

THE PROPERTIES OF

# PETROLEUM FLUIDS

SECOND EDITION

**WILLIAM D. McCAIN, Jr.**

**PennWell Books**  
PennWell Publishing Company  
Tulsa, Oklahoma

# The Properties Of Petroleum Fluids 2nd

**William D. McCain**



## **The Properties Of Petroleum Fluids 2nd:**

**Properties of Petroleum Fluids** William D. McCain, 2017 Petroleum can exist as either a liquid or a gas either in the reservoir or on the trip to the surface These properties are the basis for the chemistry of petroleum This long awaited new edition to William D McCain s acclaimed text expands on the various compounds of this essential hydrocarbon It includes new chapters on petroleum gas condensates and volatile oils while the discussion on oilfield waters is extended A vital resource for petroleum engineering students The Properties of Petroleum Fluids third edition is equally useful as a reference for practicing engineers New Features Two new chapters on gas condensates A new chapter on volatile oils A simplified explanation of phase behavior and an extended discussion of oilfield waters An expanded review of the components of petroleum and the methods of determining its composition

**The Properties of Petroleum Fluids** William D. McCain, 1973

**The Properties of Petroleum Fluids** William McCain, 2017

**The Properties of Petroleum Fluids** William D. McCain, 1990 This edition expands its scope as a conveniently arranged petroleum fluids reference book for the practicing petroleum engineer and an authoritative college text

**Characterization and Properties of Petroleum Fractions** M. R. Riazi, 2005 The last three chapters of this book deal with application of methods presented in previous chapters to estimate various thermodynamic physical and transport properties of petroleum fractions In this chapter various methods for prediction of physical and thermodynamic properties of pure hydrocarbons and their mixtures petroleum fractions crude oils natural gases and reservoir fluids are presented As it was discussed in Chapters 5 and 6 properties of gases may be estimated more accurately than properties of liquids Theoretical methods of Chapters 5 and 6 for estimation of thermophysical properties generally can be applied to both liquids and gases however more accurate properties can be predicted through empirical correlations particularly developed for liquids When these correlations are developed with some theoretical basis they are more accurate and have wider range of applications In this chapter some of these semitheoretical correlations are presented Methods presented in Chapters 5 and 6 can be used to estimate properties such as density enthalpy heat capacity heat of vaporization and vapor pressure Characterization methods of Chapters 2 4 are used to determine the input parameters needed for various predictive methods One important part of this chapter is prediction of vapor pressure that is needed for vapor liquid equilibrium calculations of Chapter 9

*Integrated Modeling of Reservoir Fluid Properties and Multiphase Flow in Offshore Production Systems* Tobias R. Gessner, Jader R. Barbosa Jr., 2023-10-03 The book is intended for practicing engineers in the oil industry researchers and graduate students interested in designing and simulating offshore hydrocarbon production systems It approaches offshore oil production systems from an integrated perspective that combines the modeling of thermophysical properties of reservoir fluids and their flow as a multiphase mixture in wellbores flow lines and risers The first part of the book presents an internally consistent method to compute the critical parameters and acentric factor of Single Carbon Number SCN fractions of petroleum mixtures using state of the art

multivariate fitting techniques The procedure is illustrated and validated using flash and differential liberation data from actual field samples In the second part of the book mechanistic multiphase flow models are discussed in light of their ability to predict the pressure temperature and phase holdup of production fluids in wellbores flow lines and risers Multivariate fitting procedures are again applied to evaluate the sensitivity of the results with respect to closure relationship parameters such as slug body gas holdup wall shear stress and wall roughness in pipelines and production tubing Finally the modeling framework is validated using actual field data from offshore production wells

**Thermophysical Properties of Heavy Petroleum Fluids** Bernardo Carreón-Calderón, Verónica Uribe-Vargas, Juan Pablo Aguayo, 2020-09-23 This book addresses conventional and new predictive methodologies for estimating thermophysical properties of heavy petroleum fluids For the unidentifiable fractions forming the fluids chemical structures are calculated so that property estimation methods for mixtures of identifiable components are now available for such fractions Chemical and multiphase equilibria are of utmost importance hence the most significant ones involving heavy petroleum fluids are determined and illustrated using advanced equations of state such as sPC SAFT and EoS GE The included phase equilibria are phase envelopes of reservoir fluids asymmetric mixtures between light solvents and bitumen including the presence of water and asphaltenes among others Besides heavy petroleum fluids are analyzed from the Newtonian and non Newtonian viewpoints exploring their complex rheological behavior Finally complemented by online an Excel program for the thermodynamic characterization of unidentifiable petroleum fractions this book is a useful resource for engineers and researchers in the petroleum industry and is also of interest to students studying chemical and petroleum engineering

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*Standard Handbook of Petroleum and Natural Gas Engineering* William C. Lyons, Gary J Plisga BS, 2011-03-15 This new edition of the Standard Handbook of Petroleum and Natural Gas Engineering provides you with the best state of the art coverage for every aspect of petroleum and natural gas engineering With thousands of illustrations and 1 600 information packed pages this text is a handy and valuable reference Written by over a dozen leading industry experts and academics the Standard Handbook of Petroleum and Natural Gas Engineering provides the best most comprehensive source of petroleum engineering information available Now in an easy to use single volume format this classic is one of the true must haves in any petroleum or natural gas engineer's library A classic for the oil and gas industry for over 65 years A comprehensive source for the newest developments advances and procedures in the petrochemical industry covering everything from drilling and production to the economics of the oil patch Everything you need all the facts data equipment performance and principles of petroleum engineering information not found anywhere else A desktop reference for all kinds of calculations tables and equations that engineers need on the rig or in the office A time and money saver on procedural and equipment alternatives application techniques and new approaches to problems

**Measurement of the Thermodynamic Properties of Single Phases** Anthony Goodwin, KN Marsh, WA Wakeham, 2003-07-03 This title is a revision of Experimental Thermodynamics

Volume II published in 1975 reflecting the significant technological developments and new methods introduced into the study of measurement of thermodynamic quantities The editors of this volume were assigned the task of assembling an international team of distinguished experimentalists to describe the current state of development of the techniques of measurement of the thermodynamic quantities of single phases The resulting volume admirably fulfils this brief and contains a valuable summary of a large variety of experimental techniques applicable over a wide range of thermodynamic states with an emphasis on the precision and accuracy of the results obtained Those interested in the art of measurements and in particular engaged in the measurement of thermodynamic properties will find this material invaluable for the guidance it provides towards the development of new and more accurate techniques Provides detailed descriptions of experimental chemical thermodynamic methods Strong practical bias and includes both detailed working equations and figures for the experimental methods Most comprehensive text in this field since the publication of *Experimental Thermodynamics II*

Natural Gas Processing Alireza Bahadori, 2014-05-05 Natural gas is considered the dominant worldwide bridge between fossil fuels of today and future resources of tomorrow Thanks to the recent shale boom in North America natural gas is in a surplus and quickly becoming a major international commodity Stay current with conventional and now unconventional gas standards and procedures with *Natural Gas Processing Technology and Engineering Design* Covering the entire natural gas process Bahadori's must have handbook provides everything you need to know about natural gas including Fundamental background on natural gas properties and single multiphase flow factors How to pinpoint equipment selection criteria such as US and international standards codes and critical design considerations A step by step simplification of the major gas processing procedures like sweetening dehydration and sulfur recovery Detailed explanation on plant engineering and design steps for natural gas projects helping managers and contractors understand how to schedule plan and manage a safe and efficient processing plant Covers both conventional and unconventional gas resources such as coal bed methane and shale gas Bridges natural gas processing with basic and advanced engineering design of natural gas projects including real world case studies Digs deeper with practical equipment sizing calculations for flare systems safety relief valves and control valves

The Journal of Canadian Petroleum Technology ,1991      **The Properties of Petroleum Fluids** William D. McCain (Jr.),1973      Applied Petroleum Reservoir Engineering Benjamin Cole Craft, Murray Free Hawkins, Ronald E. Terry, 1991 Basic level textbook covering concepts and practical analytical techniques of reservoir engineering      **Proceedings ... SPE Annual Technical Conference and Exhibition** Society of Petroleum Engineers (U.S.). Technical Conference and Exhibition, 1993      SPE Reprint Series ,1999      **SPE Advanced Technology Series** ,1996      *Oilfield Processing of Petroleum: Crude oil* Francis S. Manning, Richard E. Thompson (Ph.D.), 1995 Covers process descriptions design method operating procedures and troubleshooting in great detail This text is the definitive source on its topic and contains numerous diagrams and appendices as well as case histories and review questions with numerical problems      **Petroleum**

**Production Systems** A. Daniel Hill, Michael J. Economides, Christine Ehlig-Economides, Ding Zhu, 2012-09-23 The Definitive Guide to Petroleum Production Systems Now Fully Updated With the Industry's Most Valuable New Techniques Petroleum Production Systems Second Edition is the comprehensive source for clear and fundamental methods for about modern petroleum production engineering practice Written by four leading experts it thoroughly introduces modern principles of petroleum production systems design and operation fully considering the combined behavior of reservoirs surface equipment pipeline systems and storage facilities Long considered the definitive text for production engineers this edition adds extensive new coverage of hydraulic fracturing with emphasis on well productivity optimization It presents new chapters on horizontal wells and well performance evaluation including production data analysis and sand management This edition features A structured approach spanning classical production engineering well testing production logging artificial lift and matrix and hydraulic fracture stimulation Revisions throughout to reflect recent innovations and extensive feedback from both students and colleagues Detailed coverage of modern best practices and their rationales Unconventional oil and gas well design Many new examples and problems Detailed data sets for three characteristic reservoir types an undersaturated oil reservoir a saturated oil reservoir and a gas reservoir

**Composition and Properties of Petroleum** Hans-Joachim Neumann, Barbara Paczyńska-Lahme, Dieter Severin, 1981

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