436	15.6325	15.3270	------	------	------	------
190	16.5410	16.4089	16.2729	16.1300	15.9758	15.8028	15.5948	15.3001	------	------	------

TABLE VIII. - Continued. THERMODYNAMIC PROPERTY OF METHANE - ENTROPY, S_0/R

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	(a)	5	10	15	20	25	30	35	40	45	50
190	20.5494	18.8677	18.0946	17.5995	17.2096	16.8673	16.5410	16.2025	15.8028	15.0255	------
192	20.5915	18.9123	18.1422	17.6509	17.2662	16.9311	16.6157	16.2960	15.9383	15.4437	14.0005
194	20.6332	18.9563	18.1890	17.7013	17.3213	16.9926	16.6866	16.3820	16.0540	15.6504	14.8878
196	20.6745	18.9997	18.2351	17.7507	17.3750	17.0520	16.7541	16.4622	16.1564	15.8043	15.3128
198	20.7154	19.0426	18.2804	17.7992	17.4274	17.1096	16.8189	16.5375	16.2491	15.9313	15.5376
200	20.7559	19.0850	18.3252	17.8467	17.4785	17.1654	16.8810	16.6088	16.3345	16.0415	15.7022
202	20.7960	19.1269	18.3692	17.8935	17.5286	17.2197	16.9410	16.6766	16.4140	16.1401	15.8363
204	20.8358	19.1684	18.4127	17.9394	17.5776	17.2726	16.9990	16.7415	16.4887	16.2299	15.9516
206	20.8751	19.2094	18.4556	17.9846	17.6256	17.3242	17.0552	16.8038	16.5595	16.3129	16.0540
208	20.9142	19.2499	18.4980	18.0292	17.6728	17.3747	17.1098	16.8638	16.6268	16.3905	16.1468
210	20.9528	19.2900	18.5398	18.0730	17.7191	17.4240	17.1630	16.9218	16.6912	16.4636	16.2323
212	20.9912	19.3297	18.5811	18.1163	17.7647	17.4724	17.2147	16.9780	16.7530	16.5329	16.3118
214	21.0292	19.3690	18.6220	18.1589	17.8095	17.5198	17.2653	17.0325	16.8125	16.5990	16.3866
216	21.0668	19.4079	18.6623	18.2010	17.8536	17.5663	17.3148	17.0856	16.8701	16.6623	16.4573
218	21.1042	19.4465	18.7022	18.2425	17.8970	17.6120	17.3632	17.1372	16.9258	16.7231	16.5245
220	21.1412	19.4847	18.7417	18.2835	17.9398	17.6569	17.4106	17.1877	16.9800	16.7818	16.5889
222	21.1779	19.5225	18.7808	18.3243	17.9820	17.7011	17.4571	17.2370	17.0326	16.8385	16.6506
224	21.2144	19.5600	18.8195	18.3641	18.0236	17.7446	17.5028	17.2853	17.0840	16.8935	16.7100
226	21.2505	19.5971	18.8578	18.4037	18.0647	17.7874	17.5477	17.3325	17.1341	16.9470	16.7675
228	21.2864	19.6339	18.8957	18.4429	18.1053	17.8296	17.5918	17.3789	17.1830	16.9990	16.8231
230	21.3219	19.6704	18.9332	18.4816	18.1454	17.8713	17.6353	17.4244	17.2309	17.0497	16.8771
232	21.3572	19.7066	18.9704	18.5199	18.1851	17.9124	17.6780	17.4691	17.2779	17.0992	16.9296
234	21.3923	19.7425	19.0073	18.5579	18.2242	17.9530	17.7202	17.5131	17.3239	17.1477	16.9808
236	21.4270	19.7781	19.0438	18.5954	18.2630	17.9930	17.7618	17.5564	17.3691	17.1951	17.0307
238	21.4616	19.8134	19.0800	18.6326	18.3013	18.0326	17.8028	17.5990	17.4136	17.2416	17.0795
240	21.4958	19.8484	19.1159	18.6695	18.3392	18.0717	17.8432	17.6410	17.4572	17.2872	17.1273
242	21.5298	19.8832	19.1515	18.7060	18.3767	18.1104	17.8832	17.6823	17.5002	17.3319	17.1740
244	21.5636	19.9177	19.1868	18.7422	18.4139	18.1487	17.9227	17.7232	17.5426	17.3759	17.2199
246	21.5971	19.9519	19.2218	18.7780	18.4507	18.1865	17.9617	17.7635	17.5843	17.4192	17.2649
248	21.6305	19.9859	19.2565	18.8136	18.4872	18.2240	18.0002	17.8032	17.6254	17.4618	17.3091
250	21.6635	20.0197	19.2910	18.8489	18.5233	18.2611	18.0384	17.8425	17.6659	17.5038	17.3526

[a]For these cases, the entropy function is that of the ideal gas at a pressure of 1×10^5 N/m^2.

Temperature, K	Pressure, N m^2×10^{-5}										
	50	55	60	65	70	75	80	85	90	95	100
190	------	------	------	------	------	------	------	------	------	------	------
192	14.0005	13.7700	13.6542	13.5717	13.5062	13.4510	13.4029	13.3601	13.3214	13.2859	13.2530
194	14.8878	14.0129	13.8287	13.7195	13.6390	13.5740	13.5189	13.4707	13.4277	13.3887	13.3529
196	15.3128	14.4156	14.0409	13.8843	13.7816	13.7033	13.6392	13.5845	13.5364	13.4933	13.4542
198	15.5376	14.9349	14.3211	14.0746	13.9373	13.8406	13.7648	13.7019	13.6477	13.5999	13.5569
200	15.7022	15.2572	14.6776	14.3015	14.1108	13.9881	13.8970	13.8239	13.7623	13.7088	13.6614
202	15.8363	15.4712	15.0072	14.5671	14.3062	14.1481	14.0370	13.9510	13.8805	13.8204	13.7678
204	15.9516	15.6348	15.2553	14.8408	14.5229	14.3220	14.1857	14.0840	14.0028	13.9349	13.8763
206	16.0540	15.7699	15.4453	15.0825	14.7489	14.5085	14.3437	14.2234	14.1295	14.0526	13.9873
208	16.1468	15.8865	15.5993	15.2822	14.9642	14.7014	14.5094	14.3688	14.2608	14.1736	14.1006
210	16.2323	15.9901	15.7299	15.4480	15.1564	14.8906	14.6791	14.5191	14.3961	14.2978	14.2164
212	16.3118	16.0840	15.8442	15.5890	15.3233	15.0675	14.8472	14.6718	14.5344	14.4246	14.3343
214	16.3866	16.1705	15.9466	15.7120	15.4686	15.2278	15.0082	14.8234	14.6740	14.5533	14.4539
216	16.4573	16.2510	16.0398	15.8216	15.5967	15.3714	15.1584	14.9704	14.8125	14.6824	14.5745
218	16.5245	16.3265	16.1259	15.9208	15.7111	15.5003	15.2966	15.1101	14.9478	14.8105	14.6951
220	16.5889	16.3979	16.2062	16.0120	15.8148	15.6167	15.4230	15.2411	15.0778	14.9359	14.8146
222	16.6506	16.4658	16.2816	16.0965	15.9098	15.7228	15.5387	15.3630	15.2013	15.0574	14.9319
224	16.7100	16.5306	16.3530	16.1756	15.9979	15.8203	15.6451	15.4760	15.3178	15.1738	15.0458
226	16.7675	16.5928	16.4209	16.2502	16.0800	15.9106	15.7434	15.5811	15.4271	15.2847	15.1558
228	16.8231	16.6527	16.4858	16.3209	16.1573	15.9950	15.8350	15.6790	15.5297	15.3898	15.2613
230	16.8771	16.7105	16.5480	16.3883	16.2304	16.0744	15.9206	15.7705	15.6260	15.4892	15.3621
232	16.9296	16.7665	16.6080	16.4527	16.3000	16.1494	16.0013	15.8565	15.7166	15.5833	15.4581
234	16.9808	16.8208	16.6658	16.5146	16.3664	16.2206	16.0775	15.9377	15.8022	15.6723	15.5495
236	17.0307	16.8736	16.7219	16.5743	16.4300	16.2886	16.1500	16.0146	15.8832	15.7568	15.6365
238	17.0795	16.9250	16.7762	16.6319	16.4913	16.3537	16.2191	16.0878	15.9602	15.8371	15.7195
240	17.1273	16.9752	16.8291	16.6878	16.5503	16.4163	16.2853	16.1577	16.0336	15.9137	15.7987
242	17.1740	17.0241	16.8805	16.7419	16.6075	16.4766	16.3489	16.2246	16.1037	15.9869	15.8745
244	17.2199	17.0721	16.9307	16.7946	16.6629	16.5348	16.4102	16.2889	16.1710	16.0569	15.9470
246	17.2649	17.1190	16.9798	16.8467	16.7167	16.5912	16.4694	16.3508	16.2357	16.1243	16.0167
248	17.3091	17.1650	17.0277	16.8960	16.7690	16.6460	16.5266	16.4107	16.2981	16.1891	16.0838
250	17.3526	17.2102	17.0747	16.9450	16.8200	16.6992	16.5822	16.4686	16.3584	16.2516	16.1485

TABLE VIII. - Continued. THERMODYNAMIC PROPERTY OF METHANE - ENTROPY, S_0/R

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	100	110	120	130	140	150	160	170	180	190	200
190	------	------	------	------	------	------	------	------	------	------	------
192	13.2530	13.1935	13.1406	13.0927	13.0488	13.0081	12.9703	12.9347	12.9012	12.8694	12.8392
194	13.3529	13.2889	13.2324	13.1817	13.1355	13.0929	13.0534	13.0164	12.9816	12.9487	12.9175
196	13.4542	13.3849	13.3245	13.2707	13.2220	13.1774	13.1361	13.0976	13.0615	13.0274	12.9952
198	13.5569	13.4817	13.4170	13.3598	13.3084	13.2616	13.2184	13.1783	13.1408	13.1055	13.0722
200	13.6614	13.5795	13.5100	13.4491	13.3948	13.3456	13.3004	13.2586	13.2197	13.1831	13.1487
202	13.7678	13.6783	13.6035	13.5387	13.4812	13.4294	13.3822	13.3386	13.2981	13.2602	13.2246
204	13.8763	13.7784	13.6976	13.6285	13.5676	13.5132	13.4637	13.4182	13.3761	13.3368	13.3000
206	13.9873	13.8797	13.7925	13.7186	13.6542	13.5968	13.5449	13.4975	13.4537	13.4130	13.3748
208	14.1006	13.9824	13.8881	13.8091	13.7408	13.6803	13.6260	13.5765	13.5310	13.4887	13.4492
210	14.2164	14.0865	13.9845	13.9000	13.8275	13.7638	13.7069	13.6552	13.6078	13.5640	13.5232
212	14.3343	14.1919	14.0816	13.9912	13.9143	13.8473	13.7876	13.7336	13.6843	13.6389	13.5966
214	14.4539	14.2984	14.1793	14.0828	14.0013	13.9306	13.8681	13.8118	13.7605	13.7134	13.6697
216	14.5745	14.4058	14.2776	14.1746	14.0883	14.0139	13.9484	13.8897	13.8364	13.7875	13.7423
218	14.6951	14.5137	14.3764	14.2666	14.1754	14.0971	14.0285	13.9672	13.9119	13.8612	13.8145
220	14.8146	14.6216	14.4752	14.3588	14.2624	14.1802	14.1084	14.0446	13.9870	13.9345	13.8862
222	14.9319	14.7290	14.5739	14.4508	14.3493	14.2630	14.1880	14.1215	14.0618	14.0075	13.9576
224	15.0458	14.8351	14.6721	14.5425	14.4359	14.3456	14.2673	14.1982	14.1362	14.0800	14.0285
226	15.1558	14.9394	14.7695	14.6338	14.5221	14.4278	14.3463	14.2744	14.2102	14.1521	14.0989
228	15.2613	15.0413	14.8656	14.7243	14.6079	14.5096	14.4248	14.3503	14.2838	14.2238	14.1690
230	15.3621	15.1404	14.9602	14.8139	14.6929	14.5908	14.5029	14.4257	14.3569	14.2950	14.2385
232	15.4581	15.2363	15.0528	14.9022	14.7772	14.6714	14.5804	14.5005	14.4296	14.3657	14.3076
234	15.5495	15.3289	15.1433	14.9891	14.8604	14.7513	14.6572	14.5748	14.5017	14.4359	14.3762
236	15.6365	15.4181	15.2314	15.0745	14.9425	14.8302	14.7333	14.6485	14.5732	14.5056	14.4442
238	15.7195	15.5038	15.3169	15.1580	15.0232	14.9082	14.8087	14.7215	14.6441	14.5747	14.5117
240	15.7987	15.5862	15.3998	15.2396	15.1026	14.9850	14.8831	14.7937	14.7144	14.6432	14.5787
242	15.8745	15.6655	15.4802	15.3192	15.1805	15.0607	14.9566	14.8652	14.7839	14.7110	14.6450
244	15.9470	15.7416	15.5579	15.3967	15.2567	15.1352	15.0291	14.9357	14.8527	14.7782	14.7108
246	16.0167	15.8150	15.6331	15.4722	15.3313	15.2083	15.1005	15.0054	14.9208	14.8447	14.7759
248	16.0838	15.8856	15.7059	15.5455	15.4042	15.2801	15.1708	15.0742	14.9880	14.9105	14.8403
250	16.1485	15.9538	15.7763	15.6169	15.4754	15.3504	15.2399	15.1419	15.0543	14.9755	14.9041

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	200	210	220	230	240	250	260	270	280	290	300
190	------	------	------	------	------	------	------	------	------	------	------
192	12.8392	12.8104	12.7828	12.7563	12.7309	12.7063	12.6827	12.6597	12.6376	12.6161	12.5952
194	12.9175	12.8878	12.8594	12.8322	12.8060	12.7809	12.7566	12.7332	12.7105	12.6885	12.6672
196	12.9952	12.9645	12.9352	12.9073	12.8804	12.8546	12.8298	12.8058	12.7826	12.7601	12.7384
198	13.0722	13.0406	13.0104	12.9817	12.9541	12.9276	12.9022	12.8776	12.8539	12.8310	12.8088
200	13.1487	13.1160	13.0850	13.0554	13.0271	12.9999	12.9738	12.9487	12.9245	12.9010	12.8784
202	13.2246	13.1909	13.1589	13.1285	13.0994	13.0715	13.0448	13.0191	12.9943	12.9703	12.9472
204	13.3000	13.2652	13.2322	13.2009	13.1710	13.1425	13.1151	13.0888	13.0634	13.0389	13.0153
206	13.3748	13.3389	13.3050	13.2728	13.2421	13.2128	13.1847	13.1577	13.1318	13.1068	13.0827
208	13.4492	13.4122	13.3772	13.3440	13.3125	13.2825	13.2537	13.2261	13.1996	13.1741	13.1494
210	13.5232	13.4849	13.4489	13.4148	13.3824	13.3515	13.3221	13.2938	13.2667	13.2406	13.2155
212	13.5966	13.5571	13.5200	13.4849	13.4517	13.4200	13.3898	13.3609	13.3332	13.3066	13.2809
214	13.6697	13.6289	13.5906	13.5546	13.5204	13.4880	13.4570	13.4274	13.3991	13.3719	13.3457
216	13.7423	13.7002	13.6608	13.6237	13.5886	13.5553	13.5237	13.4934	13.4644	13.4366	13.4099
218	13.8145	13.7711	13.7305	13.6923	13.6563	13.6222	13.5897	13.5588	13.5292	13.5008	13.4735
220	13.8862	13.8415	13.7997	13.7605	13.7235	13.6885	13.6553	13.6236	13.5934	13.5644	13.5366
222	13.9576	13.9114	13.8684	13.8281	13.7902	13.7543	13.7203	13.6879	13.6570	13.6274	13.5991
224	14.0285	13.9809	13.9367	13.8953	13.8564	13.8196	13.7848	13.7517	13.7201	13.6900	13.6610
226	14.0989	14.0499	14.0044	13.9620	13.9221	13.8844	13.8488	13.8150	13.7828	13.7520	13.7225
228	14.1690	14.1185	14.0718	14.0282	13.9873	13.9488	13.9123	13.8778	13.8449	13.8134	13.7834
230	14.2385	14.1866	14.1386	14.0939	14.0520	14.0126	13.9753	13.9400	13.9065	13.8744	13.8438
232	14.3076	14.2543	14.2050	14.1591	14.1162	14.0759	14.0379	14.0018	13.9676	13.9349	13.9037
234	14.3762	14.3214	14.2708	14.2239	14.1800	14.1388	14.0999	14.0631	14.0282	13.9949	13.9631
236	14.4442	14.3880	14.3362	14.2881	14.2432	14.2011	14.1614	14.1239	14.0883	14.0544	14.0221
238	14.5117	14.4541	14.4011	14.3519	14.3060	14.2630	14.2225	14.1842	14.1480	14.1134	14.0805
240	14.5787	14.5197	14.4654	14.4151	14.3683	14.3244	14.2831	14.2441	14.2071	14.1720	14.1385
242	14.6450	14.5847	14.5292	14.4779	14.4300	14.3853	14.3432	14.3034	14.2658	14.2301	14.1960
244	14.7108	14.6492	14.5925	14.5401	14.4913	14.4457	14.4028	14.3623	14.3240	14.2877	14.2531
246	14.7759	14.7130	14.6552	14.6018	14.5520	14.5055	14.4619	14.4207	14.3818	14.3448	14.3097
248	14.8403	14.7762	14.7173	14.6629	14.6122	14.5649	14.5205	14.4786	14.4391	14.4015	14.3658
250	14.9041	14.8388	14.7789	14.7234	14.6719	14.6238	14.5786	14.5361	14.4959	14.4577	14.4215

TABLE VIII. - Continued. THERMODYNAMIC PROPERTY OF METHANE - ENTROPY, S_0/R

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	(a)	10	20	30	40	50	60	70	80	90	100
250	21.6635	19.2910	18.5233	18.0384	17.6659	17.3526	17.0747	16.8200	16.5822	16.3584	16.1485
255	21.7453	19.3760	18.6122	18.1319	17.7651	17.4584	17.1882	16.9424	16.7145	16.5010	16.3009
260	21.8257	19.4595	18.6993	18.2232	17.8613	17.5603	17.2968	17.0586	16.8388	16.6339	16.4421
265	21.9050	19.5415	18.7846	18.3123	17.9548	17.6589	17.4012	17.1694	16.9566	16.7589	16.5743
270	21.9830	19.6222	18.8682	18.3995	18.0459	17.7546	17.5019	17.2756	17.0688	16.8774	16.6990
275	22.0599	19.7015	18.9504	18.4848	18.1349	17.8476	17.5994	17.3780	17.1764	16.9903	16.8172
280	22.1358	19.7797	19.0312	18.5685	18.2219	17.9382	17.6940	17.4769	17.2798	17.0985	16.9301
285	22.2106	19.8567	19.1106	18.6507	18.3070	18.0267	17.7860	17.5728	17.3797	17.2025	17.0383
290	22.2845	19.9326	19.1888	18.7314	18.3905	18.1131	17.8757	17.6659	17.4765	17.3029	17.1424
295	22.3575	20.0076	19.2659	18.8108	18.4724	18.1978	17.9633	17.7566	17.5704	17.4002	17.2429
300	22.4296	20.0815	19.3418	18.8889	18.5529	18.2808	18.0490	17.8451	17.6618	17.4945	17.3402
305	22.5009	20.1545	19.4167	18.9658	18.6320	18.3622	18.1329	17.9316	17.7509	17.5863	17.4347
310	22.5715	20.2267	19.4906	19.0416	18.7098	18.4422	18.2151	18.0162	17.8379	17.6758	17.5266
315	22.6413	20.2980	19.5636	19.1164	18.7865	18.5209	18.2959	18.0991	17.9231	17.7631	17.6162
320	22.7104	20.3686	19.6358	19.1902	18.8621	18.5983	18.3752	18.1804	18.0064	17.8486	17.7037
325	22.7788	20.4384	19.7071	19.2631	18.9366	18.6745	18.4533	18.2603	18.0882	17.9322	17.7892
330	22.8466	20.5075	19.7776	19.3350	19.0101	18.7497	18.5301	18.3388	18.1685	18.0142	17.8729
335	22.9137	20.5759	19.8473	19.4062	19.0827	18.8238	18.6058	18.4161	18.2473	18.0947	17.9550
340	22.9803	20.6437	19.9164	19.4766	19.1545	18.8970	18.6804	18.4922	18.3249	18.1738	18.0356
345	23.0463	20.7109	19.9847	19.5462	19.2254	18.9692	18.7540	18.5672	18.4013	18.2516	18.1148
350	23.1118	20.7774	20.0524	19.6151	19.2955	19.0406	18.8267	18.6412	18.4766	18.3282	18.1927
355	23.1768	20.8435	20.1195	19.6833	19.3649	19.1112	18.8984	18.7141	18.5508	18.4036	18.2693
360	23.2413	20.9089	20.1860	19.7509	19.4335	19.1809	18.9693	18.7862	18.6240	18.4780	18.3448
365	23.3053	20.9739	20.2520	19.8178	19.5015	19.2500	19.0395	18.8574	18.6963	18.5513	18.4192
370	23.3688	21.0384	20.3174	19.8842	19.5689	19.3183	19.1088	18.9278	18.7677	18.6237	18.4926
375	23.4320	21.1024	20.3823	19.9500	19.6356	19.3860	19.1775	18.9974	18.8383	18.6952	18.5651
380	23.4947	21.1659	20.4467	20.0153	19.7018	19.4531	19.2454	19.0663	18.9080	18.7659	18.6366
385	23.5570	21.2290	20.5106	20.0800	19.7674	19.5195	19.3127	19.1344	18.9771	18.8358	18.7073
390	23.6190	21.2917	20.5741	20.1443	19.8325	19.5854	19.3794	19.2019	19.0454	18.9049	18.7773
395	23.6805	21.3540	20.6371	20.2081	19.8970	19.6507	19.4455	19.2688	19.1130	18.9733	18.8464
400	23.7418	21.4160	20.6998	20.2714	19.9611	19.7156	19.5111	19.3351	19.1800	19.0410	18.9148

[a]For these cases, the entropy function is that of the ideal gas at a pressure of 1×10^{-5} N/m^2.

Temperature, K	Pressure, N/m^2×10^{-5}										
	100	110	120	130	140	150	160	170	180	190	200
250	16.1485	15.9538	15.7763	15.6169	15.4754	15.3504	15.2399	15.1419	15.0543	14.9755	14.9041
255	16.3009	16.1145	15.9429	15.7866	15.6459	15.5199	15.4074	15.3067	15.2163	15.1346	15.0603
260	16.4421	16.2632	16.0974	15.9450	15.8062	15.6806	15.5672	15.4648	15.3723	15.2884	15.2119
265	16.5743	16.4020	16.2416	16.0933	15.9571	15.8326	15.7193	15.6162	15.5224	15.4369	15.3586
270	16.6990	16.5324	16.3770	16.2328	16.0994	15.9766	15.8640	15.7609	15.6665	15.5800	15.5005
275	16.8172	16.6557	16.5050	16.3645	16.2341	16.1134	16.0019	15.8993	15.8048	15.7177	15.6374
280	16.9301	16.7731	16.6264	16.4896	16.3620	16.2435	16.1335	16.0317	15.9375	15.8503	15.7695
285	17.0383	16.8853	16.7424	16.6088	16.4840	16.3676	16.2593	16.1585	16.0649	15.9779	15.8970
290	17.1424	16.9930	16.8534	16.7228	16.6007	16.4865	16.3798	16.2803	16.1875	16.1009	16.0201
295	17.2429	17.0967	16.9602	16.8324	16.7127	16.6006	16.4956	16.3974	16.3055	16.2195	16.1390
300	17.3402	17.1969	17.0631	16.9379	16.8205	16.7104	16.6071	16.5102	16.4193	16.3340	16.2540
305	17.4347	17.2940	17.1628	17.0399	16.9246	16.8164	16.7147	16.6191	16.5293	16.4448	16.3654
310	17.5266	17.3883	17.2593	17.1386	17.0254	16.9189	16.8188	16.7245	16.6358	16.5521	16.4733
315	17.6162	17.4801	17.3532	17.2345	17.1231	17.0183	16.9197	16.8267	16.7390	16.6562	16.5781
320	17.7037	17.5695	17.4446	17.3278	17.2180	17.1148	17.0176	16.9258	16.8392	16.7573	16.6799
325	17.7892	17.6569	17.5338	17.4186	17.3105	17.2088	17.1128	17.0223	16.9367	16.8557	16.7790
330	17.8729	17.7424	17.6209	17.5073	17.4007	17.3003	17.2057	17.1162	17.0316	16.9515	16.8756
335	17.9550	17.8260	17.7061	17.5940	17.4887	17.3897	17.2962	17.2079	17.1242	17.0449	16.9697
340	18.0356	17.9081	17.7896	17.6788	17.5749	17.4770	17.3847	17.2974	17.2146	17.1362	17.0617
345	18.1148	17.9886	17.8714	17.7619	17.6592	17.5625	17.4713	17.3849	17.3031	17.2254	17.1516
350	18.1927	18.0678	17.9518	17.8435	17.7419	17.6463	17.5560	17.4706	17.3896	17.3128	17.2396
355	18.2693	18.1456	18.0308	17.9236	17.8231	17.7285	17.6392	17.5546	17.4745	17.3983	17.3259
360	18.3448	18.2222	18.1085	18.0023	17.9028	17.8092	17.7208	17.6371	17.5577	17.4822	17.4105
365	18.4192	18.2977	18.1849	18.0798	17.9812	17.8885	17.8009	17.7180	17.6394	17.5646	17.4935
370	18.4926	18.3720	18.2603	18.1561	18.0584	17.9665	17.8797	17.7976	17.7197	17.6456	17.5750
375	18.5651	18.4454	18.3346	18.2312	18.1344	18.0433	17.9573	17.8759	17.7986	17.7251	17.6552
380	18.6366	18.5179	18.4079	18.3053	18.2093	18.1190	18.0337	17.9530	17.8763	17.8035	17.7340
385	18.7073	18.5894	18.4802	18.3785	18.2832	18.1936	18.1090	18.0289	17.9529	17.8806	17.8117
390	18.7773	18.6601	18.5516	18.4506	18.3561	18.2671	18.1832	18.1038	18.0283	17.9566	17.8882
395	18.8464	18.7300	18.6222	18.5219	18.4281	18.3398	18.2565	18.1776	18.1027	18.0315	17.9636
400	18.9148	18.7991	18.6921	18.5924	18.4992	18.4115	18.3288	18.2505	18.1762	18.1054	18.0380

TABLE VIII. - Continued. THERMODYNAMIC PROPERTY OF METHANE - ENTROPY, S_0/R

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	200	210	220	230	240	250	260	270	280	290	300
250	14.9041	14.8388	14.7789	14.7234	14.6719	14.6238	14.5786	14.5361	14.4959	14.4577	14.4215
255	15.0603	14.9924	14.9300	14.8723	14.8187	14.7686	14.7217	14.6775	14.6358	14.5962	14.5587
260	15.2119	15.1418	15.0773	15.0175	14.9620	14.9102	14.8616	14.8159	14.7727	14.7319	14.6930
265	15.3586	15.2867	15.2204	15.1589	15.1018	15.0484	14.9983	14.9512	14.9067	14.8646	14.8246
270	15.5005	15.4272	15.3594	15.2965	15.2379	15.1831	15.1317	15.0833	15.0376	14.9944	14.9533
275	15.6374	15.5631	15.4942	15.4301	15.3703	15.3144	15.2618	15.2123	15.1656	15.1213	15.0793
280	15.7695	15.6945	15.6248	15.5599	15.4991	15.4422	15.3887	15.3382	15.2905	15.2454	15.2025
285	15.8970	15.8217	15.7514	15.6858	15.6243	15.5666	15.5123	15.4610	15.4125	15.3666	15.3229
290	16.0201	15.9447	15.8741	15.8080	15.7460	15.6877	15.6327	15.5808	15.5316	15.4850	15.4406
295	16.1390	16.0637	15.9930	15.9267	15.8643	15.8055	15.7501	15.6976	15.6479	15.6007	15.5558
300	16.2540	16.1789	16.1083	16.0419	15.9793	15.9202	15.8644	15.8115	15.7614	15.7137	15.6683
305	16.3654	16.2906	16.2202	16.1538	16.0912	16.0319	15.9758	15.9227	15.8721	15.8241	15.7783
310	16.4733	16.3990	16.3289	16.2626	16.2000	16.1407	16.0845	16.0311	15.9803	15.9320	15.8859
315	16.5781	16.5043	16.4345	16.3685	16.3060	16.2467	16.1904	16.1369	16.0860	16.0374	15.9911
320	16.6799	16.6067	16.5373	16.4716	16.4093	16.3501	16.2938	16.2403	16.1892	16.1405	16.0940
325	16.7790	16.7064	16.6375	16.5721	16.5100	16.4510	16.3948	16.3413	16.2902	16.2414	16.1948
330	16.8756	16.8035	16.7351	16.6701	16.6084	16.5495	16.4935	16.4400	16.3890	16.3401	16.2934
335	16.9697	16.8983	16.8304	16.7659	16.7044	16.6458	16.5899	16.5366	16.4856	16.4368	16.3901
340	17.0617	16.9909	16.9236	16.8594	16.7983	16.7400	16.6843	16.6311	16.5803	16.5315	16.4848
345	17.1516	17.0814	17.0146	16.9509	16.8902	16.8322	16.7768	16.7237	16.6730	16.6243	16.5777
350	17.2396	17.1701	17.1038	17.0405	16.9802	16.9225	16.8673	16.8145	16.7639	16.7154	16.6688
355	17.3259	17.2569	17.1911	17.1283	17.0684	17.0110	16.9561	16.9035	16.8531	16.8047	16.7583
360	17.4105	17.3420	17.2768	17.2145	17.1549	17.0979	17.0433	16.9909	16.9407	16.8925	16.8461
365	17.4935	17.4256	17.3609	17.2990	17.2398	17.1831	17.1288	17.0767	17.0267	16.9787	16.9325
370	17.5750	17.5077	17.4434	17.3820	17.3232	17.2669	17.2129	17.1610	17.1113	17.0534	17.0173
375	17.6552	17.5884	17.5246	17.4636	17.4052	17.3492	17.2955	17.2440	17.1944	17.1467	17.1008
380	17.7340	17.6678	17.6045	17.5439	17.4859	17.4302	17.3768	17.3255	17.2762	17.2287	17.1830
385	17.8117	17.7459	17.6831	17.6229	17.5653	17.5100	17.4569	17.4058	17.3568	17.3095	17.2640
390	17.8882	17.8229	17.7605	17.7007	17.6434	17.5885	17.5357	17.4849	17.4361	17.3891	17.3437
395	17.9636	17.8988	17.8368	17.7774	17.7205	17.6659	17.6134	17.5629	17.5143	17.4675	17.4223
400	18.0380	17.9736	17.9120	17.8531	17.7965	17.7422	17.6900	17.6398	17.5914	17.5448	17.4998

Temperature, K	Pressure, N/m^2×10^{-5}										
	(a)	10	20	30	40	50	60	70	80	90	100
400	23.7418	21.4160	20.6998	20.2714	19.9611	19.7156	19.5111	19.3351	19.1800	19.0410	18.9148
405	23.8026	21.4775	20.7620	20.3344	20.0247	19.7799	19.5761	19.4008	19.2464	19.1081	18.9826
410	23.8632	21.5387	20.8238	20.3969	20.0879	19.8437	19.6406	19.4659	19.3122	19.1746	19.0497
415	23.9234	21.5995	20.8853	20.4590	20.1506	19.9071	19.7046	19.5306	19.3775	19.2405	19.1162
420	23.9833	21.6600	20.9464	20.5207	20.2129	19.9700	19.7681	19.5947	19.4422	19.3058	19.1821
425	24.0429	21.7202	21.0072	20.5820	20.2749	20.0325	19.8312	19.6584	19.5064	19.3705	19.2474
430	24.1023	21.7801	21.0676	20.6430	20.3364	20.0946	19.8938	19.7215	19.5701	19.4348	19.3122
435	24.1613	21.8397	21.1277	20.7036	20.3976	20.1563	19.9561	19.7843	19.6334	19.4986	19.3765
440	24.2201	21.8990	21.1875	20.7639	20.4584	20.2176	20.0179	19.8466	19.6962	19.5619	19.4402
445	24.2786	21.9580	21.2470	20.8239	20.5188	20.2785	20.0793	19.9085	19.7586	19.6247	19.5036
450	24.3369	22.0167	21.3062	20.8836	20.5790	20.3391	20.1404	19.9700	19.8206	19.6871	19.5664
455	24.3949	22.0752	21.3651	20.9429	20.6388	20.3994	20.2011	20.0312	19.8822	19.7491	19.6288
460	24.4527	22.1334	21.4238	21.0020	20.6983	20.4593	20.2614	20.0920	19.9433	19.8107	19.6908
465	24.5102	22.1914	21.4821	21.0608	20.7575	20.5189	20.3215	20.1524	20.0042	19.8719	19.7524
470	24.5675	22.2491	21.5403	21.1193	20.8164	20.5782	20.3811	20.2125	20.0646	19.9328	19.8136
475	24.6246	22.3065	21.5981	21.1776	20.8750	20.6373	20.4405	20.2722	20.1247	19.9932	19.8744
480	24.6815	22.3638	21.6557	21.2356	20.9334	20.6960	20.4996	20.3316	20.1845	20.0534	19.9349
485	24.7382	22.4208	21.7131	21.2933	20.9915	20.7544	20.5584	20.3907	20.2440	20.1131	19.9950
490	24.7946	22.4776	21.7702	21.3508	21.0493	20.8126	20.6169	20.4496	20.3031	20.1726	20.0547
495	24.8509	22.5342	21.8272	21.4080	21.1069	20.8704	20.6751	20.5081	20.3619	20.2317	20.1142
500	24.9069	22.5905	21.8838	21.4650	21.1642	20.9281	20.7330	20.5663	20.4205	20.2906	20.1733
505	24.9627	22.6467	21.9403	21.5218	21.2213	20.9855	20.7907	20.6243	20.4787	20.3491	20.2321
510	25.0184	22.7027	21.9966	21.5783	21.2781	21.0426	20.8481	20.6820	20.5367	20.4073	20.2906
515	25.0739	22.7584	22.0526	21.6347	21.3347	21.0995	20.9053	20.7394	20.5944	20.4653	20.3488
520	25.1292	22.8140	22.1084	21.6908	21.3911	21.1561	20.9622	20.7966	20.6518	20.5230	20.4068
525	25.1842	22.8694	22.1641	21.7467	21.4473	21.2126	21.0189	20.8535	20.7090	20.5804	20.4644
530	25.2392	22.9245	22.2195	21.8024	21.5032	21.2688	21.0753	20.9102	20.7659	20.6376	20.5218
535	25.2939	22.9795	22.2748	21.8579	21.5589	21.3247	21.1315	20.9667	20.8226	20.6945	20.5789
540	25.3485	23.0343	22.3298	21.9132	21.6145	21.3805	21.1875	21.0229	20.8790	20.7511	20.6358
545	25.4029	23.0890	22.3847	21.9683	21.6698	21.4361	21.2433	21.0789	20.9352	20.8075	20.6924
550	25.4571	23.1434	22.4394	22.0232	21.7249	21.4914	21.2988	21.1346	20.9912	20.8637	20.7488
555	25.5112	23.1977	22.4939	22.0779	21.7799	21.5465	21.3542	21.1902	21.0470	20.9197	20.8049
560	25.5651	23.2518	22.5482	22.1324	21.8346	21.6015	21.4093	21.2455	21.1025	20.9754	20.8608
565	25.6188	23.3058	22.6024	22.1868	21.8892	21.6562	21.4643	21.3007	21.1578	21.0309	20.9165
570	25.6724	23.3596	22.6564	22.2410	21.9435	21.7108	21.5190	21.3556	21.2129	21.0862	20.9720
575	25.7258	23.4132	22.7102	22.2950	21.9977	21.7652	21.5736	21.4103	21.2678	21.1412	21.0272
580	25.7791	23.4667	22.7638	22.3488	22.0517	21.8194	21.6280	21.4649	21.3225	21.1961	21.0822
585	25.8322	23.5200	22.8173	22.4025	22.1056	21.8734	21.6821	21.5192	21.3770	21.2508	21.1370
590	25.8852	23.5731	22.8706	22.4560	22.1592	21.9272	21.7361	21.5734	21.4313	21.3052	21.1917
595	25.9380	23.6261	22.9238	22.5093	22.2127	21.9809	21.7899	21.6273	21.4855	21.3595	21.2461
600	25.9907	23.6790	22.9768	22.5625	22.2661	22.0344	21.8436	21.6811	21.5394	21.4136	21.3003

[a]For these cases, the entropy function is that of the ideal gas at a pressure of 1×10^{-5} N/m^2.

TABLE VIII. - Concluded. THERMODYNAMIC PROPERTY OF METHANE - ENTROPY, S_0/R

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	100	110	120	130	140	150	160	170	180	190	200
400	18.9148	18.7991	18.6921	18.5924	18.4992	18.4115	18.3288	18.2505	18.1762	18.1054	18.0380
405	18.9826	18.8675	18.7611	18.6621	18.5695	18.4824	18.4002	18.3225	18.2486	18.1784	18.1114
410	19.0497	18.9352	18.8295	18.7311	18.6390	18.5525	18.4708	18.3936	18.3203	18.2505	18.1840
415	19.1162	19.0023	18.8971	18.7993	18.7078	18.6218	18.5407	18.4639	18.3910	18.3217	18.2556
420	19.1821	19.0688	18.9641	18.8668	18.7758	18.6904	18.6097	18.5334	18.4610	18.3921	18.3264
425	19.2474	19.1346	19.0305	18.9337	18.8433	18.7583	18.6781	18.6022	18.5303	18.4618	18.3964
430	19.3122	19.2000	19.0963	19.0000	18.9100	18.8255	18.7458	18.6703	18.5988	18.5307	18.4657
435	19.3765	19.2647	19.1616	19.0658	18.9762	18.8921	18.8128	18.7378	18.6666	18.5989	18.5343
440	19.4402	19.3290	19.2263	19.1309	19.0418	18.9581	18.8792	18.8046	18.7338	18.6664	18.6022
445	19.5036	19.3927	19.2905	19.1955	19.1068	19.0235	18.9450	18.8708	18.8003	18.7333	18.6694
450	19.5664	19.4560	19.3542	19.2596	19.1713	19.0884	19.0103	18.9364	18.8663	18.7996	18.7360
455	19.6288	19.5188	19.4174	19.3232	19.2353	19.1528	19.0750	19.0015	18.9317	18.8653	18.8020
460	19.6908	19.5812	19.4802	19.3864	19.2988	19.2166	19.1392	19.0660	18.9965	18.9305	18.8675
465	19.7524	19.6432	19.5425	19.4491	19.3619	19.2800	19.2029	19.1300	19.0609	18.9951	18.9324
470	19.8136	19.7047	19.6044	19.5113	19.4244	19.3429	19.2661	19.1935	19.1247	19.0592	18.9967
475	19.8744	19.7659	19.6659	19.5732	19.4866	19.4054	19.3289	19.2566	19.1880	19.1228	19.0606
480	19.9349	19.8267	19.7270	19.6346	19.5483	19.4674	19.3912	19.3192	19.2509	19.1859	19.1240
485	19.9950	19.8871	19.7878	19.6956	19.6097	19.5290	19.4531	19.3814	19.3133	19.2486	19.1869
490	20.0547	19.9472	19.8481	19.7563	19.6706	19.5903	19.5146	19.4431	19.3753	19.3108	19.2494
495	20.1142	20.0069	19.9081	19.8166	19.7312	19.6511	19.5757	19.5044	19.4369	19.3726	19.3114
500	20.1733	20.0663	19.9678	19.8765	19.7914	19.7115	19.6364	19.5654	19.4981	19.4340	19.3730
505	20.2321	20.1254	20.0272	19.9361	19.8512	19.7716	19.6967	19.6260	19.5589	19.4951	19.4342
510	20.2906	20.1841	20.0862	19.9954	19.9107	19.8314	19.7567	19.6862	19.6193	19.5557	19.4951
515	20.3488	20.2426	20.1449	20.0543	19.9699	19.8908	19.8163	19.7460	19.6793	19.6159	19.5555
520	20.4068	20.3008	20.2033	20.1130	20.0288	19.9499	19.8756	19.8055	19.7390	19.6758	19.6156
525	20.4644	20.3587	20.2614	20.1713	20.0873	20.0086	19.9346	19.8647	19.7984	19.7354	19.6753
530	20.5218	20.4163	20.3192	20.2293	20.1456	20.0671	19.9933	19.9235	19.8574	19.7946	19.7347
535	20.5789	20.4736	20.3768	20.2871	20.2035	20.1252	20.0516	19.9820	19.9161	19.8535	19.7938
540	20.6358	20.5307	20.4341	20.3446	20.2612	20.1831	20.1096	20.0403	19.9745	19.9120	19.8525
545	20.6924	20.5875	20.4911	20.4018	20.3186	20.2407	20.1674	20.0982	20.0326	19.9703	19.9109
550	20.7488	20.6441	20.5478	20.4587	20.3757	20.2980	20.2249	20.1558	20.0904	20.0282	19.9690
555	20.8049	20.7004	20.6043	20.5154	20.4326	20.3550	20.2821	20.2132	20.1479	20.0859	20.0268
560	20.8608	20.7565	20.6606	20.5718	20.4892	20.4118	20.3390	20.2702	20.2051	20.1433	20.0843
565	20.9165	20.8123	20.7166	20.6280	20.5455	20.4683	20.3956	20.3271	20.2621	20.2004	20.1416
570	20.9720	20.8680	20.7724	20.6840	20.6016	20.5245	20.4520	20.3836	20.3188	20.2572	20.1985
575	21.0272	20.9234	20.8280	20.7397	20.6575	20.5806	20.5082	20.4399	20.3752	20.3138	20.2552
580	21.0822	20.9785	20.8833	20.7952	20.7131	20.6363	20.5641	20.4960	20.4314	20.3701	20.3117
585	21.1370	21.0335	20.9384	20.8505	20.7685	20.6919	20.6198	20.5518	20.4874	20.4262	20.3679
590	21.1917	21.0883	20.9933	20.9055	20.8237	20.7472	20.6753	20.6074	20.5431	20.4820	20.4238
595	21.2461	21.1428	21.0480	20.9603	20.8787	20.8023	20.7305	20.6627	20.5985	20.5376	20.4795
600	21.3003	21.1972	21.1025	21.0150	20.9335	20.8572	20.7855	20.7179	20.6538	20.5929	20.5350

Temperature, K	Pressure, N/m^2×10^{-5}										
	200	210	220	230	240	250	260	270	280	290	300
400	18.0380	17.9736	17.9120	17.8531	17.7965	17.7422	17.6900	17.6398	17.5914	17.5448	17.4998
405	18.1114	18.0475	17.9863	17.9277	17.8715	17.8175	17.7655	17.7156	17.6675	17.6211	17.5763
410	18.1840	18.1204	18.0596	18.0014	17.9455	17.8918	17.8401	17.7904	17.7425	17.6964	17.6518
415	18.2556	18.1924	18.1320	18.0741	18.0185	17.9651	17.9138	17.8643	17.8167	17.7707	17.7263
420	18.3264	18.2636	18.2036	18.1469	18.0907	18.0376	17.9865	17.9373	17.8899	17.8442	17.8000
425	18.3964	18.3340	18.2743	18.2170	18.1621	18.1093	18.0584	18.0095	17.9623	17.9167	17.8727
430	18.4657	18.4037	18.3443	18.2873	18.2327	18.1801	18.1295	18.0808	18.0339	17.9885	17.9447
435	18.5343	18.4726	18.4135	18.3568	18.3025	18.2502	18.1999	18.1514	18.1046	18.0595	18.0159
440	18.6022	18.5408	18.4820	18.4257	18.3716	18.3195	18.2695	18.2212	18.1747	18.1297	18.0863
445	18.6694	18.6083	18.5498	18.4938	18.4399	18.3882	18.3383	18.2903	18.2440	18.1992	18.1559
450	18.7360	18.6752	18.6170	18.5613	18.5077	18.4561	18.4065	18.3587	18.3126	18.2680	18.2249
455	18.8020	18.7415	18.6836	18.6281	18.5748	18.5235	18.4741	18.4265	18.3805	18.3362	18.2932
460	18.8675	18.8073	18.7496	18.6943	18.6413	18.5902	18.5410	18.4936	18.4479	18.4037	18.3609
465	18.9324	18.8724	18.8150	18.7600	18.7072	18.6563	18.6074	18.5602	18.5146	18.4706	18.4280
470	18.9967	18.9371	18.8799	18.8251	18.7725	18.7219	18.6731	18.6261	18.5807	18.5369	18.4945
475	19.0606	19.0012	18.9443	18.8897	18.8373	18.7869	18.7383	18.6915	18.6463	18.6026	18.5604
480	19.1240	19.0648	19.0081	18.9538	18.9016	18.8514	18.8030	18.7564	18.7113	18.6678	18.6257
485	19.1869	19.1280	19.0715	19.0174	18.9654	18.9154	18.8672	18.8207	18.7759	18.7325	18.6905
490	19.2494	19.1906	19.1344	19.0805	19.0287	18.9789	18.9309	18.8846	18.8399	18.7967	18.7548
495	19.3114	19.2529	19.1969	19.1432	19.0916	19.0419	18.9941	18.9479	18.9034	18.8603	18.8187
500	19.3730	19.3147	19.2589	19.2054	19.1540	19.1045	19.0568	19.0109	18.9665	18.9235	18.8820
505	19.4342	19.3761	19.3205	19.2672	19.2159	19.1666	19.1191	19.0733	19.0291	18.9863	18.9449
510	19.4951	19.4372	19.3817	19.3286	19.2775	19.2284	19.1810	19.1354	19.0913	19.0486	19.0074
515	19.5555	19.4978	19.4425	19.3895	19.3386	19.2897	19.2425	19.1970	19.1530	19.1105	19.0694
520	19.6156	19.5581	19.5030	19.4502	19.3994	19.3506	19.3036	19.2582	19.2144	19.1720	19.1310
525	19.6753	19.6180	19.5630	19.5104	19.4598	19.4111	19.3642	19.3190	19.2753	19.2331	19.1922
530	19.7347	19.6775	19.6228	19.5703	19.5198	19.4713	19.4246	19.3795	19.3359	19.2938	19.2530
535	19.7938	19.7367	19.6821	19.6298	19.5795	19.5311	19.4845	19.4395	19.3961	19.3541	19.3135
540	19.8525	19.7956	19.7412	19.6890	19.6388	19.5906	19.5441	19.4993	19.4559	19.4141	19.3735
545	19.9109	19.8542	19.7999	19.7478	19.6978	19.6497	19.6034	19.5586	19.5154	19.4737	19.4332
550	19.9690	19.9124	19.8583	19.8064	19.7565	19.7085	19.6623	19.6177	19.5746	19.5329	19.4926
555	20.0268	19.9704	19.9164	19.8646	19.8148	19.7670	19.7209	19.6764	19.6334	19.5919	19.5517
560	20.0843	20.0280	19.9742	19.9225	19.8729	19.8252	19.7792	19.7348	19.6919	19.6505	19.6104
565	20.1416	20.0854	20.0317	19.9801	19.9306	19.8830	19.8371	19.7929	19.7501	19.7088	19.6688
570	20.1985	20.1425	20.0889	20.0375	19.9881	19.9406	19.8948	19.8507	19.8080	19.7668	19.7268
575	20.2552	20.1993	20.1458	20.0945	20.0453	19.9979	19.9522	19.9082	19.8656	19.8245	19.7846
580	20.3117	20.2559	20.2025	20.1513	20.1022	20.0549	20.0093	19.9654	19.9229	19.8819	19.8421
585	20.3679	20.3122	20.2589	20.2079	20.1588	20.1116	20.0662	20.0223	19.9800	19.9390	19.8993
590	20.4238	20.3683	20.3151	20.2642	20.2152	20.1681	20.1228	20.0790	20.0367	19.9958	19.9563
595	20.4795	20.4241	20.3710	20.3202	20.2713	20.2243	20.1791	20.1354	20.0932	20.0524	20.0129
600	20.5350	20.4797	20.4267	20.3760	20.3272	20.2803	20.2351	20.1916	20.1495	20.1088	20.0693

TABLE IX. - THERMODYNAMIC PROPERTY OF METHANE - SPECIFIC HEAT, $C_{p,0}/R$

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	0	1	2	3	4	5	6	7	8	9	10
120	4.003	4.665	------	------	------	------	------	------	------	------	------
122	4.003	4.604	5.325	------	------	------	------	------	------	------	------
124	4.003	4.549	5.195	------	------	------	------	------	------	------	------
126	4.003	4.499	5.079	------	------	------	------	------	------	------	------
128	4.003	4.455	4.977	5.597	------	------	------	------	------	------	------
130	4.003	4.415	4.886	5.438	------	------	------	------	------	------	------
132	4.003	4.379	4.805	5.298	5.882	------	------	------	------	------	------
134	4.004	4.346	4.732	5.175	5.691	------	------	------	------	------	------
136	4.004	4.317	4.668	5.066	5.525	6.066	------	------	------	------	------
138	4.004	4.290	4.609	4.968	5.378	5.855	------	------	------	------	------
140	4.004	4.267	4.557	4.882	5.249	5.671	6.166	------	------	------	------
142	4.004	4.245	4.510	4.804	5.135	5.511	5.945	6.457	------	------	------
144	4.005	4.226	4.468	4.735	5.033	5.369	5.753	6.199	------	------	------
146	4.005	4.208	4.430	4.673	4.943	5.244	5.585	5.977	6.434	------	------
148	4.005	4.192	4.395	4.617	4.862	5.133	5.438	5.784	6.182	6.649	------
150	4.005	4.177	4.364	4.567	4.789	5.035	5.308	5.615	5.965	6.369	6.845
152	4.006	4.164	4.336	4.522	4.724	4.947	5.193	5.467	5.776	6.129	6.538
154	4.006	4.153	4.310	4.481	4.666	4.868	5.090	5.336	5.611	5.921	6.276
156	4.006	4.142	4.287	4.444	4.613	4.797	4.999	5.220	5.466	5.741	6.052
158	4.007	4.132	4.267	4.411	4.566	4.734	4.917	5.117	5.338	5.583	5.857
160	4.007	4.124	4.248	4.381	4.523	4.677	4.844	5.026	5.225	5.444	5.688
162	4.008	4.116	4.231	4.353	4.485	4.626	4.778	4.944	5.124	5.321	5.539
164	4.009	4.109	4.215	4.329	4.450	4.580	4.719	4.870	5.034	5.212	5.407
166	4.009	4.102	4.201	4.306	4.418	4.538	4.666	4.804	4.953	5.115	5.291
168	4.010	4.097	4.189	4.286	4.390	4.500	4.618	4.745	4.881	5.028	5.188
170	4.011	4.092	4.177	4.268	4.364	4.466	4.575	4.692	4.817	4.951	5.096
172	4.011	4.087	4.167	4.251	4.341	4.436	4.536	4.644	4.758	4.881	5.013
174	4.012	4.083	4.158	4.237	4.320	4.408	4.501	4.600	4.706	4.819	4.940
176	4.013	4.080	4.150	4.223	4.301	4.382	4.469	4.561	4.659	4.763	4.874
178	4.014	4.077	4.142	4.211	4.283	4.360	4.440	4.525	4.616	4.712	4.814
180	4.015	4.074	4.135	4.200	4.268	4.339	4.414	4.493	4.577	4.666	4.760
182	4.017	4.072	4.129	4.190	4.253	4.320	4.390	4.464	4.542	4.625	4.712
184	4.018	4.070	4.124	4.181	4.241	4.303	4.369	4.438	4.511	4.587	4.668
186	4.019	4.068	4.120	4.173	4.229	4.288	4.349	4.414	4.482	4.554	4.629
188	4.021	4.067	4.115	4.166	4.219	4.274	4.332	4.393	4.456	4.523	4.593
190	4.022	4.066	4.112	4.160	4.210	4.262	4.316	4.373	4.433	4.495	4.561

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	10	12	14	16	18	20	22	24	26	28	30
150	6.845	------	------	------	------	------	------	------	------	------	------
152	6.538	------	------	------	------	------	------	------	------	------	------
154	6.276	7.177	------	------	------	------	------	------	------	------	------
156	6.052	6.822	------	------	------	------	------	------	------	------	------
158	5.857	6.524	7.431	------	------	------	------	------	------	------	------
160	5.688	6.270	7.038	8.126	------	------	------	------	------	------	------
162	5.539	6.051	6.710	7.607	------	------	------	------	------	------	------
164	5.407	5.862	6.434	7.187	8.250	------	------	------	------	------	------
166	5.291	5.697	6.198	6.841	7.710	8.989	------	------	------	------	------
168	5.188	5.552	5.995	6.550	7.276	8.289	------	------	------	------	------
170	5.096	5.424	5.818	6.302	6.920	7.746	8.938	------	------	------	------
172	5.013	5.311	5.663	6.090	6.627	7.311	8.256	9.671	------	------	------
174	4.940	5.210	5.527	5.906	6.369	6.954	7.726	8.811	10.502	------	------
176	4.874	5.120	5.407	5.745	6.153	6.656	7.301	8.166	9.414	11.446	------
178	4.814	5.040	5.300	5.604	5.965	6.404	6.951	7.661	8.630	10.065	12.512
180	4.760	4.968	5.205	5.480	5.802	6.188	6.660	7.254	8.033	9.115	10.761
182	4.712	4.903	5.120	5.370	5.659	6.001	6.412	6.918	7.561	8.414	9.617
184	4.668	4.845	5.045	5.272	5.533	5.839	6.200	6.637	7.179	7.872	8.800
186	4.629	4.793	4.976	5.184	5.422	5.696	6.017	6.399	6.862	7.439	8.182
188	4.593	4.745	4.915	5.106	5.323	5.571	5.858	6.194	6.596	7.085	7.696
190	4.561	4.703	4.860	5.036	5.234	5.460	5.718	6.017	6.369	6.790	7.303

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	30	32	34	36	38	40	42	44	46	48	50
170	------	------	------	------	------	------	------	------	------	------	------
172	------	------	------	------	------	------	------	------	------	------	------
174	------	------	------	------	------	------	------	------	------	------	------
176	------	------	------	------	------	------	------	------	------	------	------
178	12.512	------	------	------	------	------	------	------	------	------	------
180	10.761	13.697	------	------	------	------	------	------	------	------	------
182	9.617	11.489	14.977	------	------	------	------	------	------	------	------
184	8.800	10.126	12.230	16.292	------	------	------	------	------	------	------
186	8.182	9.183	10.628	12.952	17.542	33.868	------	------	------	------	------
188	7.696	8.485	9.555	11.107	13.616	18.593	36.044	------	------	------	------
190	7.303	7.945	8.777	9.906	11.542	14.177	19.315	35.610	------	------	------

TABLE IX. - Continued. THERMODYNAMIC PROPERTY OF METHANE - SPECIFIC HEAT, $C_{p,0}/R$

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	0	5	10	15	20	25	30	35	40	45	50
190	4.022	4.262	4.561	4.946	5.460	6.186	7.303	9.295	14.177	89.088	------
192	4.024	4.250	4.531	4.889	5.361	6.012	6.979	8.587	11.914	24.371	40.180
194	4.025	4.240	4.505	4.839	5.273	5.861	6.707	8.040	10.499	16.816	70.945
196	4.027	4.231	4.481	4.793	5.194	5.728	6.475	7.603	9.516	13.532	27.223
198	4.029	4.223	4.459	4.751	5.123	5.610	6.277	7.245	8.788	11.632	18.494
200	4.031	4.216	4.439	4.714	5.059	5.506	6.104	6.948	8.224	10.374	14.662
202	4.033	4.209	4.421	4.680	5.002	5.413	5.953	6.696	7.774	9.472	12.466
204	4.035	4.204	4.405	4.649	4.950	5.329	5.821	6.480	7.406	8.789	11.028
206	4.038	4.199	4.390	4.621	4.903	5.255	5.704	6.294	7.100	8.253	10.006
208	4.040	4.194	4.377	4.595	4.860	5.188	5.600	6.132	6.841	7.821	9.239
210	4.043	4.191	4.365	4.572	4.822	5.127	5.507	5.990	6.619	7.466	8.641
212	4.045	4.187	4.354	4.551	4.787	5.072	5.424	5.864	6.428	7.167	8.162
214	4.048	4.185	4.344	4.532	4.755	5.023	5.349	5.753	6.261	6.914	7.769
216	4.051	4.183	4.336	4.514	4.726	4.978	5.282	5.654	6.115	6.697	7.442
218	4.054	4.181	4.328	4.499	4.699	4.937	5.221	5.565	5.986	6.508	7.164
220	4.057	4.180	4.321	4.484	4.675	4.900	5.166	5.485	5.871	6.344	6.927
222	4.060	4.179	4.315	4.471	4.653	4.866	5.116	5.413	5.769	6.199	6.721
224	4.064	4.178	4.309	4.460	4.633	4.835	5.071	5.348	5.677	6.070	6.542
226	4.067	4.178	4.305	4.449	4.615	4.807	5.029	5.289	5.595	5.956	6.384
228	4.071	4.179	4.301	4.440	4.599	4.781	4.992	5.236	5.521	5.854	6.245
230	4.075	4.179	4.298	4.431	4.584	4.758	4.957	5.187	5.454	5.763	6.122
232	4.079	4.180	4.295	4.424	4.570	4.736	4.926	5.143	5.393	5.680	6.011
234	4.083	4.182	4.293	4.417	4.558	4.717	4.897	5.103	5.337	5.606	5.912
236	4.087	4.183	4.291	4.411	4.546	4.699	4.871	5.066	5.287	5.538	5.823
238	4.092	4.185	4.290	4.406	4.536	4.683	4.847	5.032	5.241	5.477	5.742
240	4.096	4.188	4.289	4.402	4.527	4.668	4.825	5.001	5.199	5.421	5.669
242	4.101	4.190	4.288	4.398	4.519	4.654	4.805	4.973	5.161	5.370	5.603
244	4.106	4.193	4.289	4.395	4.512	4.642	4.787	4.947	5.125	5.323	5.543
246	4.111	4.196	4.289	4.392	4.506	4.631	4.770	4.923	5.093	5.281	5.488
248	4.116	4.199	4.290	4.390	4.500	4.621	4.755	4.902	5.064	5.242	5.437
250	4.122	4.203	4.291	4.388	4.495	4.612	4.741	4.882	5.036	5.206	5.391

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	50	55	60	65	70	75	80	85	90	95	100
190	------	------	------	------	------	------	------	------	------	------	------
192	40.180	19.750	15.537	13.558	12.365	11.551	10.951	10.486	10.112	9.804	9.544
194	70.945	28.615	18.401	15.053	13.310	12.212	11.444	10.870	10.420	10.057	9.755
196	27.223	52.525	23.508	17.231	14.556	13.034	12.034	11.317	10.772	10.341	9.990
198	18.494	41.182	32.212	20.466	16.217	14.063	12.742	11.838	11.174	10.661	10.251
200	14.662	25.304	36.448	24.802	18.387	15.337	13.585	12.441	11.629	11.018	10.539
202	12.466	18.535	28.994	28.045	20.904	16.848	14.567	13.129	12.139	11.412	10.853
204	11.028	14.999	21.865	26.738	22.893	18.440	15.649	13.889	12.699	11.841	11.192
206	10.006	12.838	17.431	22.661	23.050	19.691	16.710	14.678	13.289	12.294	11.550
208	9.239	11.380	14.638	18.828	21.303	20.053	17.527	15.411	13.873	12.754	11.916
210	8.641	10.327	12.761	15.963	18.815	19.337	17.840	15.960	14.390	13.190	12.274
212	8.162	9.531	11.424	13.895	16.473	17.900	17.527	16.190	14.765	13.560	12.601
214	7.769	8.908	10.428	12.377	14.551	16.241	16.695	16.033	14.923	13.817	12.868
216	7.442	8.406	9.657	11.232	13.035	14.677	15.581	15.522	14.826	13.920	13.044
218	7.164	7.995	9.045	10.344	11.843	13.326	14.402	14.770	14.487	13.846	13.105
220	6.927	7.650	8.547	9.638	10.897	12.198	13.290	13.904	13.960	13.602	13.040
222	6.721	7.359	8.135	9.065	10.135	11.267	12.300	13.027	13.322	13.216	12.850
224	6.542	7.109	7.789	8.593	9.511	10.497	11.443	12.199	12.639	12.734	12.555
226	6.384	6.893	7.494	8.197	8.995	9.856	10.709	11.448	11.964	12.201	12.181
228	6.245	6.704	7.241	7.861	8.569	9.317	10.083	10.781	11.325	11.654	11.758
230	6.122	6.539	7.021	7.573	8.192	8.862	9.548	10.196	10.738	11.119	11.313
232	6.011	6.392	6.829	7.324	7.876	8.472	9.088	9.684	10.209	10.613	10.867
234	5.912	6.262	6.660	7.107	7.602	8.136	8.692	9.237	9.735	10.144	10.434
236	5.823	6.146	6.509	6.916	7.363	7.845	8.347	8.847	9.314	9.716	10.025
238	5.742	6.041	6.376	6.747	7.154	7.590	8.046	8.503	8.939	9.327	9.643
240	5.669	5.947	6.256	6.597	6.968	7.366	7.782	8.201	8.607	8.977	9.291
242	5.603	5.862	6.149	6.463	6.804	7.168	7.548	7.934	8.311	8.661	8.968
244	5.543	5.785	6.052	6.343	6.657	6.992	7.341	7.697	8.046	8.377	8.674
246	5.488	5.715	5.964	6.234	6.525	6.834	7.156	7.485	7.810	8.121	8.406
248	5.437	5.651	5.884	6.136	6.407	6.693	6.991	7.295	7.598	7.891	8.162
250	5.391	5.593	5.812	6.048	6.300	6.566	6.842	7.125	7.408	7.682	7.940

TABLE IX. - Continued. THERMODYNAMIC PROPERTY OF METHANE - SPECIFIC HEAT, $C_{p,0}/R$

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	100	110	120	130	140	150	160	170	180	190	200
190	------	------	------	------	------	------	------	------	------	------	------
192	9.544	9.127	8.804	8.545	8.331	8.151	7.997	7.863	7.745	7.640	7.547
194	9.755	9.280	8.919	8.634	8.401	8.206	8.040	7.897	7.772	7.661	7.562
196	9.990	9.448	9.044	8.729	8.475	8.264	8.087	7.934	7.800	7.683	7.579
198	10.251	9.631	9.179	8.832	8.554	8.327	8.136	7.973	7.831	7.708	7.598
200	10.539	9.829	9.323	8.941	8.639	8.393	8.188	8.014	7.864	7.734	7.618
202	10.853	10.043	9.477	9.056	8.727	8.462	8.243	8.058	7.899	7.761	7.640
204	11.192	10.270	9.639	9.176	8.820	8.535	8.300	8.104	7.936	7.790	7.663
206	11.550	10.508	9.808	9.302	8.915	8.609	8.360	8.151	7.974	7.821	7.687
208	11.916	10.753	9.982	9.430	9.014	8.686	8.420	8.200	8.013	7.852	7.713
210	12.274	10.998	10.157	9.560	9.113	8.763	8.482	8.249	8.053	7.885	7.739
212	12.601	11.235	10.329	9.689	9.212	8.841	8.543	8.298	8.093	7.917	7.765
214	12.868	11.452	10.494	9.814	9.309	8.917	8.604	8.348	8.133	7.950	7.792
216	13.044	11.635	10.643	9.932	9.401	8.991	8.664	8.396	8.172	7.982	7.819
218	13.105	11.772	10.772	10.039	9.488	9.061	8.720	8.442	8.210	8.014	7.845
220	13.040	11.849	10.872	10.130	9.565	9.125	8.774	8.486	8.247	8.044	7.870
222	12.850	11.857	10.936	10.203	9.632	9.182	8.822	8.527	8.281	8.073	7.894
224	12.555	11.794	10.960	10.252	9.684	9.231	8.864	8.563	8.312	8.100	7.917
226	12.181	11.660	10.940	10.275	9.720	9.268	8.900	8.595	8.340	8.123	7.937
228	11.758	11.465	10.876	10.269	9.738	9.294	8.927	8.621	8.363	8.144	7.956
230	11.313	11.219	10.769	10.235	9.737	9.307	8.945	8.640	8.382	8.162	7.971
232	10.867	10.938	10.624	10.171	9.715	9.306	8.953	8.652	8.396	8.175	7.984
234	10.434	10.634	10.447	10.080	9.673	9.290	8.951	8.657	8.403	8.184	7.993
236	10.025	10.319	10.245	9.964	9.611	9.260	8.938	8.654	8.405	8.188	7.999
238	9.643	10.004	10.026	9.827	9.531	9.215	8.914	8.642	8.400	8.188	8.001
240	9.291	9.696	9.796	9.674	9.435	9.156	8.879	8.622	8.389	8.182	7.998
242	8.968	9.399	9.561	9.507	9.324	9.085	8.834	8.593	8.372	8.172	7.992
244	8.674	9.117	9.327	9.332	9.202	9.002	8.779	8.557	8.348	8.156	7.982
246	8.406	8.852	9.097	9.153	9.071	8.910	8.715	8.513	8.317	8.135	7.967
248	8.162	8.604	8.874	8.971	8.933	8.810	8.643	8.462	8.281	8.109	7.948
250	7.940	8.374	8.661	8.791	8.791	8.703	8.565	8.404	8.239	8.078	7.926

Temperature, K	Pressure, N/m^2×10^{-5}										
	200	210	220	230	240	250	260	270	280	290	300
190	------	------	------	------	------	------	------	------	------	------	------
192	7.547	7.462	7.386	7.316	7.252	7.193	7.138	7.088	7.041	6.997	6.956
194	7.562	7.473	7.393	7.320	7.253	7.191	7.135	7.082	7.033	6.988	6.945
196	7.579	7.486	7.401	7.325	7.255	7.191	7.132	7.078	7.027	6.980	6.936
198	7.598	7.500	7.412	7.332	7.259	7.192	7.131	7.075	7.022	6.973	6.928
200	7.618	7.515	7.423	7.340	7.264	7.195	7.131	7.072	7.018	6.968	6.921
202	7.640	7.532	7.436	7.349	7.270	7.198	7.132	7.072	7.016	6.964	6.915
204	7.663	7.550	7.450	7.359	7.277	7.203	7.134	7.072	7.014	6.960	6.910
206	7.687	7.570	7.465	7.371	7.286	7.208	7.138	7.073	7.013	6.958	6.907
208	7.713	7.590	7.481	7.383	7.295	7.215	7.142	7.075	7.014	6.957	6.904
210	7.739	7.611	7.497	7.396	7.305	7.222	7.147	7.078	7.015	6.956	6.902
212	7.765	7.632	7.515	7.410	7.316	7.230	7.153	7.082	7.017	6.957	6.901
214	7.792	7.654	7.533	7.424	7.327	7.239	7.159	7.087	7.020	6.958	6.901
216	7.819	7.676	7.550	7.439	7.339	7.248	7.166	7.092	7.023	6.960	6.902
218	7.845	7.698	7.568	7.453	7.350	7.258	7.174	7.097	7.027	6.963	6.903
220	7.870	7.719	7.586	7.468	7.362	7.267	7.181	7.103	7.032	6.966	6.905
222	7.894	7.739	7.603	7.482	7.374	7.277	7.189	7.109	7.036	6.969	6.907
224	7.917	7.758	7.619	7.495	7.385	7.286	7.197	7.115	7.041	6.973	6.910
226	7.937	7.776	7.634	7.508	7.396	7.295	7.204	7.121	7.046	6.976	6.912
228	7.956	7.792	7.648	7.520	7.406	7.304	7.211	7.127	7.051	6.980	6.915
230	7.971	7.805	7.660	7.531	7.415	7.312	7.218	7.133	7.055	6.984	6.918
232	7.984	7.817	7.670	7.540	7.423	7.319	7.224	7.138	7.060	6.988	6.921
234	7.993	7.826	7.678	7.547	7.430	7.325	7.229	7.143	7.064	6.991	6.924
236	7.999	7.832	7.685	7.553	7.436	7.330	7.234	7.147	7.067	6.994	6.926
238	8.001	7.835	7.688	7.557	7.440	7.334	7.237	7.150	7.070	6.996	6.929
240	7.998	7.835	7.690	7.559	7.442	7.336	7.240	7.152	7.072	6.998	6.930
242	7.992	7.832	7.688	7.559	7.442	7.337	7.241	7.154	7.074	7.000	6.932
244	7.982	7.825	7.684	7.556	7.441	7.337	7.241	7.154	7.074	7.000	6.932
246	7.967	7.815	7.677	7.552	7.438	7.334	7.240	7.153	7.074	7.000	6.933
248	7.948	7.801	7.667	7.545	7.433	7.331	7.237	7.152	7.073	7.000	6.932
250	7.926	7.784	7.654	7.535	7.426	7.325	7.233	7.149	7.070	6.998	6.931

TABLE IX. - Continued. THERMODYNAMIC PROPERTY OF METHANE - SPECIFIC HEAT, $C_{p,0}/R$

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	0	10	20	30	40	50	60	70	80	90	100
250	4.122	4.291	4.495	4.741	5.036	5.391	5.812	6.300	6.842	7.408	7.940
255	4.136	4.296	4.486	4.711	4.978	5.292	5.657	6.073	6.531	7.008	7.470
260	4.151	4.302	4.480	4.688	4.930	5.211	5.532	5.893	6.285	6.694	7.095
265	4.166	4.310	4.477	4.670	4.892	5.145	5.431	5.747	6.088	6.443	6.794
270	4.183	4.320	4.477	4.657	4.861	5.091	5.347	5.628	5.928	6.240	6.549
275	4.201	4.331	4.480	4.648	4.837	5.047	5.279	5.531	5.798	6.073	6.349
280	4.219	4.344	4.485	4.643	4.818	5.012	5.223	5.450	5.690	5.937	6.183
285	4.239	4.359	4.492	4.641	4.805	4.984	5.177	5.384	5.601	5.823	6.045
290	4.259	4.374	4.501	4.642	4.795	4.961	5.140	5.329	5.526	5.728	5.930
295	4.281	4.391	4.512	4.645	4.789	4.944	5.110	5.284	5.464	5.649	5.833
300	4.303	4.409	4.525	4.651	4.786	4.932	5.085	5.246	5.413	5.582	5.751
305	4.326	4.428	4.539	4.658	4.787	4.923	5.067	5.216	5.370	5.526	5.682
310	4.350	4.448	4.554	4.668	4.789	4.918	5.052	5.192	5.335	5.480	5.624
315	4.374	4.469	4.571	4.679	4.795	4.916	5.042	5.173	5.306	5.441	5.575
320	4.400	4.491	4.589	4.693	4.802	4.917	5.036	5.158	5.283	5.409	5.534
325	4.426	4.514	4.608	4.707	4.811	4.920	5.032	5.148	5.265	5.383	5.500
330	4.453	4.538	4.628	4.723	4.822	4.925	5.032	5.141	5.251	5.362	5.472
335	4.480	4.562	4.649	4.740	4.835	4.933	5.034	5.137	5.241	5.345	5.449
340	4.508	4.588	4.671	4.759	4.849	4.943	5.039	5.136	5.235	5.333	5.431
345	4.537	4.614	4.694	4.778	4.865	4.954	5.045	5.138	5.231	5.324	5.417
350	4.566	4.640	4.718	4.799	4.882	4.967	5.054	5.142	5.231	5.319	5.407
355	4.596	4.668	4.743	4.820	4.900	4.982	5.065	5.148	5.233	5.317	5.400
360	4.626	4.696	4.768	4.843	4.919	4.998	5.077	5.157	5.237	5.317	5.396
365	4.657	4.724	4.794	4.866	4.940	5.015	5.091	5.167	5.243	5.320	5.395
370	4.688	4.753	4.821	4.890	4.961	5.033	5.106	5.179	5.252	5.324	5.396
375	4.719	4.783	4.848	4.915	4.983	5.053	5.122	5.192	5.262	5.331	5.400
380	4.751	4.813	4.876	4.941	5.007	5.073	5.140	5.207	5.274	5.340	5.406
385	4.784	4.844	4.905	4.967	5.031	5.095	5.159	5.223	5.287	5.351	5.414
390	4.817	4.875	4.934	4.994	5.055	5.117	5.179	5.241	5.302	5.363	5.423
395	4.850	4.906	4.964	5.022	5.081	5.140	5.200	5.259	5.318	5.377	5.434
400	4.884	4.938	4.994	5.050	5.107	5.164	5.222	5.279	5.336	5.392	5.447

Temperature, K	Pressure, N/m^2×10^{-5}										
	100	110	120	130	140	150	160	170	180	190	200
250	7.940	8.374	8.661	8.791	8.791	8.703	8.565	8.404	8.239	8.078	7.926
255	7.470	7.871	8.172	8.357	8.431	8.418	8.345	8.237	8.112	7.981	7.852
260	7.095	7.458	7.753	7.963	8.083	8.125	8.106	8.046	7.961	7.862	7.758
265	6.794	7.120	7.399	7.614	7.761	7.840	7.863	7.844	7.795	7.726	7.647
270	6.549	6.841	7.100	7.313	7.471	7.574	7.628	7.640	7.621	7.581	7.525
275	6.349	6.612	6.850	7.054	7.215	7.332	7.406	7.442	7.448	7.431	7.397
280	6.183	6.420	6.640	6.832	6.991	7.114	7.201	7.255	7.281	7.283	7.268
285	6.045	6.260	6.462	6.642	6.796	6.921	7.016	7.081	7.121	7.139	7.140
290	5.930	6.126	6.311	6.480	6.627	6.751	6.849	6.923	6.973	7.003	7.016
295	5.833	6.012	6.183	6.341	6.481	6.601	6.701	6.779	6.836	6.876	6.899
300	5.751	5.916	6.074	6.221	6.354	6.470	6.569	6.649	6.712	6.757	6.788
305	5.682	5.835	5.981	6.118	6.244	6.356	6.452	6.533	6.599	6.649	6.686
310	5.624	5.765	5.902	6.030	6.149	6.256	6.350	6.430	6.497	6.550	6.592
315	5.575	5.707	5.834	5.954	6.066	6.168	6.259	6.338	6.406	6.461	6.505
320	5.534	5.657	5.776	5.889	5.995	6.092	6.180	6.257	6.324	6.380	6.427
325	5.500	5.615	5.726	5.833	5.933	6.026	6.110	6.185	6.251	6.308	6.356
330	5.472	5.580	5.685	5.785	5.880	5.968	6.049	6.122	6.187	6.243	6.292
335	5.449	5.551	5.649	5.744	5.834	5.918	5.996	6.067	6.130	6.186	6.234
340	5.431	5.527	5.620	5.710	5.795	5.875	5.950	6.018	6.080	6.135	6.183
345	5.417	5.507	5.596	5.681	5.762	5.838	5.910	5.976	6.036	6.090	6.138
350	5.407	5.492	5.576	5.657	5.734	5.807	5.876	5.939	5.997	6.050	6.097
355	5.400	5.481	5.561	5.638	5.711	5.781	5.847	5.908	5.964	6.016	6.062
360	5.396	5.473	5.549	5.622	5.692	5.759	5.822	5.881	5.936	5.986	6.031
365	5.395	5.469	5.541	5.610	5.677	5.741	5.802	5.859	5.911	5.960	6.005
370	5.396	5.467	5.535	5.602	5.666	5.727	5.785	5.840	5.891	5.938	5.982
375	5.400	5.467	5.533	5.596	5.658	5.716	5.772	5.825	5.874	5.920	5.963
380	5.406	5.470	5.533	5.594	5.652	5.709	5.762	5.813	5.861	5.906	5.947
385	5.414	5.475	5.535	5.594	5.650	5.704	5.756	5.805	5.851	5.894	5.934
390	5.423	5.482	5.540	5.596	5.650	5.702	5.751	5.799	5.843	5.885	5.924
395	5.434	5.491	5.546	5.600	5.652	5.702	5.750	5.795	5.838	5.879	5.917
400	5.447	5.501	5.554	5.606	5.656	5.704	5.750	5.794	5.836	5.875	5.912

TABLE IX. - Continued. THERMODYNAMIC PROPERTY OF METHANE - SPECIFIC HEAT, $C_{p,0}/R$

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	200	210	220	230	240	250	260	270	280	290	300
250	7.926	7.784	7.654	7.535	7.426	7.325	7.233	7.149	7.070	6.998	6.931
255	7.852	7.728	7.611	7.501	7.399	7.304	7.217	7.136	7.060	6.990	6.925
260	7.758	7.653	7.551	7.453	7.360	7.273	7.191	7.115	7.043	6.977	6.914
265	7.647	7.562	7.477	7.392	7.310	7.232	7.157	7.086	7.020	6.957	6.897
270	7.525	7.461	7.392	7.321	7.251	7.182	7.115	7.051	6.990	6.932	6.876
275	7.397	7.352	7.299	7.243	7.184	7.125	7.067	7.010	6.955	6.902	6.851
280	7.268	7.240	7.202	7.159	7.112	7.063	7.013	6.963	6.915	6.867	6.821
285	7.140	7.127	7.103	7.072	7.036	6.997	6.955	6.913	6.871	6.829	6.788
290	7.016	7.016	7.004	6.984	6.958	6.928	6.895	6.860	6.824	6.788	6.752
295	6.899	6.908	6.907	6.897	6.881	6.859	6.834	6.806	6.776	6.746	6.714
300	6.788	6.807	6.814	6.813	6.804	6.790	6.772	6.750	6.727	6.702	6.675
305	6.686	6.711	6.725	6.731	6.730	6.723	6.711	6.695	6.677	6.657	6.636
310	6.592	6.622	6.642	6.654	6.659	6.657	6.651	6.641	6.628	6.613	6.596
315	6.505	6.539	6.564	6.581	6.591	6.595	6.594	6.589	6.580	6.569	6.556
320	6.427	6.464	6.492	6.513	6.527	6.536	6.539	6.538	6.534	6.527	6.517
325	6.356	6.395	6.426	6.450	6.468	6.480	6.487	6.490	6.489	6.486	6.480
330	6.292	6.332	6.366	6.392	6.413	6.428	6.438	6.444	6.447	6.447	6.444
335	6.234	6.276	6.311	6.339	6.362	6.380	6.393	6.402	6.407	6.410	6.410
340	6.183	6.225	6.261	6.291	6.316	6.335	6.351	6.362	6.370	6.375	6.378
345	6.138	6.180	6.216	6.247	6.273	6.295	6.312	6.325	6.336	6.343	6.347
350	6.097	6.139	6.176	6.208	6.235	6.258	6.277	6.292	6.304	6.313	6.319
355	6.062	6.104	6.141	6.173	6.201	6.225	6.245	6.261	6.275	6.285	6.294
360	6.031	6.072	6.109	6.142	6.170	6.195	6.216	6.234	6.248	6.260	6.270
365	6.005	6.045	6.082	6.114	6.143	6.168	6.190	6.209	6.225	6.238	6.249
370	5.982	6.022	6.058	6.090	6.119	6.145	6.167	6.187	6.203	6.218	6.230
375	5.963	6.002	6.038	6.070	6.099	6.124	6.147	6.167	6.185	6.200	6.213
380	5.947	5.985	6.020	6.052	6.081	6.107	6.130	6.151	6.169	6.184	6.198
385	5.934	5.972	6.006	6.038	6.066	6.092	6.115	6.136	6.155	6.171	6.185
390	5.924	5.961	5.995	6.026	6.054	6.080	6.103	6.124	6.143	6.160	6.175
395	5.917	5.953	5.986	6.016	6.045	6.070	6.094	6.115	6.134	6.151	6.166
400	5.912	5.947	5.980	6.010	6.037	6.063	6.086	6.107	6.126	6.143	6.159

Temperature, K	Pressure, N m^2×10^{-5}										
	0	10	20	30	40	50	60	70	80	90	100
400	4.884	4.938	4.994	5.050	5.107	5.164	5.222	5.279	5.336	5.392	5.447
405	4.917	4.971	5.024	5.079	5.134	5.189	5.244	5.299	5.354	5.408	5.461
410	4.952	5.003	5.055	5.108	5.161	5.215	5.268	5.321	5.373	5.425	5.477
415	4.986	5.036	5.087	5.138	5.189	5.241	5.292	5.343	5.394	5.444	5.493
420	5.021	5.069	5.119	5.168	5.218	5.268	5.317	5.366	5.415	5.463	5.511
425	5.055	5.103	5.151	5.199	5.247	5.295	5.343	5.390	5.437	5.484	5.530
430	5.091	5.137	5.183	5.230	5.276	5.323	5.369	5.415	5.460	5.505	5.549
435	5.126	5.171	5.216	5.261	5.306	5.351	5.396	5.440	5.484	5.527	5.570
440	5.161	5.205	5.249	5.292	5.336	5.380	5.423	5.466	5.508	5.550	5.591
445	5.197	5.239	5.282	5.324	5.367	5.409	5.451	5.492	5.534	5.574	5.614
450	5.233	5.274	5.315	5.356	5.398	5.439	5.479	5.519	5.559	5.598	5.637
455	5.269	5.309	5.349	5.389	5.429	5.469	5.508	5.547	5.585	5.623	5.660
460	5.305	5.344	5.383	5.422	5.460	5.499	5.537	5.575	5.612	5.649	5.685
465	5.341	5.379	5.417	5.454	5.492	5.529	5.566	5.603	5.639	5.675	5.709
470	5.377	5.414	5.451	5.488	5.524	5.560	5.596	5.632	5.667	5.701	5.735
475	5.413	5.449	5.485	5.521	5.556	5.591	5.626	5.661	5.695	5.728	5.761
480	5.449	5.484	5.519	5.554	5.589	5.623	5.657	5.690	5.723	5.755	5.787
485	5.486	5.520	5.554	5.588	5.621	5.654	5.687	5.720	5.752	5.783	5.814
490	5.522	5.555	5.588	5.621	5.654	5.686	5.718	5.750	5.781	5.811	5.841
495	5.558	5.591	5.623	5.655	5.687	5.718	5.749	5.780	5.810	5.839	5.868
500	5.595	5.626	5.658	5.689	5.720	5.750	5.780	5.810	5.839	5.868	5.896
505	5.631	5.662	5.692	5.723	5.753	5.783	5.812	5.841	5.869	5.897	5.924
510	5.667	5.697	5.727	5.757	5.786	5.815	5.843	5.871	5.899	5.926	5.953
515	5.703	5.733	5.762	5.791	5.819	5.847	5.875	5.902	5.929	5.956	5.981
520	5.740	5.768	5.797	5.825	5.853	5.880	5.907	5.934	5.960	5.985	6.010
525	5.776	5.804	5.832	5.859	5.886	5.913	5.939	5.965	5.990	6.015	6.039
530	5.812	5.839	5.866	5.893	5.919	5.945	5.971	5.996	6.021	6.045	6.069
535	5.848	5.875	5.901	5.927	5.953	5.978	6.003	6.028	6.052	6.075	6.098
540	5.884	5.910	5.936	5.961	5.986	6.011	6.035	6.059	6.083	6.106	6.128
545	5.920	5.946	5.971	5.996	6.020	6.044	6.068	6.091	6.114	6.136	6.158
550	5.956	5.981	6.006	6.030	6.053	6.077	6.100	6.123	6.145	6.167	6.188
555	5.992	6.016	6.040	6.064	6.087	6.110	6.132	6.154	6.176	6.197	6.218
560	6.028	6.052	6.075	6.098	6.121	6.143	6.165	6.186	6.207	6.228	6.248
565	6.064	6.087	6.110	6.132	6.154	6.176	6.197	6.218	6.239	6.259	6.279
570	6.100	6.122	6.144	6.166	6.188	6.209	6.230	6.250	6.271	6.290	6.309
575	6.135	6.157	6.179	6.200	6.222	6.242	6.263	6.283	6.302	6.321	6.340
580	6.171	6.192	6.214	6.235	6.255	6.275	6.295	6.315	6.334	6.353	6.371
585	6.207	6.228	6.248	6.269	6.289	6.309	6.328	6.347	6.366	6.384	6.402
590	6.242	6.263	6.283	6.303	6.323	6.342	6.361	6.380	6.398	6.416	6.433
595	6.278	6.298	6.318	6.338	6.357	6.376	6.394	6.412	6.430	6.447	6.464
600	6.314	6.333	6.353	6.372	6.391	6.409	6.427	6.445	6.462	6.479	6.496

TABLE IX. - Concluded. THERMODYNAMIC PROPERTY OF METHANE - SPECIFIC HEAT, $C_{p,0}/R$

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	100	110	120	130	140	150	160	170	180	190	200
400	5.447	5.501	5.554	5.606	5.656	5.704	5.750	5.794	5.836	5.875	5.912
405	5.461	5.513	5.564	5.614	5.662	5.708	5.753	5.795	5.836	5.874	5.910
410	5.477	5.527	5.576	5.623	5.670	5.714	5.757	5.798	5.837	5.875	5.910
415	5.493	5.541	5.589	5.635	5.679	5.722	5.764	5.803	5.841	5.877	5.911
420	5.511	5.557	5.603	5.647	5.690	5.732	5.772	5.810	5.847	5.882	5.915
425	5.530	5.574	5.618	5.661	5.702	5.742	5.781	5.818	5.854	5.888	5.920
430	5.549	5.593	5.635	5.676	5.716	5.755	5.792	5.828	5.862	5.895	5.927
435	5.570	5.612	5.653	5.692	5.731	5.768	5.804	5.839	5.873	5.904	5.935
440	5.591	5.632	5.671	5.710	5.747	5.783	5.818	5.852	5.884	5.915	5.945
445	5.614	5.653	5.691	5.728	5.764	5.799	5.833	5.865	5.897	5.927	5.955
450	5.637	5.674	5.711	5.747	5.782	5.816	5.849	5.880	5.911	5.940	5.968
455	5.660	5.697	5.732	5.767	5.801	5.834	5.865	5.896	5.925	5.954	5.981
460	5.685	5.720	5.754	5.788	5.821	5.852	5.883	5.913	5.941	5.969	5.995
465	5.709	5.743	5.777	5.809	5.841	5.872	5.902	5.931	5.958	5.985	6.011
470	5.735	5.768	5.800	5.832	5.862	5.892	5.921	5.949	5.976	6.002	6.027
475	5.761	5.793	5.824	5.855	5.884	5.913	5.941	5.968	5.995	6.020	6.044
480	5.787	5.818	5.848	5.878	5.907	5.935	5.962	5.989	6.014	6.039	6.062
485	5.814	5.844	5.873	5.902	5.930	5.957	5.984	6.009	6.034	6.058	6.081
490	5.841	5.870	5.899	5.927	5.954	5.980	6.006	6.031	6.055	6.078	6.100
495	5.868	5.897	5.924	5.952	5.978	6.004	6.029	6.053	6.076	6.099	6.121
500	5.896	5.924	5.951	5.977	6.003	6.028	6.052	6.075	6.098	6.120	6.141
505	5.924	5.951	5.977	6.003	6.028	6.052	6.076	6.098	6.121	6.142	6.163
510	5.953	5.979	6.004	6.029	6.053	6.077	6.100	6.122	6.144	6.164	6.185
515	5.981	6.007	6.031	6.056	6.079	6.102	6.124	6.146	6.167	6.187	6.207
520	6.010	6.035	6.059	6.082	6.105	6.128	6.149	6.170	6.191	6.211	6.230
525	6.039	6.063	6.087	6.110	6.132	6.154	6.175	6.195	6.215	6.234	6.253
530	6.069	6.092	6.115	6.137	6.159	6.180	6.200	6.220	6.240	6.259	6.277
535	6.098	6.121	6.143	6.165	6.186	6.206	6.226	6.246	6.265	6.283	6.301
540	6.128	6.150	6.172	6.193	6.213	6.233	6.253	6.272	6.290	6.308	6.325
545	6.158	6.179	6.200	6.221	6.241	6.260	6.279	6.298	6.316	6.333	6.350
550	6.188	6.209	6.229	6.249	6.269	6.288	6.306	6.324	6.342	6.359	6.375
555	6.218	6.239	6.258	6.278	6.297	6.315	6.333	6.351	6.368	6.385	6.401
560	6.248	6.268	6.288	6.307	6.325	6.343	6.361	6.378	6.395	6.411	6.427
565	6.279	6.298	6.317	6.336	6.354	6.371	6.389	6.405	6.421	6.437	6.453
570	6.309	6.328	6.347	6.365	6.382	6.400	6.416	6.433	6.449	6.464	6.479
575	6.340	6.359	6.377	6.394	6.411	6.428	6.444	6.460	6.476	6.491	6.506
580	6.371	6.389	6.407	6.424	6.441	6.457	6.473	6.488	6.503	6.518	6.532
585	6.402	6.420	6.437	6.453	6.470	6.486	6.501	6.517	6.531	6.546	6.560
590	6.433	6.450	6.467	6.483	6.499	6.515	6.530	6.545	6.559	6.573	6.587
595	6.464	6.481	6.498	6.513	6.529	6.544	6.559	6.574	6.588	6.601	6.615
600	6.496	6.512	6.528	6.544	6.559	6.574	6.588	6.603	6.616	6.630	6.643

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	200	210	220	230	240	250	260	270	280	290	300
400	5.912	5.947	5.980	6.010	6.037	6.063	6.086	6.107	6.126	6.143	6.159
405	5.910	5.944	5.976	6.005	6.032	6.057	6.080	6.102	6.121	6.138	6.154
410	5.910	5.943	5.974	6.002	6.029	6.054	6.077	6.098	6.117	6.135	6.151
415	5.911	5.943	5.974	6.002	6.028	6.053	6.075	6.096	6.115	6.133	6.149
420	5.915	5.946	5.975	6.003	6.029	6.053	6.075	6.096	6.115	6.133	6.149
425	5.920	5.950	5.979	6.006	6.032	6.055	6.077	6.098	6.117	6.134	6.150
430	5.927	5.956	5.984	6.011	6.036	6.059	6.081	6.101	6.120	6.137	6.153
435	5.935	5.964	5.991	6.017	6.041	6.064	6.086	6.106	6.124	6.142	6.158
440	5.945	5.973	5.999	6.025	6.048	6.071	6.092	6.112	6.130	6.147	6.163
445	5.955	5.983	6.009	6.034	6.057	6.079	6.100	6.119	6.137	6.154	6.170
450	5.968	5.994	6.020	6.044	6.067	6.088	6.109	6.128	6.146	6.162	6.178
455	5.981	6.007	6.032	6.055	6.078	6.099	6.119	6.138	6.155	6.172	6.187
460	5.995	6.021	6.045	6.068	6.090	6.110	6.130	6.148	6.166	6.182	6.198
465	6.011	6.035	6.059	6.081	6.103	6.123	6.142	6.160	6.178	6.194	6.209
470	6.027	6.051	6.074	6.096	6.117	6.137	6.155	6.173	6.190	6.206	6.221
475	6.044	6.068	6.090	6.111	6.132	6.151	6.170	6.187	6.204	6.219	6.234
480	6.062	6.085	6.107	6.128	6.148	6.167	6.185	6.202	6.218	6.234	6.248
485	6.081	6.103	6.124	6.145	6.164	6.183	6.201	6.217	6.233	6.249	6.263
490	6.100	6.122	6.143	6.163	6.182	6.200	6.217	6.234	6.250	6.264	6.279
495	6.121	6.142	6.162	6.181	6.200	6.218	6.235	6.251	6.266	6.281	6.295
500	6.141	6.162	6.182	6.201	6.219	6.236	6.253	6.269	6.284	6.298	6.312
505	6.163	6.183	6.202	6.220	6.238	6.255	6.271	6.287	6.302	6.316	6.330
510	6.185	6.204	6.223	6.241	6.258	6.275	6.291	6.306	6.321	6.335	6.348
515	6.207	6.226	6.244	6.262	6.279	6.295	6.311	6.326	6.340	6.354	6.367
520	6.230	6.248	6.266	6.283	6.300	6.316	6.331	6.346	6.360	6.373	6.386
525	6.253	6.271	6.289	6.305	6.322	6.337	6.352	6.366	6.380	6.393	6.406
530	6.277	6.294	6.311	6.328	6.344	6.359	6.374	6.388	6.401	6.414	6.426
535	6.301	6.318	6.335	6.351	6.366	6.381	6.395	6.409	6.422	6.435	6.447
540	6.325	6.342	6.358	6.374	6.389	6.404	6.418	6.431	6.444	6.457	6.468
545	6.350	6.367	6.382	6.398	6.412	6.427	6.440	6.454	6.466	6.478	6.490
550	6.375	6.391	6.407	6.422	6.436	6.450	6.464	6.476	6.489	6.501	6.512
555	6.401	6.416	6.432	6.446	6.460	6.474	6.487	6.500	6.512	6.524	6.535
560	6.427	6.442	6.457	6.471	6.485	6.498	6.511	6.523	6.535	6.547	6.558
565	6.453	6.468	6.482	6.496	6.509	6.522	6.535	6.547	6.559	6.570	6.581
570	6.479	6.493	6.508	6.521	6.534	6.547	6.560	6.571	6.583	6.594	6.605
575	6.506	6.520	6.534	6.547	6.560	6.572	6.584	6.596	6.607	6.618	6.629
580	6.532	6.546	6.560	6.573	6.585	6.598	6.609	6.621	6.632	6.643	6.653
585	6.560	6.573	6.586	6.599	6.611	6.623	6.635	6.646	6.657	6.667	6.677
590	6.587	6.600	6.613	6.626	6.638	6.649	6.661	6.672	6.682	6.693	6.702
595	6.615	6.628	6.640	6.652	6.664	6.676	6.687	6.698	6.708	6.718	6.728
600	6.643	6.655	6.668	6.680	6.691	6.702	6.713	6.724	6.734	6.744	6.753

TABLE X. - THERMODYNAMIC PROPERTY OF METHANE - SPECIFIC-HEAT RATIO, γ_0

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	0	1	2	3	4	5	6	7	8	9	10
120	1.333	1.370	------	------	------	------	------	------	------	------	------
122	1.333	1.367	1.412	------	------	------	------	------	------	------	------
124	1.333	1.364	1.404	------	------	------	------	------	------	------	------
126	1.333	1.361	1.397	------	------	------	------	------	------	------	------
128	1.333	1.359	1.392	1.434	------	------	------	------	------	------	------
130	1.333	1.357	1.387	1.425	------	------	------	------	------	------	------
132	1.333	1.355	1.382	1.416	1.460	------	------	------	------	------	------
134	1.333	1.354	1.379	1.409	1.448	------	------	------	------	------	------
136	1.333	1.352	1.375	1.403	1.438	1.481	------	------	------	------	------
138	1.333	1.351	1.373	1.398	1.429	1.467	------	------	------	------	------
140	1.333	1.350	1.370	1.394	1.422	1.456	1.498	------	------	------	------
142	1.333	1.349	1.368	1.390	1.415	1.446	1.483	1.529	------	------	------
144	1.333	1.348	1.366	1.386	1.410	1.438	1.471	1.511	------	------	------
146	1.333	1.347	1.364	1.383	1.405	1.430	1.460	1.496	1.539	------	------
148	1.333	1.347	1.362	1.380	1.401	1.424	1.451	1.483	1.521	1.568	------
150	1.333	1.346	1.361	1.378	1.397	1.419	1.443	1.472	1.506	1.547	1.597
152	1.333	1.346	1.360	1.376	1.393	1.414	1.437	1.463	1.494	1.530	1.573
154	1.333	1.345	1.359	1.374	1.390	1.409	1.431	1.455	1.483	1.515	1.553
156	1.333	1.344	1.358	1.372	1.388	1.406	1.425	1.448	1.473	1.502	1.536
158	1.333	1.344	1.357	1.370	1.385	1.402	1.421	1.441	1.465	1.491	1.522
160	1.333	1.344	1.356	1.369	1.383	1.399	1.416	1.436	1.457	1.482	1.509
162	1.332	1.343	1.355	1.367	1.381	1.396	1.413	1.431	1.451	1.473	1.499
164	1.332	1.343	1.354	1.366	1.379	1.394	1.409	1.426	1.445	1.466	1.489
166	1.332	1.342	1.353	1.365	1.378	1.391	1.406	1.422	1.440	1.459	1.481
168	1.332	1.342	1.353	1.364	1.376	1.389	1.403	1.419	1.435	1.454	1.474
170	1.332	1.342	1.352	1.363	1.375	1.387	1.401	1.415	1.431	1.448	1.467
172	1.332	1.341	1.351	1.362	1.373	1.385	1.398	1.412	1.427	1.443	1.461
174	1.332	1.341	1.351	1.361	1.372	1.383	1.396	1.409	1.424	1.439	1.456
176	1.332	1.341	1.350	1.360	1.371	1.382	1.394	1.407	1.420	1.435	1.451
178	1.332	1.340	1.350	1.359	1.369	1.380	1.392	1.404	1.417	1.431	1.446
180	1.332	1.340	1.349	1.358	1.368	1.379	1.390	1.402	1.414	1.428	1.442
182	1.332	1.340	1.348	1.358	1.367	1.377	1.388	1.400	1.412	1.424	1.438
184	1.331	1.339	1.348	1.357	1.366	1.376	1.386	1.397	1.409	1.421	1.434
186	1.331	1.339	1.347	1.356	1.365	1.375	1.385	1.395	1.407	1.418	1.431
188	1.331	1.339	1.347	1.355	1.364	1.374	1.383	1.394	1.404	1.416	1.428
190	1.331	1.338	1.346	1.355	1.363	1.372	1.382	1.392	1.402	1.413	1.425

Temperature, K	Pressure, N/m^2×10^{-5}										
	10	12	14	16	18	20	22	24	26	28	30
150	1.597	------	------	------	------	------	------	------	------	------	------
152	1.573	------	------	------	------	------	------	------	------	------	------
154	1.553	1.653	------	------	------	------	------	------	------	------	------
156	1.536	1.623	------	------	------	------	------	------	------	------	------
158	1.522	1.598	1.707	------	------	------	------	------	------	------	------
160	1.509	1.577	1.670	1.809	------	------	------	------	------	------	------
162	1.499	1.560	1.641	1.756	------	------	------	------	------	------	------
164	1.489	1.545	1.617	1.715	1.858	------	------	------	------	------	------
166	1.481	1.532	1.596	1.681	1.800	1.980	------	------	------	------	------
168	1.474	1.520	1.578	1.653	1.754	1.899	------	------	------	------	------
170	1.467	1.510	1.563	1.630	1.717	1.837	2.014	------	------	------	------
172	1.461	1.501	1.550	1.610	1.687	1.788	1.931	2.149	------	------	------
174	1.456	1.493	1.538	1.593	1.661	1.749	1.867	2.036	2.306	------	------
176	1.451	1.486	1.528	1.578	1.639	1.716	1.817	1.954	2.155	2.489	------
178	1.446	1.479	1.519	1.565	1.620	1.689	1.776	1.890	2.049	2.287	2.701
180	1.442	1.474	1.510	1.553	1.604	1.666	1.742	1.839	1.969	2.152	2.433
182	1.438	1.468	1.502	1.542	1.589	1.645	1.713	1.798	1.907	2.053	2.262
184	1.434	1.463	1.495	1.533	1.576	1.627	1.689	1.763	1.857	1.978	2.141
186	1.431	1.458	1.489	1.524	1.565	1.612	1.667	1.734	1.815	1.918	2.051
188	1.428	1.454	1.483	1.516	1.554	1.598	1.648	1.709	1.781	1.869	1.981
190	1.425	1.450	1.478	1.509	1.544	1.585	1.632	1.686	1.751	1.829	1.924

Temperature, K	Pressure, N/m^2×10^{-5}										
	30	32	34	36	38	40	42	44	46	48	50
170	------	------	------	------	------	------	------	------	------	------	------
172	------	------	------	------	------	------	------	------	------	------	------
174	------	------	------	------	------	------	------	------	------	------	------
176	------	------	------	------	------	------	------	------	------	------	------
178	2.701	------	------	------	------	------	------	------	------	------	------
180	2.433	2.942	------	------	------	------	------	------	------	------	------
182	2.262	2.590	3.208	------	------	------	------	------	------	------	------
184	2.141	2.377	2.754	3.490	------	------	------	------	------	------	------
186	2.051	2.232	2.495	2.921	3.768	6.798	------	------	------	------	------
188	1.981	2.126	2.323	2.612	3.081	4.018	7.310	------	------	------	------
190	1.924	2.044	2.200	2.413	2.724	3.227	4.210	7.335	------	------	------

TABLE X. - Continued. THERMODYNAMIC PROPERTY OF METHANE - SPECIFIC-HEAT RATIO, γ_0

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	0	5	10	15	20	25	30	35	40	45	50
190	1.331	1.372	1.425	1.493	1.585	1.717	1.924	2.298	3.227	17.604	------
192	1.331	1.371	1.422	1.487	1.574	1.695	1.877	2.184	2.827	5.251	8.948
194	1.331	1.370	1.419	1.481	1.563	1.675	1.838	2.097	2.579	3.827	14.603
196	1.330	1.369	1.416	1.476	1.553	1.657	1.804	2.027	2.409	3.214	5.969
198	1.330	1.368	1.414	1.471	1.544	1.641	1.775	1.970	2.283	2.862	4.264
200	1.330	1.367	1.411	1.467	1.536	1.627	1.749	1.922	2.185	2.630	3.520
202	1.330	1.366	1.409	1.462	1.529	1.614	1.726	1.881	2.107	2.464	3.095
204	1.329	1.365	1.407	1.458	1.521	1.601	1.706	1.846	2.043	2.339	2.817
206	1.329	1.364	1.405	1.454	1.514	1.590	1.687	1.815	1.989	2.240	2.620
208	1.329	1.363	1.402	1.450	1.508	1.580	1.670	1.787	1.943	2.159	2.472
210	1.329	1.362	1.400	1.446	1.502	1.570	1.655	1.763	1.904	2.093	2.356
212	1.328	1.361	1.398	1.443	1.496	1.561	1.641	1.741	1.869	2.036	2.262
214	1.328	1.360	1.396	1.439	1.491	1.552	1.628	1.721	1.838	1.988	2.184
216	1.328	1.359	1.394	1.436	1.486	1.544	1.615	1.702	1.810	1.946	2.119
218	1.327	1.358	1.392	1.433	1.481	1.537	1.604	1.685	1.785	1.908	2.063
220	1.327	1.357	1.391	1.430	1.476	1.530	1.593	1.670	1.762	1.875	2.014
222	1.327	1.356	1.389	1.427	1.471	1.523	1.584	1.656	1.742	1.846	1.972
224	1.326	1.355	1.387	1.424	1.467	1.516	1.574	1.642	1.723	1.819	1.934
226	1.326	1.354	1.385	1.421	1.462	1.510	1.565	1.630	1.705	1.794	1.900
228	1.326	1.353	1.384	1.418	1.458	1.504	1.557	1.618	1.689	1.772	1.869
230	1.325	1.352	1.382	1.416	1.454	1.498	1.549	1.607	1.674	1.752	1.842
232	1.325	1.351	1.380	1.413	1.450	1.493	1.541	1.596	1.660	1.733	1.816
234	1.324	1.350	1.378	1.411	1.447	1.488	1.534	1.587	1.647	1.715	1.793
236	1.324	1.349	1.377	1.408	1.443	1.483	1.527	1.577	1.634	1.699	1.772
238	1.323	1.348	1.375	1.406	1.440	1.478	1.520	1.568	1.623	1.683	1.752
240	1.323	1.347	1.374	1.403	1.436	1.473	1.514	1.560	1.612	1.669	1.734
242	1.322	1.346	1.372	1.401	1.433	1.468	1.508	1.552	1.601	1.656	1.717
244	1.322	1.345	1.370	1.399	1.430	1.464	1.502	1.544	1.591	1.643	1.701
246	1.321	1.344	1.369	1.396	1.426	1.460	1.496	1.537	1.582	1.631	1.686
248	1.321	1.343	1.367	1.394	1.423	1.456	1.491	1.530	1.573	1.620	1.671
250	1.320	1.342	1.366	1.392	1.420	1.452	1.486	1.523	1.564	1.609	1.658

Temperature, K	Pressure, N/m^2×10^{-5}										
	50	55	60	65	70	75	80	85	90	95	100
190	------	------	------	------	------	------	------	------	------	------	------
192	8.948	4.661	3.758	3.328	3.066	2.884	2.749	2.643	2.557	2.485	2.424
194	14.603	6.567	4.404	3.681	3.299	3.056	2.883	2.752	2.649	2.565	2.494
196	5.969	11.453	5.523	4.182	3.600	3.263	3.039	2.876	2.751	2.651	2.569
198	4.264	8.942	7.363	4.907	3.990	3.517	3.222	3.017	2.865	2.746	2.650
200	3.520	5.732	8.179	5.852	4.489	3.824	3.435	3.177	2.991	2.850	2.737
202	3.095	4.374	6.608	6.533	5.056	4.182	3.678	3.355	3.130	2.962	2.831
204	2.817	3.667	5.142	6.244	5.496	4.553	3.943	3.550	3.279	3.082	2.930
206	2.620	3.235	4.233	5.389	5.534	4.844	4.200	3.749	3.435	3.207	3.033
208	2.472	2.943	3.661	4.590	5.167	4.936	4.400	3.935	3.589	3.333	3.138
210	2.356	2.732	3.276	3.993	4.643	4.792	4.486	4.077	3.726	3.452	3.240
212	2.262	2.572	3.000	3.560	4.149	4.490	4.431	4.146	3.830	3.556	3.334
214	2.184	2.446	2.794	3.241	3.741	4.138	4.260	4.126	3.883	3.633	3.413
216	2.119	2.343	2.634	2.999	3.418	3.803	4.024	4.025	3.876	3.672	3.470
218	2.063	2.258	2.505	2.810	3.162	3.512	3.771	3.867	3.812	3.670	3.499
220	2.014	2.187	2.400	2.659	2.958	3.267	3.529	3.682	3.703	3.626	3.498
222	1.972	2.125	2.312	2.535	2.791	3.063	3.312	3.490	3.567	3.548	3.465
224	1.934	2.072	2.237	2.432	2.654	2.893	3.122	3.307	3.418	3.445	3.406
226	1.900	2.025	2.172	2.344	2.539	2.750	2.958	3.139	3.268	3.329	3.327
228	1.869	1.983	2.116	2.269	2.442	2.628	2.817	2.989	3.124	3.207	3.235
230	1.842	1.946	2.066	2.204	2.358	2.524	2.694	2.855	2.990	3.085	3.135
232	1.816	1.912	2.022	2.147	2.285	2.434	2.588	2.737	2.868	2.969	3.033
234	1.793	1.882	1.983	2.096	2.221	2.355	2.495	2.632	2.757	2.860	2.933
236	1.772	1.854	1.947	2.051	2.164	2.286	2.413	2.540	2.657	2.759	2.837
238	1.752	1.829	1.915	2.010	2.114	2.225	2.341	2.457	2.568	2.666	2.746
240	1.734	1.806	1.885	1.973	2.068	2.170	2.277	2.384	2.487	2.581	2.661
242	1.717	1.784	1.858	1.940	2.028	2.121	2.219	2.318	2.414	2.504	2.582
244	1.701	1.764	1.833	1.909	1.990	2.077	2.167	2.259	2.349	2.433	2.509
246	1.686	1.745	1.810	1.881	1.957	2.037	2.120	2.205	2.289	2.369	2.442
248	1.671	1.728	1.789	1.855	1.925	2.000	2.078	2.156	2.235	2.310	2.380
250	1.658	1.711	1.769	1.831	1.897	1.966	2.039	2.112	2.185	2.256	2.323

TABLE X. - Continued. THERMODYNAMIC PROPERTY OF METHANE - SPECIFIC-HEAT RATIO, γ_0

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	100	110	120	130	140	150	160	170	180	190	200
190	------	------	------	------	------	------	------	------	------	------	------
192	2.424	2.324	2.246	2.182	2.128	2.082	2.042	2.007	1.975	1.947	1.921
194	2.494	2.380	2.292	2.222	2.163	2.113	2.070	2.032	1.999	1.969	1.942
196	2.569	2.439	2.341	2.263	2.199	2.145	2.099	2.058	2.023	1.991	1.962
198	2.650	2.502	2.392	2.306	2.236	2.178	2.128	2.085	2.047	2.013	1.983
200	2.737	2.568	2.445	2.350	2.274	2.211	2.158	2.111	2.071	2.036	2.004
202	2.831	2.638	2.500	2.396	2.313	2.245	2.187	2.138	2.096	2.058	2.024
204	2.930	2.711	2.557	2.442	2.352	2.279	2.217	2.165	2.120	2.080	2.045
206	3.033	2.785	2.615	2.490	2.392	2.313	2.248	2.192	2.144	2.102	2.065
208	3.138	2.862	2.674	2.537	2.432	2.347	2.278	2.219	2.168	2.124	2.085
210	3.240	2.937	2.733	2.585	2.471	2.381	2.307	2.245	2.192	2.146	2.105
212	3.334	3.011	2.791	2.631	2.510	2.415	2.336	2.271	2.215	2.167	2.124
214	3.413	3.078	2.845	2.677	2.548	2.447	2.365	2.296	2.238	2.187	2.143
216	3.470	3.137	2.896	2.719	2.585	2.478	2.392	2.320	2.259	2.207	2.161
218	3.499	3.184	2.941	2.759	2.619	2.508	2.418	2.343	2.280	2.226	2.179
220	3.498	3.216	2.978	2.794	2.650	2.535	2.443	2.365	2.300	2.244	2.195
222	3.465	3.231	3.006	2.823	2.677	2.560	2.465	2.386	2.319	2.261	2.211
224	3.406	3.227	3.023	2.846	2.701	2.583	2.485	2.404	2.336	2.277	2.225
226	3.327	3.205	3.028	2.861	2.719	2.601	2.503	2.421	2.351	2.291	2.239
228	3.235	3.166	3.022	2.869	2.732	2.616	2.518	2.436	2.365	2.304	2.251
230	3.135	3.115	3.004	2.868	2.740	2.627	2.530	2.448	2.377	2.316	2.262
232	3.033	3.053	2.975	2.859	2.741	2.634	2.539	2.458	2.387	2.325	2.271
234	2.933	2.984	2.937	2.843	2.737	2.636	2.545	2.465	2.395	2.333	2.279
236	2.837	2.911	2.892	2.819	2.727	2.633	2.546	2.469	2.400	2.339	2.286
238	2.746	2.837	2.842	2.789	2.711	2.626	2.545	2.470	2.403	2.343	2.290
240	2.661	2.763	2.788	2.754	2.690	2.615	2.540	2.469	2.404	2.346	2.293
242	2.582	2.691	2.731	2.715	2.665	2.600	2.531	2.465	2.403	2.346	2.295
244	2.509	2.622	2.674	2.673	2.636	2.581	2.520	2.458	2.399	2.345	2.295
246	2.442	2.556	2.617	2.629	2.604	2.559	2.505	2.448	2.393	2.341	2.293
248	2.380	2.493	2.561	2.583	2.570	2.535	2.488	2.436	2.385	2.336	2.290
250	2.323	2.434	2.506	2.537	2.534	2.508	2.468	2.422	2.375	2.329	2.285

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	200	210	220	230	240	250	260	270	280	290	300
190	------	------	------	------	------	------	------	------	------	------	------
192	1.921	1.898	1.877	1.857	1.838	1.821	1.806	1.791	1.777	1.764	1.751
194	1.942	1.917	1.895	1.874	1.855	1.837	1.820	1.805	1.790	1.777	1.764
196	1.962	1.936	1.913	1.891	1.871	1.852	1.835	1.819	1.804	1.789	1.776
198	1.983	1.956	1.931	1.908	1.887	1.868	1.850	1.833	1.817	1.802	1.788
200	2.004	1.975	1.949	1.925	1.903	1.883	1.864	1.847	1.830	1.815	1.801
202	2.024	1.994	1.967	1.942	1.919	1.898	1.879	1.860	1.844	1.828	1.813
204	2.045	2.013	1.985	1.959	1.935	1.913	1.893	1.874	1.856	1.840	1.825
206	2.065	2.032	2.002	1.975	1.950	1.928	1.907	1.887	1.869	1.852	1.836
208	2.085	2.051	2.020	1.991	1.966	1.942	1.920	1.900	1.882	1.864	1.848
210	2.105	2.069	2.037	2.007	1.981	1.956	1.934	1.913	1.894	1.876	1.859
212	2.124	2.087	2.053	2.023	1.995	1.970	1.947	1.925	1.906	1.887	1.870
214	2.143	2.104	2.069	2.038	2.009	1.983	1.959	1.937	1.917	1.898	1.880
216	2.161	2.121	2.085	2.052	2.023	1.996	1.972	1.949	1.928	1.908	1.890
218	2.179	2.137	2.100	2.066	2.036	2.009	1.983	1.960	1.939	1.919	1.900
220	2.195	2.152	2.114	2.080	2.049	2.020	1.994	1.971	1.949	1.928	1.909
222	2.211	2.167	2.127	2.092	2.060	2.031	2.005	1.981	1.958	1.937	1.918
224	2.225	2.180	2.140	2.104	2.072	2.042	2.015	1.990	1.967	1.946	1.926
226	2.239	2.193	2.152	2.115	2.082	2.052	2.024	1.999	1.976	1.954	1.934
228	2.251	2.204	2.163	2.125	2.092	2.061	2.033	2.008	1.984	1.962	1.942
230	2.262	2.214	2.172	2.135	2.100	2.069	2.041	2.015	1.991	1.969	1.948
232	2.271	2.223	2.181	2.143	2.108	2.077	2.048	2.022	1.998	1.976	1.955
234	2.279	2.231	2.189	2.150	2.115	2.084	2.055	2.029	2.004	1.981	1.960
236	2.286	2.238	2.195	2.156	2.122	2.090	2.061	2.034	2.010	1.987	1.966
238	2.290	2.243	2.200	2.162	2.127	2.095	2.066	2.039	2.014	1.992	1.970
240	2.293	2.246	2.204	2.166	2.131	2.099	2.070	2.043	2.019	1.996	1.974
242	2.295	2.249	2.207	2.169	2.134	2.103	2.074	2.047	2.022	1.999	1.978
244	2.295	2.249	2.208	2.171	2.136	2.105	2.076	2.049	2.025	2.002	1.981
246	2.293	2.249	2.208	2.172	2.138	2.107	2.078	2.051	2.027	2.004	1.983
248	2.290	2.247	2.207	2.171	2.138	2.107	2.079	2.053	2.028	2.006	1.984
250	2.285	2.243	2.205	2.170	2.137	2.107	2.079	2.053	2.029	2.007	1.986

TABLE X. - Continued. THERMODYNAMIC PROPERTY OF METHANE - SPECIFIC-HEAT RATIO, γ_0

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	0	10	20	30	40	50	60	70	80	90	100
250	1.320	1.366	1.420	1.486	1.564	1.658	1.769	1.897	2.039	2.185	2.323
255	1.319	1.362	1.413	1.473	1.545	1.628	1.725	1.834	1.954	2.079	2.199
260	1.317	1.358	1.406	1.462	1.527	1.601	1.687	1.782	1.885	1.992	2.096
265	1.316	1.355	1.400	1.451	1.511	1.578	1.654	1.737	1.827	1.920	2.011
270	1.314	1.351	1.393	1.441	1.496	1.557	1.625	1.699	1.778	1.859	1.940
275	1.312	1.348	1.387	1.432	1.482	1.538	1.599	1.665	1.735	1.807	1.878
280	1.311	1.344	1.381	1.423	1.470	1.521	1.576	1.636	1.698	1.762	1.825
285	1.309	1.340	1.376	1.415	1.458	1.505	1.555	1.609	1.665	1.722	1.779
290	1.307	1.337	1.370	1.407	1.447	1.490	1.537	1.585	1.636	1.688	1.739
295	1.305	1.334	1.365	1.400	1.437	1.477	1.519	1.564	1.610	1.657	1.703
300	1.303	1.330	1.360	1.392	1.427	1.464	1.503	1.544	1.586	1.629	1.671
305	1.301	1.327	1.355	1.386	1.418	1.453	1.489	1.526	1.565	1.604	1.642
310	1.299	1.323	1.350	1.379	1.410	1.442	1.475	1.510	1.545	1.581	1.616
315	1.296	1.320	1.346	1.373	1.401	1.431	1.463	1.495	1.527	1.560	1.593
320	1.294	1.317	1.341	1.367	1.394	1.422	1.451	1.481	1.511	1.541	1.571
325	1.292	1.314	1.337	1.361	1.386	1.413	1.440	1.468	1.496	1.524	1.552
330	1.290	1.310	1.332	1.355	1.379	1.404	1.429	1.455	1.481	1.508	1.533
335	1.287	1.307	1.328	1.350	1.372	1.396	1.420	1.444	1.468	1.493	1.517
340	1.285	1.304	1.324	1.345	1.366	1.388	1.410	1.433	1.456	1.479	1.501
345	1.283	1.301	1.320	1.339	1.360	1.380	1.402	1.423	1.444	1.466	1.487
350	1.280	1.298	1.316	1.335	1.354	1.373	1.393	1.413	1.433	1.453	1.473
355	1.278	1.295	1.312	1.330	1.348	1.367	1.385	1.404	1.423	1.442	1.460
360	1.276	1.292	1.308	1.325	1.342	1.360	1.378	1.396	1.413	1.431	1.449
365	1.273	1.289	1.305	1.321	1.337	1.354	1.371	1.387	1.404	1.421	1.437
370	1.271	1.286	1.301	1.316	1.332	1.348	1.364	1.380	1.396	1.411	1.427
375	1.269	1.283	1.297	1.312	1.327	1.342	1.357	1.372	1.387	1.402	1.417
380	1.267	1.280	1.294	1.308	1.322	1.336	1.351	1.365	1.379	1.394	1.407
385	1.264	1.277	1.291	1.304	1.318	1.331	1.345	1.358	1.372	1.385	1.399
390	1.262	1.274	1.287	1.300	1.313	1.326	1.339	1.352	1.365	1.378	1.390
395	1.260	1.272	1.284	1.296	1.309	1.321	1.333	1.346	1.358	1.370	1.382
400	1.257	1.269	1.281	1.293	1.304	1.316	1.328	1.340	1.352	1.363	1.374

Temperature, K	Pressure, N $m^2 \times 10^{-5}$										
	100	110	120	130	140	150	160	170	180	190.	200
250	2.323	2.434	2.506	2.537	2.534	2.508	2.468	2.422	2.375	2.329	2.285
255	2.199	2.302	2.378	2.424	2.440	2.433	2.411	2.379	2.342	2.304	2.266
260	2.096	2.190	2.265	2.317	2.346	2.354	2.345	2.326	2.300	2.270	2.239
265	2.011	2.095	2.167	2.221	2.256	2.274	2.277	2.268	2.252	2.230	2.206
270	1.940	2.015	2.081	2.134	2.173	2.197	2.208	2.208	2.200	2.186	2.168
275	1.878	1.946	2.007	2.058	2.098	2.125	2.142	2.148	2.147	2.139	2.127
280	1.825	1.886	1.942	1.990	2.029	2.059	2.079	2.090	2.094	2.091	2.084
285	1.779	1.834	1.885	1.930	1.968	1.998	2.020	2.035	2.042	2.044	2.041
290	1.739	1.789	1.835	1.877	1.913	1.943	1.966	1.982	1.993	1.998	1.999
295	1.703	1.748	1.791	1.830	1.864	1.893	1.916	1.934	1.946	1.954	1.957
300	1.671	1.712	1.751	1.787	1.819	1.847	1.870	1.889	1.902	1.912	1.918
305	1.642	1.680	1.716	1.749	1.779	1.806	1.829	1.847	1.862	1.872	1.880
310	1.616	1.651	1.684	1.715	1.743	1.769	1.790	1.809	1.824	1.835	1.844
315	1.593	1.625	1.655	1.684	1.710	1.734	1.755	1.773	1.788	1.800	1.810
320	1.571	1.601	1.629	1.656	1.681	1.703	1.723	1.741	1.756	1.768	1.778
325	1.552	1.579	1.605	1.630	1.653	1.675	1.694	1.711	1.725	1.738	1.748
330	1.533	1.559	1.583	1.606	1.628	1.648	1.667	1.683	1.697	1.710	1.720
335	1.517	1.540	1.563	1.585	1.605	1.624	1.642	1.657	1.671	1.683	1.694
340	1.501	1.523	1.544	1.565	1.584	1.602	1.619	1.634	1.647	1.659	1.669
345	1.487	1.507	1.527	1.546	1.564	1.581	1.597	1.611	1.624	1.636	1.646
350	1.473	1.492	1.511	1.529	1.546	1.562	1.577	1.591	1.603	1.615	1.625
355	1.460	1.479	1.496	1.513	1.529	1.544	1.559	1.572	1.584	1.595	1.604
360	1.449	1.466	1.482	1.498	1.513	1.528	1.541	1.554	1.565	1.576	1.585
365	1.437	1.453	1.469	1.484	1.498	1.512	1.525	1.537	1.548	1.558	1.567
370	1.427	1.442	1.457	1.471	1.485	1.497	1.510	1.521	1.532	1.542	1.551
375	1.417	1.431	1.445	1.459	1.471	1.484	1.495	1.506	1.517	1.526	1.535
380	1.407	1.421	1.434	1.447	1.459	1.471	1.482	1.493	1.502	1.511	1.520
385	1.399	1.411	1.424	1.436	1.448	1.459	1.469	1.479	1.489	1.498	1.506
390	1.390	1.402	1.414	1.426	1.437	1.447	1.457	1.467	1.476	1.484	1.492
395	1.382	1.394	1.405	1.416	1.426	1.436	1.446	1.455	1.464	1.472	1.480
400	1.374	1.385	1.396	1.407	1.417	1.426	1.435	1.444	1.453	1.460	1.468

TABLE X. - Continued. THERMODYNAMIC PROPERTY OF METHANE - SPECIFIC-HEAT RATIO, γ_0

Temperature, K	Pressure, N/m^2×10^{-5}										
	200	210	220	230	240	250	260	270	280	290	300
250	2.285	2.243	2.205	2.170	2.137	2.107	2.079	2.053	2.029	2.007	1.986
255	2.266	2.229	2.195	2.162	2.131	2.103	2.076	2.051	2.028	2.006	1.986
260	2.239	2.208	2.177	2.148	2.120	2.093	2.069	2.045	2.023	2.002	1.982
265	2.206	2.180	2.154	2.128	2.104	2.080	2.057	2.035	2.014	1.995	1.976
270	2.168	2.148	2.126	2.105	2.083	2.062	2.041	2.021	2.002	1.984	1.967
275	2.127	2.112	2.095	2.077	2.059	2.040	2.022	2.005	1.987	1.971	1.955
280	2.084	2.074	2.061	2.047	2.032	2.017	2.001	1.985	1.970	1.955	1.940
285	2.041	2.035	2.026	2.015	2.003	1.991	1.977	1.964	1.950	1.937	1.924
290	1.999	1.996	1.990	1.983	1.974	1.963	1.952	1.941	1.929	1.918	1.906
295	1.957	1.957	1.955	1.950	1.943	1.935	1.926	1.917	1.907	1.897	1.887
300	1.918	1.920	1.920	1.917	1.913	1.907	1.900	1.892	1.884	1.876	1.867
305	1.880	1.884	1.885	1.885	1.882	1.878	1.873	1.867	1.861	1.854	1.847
310	1.844	1.849	1.852	1.853	1.853	1.850	1.847	1.842	1.837	1.832	1.826
315	1.810	1.816	1.821	1.823	1.824	1.823	1.821	1.818	1.814	1.809	1.805
320	1.778	1.785	1.791	1.794	1.796	1.796	1.795	1.793	1.791	1.787	1.784
325	1.748	1.756	1.762	1.766	1.769	1.770	1.770	1.770	1.768	1.766	1.763
330	1.720	1.728	1.735	1.740	1.743	1.745	1.747	1.747	1.746	1.744	1.742
335	1.694	1.702	1.709	1.715	1.719	1.722	1.723	1.724	1.724	1.724	1.722
340	1.669	1.678	1.685	1.691	1.695	1.699	1.701	1.703	1.703	1.703	1.703
345	1.646	1.655	1.662	1.668	1.673	1.677	1.680	1.682	1.683	1.684	1.684
350	1.625	1.633	1.641	1.647	1.652	1.656	1.660	1.662	1.664	1.665	1.665
355	1.604	1.613	1.620	1.627	1.632	1.637	1.640	1.643	1.645	1.647	1.648
360	1.585	1.594	1.601	1.608	1.613	1.618	1.622	1.625	1.627	1.629	1.630
365	1.567	1.576	1.583	1.589	1.595	1.600	1.604	1.607	1.610	1.612	1.614
370	1.551	1.559	1.566	1.572	1.578	1.583	1.587	1.591	1.594	1.596	1.598
375	1.535	1.543	1.550	1.556	1.562	1.567	1.571	1.575	1.578	1.580	1.583
380	1.520	1.527	1.534	1.541	1.546	1.551	1.556	1.560	1.563	1.566	1.568
385	1.506	1.513	1.520	1.526	1.532	1.537	1.541	1.545	1.548	1.551	1.554
390	1.492	1.500	1.506	1.512	1.518	1.523	1.527	1.531	1.535	1.538	1.540
395	1.480	1.487	1.493	1.499	1.505	1.510	1.514	1.518	1.521	1.524	1.527
400	1.468	1.475	1.481	1.487	1.492	1.497	1.501	1.505	1.509	1.512	1.515

Temperature, K	Pressure, N m^2×10^{-5}										
	0	10	20	30	40	50	60	70	80	90	100
400	1.257	1.269	1.281	1.293	1.304	1.316	1.328	1.340	1.352	1.363	1.374
405	1.255	1.266	1.278	1.289	1.300	1.312	1.323	1.334	1.345	1.356	1.367
410	1.253	1.264	1.275	1.285	1.296	1.307	1.318	1.329	1.339	1.350	1.360
415	1.251	1.261	1.272	1.282	1.292	1.303	1.313	1.323	1.334	1.344	1.353
420	1.249	1.259	1.269	1.279	1.289	1.299	1.309	1.318	1.328	1.338	1.347
425	1.247	1.256	1.266	1.275	1.285	1.295	1.304	1.313	1.323	1.332	1.341
430	1.244	1.254	1.263	1.272	1.281	1.291	1.300	1.309	1.318	1.326	1.335
435	1.242	1.251	1.260	1.269	1.278	1.287	1.296	1.304	1.313	1.321	1.329
440	1.240	1.249	1.258	1.266	1.275	1.283	1.291	1.300	1.308	1.316	1.324
445	1.238	1.247	1.255	1.263	1.271	1.280	1.288	1.296	1.303	1.311	1.319
450	1.236	1.244	1.252	1.260	1.268	1.276	1.284	1.291	1.299	1.306	1.314
455	1.234	1.242	1.250	1.257	1.265	1.273	1.280	1.287	1.295	1.302	1.309
460	1.232	1.240	1.247	1.255	1.262	1.269	1.277	1.284	1.291	1.297	1.304
465	1.230	1.238	1.245	1.252	1.259	1.266	1.273	1.280	1.287	1.293	1.300
470	1.228	1.236	1.242	1.249	1.256	1.263	1.270	1.276	1.283	1.289	1.295
475	1.227	1.233	1.240	1.247	1.253	1.260	1.266	1.273	1.279	1.285	1.291
480	1.225	1.231	1.238	1.244	1.251	1.257	1.263	1.269	1.275	1.281	1.287
485	1.223	1.229	1.236	1.242	1.248	1.254	1.260	1.266	1.272	1.278	1.283
490	1.221	1.227	1.233	1.240	1.245	1.251	1.257	1.263	1.269	1.274	1.279
495	1.219	1.225	1.231	1.237	1.243	1.249	1.254	1.260	1.265	1.271	1.276
500	1.218	1.223	1.229	1.235	1.240	1.246	1.251	1.257	1.262	1.267	1.272
505	1.216	1.222	1.227	1.233	1.238	1.243	1.249	1.254	1.259	1.264	1.269
510	1.214	1.220	1.225	1.230	1.236	1.241	1.246	1.251	1.256	1.261	1.266
515	1.213	1.218	1.223	1.228	1.233	1.238	1.243	1.248	1.253	1.258	1.262
520	1.211	1.216	1.221	1.226	1.231	1.236	1.241	1.246	1.250	1.255	1.259
525	1.209	1.214	1.219	1.224	1.229	1.234	1.238	1.243	1.247	1.252	1.256
530	1.208	1.213	1.217	1.222	1.227	1.231	1.236	1.240	1.245	1.249	1.253
535	1.206	1.211	1.216	1.220	1.225	1.229	1.234	1.238	1.242	1.246	1.250
540	1.205	1.209	1.214	1.218	1.223	1.227	1.231	1.236	1.240	1.244	1.248
545	1.203	1.208	1.212	1.216	1.221	1.225	1.229	1.233	1.237	1.241	1.245
550	1.202	1.206	1.210	1.215	1.219	1.223	1.227	1.231	1.235	1.239	1.242
555	1.200	1.205	1.209	1.213	1.217	1.221	1.225	1.229	1.232	1.236	1.240
560	1.199	1.203	1.207	1.211	1.215	1.219	1.223	1.226	1.230	1.234	1.237
565	1.197	1.202	1.205	1.209	1.213	1.217	1.221	1.224	1.228	1.231	1.235
570	1.196	1.200	1.204	1.208	1.211	1.215	1.219	1.222	1.226	1.229	1.232
575	1.195	1.199	1.202	1.206	1.210	1.213	1.217	1.220	1.224	1.227	1.230
580	1.193	1.197	1.201	1.204	1.208	1.211	1.215	1.218	1.222	1.225	1.228
585	1.192	1.196	1.199	1.203	1.206	1.210	1.213	1.216	1.220	1.223	1.226
590	1.191	1.194	1.198	1.201	1.205	1.208	1.211	1.214	1.218	1.221	1.224
595	1.189	1.193	1.196	1.200	1.203	1.206	1.209	1.213	1.216	1.219	1.222
600	1.188	1.192	1.195	1.198	1.201	1.205	1.208	1.211	1.214	1.217	1.219

TABLE X. - Concluded. THERMODYNAMIC PROPERTY OF METHANE - SPECIFIC-HEAT RATIO, γ_0

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	100	110	120	130	140	150	160	170	180	190	200
400	1.374	1.385	1.396	1.407	1.417	1.426	1.435	1.444	1.453	1.460	1.468
405	1.367	1.377	1.388	1.398	1.407	1.417	1.425	1.434	1.442	1.449	1.456
410	1.360	1.370	1.380	1.389	1.398	1.407	1.416	1.424	1.431	1.439	1.446
415	1.353	1.363	1.372	1.381	1.390	1.398	1.407	1.414	1.422	1.429	1.435
420	1.347	1.356	1.365	1.374	1.382	1.390	1.398	1.405	1.412	1.419	1.426
425	1.341	1.350	1.358	1.366	1.374	1.382	1.390	1.397	1.404	1.410	1.416
430	1.335	1.343	1.351	1.359	1.367	1.375	1.382	1.389	1.395	1.401	1.407
435	1.329	1.337	1.345	1.353	1.360	1.367	1.374	1.381	1.387	1.393	1.399
440	1.324	1.332	1.339	1.346	1.353	1.360	1.367	1.373	1.379	1.385	1.391
445	1.319	1.326	1.333	1.340	1.347	1.354	1.360	1.366	1.372	1.378	1.383
450	1.314	1.321	1.328	1.334	1.341	1.347	1.353	1.359	1.365	1.370	1.376
455	1.309	1.316	1.322	1.329	1.335	1.341	1.347	1.353	1.358	1.364	1.369
460	1.304	1.311	1.317	1.323	1.329	1.335	1.341	1.346	1.352	1.357	1.362
465	1.300	1.306	1.312	1.318	1.324	1.330	1.335	1.340	1.346	1.350	1.355
470	1.295	1.301	1.307	1.313	1.319	1.324	1.330	1.335	1.340	1.344	1.349
475	1.291	1.297	1.303	1.308	1.314	1.319	1.324	1.329	1.334	1.339	1.343
480	1.287	1.293	1.298	1.304	1.309	1.314	1.319	1.324	1.328	1.333	1.337
485	1.283	1.289	1.294	1.299	1.304	1.309	1.314	1.319	1.323	1.327	1.332
490	1.279	1.285	1.290	1.295	1.300	1.305	1.309	1.314	1.318	1.322	1.326
495	1.276	1.281	1.286	1.291	1.295	1.300	1.305	1.309	1.313	1.317	1.321
500	1.272	1.277	1.282	1.287	1.291	1.296	1.300	1.304	1.308	1.312	1.316
505	1.269	1.274	1.278	1.283	1.287	1.292	1.296	1.300	1.304	1.308	1.311
510	1.266	1.270	1.275	1.279	1.283	1.288	1.292	1.296	1.299	1.303	1.307
515	1.262	1.267	1.271	1.275	1.280	1.284	1.288	1.291	1.295	1.299	1.302
520	1.259	1.264	1.268	1.272	1.276	1.280	1.284	1.287	1.291	1.295	1.298
525	1.256	1.260	1.264	1.268	1.272	1.276	1.280	1.284	1.287	1.291	1.294
530	1.253	1.257	1.261	1.265	1.269	1.273	1.276	1.280	1.283	1.287	1.290
535	1.250	1.254	1.258	1.262	1.266	1.269	1.273	1.276	1.280	1.283	1.286
540	1.248	1.251	1.255	1.259	1.262	1.266	1.269	1.273	1.276	1.279	1.282
545	1.245	1.249	1.252	1.256	1.259	1.263	1.266	1.269	1.272	1.276	1.279
550	1.242	1.246	1.249	1.253	1.256	1.260	1.263	1.266	1.269	1.272	1.275
555	1.240	1.243	1.247	1.250	1.253	1.257	1.260	1.263	1.266	1.269	1.272
560	1.237	1.241	1.244	1.247	1.251	1.254	1.257	1.260	1.263	1.265	1.268
565	1.235	1.238	1.241	1.245	1.248	1.251	1.254	1.257	1.260	1.262	1.265
570	1.232	1.236	1.239	1.242	1.245	1.248	1.251	1.254	1.257	1.259	1.262
575	1.230	1.233	1.236	1.240	1.242	1.245	1.248	1.251	1.254	1.256	1.259
580	1.228	1.231	1.234	1.237	1.240	1.243	1.246	1.248	1.251	1.253	1.256
585	1.226	1.229	1.232	1.235	1.237	1.240	1.243	1.246	1.248	1.251	1.253
590	1.224	1.227	1.229	1.232	1.235	1.238	1.240	1.243	1.245	1.248	1.250
595	1.222	1.224	1.227	1.230	1.233	1.235	1.238	1.240	1.243	1.245	1.248
600	1.219	1.222	1.225	1.228	1.230	1.233	1.235	1.238	1.240	1.243	1.245

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	200	210	220	230	240	250	260	270	280	290	300
400	1.468	1.475	1.481	1.487	1.492	1.497	1.501	1.505	1.509	1.512	1.515
405	1.456	1.463	1.469	1.475	1.480	1.485	1.489	1.493	1.497	1.500	1.503
410	1.446	1.452	1.458	1.463	1.469	1.473	1.478	1.482	1.485	1.488	1.491
415	1.435	1.441	1.447	1.453	1.458	1.462	1.467	1.471	1.474	1.477	1.480
420	1.426	1.432	1.437	1.442	1.447	1.452	1.456	1.460	1.463	1.467	1.470
425	1.416	1.422	1.428	1.433	1.437	1.442	1.446	1.450	1.453	1.457	1.459
430	1.407	1.413	1.418	1.423	1.428	1.432	1.436	1.440	1.444	1.447	1.450
435	1.399	1.404	1.409	1.414	1.419	1.423	1.427	1.431	1.434	1.437	1.440
440	1.391	1.396	1.401	1.406	1.410	1.414	1.418	1.422	1.425	1.428	1.431
445	1.383	1.388	1.393	1.398	1.402	1.406	1.410	1.413	1.417	1.420	1.423
450	1.376	1.381	1.385	1.390	1.394	1.398	1.402	1.405	1.409	1.412	1.414
455	1.369	1.373	1.378	1.382	1.386	1.390	1.394	1.397	1.401	1.404	1.406
460	1.362	1.366	1.371	1.375	1.379	1.383	1.386	1.390	1.393	1.396	1.399
465	1.355	1.360	1.364	1.368	1.372	1.376	1.379	1.383	1.386	1.389	1.391
470	1.349	1.353	1.358	1.362	1.365	1.369	1.372	1.376	1.379	1.382	1.384
475	1.343	1.347	1.351	1.355	1.359	1.362	1.366	1.369	1.372	1.375	1.377
480	1.337	1.341	1.345	1.349	1.353	1.356	1.359	1.362	1.365	1.368	1.371
485	1.332	1.336	1.339	1.343	1.347	1.350	1.353	1.356	1.359	1.362	1.364
490	1.326	1.330	1.334	1.337	1.341	1.344	1.347	1.350	1.353	1.356	1.358
495	1.321	1.325	1.328	1.332	1.335	1.339	1.342	1.344	1.347	1.350	1.352
500	1.316	1.320	1.323	1.327	1.330	1.333	1.336	1.339	1.342	1.344	1.347
505	1.311	1.315	1.318	1.322	1.325	1.328	1.331	1.334	1.336	1.339	1.341
510	1.307	1.310	1.314	1.317	1.320	1.323	1.326	1.328	1.331	1.333	1.336
515	1.302	1.306	1.309	1.312	1.315	1.318	1.321	1.323	1.326	1.328	1.331
520	1.298	1.301	1.304	1.307	1.310	1.313	1.316	1.319	1.321	1.323	1.326
525	1.294	1.297	1.300	1.303	1.306	1.309	1.311	1.314	1.316	1.319	1.321
530	1.290	1.293	1.296	1.299	1.302	1.304	1.307	1.309	1.312	1.314	1.316
535	1.286	1.289	1.292	1.295	1.297	1.300	1.303	1.305	1.307	1.310	1.312
540	1.282	1.285	1.288	1.291	1.293	1.296	1.298	1.301	1.303	1.305	1.307
545	1.279	1.281	1.284	1.287	1.289	1.292	1.294	1.297	1.299	1.301	1.303
550	1.275	1.278	1.281	1.283	1.286	1.288	1.291	1.293	1.295	1.297	1.299
555	1.272	1.274	1.277	1.280	1.282	1.284	1.287	1.289	1.291	1.293	1.295
560	1.268	1.271	1.274	1.276	1.278	1.281	1.283	1.285	1.287	1.289	1.291
565	1.265	1.268	1.270	1.273	1.275	1.277	1.280	1.282	1.284	1.286	1.288
570	1.262	1.264	1.267	1.269	1.272	1.274	1.276	1.278	1.280	1.282	1.284
575	1.259	1.261	1.264	1.266	1.268	1.271	1.273	1.275	1.277	1.279	1.281
580	1.256	1.258	1.261	1.263	1.265	1.267	1.269	1.271	1.273	1.275	1.277
585	1.253	1.255	1.258	1.260	1.262	1.264	1.266	1.268	1.270	1.272	1.274
590	1.250	1.253	1.255	1.257	1.259	1.261	1.263	1.265	1.267	1.269	1.271
595	1.248	1.250	1.252	1.254	1.256	1.258	1.260	1.262	1.264	1.266	1.267
600	1.245	1.247	1.249	1.251	1.253	1.255	1.257	1.259	1.261	1.263	1.264

TABLE XI. - THERMODYNAMIC PROPERTY OF METHANE - SPEED OF SOUND, a_0, m/sec

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	0	1	2	3	4	5	6	7	8	9	10
120	287.9	281.2	------	------	------	------	------	------	------	------	------
122	290.3	283.9	277.0	------	------	------	------	------	------	------	------
124	292.7	286.6	280.1	------	------	------	------	------	------	------	------
126	295.0	289.3	283.1	------	------	------	------	------	------	------	------
128	297.4	291.9	286.0	279.7	------	------	------	------	------	------	------
130	299.7	294.5	288.9	283.0	------	------	------	------	------	------	------
132	302.0	297.0	291.8	286.2	280.1	------	------	------	------	------	------
134	304.2	299.5	294.5	289.2	283.6	------	------	------	------	------	------
136	306.5	302.0	297.3	292.2	286.9	281.1	------	------	------	------	------
138	308.8	304.4	299.9	295.2	290.1	284.7	------	------	------	------	------
140	311.0	306.9	302.6	298.0	293.3	288.2	282.7	------	------	------	------
142	313.2	309.3	305.2	300.8	296.3	291.5	286.4	280.9	------	------	------
144	315.4	311.6	307.7	303.6	299.3	294.8	290.0	284.8	------	------	------
146	317.6	314.0	310.2	306.3	302.2	297.9	293.4	288.6	283.4	------	------
148	319.7	316.3	312.7	309.0	305.1	301.0	296.7	292.2	287.4	282.2	------
150	321.9	318.6	315.1	311.6	307.9	304.0	299.9	295.7	291.2	286.4	281.2
152	324.0	320.8	317.5	314.1	310.6	306.9	303.1	299.0	294.8	290.3	285.6
154	326.1	323.1	319.9	316.7	313.3	309.8	306.1	302.3	298.3	294.1	289.7
156	328.2	325.3	322.3	319.2	315.9	312.6	309.1	305.5	301.7	297.8	293.6
158	330.3	327.5	324.6	321.6	318.5	315.3	312.0	308.6	305.0	301.3	297.4
160	332.4	329.7	326.9	324.0	321.1	318.0	314.9	311.6	308.2	304.7	301.0
162	334.5	331.9	329.2	326.4	323.6	320.7	317.7	314.6	311.3	308.0	304.5
164	336.5	334.0	331.4	328.8	326.1	323.3	320.4	317.4	314.4	311.2	307.9
166	338.6	336.1	333.6	331.1	328.5	325.8	323.1	320.2	317.3	314.3	311.2
168	340.6	338.2	335.9	333.4	330.9	328.3	325.7	323.0	320.2	317.4	314.4
170	342.6	340.3	338.0	335.7	333.3	330.8	328.3	325.7	323.1	320.3	317.5
172	344.6	342.4	340.2	337.9	335.6	333.3	330.8	328.4	325.8	323.2	320.6
174	346.6	344.5	342.3	340.2	337.9	335.7	333.3	331.0	328.6	326.1	323.5
176	348.5	346.5	344.5	342.4	340.2	338.0	335.8	333.5	331.2	328.8	326.4
178	350.5	348.5	346.6	344.5	342.5	340.4	338.2	336.1	333.8	331.6	329.2
180	352.5	350.6	348.6	346.7	344.7	342.7	340.6	338.5	336.4	334.2	332.0
182	354.4	352.6	350.7	348.8	346.9	345.0	343.0	341.0	338.9	336.8	334.7
184	356.3	354.5	352.7	350.9	349.1	347.2	345.3	343.4	341.4	339.4	337.4
186	358.2	356.5	354.8	353.0	351.2	349.4	347.6	345.7	343.9	341.9	340.0
188	360.1	358.5	356.8	355.1	353.4	351.6	349.9	348.1	346.3	344.4	342.6
190	362.0	360.4	358.8	357.1	355.5	353.8	352.1	350.4	348.6	346.9	345.1

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	10	12	14	16	18	20	22	24	26	28	30
150	281.2	------	------	------	------	------	------	------	------	------	------
152	285.6	------	------	------	------	------	------	------	------	------	------
154	289.7	279.9	------	------	------	------	------	------	------	------	------
156	293.6	284.5	------	------	------	------	------	------	------	------	------
158	297.4	288.9	279.4	------	------	------	------	------	------	------	------
160	301.0	293.1	284.3	274.2	------	------	------	------	------	------	------
162	304.5	297.1	288.9	279.7	------	------	------	------	------	------	------
164	307.9	300.9	293.3	284.9	275.2	------	------	------	------	------	------
166	311.2	304.6	297.5	289.7	280.9	270.8	------	------	------	------	------
168	314.4	308.2	301.5	294.2	286.2	277.1	------	------	------	------	------
170	317.5	311.6	305.4	298.6	291.1	282.9	273.5	------	------	------	------
172	320.6	315.0	309.1	302.7	295.9	288.3	279.8	270.1	------	------	------
174	323.5	318.2	312.6	306.7	300.2	293.3	285.6	277.0	267.0	------	------
176	326.4	321.4	316.1	310.5	304.5	298.0	291.0	283.3	274.5	264.3	------
178	329.2	324.5	319.4	314.1	308.5	302.5	296.0	289.0	281.2	272.4	261.9
180	332.0	327.4	322.7	317.7	312.4	306.8	300.8	294.3	287.3	279.5	270.6
182	334.7	330.4	325.8	321.1	316.1	310.8	305.3	299.4	293.0	286.0	278.2
184	337.4	333.2	328.9	324.4	319.7	314.8	309.6	304.1	298.2	291.9	285.0
186	340.0	336.0	331.9	327.6	323.2	318.5	313.7	308.5	303.1	297.4	291.2
188	342.6	338.8	334.8	330.7	326.5	322.1	317.6	312.8	307.8	302.5	296.9
190	345.1	341.4	337.7	333.8	329.8	325.7	321.4	316.9	312.2	307.3	302.2

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	30	32	34	36	38	40	42	44	46	48	50
170	------	------	------	------	------	------	------	------	------	------	------
172	------	------	------	------	------	------	------	------	------	------	------
174	------	------	------	------	------	------	------	------	------	------	------
176	------	------	------	------	------	------	------	------	------	------	------
178	261.9	------	------	------	------	------	------	------	------	------	------
180	270.6	260.0	------	------	------	------	------	------	------	------	------
182	278.2	269.4	258.7	------	------	------	------	------	------	------	------
184	285.0	277.4	268.6	258.0	------	------	------	------	------	------	------
186	291.2	284.4	277.0	268.4	258.1	243.8	------	------	------	------	------
188	296.9	290.8	284.3	277.1	268.9	259.1	245.8	------	------	------	------
190	302.2	296.7	290.9	284.6	277.7	269.9	260.9	249.1	------	------	------

TABLE XI. - Continued. THERMODYNAMIC PROPERTY OF METHANE - SPEED OF SOUND, α_0, m/sec

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	0	5	10	15	20	25	30	35	40	45	50
190	362.0	353.8	345.1	335.7	325.7	314.6	302.2	287.8	269.9	240.3	------
192	363.9	356.0	347.6	338.6	329.0	318.6	307.1	294.2	278.8	258.8	313.1
194	365.8	358.1	350.0	341.4	332.3	322.5	311.8	300.0	286.5	270.5	251.9
196	367.6	360.2	352.4	344.2	335.5	326.3	316.3	305.5	293.4	279.8	264.5
198	369.4	362.3	354.8	346.9	338.6	329.9	320.6	310.5	299.7	287.8	275.1
200	371.3	364.3	357.1	349.6	341.7	333.4	324.6	315.3	305.5	294.9	284.0
202	373.1	366.4	359.4	352.1	344.6	336.7	328.5	319.9	310.8	301.4	291.8
204	374.9	368.4	361.7	354.7	347.5	340.0	332.2	324.2	315.9	307.3	298.8
206	376.7	370.4	363.9	357.2	350.3	343.2	335.9	328.3	320.6	312.8	305.1
208	378.5	372.4	366.1	359.7	353.0	346.3	339.3	332.3	325.1	317.9	311.0
210	380.3	374.3	368.3	362.1	355.7	349.3	342.7	336.1	329.4	322.7	316.4
212	382.0	376.3	370.4	364.5	358.4	352.2	346.0	339.7	333.4	327.3	321.5
214	383.8	378.2	372.5	366.8	361.0	355.1	349.2	343.2	337.4	331.7	326.3
216	385.5	380.1	374.6	369.1	363.5	357.9	352.2	346.6	341.1	335.8	330.8
218	387.3	382.0	376.7	371.4	366.0	360.6	355.2	349.9	344.7	339.8	335.1
220	389.0	383.9	378.8	373.6	368.4	363.3	358.2	353.1	348.2	343.6	339.3
222	390.7	385.8	380.8	375.8	370.8	365.9	361.0	356.2	351.6	347.2	343.2
224	392.4	387.6	382.8	378.0	373.2	368.5	363.8	359.3	354.9	350.8	347.0
226	394.1	389.4	384.8	380.1	375.5	371.0	366.5	362.2	358.1	354.2	350.6
228	395.8	391.3	386.7	382.3	377.8	373.5	369.2	365.1	361.2	357.5	354.2
230	397.4	393.1	388.7	384.4	380.1	375.9	371.8	367.9	364.2	360.7	357.6
232	399.1	394.8	390.6	386.4	382.3	378.3	374.4	370.6	367.1	363.8	360.8
234	400.8	396.6	392.5	388.5	384.5	380.6	376.9	373.3	369.9	366.8	364.0
236	402.4	398.4	394.4	390.5	386.7	382.9	379.4	375.9	372.7	369.8	367.1
238	404.0	400.1	396.3	392.5	388.8	385.2	381.8	378.5	375.4	372.6	370.1
240	405.6	401.9	398.1	394.5	390.9	387.5	384.1	381.0	378.1	375.4	373.1
242	407.3	403.6	400.0	396.4	393.0	389.7	386.5	383.5	380.7	378.2	375.9
244	408.9	405.3	401.8	398.3	395.0	391.8	388.8	385.9	383.3	380.9	378.7
246	410.5	407.0	403.6	400.3	397.0	394.0	391.0	388.3	385.8	383.5	381.5
248	412.0	408.7	405.3	402.1	399.0	396.1	393.3	390.6	388.2	386.0	384.1
250	413.6	410.3	407.1	404.0	401.0	398.2	395.5	392.9	390.6	388.6	386.8

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	50	55	60	65	70	75	80	85	90	95	100
190	------	------	------	------	------	------	------	------	------	------	------
192	313.1	388.3	436.1	473.3	504.3	531.3	555.3	577.0	597.0	615.5	632.8
194	251.9	336.2	396.6	440.0	475.0	504.7	530.7	554.1	575.4	595.0	613.2
196	264.5	282.1	354.1	405.1	444.6	477.4	505.8	530.9	553.6	574.3	593.5
198	275.1	268.1	312.9	369.5	413.7	449.8	480.6	507.6	531.7	553.7	573.9
200	284.0	275.2	287.7	336.1	383.2	422.3	455.4	484.3	509.9	533.1	554.3
202	291.8	283.5	283.9	311.5	355.2	395.7	430.8	461.3	488.3	512.7	534.9
204	298.8	291.2	288.2	300.3	333.0	371.6	407.3	439.1	467.3	492.8	515.9
206	305.1	298.3	294.3	298.9	319.4	351.9	386.2	418.2	447.2	473.4	497.4
208	311.0	304.8	300.6	301.8	313.7	338.0	368.5	399.4	428.4	455.1	479.6
210	316.4	310.7	306.7	306.3	313.1	330.0	355.1	383.4	411.5	438.1	462.8
212	321.5	316.3	312.5	311.3	315.2	326.7	346.3	370.8	397.0	422.8	447.3
214	326.3	321.5	317.9	316.4	318.6	326.5	341.3	361.7	385.2	409.5	433.3
216	330.8	326.4	323.0	321.4	322.6	328.1	339.2	355.8	376.2	398.5	421.1
218	335.1	331.1	327.9	326.2	326.8	330.8	339.2	352.5	369.8	389.7	410.7
220	339.3	335.5	332.5	330.8	331.0	334.0	340.5	351.1	365.6	383.1	402.3
222	343.2	339.7	336.9	335.3	335.2	337.4	342.6	351.2	363.3	378.5	395.7
224	347.0	343.7	341.1	339.6	339.4	341.0	345.2	352.2	362.4	375.5	390.8
226	350.6	347.6	345.2	343.7	343.4	344.7	348.1	353.9	362.5	373.8	387.3
228	354.2	351.3	349.0	347.6	347.2	348.3	351.1	356.1	363.4	373.1	385.1
230	357.6	354.9	352.8	351.4	351.0	351.9	354.3	358.5	364.8	373.3	383.8
232	360.8	358.3	356.3	355.1	354.7	355.4	357.4	361.1	366.6	374.0	383.3
234	364.0	361.7	359.8	358.6	358.2	358.8	360.6	363.8	368.6	375.2	383.5
236	367.1	364.9	363.2	362.0	361.6	362.1	363.7	366.6	370.9	376.7	384.1
238	370.1	368.0	366.4	365.3	365.0	365.4	366.8	369.4	373.2	378.4	385.1
240	373.1	371.1	369.6	368.6	368.2	368.6	369.9	372.2	375.7	380.4	386.4
242	375.9	374.1	372.6	371.7	371.4	371.7	372.9	375.0	378.2	382.4	387.9
244	378.7	377.0	375.6	374.7	374.4	374.8	375.9	377.8	380.7	384.6	389.6
246	381.5	379.8	378.5	377.7	377.4	377.7	378.8	380.6	383.2	386.8	391.4
248	384.1	382.6	381.4	380.6	380.3	380.6	381.6	383.3	385.7	389.1	393.3
250	386.8	385.3	384.1	383.4	383.2	383.5	384.4	386.0	388.3	391.4	395.3

TABLE XI. - Continued. THERMODYNAMIC PROPERTY OF METHANE - SPEED OF SOUND, α_0, m/sec

Temperature, K	Pressure, N/m^2×10^{-5}										
	100	110	120	130	140	150	160	170	180	190	200
190	------	------	------	------	------	------	------	------	------	------	------
192	632.8	664.5	693.0	719.1	743.3	765.8	787.0	807.0	826.1	844.2	861.6
194	613.2	646.3	676.0	703.1	728.0	751.2	772.9	793.4	812.9	831.4	849.1
196	593.5	628.2	659.1	687.1	712.8	736.7	759.0	780.0	799.8	818.7	836.8
198	573.9	610.2	642.3	671.2	697.7	722.3	745.1	766.6	786.9	806.2	824.6
200	554.3	592.2	625.6	655.5	682.8	708.0	731.4	753.4	774.1	793.8	812.5
202	534.9	574.5	609.0	639.9	668.0	693.8	717.8	740.3	761.5	781.5	800.5
204	515.9	556.9	592.7	624.6	653.4	679.9	704.4	727.4	748.9	769.3	788.7
206	497.4	539.8	576.7	609.4	639.0	666.2	691.2	714.6	736.6	757.4	777.1
208	479.6	523.2	561.0	594.6	624.9	652.6	678.2	702.1	724.4	745.5	765.6
210	462.8	507.2	545.8	580.2	611.1	639.4	665.5	689.7	712.5	733.9	754.2
212	447.3	491.9	531.2	566.2	597.7	626.5	653.0	677.6	700.7	722.5	743.1
214	433.3	477.7	517.3	552.7	584.6	613.9	640.8	665.8	689.2	711.3	732.1
216	421.1	464.5	504.1	539.7	572.1	601.6	628.9	654.2	678.0	700.3	721.4
218	410.7	452.6	491.7	527.4	560.0	589.8	617.4	643.0	667.0	689.5	710.8
220	402.3	442.1	480.4	515.9	548.4	578.5	606.2	632.1	656.3	679.0	700.6
222	395.7	432.9	470.0	505.1	537.5	567.6	595.5	621.5	645.9	668.8	690.5
224	390.8	425.2	460.8	495.1	527.3	557.3	585.2	611.3	635.8	658.9	680.8
226	387.3	418.8	452.6	486.0	517.7	547.5	575.4	601.5	626.1	649.3	671.3
228	385.1	413.7	445.6	477.7	508.8	538.3	566.0	592.1	616.8	640.0	662.1
230	383.8	409.8	439.5	470.4	500.7	529.7	557.2	583.2	607.8	631.1	653.2
232	383.3	406.8	434.5	463.9	493.3	521.7	548.9	574.7	599.2	622.5	644.6
234	383.5	404.7	430.4	458.3	486.6	514.4	541.1	566.7	591.1	614.2	636.3
236	384.1	403.3	427.1	453.4	480.6	507.6	533.9	559.2	583.3	606.4	628.4
238	385.1	402.5	424.5	449.3	475.3	501.5	527.2	552.1	576.0	598.9	620.8
240	386.4	402.3	422.5	445.8	470.7	496.0	521.0	545.5	569.1	591.7	613.5
242	387.9	402.4	421.2	443.0	466.6	491.0	515.4	539.3	562.6	585.0	606.6
244	389.6	402.9	420.2	440.7	463.2	486.6	510.3	533.6	556.5	578.6	600.0
246	391.4	403.7	419.8	438.9	460.2	482.7	505.6	528.4	550.8	572.6	593.8
248	393.3	404.7	419.6	437.6	457.8	479.3	501.4	523.6	545.5	567.0	587.9
250	395.3	405.8	419.8	436.6	455.8	476.3	497.7	519.2	540.7	561.8	582.3

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	200	210	220	230	240	250	260	270	280	290	300
190	------	------	------	------	------	------	------	------	------	------	------
192	861.6	878.2	894.3	909.8	924.7	939.2	953.3	967.0	980.3	993.2	1005.9
194	849.1	866.1	882.4	898.2	913.4	928.1	942.3	956.2	969.7	982.8	995.6
196	836.8	854.1	870.7	886.7	902.1	917.0	931.5	945.5	959.2	972.5	985.4
198	824.6	842.2	859.0	875.3	890.9	906.1	920.7	935.0	948.8	962.2	975.3
200	812.5	830.4	847.5	864.0	879.9	895.3	910.1	924.5	938.5	952.1	965.4
202	800.5	818.7	836.1	852.9	869.0	884.6	899.6	914.2	928.3	942.1	955.5
204	788.7	807.2	824.9	841.9	858.2	874.0	889.2	904.0	918.3	932.2	945.7
206	777.1	795.8	813.8	831.0	847.5	863.5	878.9	893.8	908.3	922.4	936.0
208	765.6	784.6	802.8	820.2	837.0	853.2	868.8	883.9	898.5	912.7	926.5
210	754.2	773.5	792.0	809.6	826.6	843.0	858.7	874.0	888.8	903.1	917.0
212	743.1	762.6	781.3	799.2	816.4	832.9	848.8	864.2	879.2	893.6	907.7
214	732.1	751.9	770.8	788.9	806.3	823.0	839.1	854.6	869.7	884.3	898.5
216	721.4	741.4	760.5	778.8	796.3	813.2	829.5	845.2	860.4	875.1	889.4
218	710.8	731.1	750.4	768.9	786.6	803.6	820.0	835.8	851.1	866.0	880.4
220	700.6	721.0	740.5	759.1	777.0	794.1	810.7	826.6	842.1	857.0	871.6
222	690.5	711.1	730.8	749.6	767.6	784.9	801.5	817.6	833.2	848.2	862.9
224	680.8	701.5	721.3	740.2	758.3	775.8	792.5	808.7	824.4	839.6	854.3
226	671.3	692.1	712.0	731.1	749.3	766.8	783.7	800.0	815.8	831.1	845.9
228	662.1	683.0	703.0	722.2	740.5	758.1	775.1	791.5	807.3	822.7	837.6
230	653.2	674.2	694.3	713.5	731.9	749.6	766.7	783.1	799.1	814.5	829.4
232	644.6	665.6	685.8	705.0	723.5	741.3	758.4	775.0	791.0	806.4	821.5
234	636.3	657.4	677.5	696.8	715.4	733.2	750.4	767.0	783.0	798.6	813.6
236	628.4	649.4	669.6	688.9	707.4	725.3	742.5	759.2	775.3	790.9	806.0
238	620.8	641.8	661.9	681.2	699.8	717.6	734.9	751.6	767.7	783.3	798.5
240	613.5	634.4	654.5	673.8	692.3	710.2	727.5	744.2	760.3	776.0	791.2
242	606.6	627.4	647.4	666.6	685.1	703.0	720.3	737.0	753.1	768.8	784.0
244	600.0	620.6	640.5	659.7	678.2	696.0	713.3	730.0	746.2	761.8	777.1
246	593.8	614.2	634.0	653.1	671.5	689.3	706.5	723.2	739.4	755.0	770.3
248	587.9	608.1	627.7	646.7	665.0	682.8	700.0	716.6	732.8	748.4	763.7
250	582.3	602.4	621.8	640.6	658.9	676.5	693.6	710.3	726.4	742.0	757.3

TABLE XI. - Continued. THERMODYNAMIC PROPERTY OF METHANE - SPEED OF SOUND, α_0, m/sec

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	0	10	20	30	40	50	60	70	80	90	100
250	413.6	407.1	401.0	395.5	390.6	386.8	384.1	383.2	384.4	388.3	395.3
255	417.5	411.5	405.9	400.8	396.5	393.1	390.8	390.0	391.1	394.5	400.5
260	421.3	415.7	410.6	406.0	402.1	399.1	397.1	396.5	397.6	400.6	405.8
265	425.1	419.9	415.2	411.0	407.5	404.8	403.2	402.7	403.8	406.5	411.1
270	428.8	424.0	419.6	415.8	412.7	410.4	409.0	408.7	409.7	412.2	416.4
275	432.5	428.0	424.0	420.6	417.7	415.7	414.5	414.4	415.4	417.7	421.6
280	436.1	432.0	428.3	425.1	422.6	420.8	419.9	419.8	420.9	423.1	426.7
285	439.7	435.8	432.4	429.6	427.4	425.8	425.0	425.1	426.2	428.3	431.7
290	443.2	439.6	436.5	433.9	432.0	430.6	430.0	430.2	431.3	433.4	436.6
295	446.6	443.4	440.5	438.2	436.4	435.3	434.8	435.2	436.3	438.3	441.4
300	450.1	447.0	444.4	442.3	440.8	439.8	439.5	439.9	441.1	443.1	446.0
305	453.4	450.6	448.3	446.4	445.0	444.3	444.1	444.6	445.8	447.8	450.6
310	456.7	454.2	452.0	450.4	449.2	448.6	448.5	449.1	450.4	452.4	455.1
315	460.0	457.7	455.7	454.3	453.3	452.8	452.9	453.5	454.8	456.8	459.5
320	463.3	461.1	459.4	458.1	457.2	456.9	457.1	457.8	459.2	461.1	463.7
325	466.5	464.5	462.9	461.8	461.1	460.9	461.2	462.0	463.4	465.4	467.9
330	469.6	467.8	466.5	465.5	464.9	464.9	465.2	466.1	467.6	469.5	472.1
335	472.8	471.1	469.9	469.1	468.7	468.7	469.2	470.2	471.6	473.6	476.1
340	475.9	474.4	473.3	472.6	472.4	472.5	473.1	474.1	475.6	477.6	480.0
345	478.9	477.6	476.7	476.1	476.0	476.2	476.8	477.9	479.5	481.5	483.9
350	481.9	480.8	480.0	479.6	479.5	479.8	480.6	481.7	483.3	485.3	487.7
355	484.9	483.9	483.2	482.9	483.0	483.4	484.2	485.4	487.0	489.0	491.5
360	487.9	487.0	486.5	486.3	486.4	486.9	487.8	489.1	490.7	492.7	495.2
365	490.8	490.1	489.6	489.5	489.8	490.4	491.3	492.6	494.3	496.4	498.8
370	493.7	493.1	492.8	492.8	493.1	493.8	494.8	496.2	497.9	499.9	502.4
375	496.6	496.1	495.9	496.0	496.4	497.2	498.2	499.6	501.4	503.4	505.9
380	499.4	499.0	498.9	499.1	499.6	500.5	501.6	503.0	504.8	506.9	509.3
385	502.3	502.0	502.0	502.2	502.8	503.7	504.9	506.4	508.2	510.3	512.7
390	505.0	504.9	504.9	505.3	506.0	506.9	508.2	509.7	511.5	513.6	516.1
395	507.8	507.7	507.9	508.4	509.1	510.1	511.4	513.0	514.8	516.9	519.4
400	510.6	510.6	510.8	511.4	512.2	513.2	514.6	516.2	518.0	520.2	522.6

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	100	110	120	130	140	150	160	170	180	190	200
250	395.3	405.8	419.8	436.6	455.8	476.3	497.7	519.2	540.7	561.8	582.3
255	400.5	409.3	421.1	435.6	452.3	470.7	490.1	510.0	530.1	550.2	569.9
260	405.8	413.4	423.6	436.1	450.8	467.1	484.7	503.0	521.8	540.6	559.4
265	411.1	417.8	426.7	437.7	450.7	465.2	481.1	497.9	515.3	533.0	550.8
270	416.4	422.4	430.2	440.0	451.5	464.6	479.0	494.4	510.5	527.0	543.8
275	421.6	427.0	434.1	442.8	453.2	465.0	478.1	492.1	507.0	522.4	538.2
280	426.7	431.6	438.1	446.0	455.4	466.1	478.0	491.0	504.7	519.1	533.8
285	431.7	436.3	442.2	449.4	458.0	467.8	478.7	490.6	503.4	516.7	530.6
290	436.6	440.9	446.3	453.0	460.9	469.9	480.0	491.0	502.8	515.3	528.3
295	441.4	445.4	450.5	456.7	464.0	472.3	481.7	491.9	502.9	514.6	526.8
300	446.0	449.9	454.7	460.5	467.3	475.0	483.7	493.2	503.5	514.5	526.0
305	450.6	454.3	458.8	464.3	470.7	477.9	486.0	495.0	504.6	514.9	525.7
310	455.1	458.6	462.9	468.1	474.1	480.9	488.6	497.0	506.0	515.7	526.0
315	459.5	462.9	467.0	471.9	477.6	484.1	491.3	499.2	507.7	516.9	526.6
320	463.7	467.0	471.0	475.7	481.1	487.3	494.1	501.6	509.7	518.4	527.6
325	467.9	471.1	475.0	479.5	484.7	490.5	497.0	504.1	511.8	520.1	528.8
330	472.1	475.2	478.9	483.3	488.2	493.8	500.0	506.8	514.1	522.0	530.3
335	476.1	479.2	482.8	487.0	491.8	497.1	503.1	509.5	516.5	524.0	532.0
340	480.0	483.1	486.6	490.7	495.3	500.4	506.1	512.3	519.1	526.3	533.9
345	483.9	486.9	490.3	494.3	498.8	503.8	509.2	515.2	521.7	528.6	535.9
350	487.7	490.7	494.0	497.9	502.2	507.1	512.4	518.1	524.3	531.0	538.0
355	491.5	494.4	497.7	501.5	505.7	510.4	515.5	521.1	527.1	533.5	540.3
360	495.2	498.0	501.3	505.0	509.1	513.6	518.6	524.0	529.8	536.0	542.6
365	498.8	501.6	504.8	508.5	512.5	516.9	521.7	527.0	532.6	538.6	544.9
370	502.4	505.1	508.3	511.9	515.8	520.2	524.9	529.9	535.4	541.2	547.4
375	505.9	508.6	511.8	515.3	519.1	523.4	528.0	532.9	538.2	543.9	549.8
380	509.3	512.1	515.2	518.6	522.4	526.6	531.1	535.9	541.1	546.5	552.3
385	512.7	515.5	518.5	521.9	525.7	529.7	534.1	538.8	543.9	549.2	554.9
390	516.1	518.8	521.8	525.2	528.9	532.9	537.2	541.8	546.7	551.9	557.4
395	519.4	522.1	525.1	528.4	532.1	536.0	540.2	544.7	549.6	554.7	560.0
400	522.6	525.4	528.4	531.6	535.2	539.1	543.2	547.7	552.4	557.4	562.6

TABLE XI. - Continued. THERMODYNAMIC PROPERTY OF METHANE - SPEED OF SOUND, a_0, m/sec

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	200	210	220	230	240	250	260	270	280	290	300
250	582.3	602.4	621.8	640.6	658.9	676.5	693.6	710.3	726.4	742.0	757.3
255	569.9	589.3	608.2	626.6	644.5	661.9	678.8	695.3	711.3	726.8	742.0
260	559.4	578.0	596.3	614.2	631.7	648.7	665.4	681.6	697.4	712.8	727.9
265	550.8	568.5	586.1	603.4	620.4	637.0	653.3	669.3	684.8	700.0	714.9
270	543.8	560.6	577.4	594.0	610.5	626.7	642.6	658.2	673.4	688.4	703.0
275	538.2	554.1	570.1	586.1	601.9	617.6	633.1	648.3	663.2	677.9	692.3
280	533.8	548.9	564.1	579.4	594.6	609.7	624.7	639.5	654.1	668.4	682.5
285	530.6	544.8	559.3	573.8	588.4	603.0	617.5	631.8	646.0	660.0	673.8
290	528.3	541.7	555.4	569.3	583.3	597.3	611.2	625.1	638.9	652.5	666.0
295	526.8	539.5	552.5	565.7	579.0	592.5	605.9	619.3	632.7	645.9	659.0
300	526.0	537.9	550.3	562.8	575.6	588.5	601.4	614.4	627.3	640.1	652.9
305	525.7	537.0	548.7	560.7	572.9	585.2	597.7	610.2	622.7	635.1	647.5
310	526.0	536.7	547.8	559.2	570.8	582.7	594.6	606.7	618.7	630.8	642.9
315	526.6	536.7	547.3	558.2	569.3	580.7	592.2	603.8	615.4	627.1	638.8
320	527.6	537.2	547.3	557.7	568.3	579.2	590.3	601.5	612.7	624.0	635.4
325	528.8	538.0	547.6	557.5	567.8	578.2	588.8	599.6	610.5	621.5	632.5
330	530.3	539.1	548.3	557.8	567.6	577.6	587.8	598.2	608.8	619.4	630.0
335	532.0	540.4	549.2	558.3	567.7	577.4	587.2	597.3	607.4	617.7	628.0
340	533.9	541.9	550.3	559.1	568.1	577.4	586.9	596.6	606.5	616.4	626.4
345	535.9	543.6	551.7	560.1	568.8	577.8	586.9	596.3	605.8	615.5	625.2
350	538.0	545.5	553.2	561.3	569.7	578.4	587.2	596.3	605.5	614.8	624.3
355	540.3	547.4	554.9	562.7	570.8	579.2	587.7	596.5	605.4	614.5	623.7
360	542.6	549.5	556.7	564.3	572.1	580.1	588.4	596.9	605.6	614.4	623.3
365	544.9	551.6	558.6	565.9	573.5	581.3	589.3	597.6	606.0	614.5	623.2
370	547.4	553.8	560.6	567.7	575.0	582.6	590.4	598.4	606.5	614.8	623.3
375	549.8	556.1	562.7	569.6	576.7	584.0	591.6	599.3	607.3	615.3	623.6
380	552.3	558.5	564.8	571.5	578.4	585.5	592.9	600.4	608.2	616.0	624.0
385	554.9	560.8	567.0	573.5	580.2	587.2	594.3	601.7	609.2	616.8	624.6
390	557.4	563.2	569.3	575.6	582.1	588.9	595.9	603.0	610.3	617.8	625.4
395	560.0	565.7	571.6	577.7	584.1	590.7	597.5	604.4	611.6	618.9	626.3
400	562.6	568.1	573.9	579.9	586.1	592.5	599.2	606.0	612.9	620.1	627.3

Temperature, K	Pressure, N/m^2×10^{-5}										
	0	10	20	30	40	50	60	70	80	90	100
400	510.6	510.6	510.8	511.4	512.2	513.2	514.6	516.2	518.0	520.2	522.6
405	513.3	513.4	513.7	514.3	515.2	516.3	517.7	519.3	521.3	523.4	525.9
410	516.0	516.2	516.6	517.3	518.2	519.4	520.8	522.5	524.4	526.6	529.0
415	518.7	518.9	519.4	520.2	521.2	522.4	523.9	525.6	527.5	529.7	532.2
420	521.4	521.7	522.3	523.1	524.1	525.4	526.9	528.6	530.6	532.8	535.3
425	524.0	524.4	525.0	525.9	527.0	528.3	529.9	531.7	533.7	535.9	538.4
430	526.6	527.1	527.8	528.7	529.9	531.3	532.9	534.7	536.7	538.9	541.4
435	529.2	529.8	530.6	531.5	532.7	534.2	535.8	537.6	539.7	541.9	544.4
440	531.8	532.4	533.3	534.3	535.6	537.0	538.7	540.5	542.6	544.9	547.4
445	534.4	535.1	536.0	537.1	538.4	539.9	541.6	543.4	545.5	547.8	550.3
450	536.9	537.7	538.7	539.8	541.1	542.7	544.4	546.3	548.4	550.7	553.2
455	539.5	540.3	541.3	542.5	543.9	545.5	547.2	549.2	551.3	553.6	556.1
460	542.0	542.9	543.9	545.2	546.6	548.2	550.0	552.0	554.1	556.4	558.9
465	544.5	545.5	546.6	547.9	549.3	551.0	552.8	554.8	556.9	559.3	561.8
470	547.0	548.0	549.2	550.5	552.0	553.7	555.5	557.5	559.7	562.1	564.6
475	549.5	550.5	551.7	553.1	554.7	556.4	558.2	560.3	562.5	564.8	567.4
480	552.0	553.1	554.3	555.7	557.3	559.0	560.9	563.0	565.2	567.6	570.1
485	554.4	555.6	556.9	558.3	559.9	561.7	563.6	565.7	567.9	570.3	572.8
490	556.9	558.1	559.4	560.9	562.5	564.3	566.3	568.4	570.6	573.0	575.6
495	559.3	560.5	561.9	563.4	565.1	567.0	568.9	571.0	573.3	575.7	578.2
500	561.7	563.0	564.4	566.0	567.7	569.5	571.5	573.7	576.0	578.4	580.9
505	564.1	565.4	566.9	568.5	570.2	572.1	574.1	576.3	578.6	581.0	583.6
510	566.5	567.9	569.4	571.0	572.8	574.7	576.7	578.9	581.2	583.6	586.2
515	568.9	570.3	571.8	573.5	575.3	577.2	579.3	581.5	583.8	586.2	588.8
520	571.3	572.7	574.3	576.0	577.8	579.8	581.8	584.1	586.4	588.8	591.4
525	573.6	575.1	576.7	578.4	580.3	582.3	584.4	586.6	588.9	591.4	594.0
530	576.0	577.5	579.1	580.9	582.8	584.8	586.9	589.1	591.5	594.0	596.5
535	578.3	579.9	581.5	583.3	585.2	587.3	589.4	591.7	594.0	596.5	599.1
540	580.7	582.2	583.9	585.8	587.7	589.7	591.9	594.2	596.5	599.0	601.6
545	583.0	584.6	586.3	588.2	590.1	592.2	594.4	596.6	599.0	601.5	604.1
550	585.3	586.9	588.7	590.6	592.5	594.6	596.8	599.1	601.5	604.0	606.6
555	587.6	589.3	591.0	592.9	594.9	597.1	599.3	601.6	604.0	606.5	609.1
560	589.9	591.6	593.4	595.3	597.3	599.5	601.7	604.0	606.4	609.0	611.6
565	592.1	593.9	595.7	597.7	599.7	601.9	604.1	606.4	608.9	611.4	614.0
570	594.4	596.2	598.1	600.0	602.1	604.3	606.5	608.9	611.3	613.8	616.5
575	596.7	598.5	600.4	602.4	604.4	606.6	608.9	611.3	613.7	616.3	618.9
580	598.9	600.8	602.7	604.7	606.8	609.0	611.3	613.6	616.1	618.7	621.3
585	601.2	603.0	605.0	607.0	609.1	611.3	613.6	616.0	618.5	621.1	623.7
590	603.4	605.3	607.2	609.3	611.4	613.7	616.0	618.4	620.9	623.4	626.1
595	605.6	607.5	609.5	611.6	613.8	616.0	618.3	620.7	623.2	625.8	628.5
600	607.8	609.8	611.8	613.9	616.1	618.3	620.7	623.1	625.6	628.2	630.8

TABLE XI. - Concluded. THERMODYNAMIC PROPERTY OF METHANE - SPEED OF SOUND, a_0, m/sec

Temperature, K	Pressure, N/m^2×10^{-5}										
	100	110	120	130	140	150	160	170	180	190	200
400	522.6	525.4	528.4	531.6	535.2	539.1	543.2	547.7	552.4	557.4	562.6
405	525.9	528.6	531.5	534.8	538.3	542.1	546.2	550.6	555.2	560.1	565.2
410	529.0	531.7	534.7	537.9	541.4	545.2	549.2	553.5	558.0	562.8	567.8
415	532.2	534.9	537.8	541.0	544.5	548.2	552.1	556.4	560.8	565.5	570.5
420	535.3	538.0	540.9	544.1	547.5	551.2	555.1	559.2	563.6	568.2	573.1
425	538.4	541.0	544.0	547.1	550.5	554.1	558.0	562.1	566.4	570.9	575.7
430	541.4	544.1	547.0	550.1	553.5	557.1	560.9	564.9	569.1	573.6	578.3
435	544.4	547.1	550.0	553.1	556.4	560.0	563.7	567.7	571.9	576.3	580.9
440	547.4	550.0	552.9	556.0	559.3	562.9	566.6	570.5	574.6	579.0	583.5
445	550.3	553.0	555.9	558.9	562.2	565.7	569.4	573.3	577.4	581.6	586.1
450	553.2	555.9	558.8	561.8	565.1	568.5	572.2	576.0	580.1	584.3	588.7
455	556.1	558.8	561.6	564.7	567.9	571.4	575.0	578.8	582.8	586.9	591.3
460	558.9	561.6	564.5	567.5	570.8	574.2	577.7	581.5	585.4	589.6	593.9
465	561.8	564.5	567.3	570.3	573.5	576.9	580.5	584.2	588.1	592.2	596.4
470	564.6	567.3	570.1	573.1	576.3	579.7	583.2	586.9	590.8	594.8	599.0
475	567.4	570.0	572.9	575.9	579.1	582.4	585.9	589.6	593.4	597.4	601.5
480	570.1	572.8	575.6	578.6	581.8	585.1	588.6	592.2	596.0	600.0	604.1
485	572.8	575.5	578.4	581.4	584.5	587.8	591.3	594.9	598.6	602.5	606.6
490	575.6	578.2	581.1	584.1	587.2	590.5	593.9	597.5	601.2	605.1	609.1
495	578.2	580.9	583.8	586.8	589.9	593.1	596.6	600.1	603.8	607.6	611.6
500	580.9	583.6	586.4	589.4	592.5	595.8	599.2	602.7	606.4	610.2	614.1
505	583.6	586.3	589.1	592.1	595.2	598.4	601.8	605.3	608.9	612.7	616.6
510	586.2	588.9	591.7	594.7	597.8	601.0	604.4	607.8	611.5	615.2	619.1
515	588.8	591.5	594.3	597.3	600.4	603.6	606.9	610.4	614.0	617.7	621.5
520	591.4	594.1	596.9	599.9	603.0	606.2	609.5	612.9	616.5	620.2	624.0
525	594.0	596.7	599.5	602.5	605.5	608.7	612.0	615.4	619.0	622.7	626.4
530	596.5	599.3	602.1	605.0	608.1	611.3	614.5	618.0	621.5	625.1	628.9
535	599.1	601.8	604.6	607.6	610.6	613.8	617.1	620.4	624.0	627.6	631.3
540	601.6	604.3	607.2	610.1	613.1	616.3	619.6	622.9	626.4	630.0	633.7
545	604.1	606.8	609.7	612.6	615.6	618.8	622.0	625.4	628.9	632.4	636.1
550	606.6	609.3	612.2	615.1	618.1	621.3	624.5	627.9	631.3	634.9	638.5
555	609.1	611.8	614.7	617.6	620.6	623.7	627.0	630.3	633.7	637.3	640.9
560	611.6	614.3	617.1	620.0	623.1	626.2	629.4	632.7	636.1	639.7	643.3
565	614.0	616.8	619.6	622.5	625.5	628.6	631.8	635.1	638.5	642.0	645.6
570	616.5	619.2	622.0	624.9	627.9	631.0	634.2	637.5	640.9	644.4	648.0
575	618.9	621.6	624.4	627.4	630.4	633.5	636.7	639.9	643.3	646.8	650.3
580	621.3	624.0	626.9	629.8	632.8	635.9	639.0	642.3	645.7	649.1	652.7
585	623.7	626.4	629.3	632.2	635.2	638.2	641.4	644.7	648.0	651.5	655.0
590	626.1	628.8	631.6	634.6	637.5	640.6	643.8	647.0	650.4	653.8	657.3
595	628.5	631.2	634.0	636.9	639.9	643.0	646.1	649.4	652.7	656.1	659.6
600	630.8	633.6	636.4	639.3	642.3	645.3	648.5	651.7	655.0	658.4	661.9

Temperature, K	Pressure, $N/m^2 \times 10^{-5}$										
	200	210	220	230	240	250	260	270	280	290	300
400	562.6	568.1	573.9	579.9	586.1	592.5	599.2	606.0	612.9	620.1	627.3
405	565.2	570.6	576.3	582.1	588.2	594.5	600.9	607.6	614.4	621.3	628.4
410	567.8	573.1	578.6	584.4	590.3	596.4	602.7	609.2	615.9	622.7	629.6
415	570.5	575.6	581.0	586.6	592.4	598.4	604.6	611.0	617.5	624.1	630.9
420	573.1	578.1	583.4	588.9	594.6	600.5	606.5	612.7	619.1	625.6	632.3
425	575.7	580.7	585.8	591.2	596.8	602.6	608.5	614.6	620.8	627.2	633.7
430	578.3	583.2	588.3	593.6	599.0	604.7	610.5	616.5	622.6	628.8	635.2
435	580.9	585.7	590.7	595.9	601.3	606.8	612.5	618.4	624.4	630.5	636.8
440	583.5	588.2	593.2	598.3	603.5	609.0	614.6	620.3	626.2	632.2	638.4
445	586.1	590.8	595.6	600.6	605.8	611.1	616.6	622.3	628.1	634.0	640.0
450	588.7	593.3	598.0	603.0	608.1	613.3	618.7	624.3	630.0	635.8	641.7
455	591.3	595.8	600.5	605.4	610.4	615.5	620.9	626.3	631.9	637.6	643.5
460	593.9	598.3	602.9	607.7	612.7	617.8	623.0	628.4	633.9	639.5	645.2
465	596.4	600.8	605.4	610.1	615.0	620.0	625.2	630.4	635.9	641.4	647.0
470	599.0	603.3	607.8	612.5	617.3	622.2	627.3	632.5	637.9	643.3	648.9
475	601.5	605.8	610.3	614.9	619.6	624.5	629.5	634.6	639.9	645.2	650.7
480	604.1	608.3	612.7	617.2	621.9	626.7	631.7	636.7	641.9	647.2	652.6
485	606.6	610.8	615.1	619.6	624.2	629.0	633.9	638.8	644.0	649.2	654.5
490	609.1	613.3	617.6	622.0	626.5	631.2	636.0	641.0	646.0	651.2	656.4
495	611.6	615.7	620.0	624.4	628.9	633.5	638.2	643.1	648.1	653.2	658.4
500	614.1	618.2	622.4	626.7	631.2	635.8	640.4	645.3	650.2	655.2	660.3
505	616.6	620.6	624.8	629.1	633.5	638.0	642.7	647.4	652.3	657.2	662.3
510	619.1	623.1	627.2	631.4	635.8	640.3	644.9	649.6	654.4	659.3	664.2
515	621.5	625.5	629.6	633.8	638.1	642.5	647.1	651.7	656.5	661.3	666.2
520	624.0	627.9	632.0	636.1	640.4	644.8	649.3	653.9	658.6	663.4	668.2
525	626.4	630.3	634.4	638.5	642.7	647.1	651.5	656.0	660.7	665.4	670.2
530	628.9	632.7	636.7	640.8	645.0	649.3	653.7	658.2	662.8	667.5	672.2
535	631.3	635.1	639.1	643.1	647.3	651.6	655.9	660.4	664.9	669.5	674.3
540	633.7	637.5	641.4	645.5	649.6	653.8	658.1	662.5	667.0	671.6	676.3
545	636.1	639.9	643.8	647.8	651.9	656.0	660.3	664.7	669.2	673.7	678.3
550	638.5	642.3	646.1	650.1	654.1	658.3	662.5	666.9	671.3	675.8	680.4
555	640.9	644.6	648.5	652.4	656.4	660.5	664.7	669.0	673.4	677.8	682.4
560	643.3	647.0	650.8	654.7	658.7	662.8	666.9	671.2	675.5	679.9	684.4
565	645.6	649.3	653.1	657.0	660.9	665.0	669.1	673.3	677.6	682.0	686.5
570	648.0	651.6	655.4	659.2	663.2	667.2	671.3	675.5	679.8	684.1	688.5
575	650.3	654.0	657.7	661.5	665.4	669.4	673.5	677.6	681.9	686.2	690.5
580	652.7	656.3	660.0	663.8	667.7	671.6	675.7	679.8	684.0	688.2	692.6
585	655.0	658.6	662.3	666.0	669.9	673.8	677.8	681.9	686.1	690.3	694.6
590	657.3	660.9	664.5	668.3	672.1	676.0	680.0	684.1	688.2	692.4	696.7
595	659.6	663.2	666.8	670.5	674.3	678.2	682.2	686.2	690.3	694.5	698.7
600	661.9	665.4	669.1	672.8	676.5	680.4	684.3	688.3	692.4	696.5	700.7