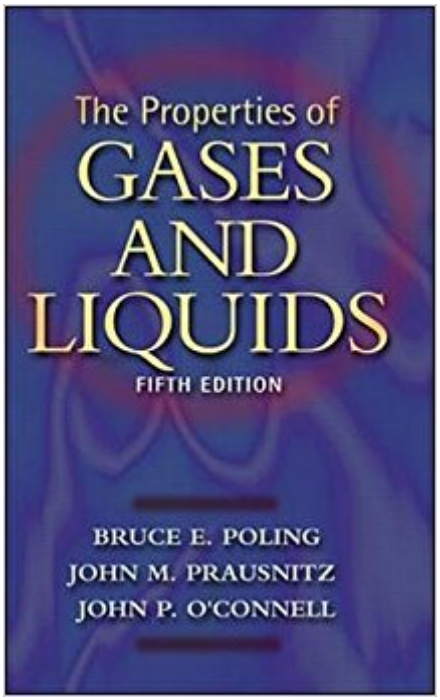
The Properties Of Gases And Liquids



Synopsis

Must-have reference for processes involving liquids, gases, and mixtures Reap the time-saving, mistake-avoiding benefits enjoyed by thousands of chemical and process design engineers, research scientists, and educators. Properties of Gases and Liquids, Fifth Edition, is an all-inclusive, critical survey of the most reliable estimating methods in use today --now completely rewritten and reorganized by Bruce Poling, John Prausnitz, and John Oâ ™Connell to reflect every late-breaking development. You get on-the-spot information for estimating both physical and thermodynamic properties in the absence of experimental data with this property data bank of 600+ compound constants. Bridge the gap between theory and practice with this trusted, irreplaceable, and expert-authored expert guide -- the only book that includes a critical analysis of existing methods as well as hands-on practical recommendations. Areas covered include pure component constants; thermodynamic properties of ideal gases, pure components and mixtures; pressure-volume-temperature relationships; vapor pressures and enthalpies of vaporization of pure fluids; fluid phase equilibria in multicomponent systems; viscosity; thermal conductivity; diffusion coefficients; and surface tension.

Book Information

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Customer Reviews

By L. A. Wenzel, Lehigh University This new edition provides a very thorough and careful presentation of modern methods of estimating the physical properties of gases and liquids. Pure

gases, pure liquids, multicomponent mixtures of gases and of liquids, and equilibrium multiphase systems are all considered. In the phase equilibria area, solid-liquid and solid-gas systems are included. Properties considered include vapor pressure, critical properties, boiling and freezing points, PVT (pressure-volume-temperature) properties, thermodynamic properties (viscosity, thermal conductivity, diffusion coefficents, and surface tension). Estimation methods are chosen for their accuracy, range of utility, and the availability of needed input data. Methods that are based on a theoretical model of the system are generally preferred. The emphasis on new work is strong, so that in many cases, old familiar methods are omitted. A very extensive database of properties of pure components is provided in the appendixes. Generally, simplicity has been sacrificed to accuracy, so that these methods will not be as easy for the process engineer to use, as was the case with earlier editions. Still, this is a useful, and possibly even vital book for a practicing process engineer; highly recommended for libraries serving them. Graduate students through professionals.Ever since the first edition of this work was published in 1958, it has been a "must have" in the reference library of Chemical Engineers, particularly those engaged in process design. It has long been the primary reference for anyone who must estimate physical or thermodynamic properties required for equipment design knowing little more than the chemical formula of the materials to be handled. The main value of this book over a simple bibliography that can now be generated by a computer search is that the authors continue the practice started in the first edition of publishing tables comparing the results of using the various estimation methods to each other and experimental data when available and then make recommendations as to which method seems to work best under various conditions. The need for regular updating was succintly stated by Reid and Sherwood in their Preface to the second edition in 1966 when they commented that the half life of estimation correlations seemed to be about four years. Although there are now more fundamentally based properties estimation methods than there were then, the authors note in their Preface to the new edition that ..".most estimation methods rely heavily on empiricism..." Thus the need for periodic updating of this work continues. Space does not permit listing chapter by chapter the significant differences from the previous edition, but they are substantial. The properties data bank in Appendix A has been completed revised. This new edition should be added to the library of anyone who must estimate physical properties of materials to be processed.--Kunesh, John "AIChE Journal "

Latest Estimation Methods and Property Values *Validated databank *Tested estimation methods *Pure substances and mixtures *Thermodynamics, phase equilibria, and more *Fully worked

examples *Instantly usable information Bridge the gap between theory and practice with this expert guide. Youâ ™ll reap the time-saving, mistake-avoiding benefits already enjoyed by thousands of chemical and process design engineers, research scientists, and educators. Trusted, irreplaceable, and expert-authored, this is the only book that includes a critical analysis of existing methods as well as hands-on practical recommendations.

Having read all the editions of this book the 4th is still my favorite, in my view the most useful, but the 5 th is a solid effort and certainly includes updates occurring since the 4th edition. This book is authored by three engineering and academic giants. I've met or taken classes from two of them. They all are the real deal. This book is the definitive compendium of physical properties methods offering specific recommendations but also detailing methods the authors do not favor. Included are a lot of data and equation constants allowing estimation by some method of just about any physical property. To have a complete set of "Properties" and methods you really need both the 4th and 5th editions. The authors do frequently reference the 4th edition when they've omitted its information from the 5th.Part of the reason for 4 rather than 5 stars is my copy of this book arrived with the front cover not glued to the interior pages. I glued it myself, but still disappointing.

This a very good hard copy book, however the formatting for kindle (based on paper white) is disappointing:It is not indexed, searching for words will not work.Large tables in the appendix and mathematical formulas in the text are pictures.Mathematical formulas in the text are pictures. You cannot scale the fonts. There is a single level of zoom available, however the image is still low resolution. Subscripts are barely readable. Zooming typically shows only a single formula, so reading a page with multiple formulas is slow. You cannot just flick your eyes to compare terms in formulas on the same page.The tables in the appendix appear to be pictures as well. The chemical formulas in the left column cannot be read, even in landscape mode. In this case zooming does nothing as the picture is already full screen width.The text is not indexed, the Kindle search function returns "Title not yet indexed". You are reduced to paging through the book's index to find things (which are linked to the actual content). The worst of both worlds. You only have an index (just like the book), page turning is slow and you have to view pages in sequence or call up the menu... (like most digital readers). No fast manual "binary" searches through the index pages.This version ofÂ The Properties of Gases and LiquidsÂ is not ready for use on the Kindle.

I was a bit unconfortable when I bought this book since I was suspicious that this one was one of

those unreadable thermodynamic books. Fortunately I was wrong. This book provides you with a complete treatment of the properties of gases and liquids in a plain language stressing the understanding of the basic laws governing the behavior of liquids and gases instead of the mathematic that goes with it. The treatment of the topics is very suitable for engineers since it allows quick understanding of the phenomena and provides a wealth of correlations and methods for estimating properties. The appendixes contain all kind of basic information indeed helpful for applying the correlations showed. Without any hesitation, this book is well worth its price.

When you need physical property data, and you don’t have exact information; this book provides best available estimations of the physical properties. It has been a great help to me, over the years. Having worked on a piece of an earlier edition, as a grad student at U of Mo - Rolla; where Bruce Poling was a professor, I know how much work it is putting this together for the industries. My hats off to Bruce and his co-authors, and especially to Nanci, his wife, for doing yoman’s work on this 5th edition of a classic!

you often resolve equations and optimize systems in variables... well this is the book that puts numbers to those variables, so you can start talking about how much.if you are a serious chemical engineer, you will buy this.

I have been using several editions of the book in the past and I was always very satisfied with the book.

Bought based on a reference from Wiki but while very good on how to estimate properties the underlying data was rather thin, much more in Perry. But very useful at the price.

A very useful book.

Principles of Fluid Mechanics (Secrets of the Universe) Solids, Liquids, Gases (Simply Science) The Mathematical Theory of Non-uniform Gases: An Account of the Kinetic Theory of Viscosity, Thermal Conduction and Diffusion in Gases (Cambridge Mathematical Library) The interaction of gases with solid surfaces, (The International encyclopedia of physical chemistry and chemical physics. Topic 14: Properties of interfaces) Dental Materials: Properties and Manipulation, 9e (Dental Materials: Properties & Manipulation (Craig)) Dental Materials: Properties and Manipulation, 8e (Dental Materials: Properties & Manipulation (Craig)) Hippocrates: Volume VIII, Places in Man. Glands. Fleshes. Prorrhetic 1-2. Physician. Use of Liquids. Ulcers. Haemorrhoids and Fistulas (Loeb Classical Library No. 482) Spectroscopic Analysis of Coal Liquids (Coal Science and Technology Vol 12) Computer Simulation of Liquids Natural Gas Liquids: A Nontechnical Guide Metastable Liquids