

Robert Treybal Mass Transfer Operations Solutions

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[Chemical Product Design](#) Wiley-Interscience

Author's purpose is "to provide a vehicle for teaching, either through a formal course or through self-study, the techniques of, and principles of equipment design for, the mass-transfer operations of chemical engineering." As before, these operations are largely the responsibility of the chemical engineer, but increasingly practitioners of other engineering disciplines are finding them necessary for their work. This is especially true for those engaged in pollution control and environment protection, where separation processes predominate, and in, for example, extractive metallurgy, where more sophisticated and diverse methods of separation are increasingly relied upon.

[Mass-transfer Operations](#) Routledge

In recent years, the subject of mass transfer has been treated as a minor player in the larger field of transport phenomena and taken a back seat to its more mature "brother," heat transfer. Yet mass transfer is sufficiently mature as a discipline and sufficiently distinct from other transport processes to merit a separate treatment, particularly one that does not overwhelm readers with an abundance of high-level mathematics. Mass Transfer: Principles and Applications takes an integrated approach that uses a wealth of real-world examples, organizes the material according to mode of operation, and highlights the importance of modeling. The author begins by introducing diffusion rates, Fick's Law, film theory, and mass transfer coefficients, then develops these concepts in complementary stages. The treatment of phase equilibria covers topics generally not addressed in thermodynamics courses, and these concepts are then used to analyze compartmental models and staged processes as well as continuous contact operations. The final chapter offers a concise survey of simultaneous mass and heat transfer. Throughout the book, discussions transition smoothly between theory and practice and clearly reflect the author's many years of engineering experience and the breadth of mass transfer applications. Mass Transfer: Principles and Applications is a unique and accessible treatment of this relatively complicated topic that will fill a significant gap as both a textbook and professional reference.

Stoichiometry Hassell Street Press

Fractionators, separators and accumulators, cooling towers, gas treating, blending, troubleshooting field cases, gas solubility, and density of irregular solids * Hundreds of common sense techniques, shortcuts, and calculations.

[Transport Phenomena and Unit Operations](#) John Wiley & Sons

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[Transport Phenomena, 2nd Ed](#) John Wiley & Sons

This book is designed to serve as a basic text for the undergraduate course in Heat and Mass Transfer. The book follows the classical pattern treating the subject from both analytical and numerical view points. Throughout the text, emphasis has been placed.

Unit Operations of Chemical Engineering Wiley-AIChE

Mass Transfer is the net movement of mass of a chemical species from the region of higher concentration to a region of lower concentration. It occurs in many industrial and non-industrial processes. Mass transfer is used by different scientific communities for different processes and mechanisms. Mass Transfer Operation is one of the core courses at the undergraduate level of Chemical Engineering curriculum. The chapters are organized in a way that enables the students to acquire an in depth understanding of the subject. The emphasis is given to the basic concepts of mass transfer operating, molecular diffusion, inter-phase mass transfer, humidification operations, drying, evaporation, crystallization, adsorption, novel separations and Mass transfer analogy, all coming under the realm of mass transfer operations. Apart from the numerous illustrations, the book includes review questions, exercises and aptitude test in chemical engineering which bridge the gap between theory and practical implementation. All numerical problems are solved in a systematic manner to reinforce the understanding of the concepts. This book demonstrates how to solve the industry related problems in chemical engineering practice. This book is primarily intended as a textbook for the undergraduate students of Chemical Engineering. It will also be useful for other allied branches such as Mechanical Engineering, Petroleum Engineering Polymer Science and Engineering, Bio-technology as well as Diploma in Chemical Engineering.

[Unit Operations Handbook](#) New Age International

Most chemical companies now devote new resources to the design and manufacture of specialty, high-value-added chemical products such as pharmaceuticals, cosmetics, and electronic coatings. The training of chemical engineers has remained static, however, emphasizing traditional commodities. This ground breaking text redresses the balance between commodities and higher-value-added products. It expands the scope of chemical engineering design to encompass both process design and product design. The authors use a four-step procedure for chemical product design--needs, ideas, selection, manufacture--drawing numerous examples from industry to illustrate the discussion. Chemical engineering students and beginning chemical engineers will find this text an inviting introduction to chemical product design.

[Unit Operations in Environmental Engineering](#) Wiley-Interscience

Properties and Handling of Particulate Solids, Conveyors, Mixing of Solids and Pastes, Size Reduction, Mechanical Separations: Screening, Filtration, Separation Based on Motion of Particulate through the Fluids, Mixing and Agitation, Fluidization, Beneficiation Process
[Random Packings and Packed Towers](#) CRC Press

Offers a concise introduction to the separation and purification of biochemicals. Bridges two scientific cultures, providing an introduction to bioseparations for scientists with no background in engineering and for engineers with little grounding in biology. The authors supplement the ideas by simple worked examples, making the techniques of bioseparations easy to learn. Discusses removal of insolubles, product isolation, purification and polishing.

HEAT TRANSFER CRC Press

This broad-based book covers the three major areas of Chemical Engineering. Most of the books in the market involve one of the individual areas, namely, Fluid Mechanics, Heat Transfer or Mass Transfer, rather than all the three. This book presents this material in a single source. This avoids the user having to refer to a number of books to obtain information. Most published books covering all the three areas in a single source emphasize theory rather than practical issues. This book is written with emphasis on practice with brief theoretical concepts in the form of questions and answers, not adopting stereo-typed question-answer approach practiced in certain books in the market, bridging the two areas of theory and practice with respect to the core areas of chemical engineering. Most parts of the book are easily understandable by those who are not experts in the field. Fluid Mechanics chapters include basics on non-Newtonian systems which, for instance find importance in polymer and food processing, flow through piping, flow measurement, pumps, mixing technology and fluidization and two phase flow. For example it covers types of pumps and valves, membranes and areas of their use, different equipment commonly used in chemical industry and their merits and drawbacks. Heat Transfer chapters cover the basics involved in conduction, convection and radiation, with emphasis on insulation, heat exchangers, evaporators, condensers, reboilers and fired heaters. Design methods, performance, operational issues and maintenance problems are highlighted. Topics such as heat pipes, heat pumps, heat tracing, steam traps, refrigeration, cooling of electronic devices, NOx control find place in the book. Mass transfer chapters cover basics such as diffusion, theories, analogies, mass transfer coefficients and mass transfer with chemical reaction, equipment such as tray and packed columns, column internals including structural packings, design, operational and installation issues, drums and separators are discussed in good detail. Absorption, distillation, extraction and leaching with applications and design methods, including emerging practices involving Divided Wall and Petluk column arrangements, multicomponent separations,

supercritical solvent extraction find place in the book.

[Mass-transfer Operations \[by\] Robert E. Treybal](#) Techsar Pvt. Ltd.

Distillation - Liquid-Liquid Extraction - Adsorption and Ion Exchange - Leaching -

Crystallisation - Drying - Appendix - I

[Introduction to Chemical Engineering](#) PHI Learning Pvt. Ltd.

In A Simple And Systematic Manner, This Book Presents An Exhaustive Account Of Various Mass Transfer Operations Involved In Chemical Engineering.Emphasising The Basic Concepts And Techniques, The Book Discusses In Detail Material And Energy Balances, Distillation, Absorption And Stripping And Extraction.The Book Also Explains The Relevant Aspects Of Equipment Design.Recent Developments Like Permeation, Ion Exchange And Froth Floatation Have Also Been Discussed.A Large Number Of Digital Computer Programs Are Included To Illustrate Computer-Aided Techniques.Several Solved Examples And Practice Problems Are Presented In Each Chapter To Illustrate The Theory.With All These Features, This Is An Ideal Text For Undergraduate Chemical Engineering Students. Practising Engineers And Students Of Pharmacy And Metallurgy Would Also Find The Book A Useful Reference Source.

[COO- Nirali Prakashan](#)

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[Rules of Thumb for Chemical Engineers](#) Tata McGraw-Hill Education

"Presents the most important and up-to-date research related to heat transfer in porous media, focusing on practical applications of the latest studies to engineering products and procedures. Includes theoretical models of fluid flow, capillary effects, application of fractal and percolation characterizing porous materials, multiphase flow and heat transfer, turbulent flow and heat transfer, improved measurement and flow visualization techniques, and enhanced design correlations."

[Mass Transfer](#) Tata McGraw-Hill Education

The book presents the principles of unit operations as well as the application of these principles to real-world problems. The authors have written a practical introductory text exploring the theory and applications of unit operations for environmental engineers that is a comprehensive update to Linvil Rich's 1961 classic work, "Unit Operations in Sanitary Engineering". The book is designed to serve as a training tool for those individuals pursuing degrees that include courses on unit operations. Although the literature is inundated with publications in this area emphasizing theory and theoretical derivations, the goal of this book is to present the subject from a strictly pragmatic introductory point-of-view, particularly for those individuals involved with environmental engineering. This book is concerned with unit operations, fluid flow, heat transfer, and mass transfer. Unit operations, by definition, are physical processes although there are some that include chemical and biological reactions. The unit operations approach allows both the practicing engineer and student to compartmentalize the various operations that constitute a process, and emphasizes introductory engineering principles so that the reader can then satisfactorily predict the performance of the various unit operations equipment. "This is a definitive work on Unit Operations, one of the most important subjects in environmental engineering today. It is an excellent reference, well written, easily read and comprehensive. I believe the book will serve well those working in engineering disciplines including those beyond just environmental and chemical engineering. Bottom-line: A must for any technical library".
—Kenneth J. Skipka, CCM

[Mass-transfer Operations](#) John Wiley & Sons

A staple in any chemical engineering curriculum New edition has a stronger emphasis on membrane separations, chromatography and other adsorptive processes, ion exchange Discusses many developing topics in more depth in mass transfer operations, especially in the biological engineering area Covers in more detail phase equilibrium since distillation calculations are completely dependent on this principle Integrates computational software and problems using Mathcad Features 25-30 problems per chapter

Liquid Extraction Gulf Professional Publishing

Market_Desc: · Chemical, Mechanical, Nuclear, Industrial Engineers Special Features: · Careful attention is paid to the presentation of the basic theory · Enhanced sections throughout text provide much firmer foundation than the first edition · Literature citations are given throughout for reference to additional material About The Book: The long-awaited revision of a classic! This new edition presents a balanced introduction to transport phenomena, which is the foundation of its long-standing success. Topics include mass transport, momentum transport and energy transport, which are presented at three different scales: molecular, microscopic and macroscopic.

Mass Transfer Operations Cambridge University Press

Introduction - Conduction - Convection - Radiation - Heat Exchange Equipments - Evaporation - Diffusion - Distillation - Gas Absorption - Liquid Liquid Extraction - Crystallisation - Drying - Appendix I Try yourself - Appendix II Thermal conductivity data - Appendix III Steam tables

Hydrometallurgy of Base Metals Nirali Prakashan

This textbook is intended for courses in heat transfer for undergraduates, not only in chemical engineering and related disciplines of biochemical engineering and chemical technology, but also in mechanical engineering and production engineering. The author provides the reader with a very thorough account of the fundamental principles and their applications to engineering practice, including a survey of the recent developments in heat transfer equipment. The three basic modes of heat transfer - conduction, convection and radiation - have been comprehensively analyzed and elucidated by solving a wide range of practical and design-oriented problems. A whole chapter has been devoted to explain the concept of the heat transfer coefficient to give a feel of its importance in tackling problems of convective heat transfer. The use of the important heat transfer correlations has been illustrated with carefully selected examples.

The physical chemistry of electrolytic solutions, by Herbert S. Harned ... and Benton B. Owen ... PHI Learning

Emphasizes the design, control and functioning of various unit operations - offering shortcut methods of calculation along with computer and nomographic solution techniques. Provides practical sections on conversion to and from SI units and cost indexes for quick updating of all cost information.; This book is designed for mechanical, chemical, process design, project, and materials engineers and continuing-education courses in these disciplines.