

CRC Handbook of Chemistry and Physics, 92nd Edition (CRC Handbook of Chemistry & Physics)

From CRC Press



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Mirroring the growth and direction of science for a century, the **CRC Handbook of Chemistry and Physics**, now in its 92nd edition, continues to be the most accessed and respected scientific reference in the world, used by students and Nobel Laureates. Available in its traditional print format, the **Handbook** is also available as an innovative interactive product on DVD and online.

Among a wealth of enhancements, this edition analyzes, updates, and validates molecular formulas and weights, boiling and melting points, densities, and refractive indexes in the Physical Constants of Organic Compounds Table through comparisons with critically evaluated data from the NIST Thermodynamics Research Center.

New Tables: Analytical Chemistry

- Abbreviations Used In Analytical Chemistry
- Basic Instrumental Techniques of Analytical Chemistry
- Correlation Table for Ultraviolet Active Functionalities
- Detection of Outliers in Measurements

Polymer Properties

• Second Virial Coefficients of Polymer Solutions

Updated Tables: *Properties of the Elements and Inorganic Compounds*

• Update of the Melting, Boiling, Triple, and Critical Points of the Elements

Fluid Properties

- Major update and expansion of Viscosity of Gases table
- Major update and expansion of Thermal Conductivity of Gases table
- Major update of Properties of Cryogenic Fluids

- Major update of Recommended Data for Vapor-Pressure Calibration
- Expansion of table on the Viscosity of Liquid Metals
- Update of Permittivity (Dielectric Constant) of Gases table
- Added new refrigerant R-1234yf to Thermophysical Properties of Selected Fluids at Saturation table

Molecular Structure and Spectroscopy

- Major update of Atomic Radii of the Elements
- Update of Bond Dissociation Energies
- Update of Characteristic Bond Lengths in Free Molecules

Atomic, Molecular, and Optical Physics

- Update of Electron Affinities
- Update of Atomic and Molecular Polarizabilities

Nuclear and Particle Physics

• Major update of the Table of the Isotopes

Properties of Solids

- Major update and expansion of the Electron Inelastic Mean Free Paths table
- Update of table on Semiconducting Properties of Selected Materials

Geophysics, Astronomy, and Acoustics

• Update of the Global Temperature Trend table to include 2010 data

Health and Safety Information

• Major update of Threshold Limits for Airborne Contaminants

The Handbook is also available as an eBook.

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Editorial Review

Review

"The *Handbook* has always provided a thorough range of critically evaluated data in a convenient, onevolume format. Over the period of last almost two decades it has addressed environmental concerns by providing data on pollutants, contaminants, global warming, and ground water contamination. It also has supported the advances in semiconductors and high-temperature superconductors, and amended pertinent data to stay current with IUPAC standards." *?Gupta Verlag*

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"The content is impressive . . . good value for money." ?David W.H. Rankin, School of Chemistry, University of Edinburgh, in *Crystallography Reviews*, July-September 2009, Vol. 15, No. 3

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?Usman Iqbal Lula, Dorset Cancer Centre, Poole General Hospital, UK, and Sadiq Iqbal Lula, Cambridge Research Centre, Pfizer Inc., UK, in Physical Sciences *Educational Reviews*, December 2007, Vol. 8, issue 2 (on the 87th Edition)

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? Martin Preston, Dept. of Earth and Ocean Sciences, University of Liverpool, UK, in *Physical Sciences Educational Reviews*, Vol. 7, issue 1 (on the 86th Edition)

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About the Author

Profile of Dr. Haynes

Mickey Haynes joined the National Institute of Standards and Technology (NIST) in 1970 as a National Research Council Postdoctoral Research Associate after completing his Ph.D. in physics at the University of Virginia. During this associateship, he carried out an experimental program on the viscosity of cryogenic fluids. In 1972 he became a permanent staff member and was involved in research on measurements and correlations of the thermophysical properties of fluids and fluid mixtures of scientific and industrial interest. He was involved in major projects on the properties of natural gas, cryogenic fluids, air, alternative refrigerants, and ammonia/water systems. Mickey was responsible for the development of state-of-the-art apparatus for measurements of both transport and thermodynamic properties of fluids (e.g., magnetic suspension densimeters and torsional crystal viscometers). The apparatus were used for fluid thermophysical property measurements at low and high temperatures and at extreme pressures; and for the development of empirical and theoretical models for the prediction of fluid properties.

In 1985, Mickey became Group Leader of the Properties of Fluids Group in the Thermophysics Division and served in that capacity for ten years. In 1989 he assumed the position of Deputy Chief of the Thermophysics Division, which was reorganized and became the Physical and Chemical Properties Division in 1996. While remaining in the Deputy Chief position, Mickey became the Assistant Director for Boulder of the Chemical Science and Technology Laboratory (CSTL) in 1994. He stayed in these positions until becoming the Chief of the Physical and Chemical Properties Division in 1999. Mickey remained in this position until he retired from the NIST in January 2003.

Mickey served on the Editorial Boards of the *Journal of Chemical and Engineering Data, Review of Scientific Instruments,* and *Cryogenics.* At the request of the ASME Heat Transfer Division Committee on Thermophysical Properties, he was Chair and Organizer of the 13th and 14th Symposia on Thermophysical Properties in 1997 and 2000, respectively. Mickey has been previously active on ASTM Committee D03 on Gaseous Fuels (Chair of the ASTM Subcommitte D03.08 on Thermophysical Properties) and the ASME K-7 Committee on Thermophysical Properties. He has recently served on the International Advisory Committees of the 16th and 17th European Conferences on Thermophysical Properties, the 6th and 7th Asian Thermophysical Properties Conferences, and the 17th IUPAC Conference on Chemical Thermodynamics. Mickey was elected as a Fellow of the American Physical Society in 1999 and has received several Department of Commerce (DOC)/NIST awards.

Since his retirement from the NIST in 2003, Mickey has remained active in several areas. Currently, he is a Scientist Emeritus in CSTL. He has been the Editor-in-Chief of the *International Journal of Thermophysics* since 1997. Mickey was the President of the Executive Board responsible for organization of THERMO International, a joint conference comprised of the 16th Symposium on Thermophysical Properties, the 19th IUPAC Conference on Chemical Thermodynamics, and the 61st Calorimetry Conference held in Boulder in August, 2006. He has been a member of the ASME K-7 Committee on Thermophysical Properties since 1992 and is currently serving on the Touloukian Award Committee. Since 1998, Mickey has been a permanent member of the International Organizing Committee of the European Conference on Thermophysical Properties; he has also served on the International Advisory Committee of the Asian Thermophysical Properties Conference.

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