

BOOKS

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quid extraction, adsorption and ion exchange, drying and leaching are all accorded detailed treatment, each being presented in a well-balanced combination of descriptive and mathematical material. Brief consideration of dialysis and gas-gas separations completes the volume.

Throughout, the author develops theory and applications simultaneously, never allowing one to become detached from the other. Although the quantity of material presented is more than can ordinarily be covered in an undergraduate course, topics of subordinate interest easily may be omitted or briefly treated.

There are numerous illustrative examples worked out in the text as well as problems for the student at the end of each chapter. Also, mention should be made of the exceptionally well-chosen references given at the end of each chapter.

ROBERT M. SECOR

Tables of Thermal Properties of Gases. Joseph Hilsenrath, C. W. Beckett, W. S. Benedict, Lilla Fano, H. J. Hoge, J. F. Masi, R. L. Nuttall, Y. S. Touloukian, and H. W. Woolley. National Bureau of Standards Circular 564. Government Printing Office, Washington 25, D. C. (1955). 488 pages, \$3.75.

This work is a compilation of the thermodynamic and transport properties of air, argon, carbon dioxide, carbon monoxide, hydrogen, nitrogen, oxygen, and steam. With a few exceptions, values of the compressibility factor, density, entropy, enthalpy, specific heat, specific-heat ratio, and sound velocity at low frequency of the real gas are tabulated at close temperature intervals at pressures from 0.01 to 100 atm. Extensive ranges of temperature are covered, varying from the 380° to 850°K. range of the steam data to the 70° to 5,000°K. range of some of the data for argon. Spectroscopic measurements and pressure-volume-temperature data form the basis for the tabulated thermodynamic properties.

Values of specific heat, enthalpy, entropy, and free-energy function for the ideal gases are tabulated to 5,000°K. at 0.01 atm. for steam and at 1 atm. for the other gases. The data start at 50°K. for carbon dioxide and steam, at 60°K. for carbon monoxide, and at 10°K. for the remaining gases.

Vapor pressure, viscosity, and thermal conductivity are tabulated over broad temperature ranges at various pressures for steam and at 1 atm. for the other gases. Prandtl numbers as a function of temperature at 1 atm. pressure are tabulated for all the gases except steam.

Extensive references and a series of plots comparing the tabulated values with the experimental data are presented.

The authors and the National Bureau of Standards have performed a very valuable service in analyzing and making easily accessible the results of the numerous experimental investigations in this field.

EDGAR W. SLOCUM

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