

New Data Compilations

Thermal Constants of Substances. Vol. IV, Part 1, V. P. GLUSHKO (Chief Editor) AND V. A. MEDVEDEV (Director). 509 pages. Academy of Sciences, USSR, Union Institute of Scientific and Technical Information, Moscow, 1970.

This extensive compilation contains selected numerical values of $\Delta H_{f_0}^\circ$, $\Delta H_{f_{298}}^\circ$, $\Delta G_{f_{298}}^\circ$, D_0 , $H_{298}^\circ - H_0^\circ$, S_{298}° , and $C_{p_{298}}^\circ$ for the condensed phases, the gas phase, and aqueous solutions of compounds of the elements C, Si, Ge, Sn, and Pb. Values of temperature, pressure, ΔH , and ΔS are also listed for phase changes. A total of 4482 distinct species are included.

Thermal Constants of Substances. Vol. IV, Part 2, V. P. GLUSHKO (Chief Editor) AND V. A. MEDVEDEV (Director). 432 pages. Academy of Sciences, USSR, Union Institute of Scientific and Technical Information, Moscow, 1971.

The bibliography, literature citations, and formula index to the numerical data in Part 1 (see above) are given here. A total of 6941 references are listed.

IPST Cat. No. 5914. Properties of Liquid and Solid Hydrogen. B. N. ESEL'SON, YU. P. BLAGOI, V. N. GRIGOR'EV, V. G. MANZHELII, S. A. MIKHAILENKO, AND N. P. NEKLYODOV. (Transl.) Israel Program for Scientific Translations, Jerusalem, Israel, 1971. 123 pages. Available from NTIS, TT 70-50179. \$3.00

The equilibrium and transport properties of various forms of liquid and solid hydrogen are reviewed, and extensive tables of selected numerical values are given. Properties of liquid hydrogen include density, vapor pressure, heat of vaporization, specific heat, thermal conductivity, surface tension, velocity of sound, viscosity, electrical and optical properties, and others. Properties of solid hydrogen include density, compressibility, melting point, sublimation pressure, heat of fusion, specific heat, thermal conductivity, dielectric constant, and velocity of sound. This monograph is a continuation of the series being issued by the GSSD of the USSR. See *J. Chem. Eng. Data*, **15**, 464 (1970).

Physical Constants of Hydrocarbons C₁ to C₁₀. ASTM Committee D-2 on Petroleum Products and Lubricants and API Research Project 44 on Hydrocarbons and Related Compounds, ASTM Data Series Publication DS 4A. 72 pages. American Society for Testing Materials, 1916 Race Street, Philadelphia, PA, 1971. \$4.00.

Common thermodynamic and engineering properties of approximately 650 hydrocarbons of industrial importance are tabulated. There are two main sections. The tables of properties in U.S. units include boiling point, vapor pressure, freezing point, critical constants, specific gravity at 60°F in several units, coefficient of expansion, refractive index, specific dispersion, kinematic viscosity, aniline point, heat capacity, heat of vaporization, heat of combustion, flammability limits, and ASTM octane number. The tables of properties in metric units include boiling point, dt/dp , freezing point, density at three temperatures, refractive index, specific dispersion, kinematic viscosity, surface tension, aniline point, critical constants, heat capacity of liquid and gas, heat of vaporization at 25°C and at the boiling point, heat of formation, Gibbs energy of formation, and heat of combustion. Tables of properties of

real gases are also included. Definitions of properties and computational procedures are discussed and references to sources of data are listed. The numerical data in these tables are consistent with the values published in "Selected Values of Properties of Hydrocarbons and Related Compounds," American Petroleum Institute Research Project 44, and with "Technical Data Book—Petroleum Refining," American Petroleum Institute, 2nd ed., 1970.

Handbook of Thermodynamic Constants of Inorganic and Organic Compounds. M. KH. KARAPET'YANTS AND M. L. KARAPET'YANTS, transl. by Schmorak. 461 pages. Humphrey Science Publishers, Inc., Ann Arbor, MI, 1970. \$20.

The original Russian version of these tables was published in 1968 and covers published literature through 1966. Data on about 4000 compounds are listed, and the bibliography includes 2800 references. Selected values of $\Delta H_{f_0}^\circ$, $\Delta H_{f_{298}}^\circ$, $\Delta G_{f_{298}}^\circ$, S_{298}° , and $C_{p_{298}}^\circ$ are listed for crystal, liquid, and gas states, and for dilute aqueous solutions.

JANAF Thermochemical Tables. Second Edition. D. R. STULL AND H. PROPHET. 1141 pages. National Bureau of Standards, Office of Standard Reference Data. Available from Government Printing Office, Stock No. 0303-0872, June 1971. \$9.75.

This compilation contains tables of thermodynamic properties of 1099 chemical species in the condensed and ideal gas phases from 0–5000K. It includes heat capacity, C_p° , entropy, S° , Gibbs energy, $(G^\circ - H_{298}^\circ)/T$, enthalpy, $H^\circ - H_{298}^\circ$, heat of formation, ΔH_f , Gibbs energy of formation, ΔG_f , and $\log K_p$. Sources of data are identified, and selection of values is briefly discussed for each species.

Handbook on Vapor Pressures and Heats of Vaporization of Hydrocarbons and Related Compounds. R. C. WILHOIT AND B. J. ZWOLINSKI. 329 pages. API44-TRC Publication No. 101 in Science and Engineering, Thermodynamics Research Center, Texas A&M University, College Station, TX, 1971. \$10.

This is the first in a series of new handbooks of physical and thermodynamic property data based on the tables published by the American Petroleum Institute Research Project 44 and the Thermodynamics Research Center Data Project. It contains reprints of k -tables (boiling points in °C at pressures from 10 to 1500 mm) and k - E tables (vapor pressures in lb in.⁻² at selected temperatures in the range of 0.2 to 30 lb in.⁻²). It also contains a special table of heats of vaporization and related quantities in various units at 25°C, 60°F, and the normal boiling point, a compound name index, and a boiling point index. Data on water, hydrocarbons, alkanethiols, thiaalkanes, dithiaalkanes, thiophenes, and benzenethiol are included. Many of the tables have been converted to the 1968 International Practical Temperature Scales. Sources of vapor pressure data on API Standard and Research samples are identified. Complete references to the original data upon which the tables are based are given in "Selected Values of Properties of Hydrocarbons and Related Compounds," American Petroleum Institute Research Project 44, published by the Thermodynamics Research Center at Texas A&M University.