

NASA TECH BRIEF

Kennedy Space Center



NASA Tech Briefs announce new technology derived from the U.S. space program. They are issued to encourage commercial application. Tech Briefs are available on a subscription basis from the National Technical Information Service, Springfield, Virginia 22151. Requests for individual copies or questions relating to the Tech Brief program may be directed to the Technology Utilization Office, NASA, Code KT, Washington, D.C. 20546.

Compressed Gas Handbook

Thermodynamic and related fluid-flow principles and data required to analyze high-pressure compressible and incompressible fluid systems have been made available in a handbook. Theory and applications are presented for the fundamentals of thermodynamics, behavior of gases, compressible and incompressible flow, adiabatic and isentropic flow, shock waves, flow measurement, adiabatic and isothermal frictional flow in pipes, compressible flow through components (valves and orifices), and the thermodynamics of pressure vessels under charge and discharge conditions.

Practical problem solving for designers and operating engineers is treated qualitatively. Pertinent engineering data (pipe dimensions, conversion factors, and low-temperature physical properties of various gases) and a selection of basic thermodynamic data for air, nitrogen, oxygen, helium, and hydrogen are included, as are full-size working charts for the solution of common compressible flow problems. The data range is as wide as possible for complete-

ness; and special emphasis is given to data for pressures up to 41.3 MN/m^2 (6000 psi) and temperatures from 339 to 200 K (+150° to -100° F).

Note:

The following documentation may be obtained from:

National Technical Information Service
Springfield, Virginia 22151
Single document price \$3.00
(or microfiche \$0.95)

Reference:

NASA-SP-3045 (N69-26987), Compressed Gas Handbook

Patent status:

No patent action is contemplated by NASA.

Source: J. S. Kunkle, S. D. Wilson,
and R. A. Cota
Kennedy Space Center
(KSC-10662)

Category 03