

Landolt-Börnstein

Numerical Data and Functional Relationships in Science and Technology

New Series / Editor in Chief: W. Martienssen

Group IV: Physical Chemistry

Volume 20

Vapor Pressure of Chemicals

Subvolume B

Vapor Pressure and Antoine Constants for

Oxygen Containing Organic Compounds

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Edited by K.R. Hall



Springer

ISSN 1615-2018 (Physical Chemistry)

ISBN 3-540-64968-9 Springer-Verlag Berlin Heidelberg New York

Library of Congress Cataloging in Publication Data

Zahlenwerte und Funktionen aus Naturwissenschaften und Technik, Neue Serie

Editor in Chief: W. Martienssen

Vol. IV/20B: Editor: K.R. Hall

At head of title: Landolt-Börnstein. Added t.p.: Numerical data and functional relationships in science and technology.

Tables chiefly in English.

Intended to supersede the Physikalisch-chemische Tabellen by H. Landolt and R. Börnstein of which the 6th ed. began publication in 1950 under title: Zahlenwerte und Funktionen aus Physik, Chemie, Astronomie, Geophysik und Technik.

Vols. published after v. 1 of group I have imprint: Berlin, New York, Springer-Verlag

Includes bibliographies.

1. Physics--Tables. 2. Chemistry--Tables. 3. Engineering--Tables.

I. Börnstein, R. (Richard), 1852-1913. II. Landolt, H. (Hans), 1831-1910.

III. Physikalisch-chemische Tabellen. IV. Title: Numerical data and functional relationships in science and technology.

QC61.23 502'.12 62-53136

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Printed in Germany

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Cover layout: Erich Kirchner, Heidelberg

Typesetting: Authors and Redaktion Landolt-Börnstein, Darmstadt

Printing: Computer to plate, Mercedes-Druck, Berlin

Binding: Lüderitz & Bauer, Berlin

SPIN: 10688583 63/3020 - 5 4 3 2 1 0 - Printed on acid-free paper

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Preface

The thermodynamic properties of fluids are vital information for design, operation (including safety considerations) and maintenance in the fluid processing or continuous manufacturing industries. Among the thermodynamic properties, some are more important and pervasive with vapor pressure being possibly the most important of all. Practical handling of any fluid requires knowledge of its vapor pressure, and vapor pressure (or boiling point) is invariably among the first properties measured for any substance.

Chemists and chemical engineers are the primary people who need these data. Traditionally, these professionals have populated the petrochemical industries and have driven it to unparalleled levels of efficiency and productivity. However, these same professionals recently have migrated into other fields, such as: electronic materials, pharmaceuticals, environmental professions, food processing, and biotechnology. They bring with them their skills and knowledge of continuous processing and their consequent need for thermodynamic properties, such as vapor pressure. In addition, the faculty and students of academia need this information to prepare those who would enter the fluid processing industries.

The Thermodynamics Research Center at Texas A&M University (TRC) has assembled, collected, evaluated and published tables of thermodynamic data for nearly 60 years. These current volumes describing vapor pressures come from those tables and other evaluation projects conducted by TRC and other research groups, and, as of the publication date, represent all known, evaluated data. The volumes contain constants derived from fitting experimental data with the Antoine and extended Antoine vapor pressure equations. The condensed phases can be either liquid or crystal. Thus, these constants provide evaluated vapor pressures which professional thermodynamicists believe represent the data within experimental error.

The subvolume IV/20A covers hydrocarbons and organic chemicals containing S, Se, Te as well as halohydrocarbons, total of 4,252 compounds.

The present subvolume IV/20B covers oxygen containing organic chemicals, total of 3174 compounds including so vitally important classes of organic compounds as alcohols, Ketones, aldehydes, acids, ethers and esters.

While the parameters presented in this series only describe pure compounds, the vapor pressures of pure compounds are essential for describing the phase behavior of mixtures accurately. The simplest equation for describing the phase behavior of mixtures is Raoult's Law which states that the mole fraction of a component in an equilibrium vapor mixture multiplied by the total pressure equals the mole fraction of that component in the equilibrium liquid mixture multiplied by the vapor pressure. More accurate equations append correction terms to each side of this equation.

Because these volumes present vapor pressures for such a wide variety of organic compounds, they should be of value to professionals in a wide variety of commercial and academic activities. Because they have been evaluated, those who would use these values are freed from the necessity of selecting from among various sets of data.

College Station, Texas, January 2000

The Editor

Acknowledgements

The authors express their sincere thanks to members of the staff of the Thermodynamics Research Center, part of the Chemical Engineering Division of the Texas Engineering Experiment Station within the Texas A&M University System. Our special thanks to Colin Worthy, Christina Virgilio, Munaf Chasmawala, Cheryl Clark, and James Carruth for their assistance in data collection and entry.