
Separation Processes Mcgraw Hill Chemical Engineering Series

Separation Process Technology

Mass-transfer Operations

Perry's Chemical Engineer's Handbook, 8th Edition, Section 4

Industrial Separation Processes

Separation Processes

Separation processes, 1

Separating processes

Absorption and Extraction

Fundamentals and Modeling of Separation Processes: Absorption, Distillation, Evaporation, and Extraction

Design of Equilibrium Stage Processes

Handbook of Separation Techniques for Chemical Engineers

Separation Process Engineering

Separation Process Principles

Separation Process Principles

Equilibrium Staged Separations

Separation Techniques 2 - Gas/Liquid/Solid Systems

Separation processes, 2

Separation Process Engineering

Separation Processes

Alternative Separation Processes

Alternative Separation Processes

Separation Processes

Handbook of separation techniques for Chemical Engineers

Transport Processes and Separation Process Principles (includes Unit Operations)
Séparation Processes
Solutions Manual to Accompany Separation Processes
Principles of Chemical Separations with Environmental Applications
Separation Techniques II
Separation Process Engineering
Introduction to Chemical Processes
Separation Process Principles with Applications Using Process Simulators
Physical and Chemical Methods of Separation
Solutions manual to accompany separation processes
SEPARATION PROCESS PRINCIPLES, 2ND ED
Handbook of Separation Techniques for Chemical Engineers
Handbook of Separation Process Technology
Absorption and extraction
Perry's Chemical Engineers' Handbook. Section 20
Thermal Separation Processes
PERRY'S CHEMICAL ENGINEER'S HANDBOOK 8/E SECTION 12 PSYCHROMETRY,EVAPO... (POD)

*Separation Processes McGraw Hill
Chemical Engineering Series*

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Separation Process Technology McGraw Hill Professional
"Introduction to Chemical Processes: Principles, Analysis,
Synthesis, 2e is intended for use in an introductory, one-semester
course for students in chemical engineering and related
disciplines"--

Mass-transfer Operations Prentice Hall
Separation Process Principles with Applications Using Process

Simulator, 4th Edition is the most comprehensive and up-to-date treatment of the major separation operations in the chemical industry. The 4th edition focuses on using process simulators to design separation processes and prepares readers for professional practice. Completely rewritten to enhance clarity, this fourth edition provides engineers with a strong understanding of the field. With the help of an additional co-author, the text presents new information on bioseparations throughout the chapters. A new chapter on mechanical separations covers settling, filtration and centrifugation including mechanical separations in biotechnology and cell lysis. Boxes

help highlight fundamental equations. Numerous new examples and exercises are integrated throughout as well.

Perry's Chemical Engineer's Handbook, 8th Edition, Section 4

McGraw-Hill Professional Publishing

The Definitive, Up-to-Date, Student-Friendly Guide to Separation Process Engineering—With More Mass Transfer Coverage and a New Chapter on Crystallization Separation Process Engineering, Fourth Edition, is the most comprehensive, accessible guide available on modern separation processes and the fundamentals of mass transfer. In this completely updated edition, Phillip C. Wankat teaches each key concept through detailed, realistic examples using real data—including up-to-date simulation practice and spreadsheet-based exercises. Wankat thoroughly covers each separation process, including flash, column, and batch distillation; exact calculations and shortcut methods for multicomponent distillation; staged and packed column design; absorption; stripping; and more. This edition provides expanded coverage of mass transfer and diffusion, so faculty can cover separations and mass transfer in one course. Detailed discussions of liquid-liquid extraction, adsorption, chromatography, and ion exchange prepare students for advanced work. Wankat presents coverage of membrane separations, including gas permeation, reverse osmosis, ultrafiltration, pervaporation, and applications. An updated chapter on economics and energy conservation in distillation adds coverage of equipment costs. This edition contains more than 300 new, up-to-date homework problems, extensively tested in undergraduate courses at Purdue University and the University of Canterbury (New Zealand). Coverage includes New chapter on crystallization from solution, including

equilibrium, chemical purity, crystal size distribution, and pharmaceutical applications Thirteen up-to-date Aspen Plus process simulation labs, adaptable to any simulator Eight detailed Aspen Chromatography labs Extensive new coverage of ternary stage-by-stage distillation calculations Fraction collection and multicomponent calculations for simple batch distillation New mass transfer analysis sections on numerical solution for variable diffusivity Mass transfer to expanding or contracting objects, including ternary mass transfer Expanded coverage of pervaporation Updated Excel spreadsheets offering more practice with distillation, diffusion, mass transfer, and membrane separation problems

Industrial Separation Processes McGraw-Hill Companies
Now in its eighth edition, Perry's Chemical Engineers' Handbook offers unrivaled, up-to-date coverage of all aspects of chemical engineering. For the first time, individual sections are available for purchase. Now you can receive only the content you need for a fraction of the price of the entire volume. Streamline your research, pinpoint specialized information, and save money by ordering single sections of this definitive chemical engineering reference today. First published in 1934, Perry's Chemical Engineers' Handbook has equipped generations of engineers and chemists with an expert source of chemical engineering information and data. Now updated to reflect the latest technology and processes of the new millennium, the Eighth Edition of this classic guide provides unsurpassed coverage of every aspect of chemical engineering—from fundamental principles to chemical processes and equipment to new computer applications. Filled with over 700 detailed illustrations, the Eighth

Edition of Perry's Chemical Engineers' Handbook features:

*Comprehensive tables and charts for unit conversion *A greatly expanded section on physical and chemical data *New to this edition: the latest advances in distillation, liquid-liquid extraction, reactor modeling, biological processes, biochemical and membrane separation processes, and chemical plant safety practices with accident case histories

Separation Processes John Wiley & Sons

Covers the key topics in computer organization and embedded systems. This title presents hardware design principles and shows how hardware design is influenced by the requirements of software. It explains the main principles supported by examples drawn from commercially available processors.

Separation processes, 1 Prentice Hall

Now in its eighth edition, Perry's Chemical Engineers' Handbook offers unrivaled, up-to-date coverage of all aspects of chemical engineering. For the first time, individual sections are available for purchase. Now you can receive only the content you need for a fraction of the price of the entire volume. Streamline your research, pinpoint specialized information, and save money by ordering single sections of this definitive chemical engineering reference today. First published in 1934, Perry's Chemical Engineers' Handbook has equipped generations of engineers and chemists with an expert source of chemical engineering information and data. Now updated to reflect the latest technology and processes of the new millennium, the Eighth Edition of this classic guide provides unsurpassed coverage of every aspect of chemical engineering—from fundamental principles to chemical processes and equipment to new computer

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Separating processes McGraw-Hill Professional Publishing
Originally published: New York: McGraw-Hill, 1971. 2nd ed.
Includes a new introduction.

Absorption and Extraction McGraw Hill Professional
The Definitive, Learner-Friendly Guide to Chemical Engineering Separations--Extensively Updated, Including a New Chapter on Melt Crystallization Efficient separation processes are crucial to addressing many societal problems, from developing new medicines to improving energy efficiency and reducing emissions. Separation Process Engineering, Fifth Edition, is the most comprehensive, accessible guide to modern separation processes and the fundamentals of mass transfer. In this completely updated edition, Phillip C. Wankat teaches each key concept through detailed, realistic examples using actual data--with up-to-date simulation practice, spreadsheet-based exercises, and references. Wankat thoroughly covers each separation process, including flash, column, and batch distillation; exact calculations and shortcut methods for multicomponent distillation; staged and packed column design; absorption; stripping; and more. His extensive discussions of mass transfer and diffusion enable faculty to teach separations and mass transfer in a single course.

And detailed material on liquid-liquid extraction, adsorption, chromatography, and ion exchange prepares students for advanced work. New and updated content includes melt crystallization, steam distillation, residue curve analysis, batch washing, the Shanks system for percolation leaching, eutectic systems, forward osmosis, microfiltration, and hybrid separations. A full chapter discusses economics and energy conservation, including updated equipment costs. Over 300 new and updated homework problems are presented, all extensively tested in undergraduate courses at Purdue University. New chapter on melt crystallization: solid-liquid phase equilibrium, suspension, static and falling film layer approaches, and 34 questions and problems New binary VLE equations and updated content on simultaneous solutions New coverage of safety and fire hazards New material on steam distillation, simple multi-component batch distillation, and residue curve analysis Expanded discussion of tray efficiencies, packed column design, and energy reduction in distillation New coverage of two hybrid extraction with distillation, and the Kremser equation in fractional extraction Added sections on deicing with eutectic systems, eutectic freeze concentration, and scale-up New sections on forward osmosis and microfiltration Expanded advanced content on adsorption and ion exchange including updated instructions for eight detailed Aspen Chromatography labs Discussion of membrane separations, including gas permeation, reverse osmosis, ultrafiltration, pervaporation, and applications Thirteen up-to-date Aspen Plus process simulation labs, adaptable to any simulator This guide reflects an up-to-date understanding of how modern students learn: designed, organized, and written to be exceptionally clear

and easy to use. It presents detailed examples in a clear, standard format, using real data to solve actual engineering problems, preparing students for their future careers. *Fundamentals and Modeling of Separation Processes: Absorption, Distillation, Evaporation, and Extraction* Pearson Appropriate for one-year transport phenomena (also called transport processes) and separation processes course. First semester covers fluid mechanics, heat and mass transfer; second semester covers separation process principles (includes unit operations). The title of this Fourth Edition has been changed from Transport Processes and Unit Operations to Transport Processes and Separation Process Principles (Includes Unit Operations). This was done because the term Unit Operations has been largely superseded by the term Separation Processes which better reflects the present modern nomenclature being used. The main objectives and the format of the Fourth Edition remain the same. The sections on momentum transfer have been greatly expanded, especially in the sections on fluidized beds, flow meters, mixing, and non-Newtonian fluids. Material has been added to the chapter on mass transfer. The chapters on absorption, distillation, and liquid-liquid extraction have also been enlarged. More new material has been added to the sections on ion exchange and crystallization. The chapter on membrane separation processes has been greatly expanded especially for gas-membrane theory. *Design of Equilibrium Stage Processes* McGraw-Hill Companies The Comprehensive Introduction to Standard and Advanced Separation for Every Chemical Engineer Separation Process Engineering, Second Edition helps readers thoroughly master

both standard equilibrium staged separations and the latest new processes. The author explains key separation process with exceptional clarity, realistic examples, and end-of-chapter simulation exercises using Aspen Plus. The book starts by reviewing core concepts, such as equilibrium and unit operations; then introduces a step-by-step process for solving separation problems. Next, it introduces each leading processes, including advanced processes such as membrane separation, adsorption, and chromatography. For each process, the author presents essential principles, techniques, and equations, as well as detailed examples. Separation Process Engineering is the new, thoroughly updated edition of the author's previous book, Equilibrium Staged Separations. Enhancements include improved organization, extensive new coverage, and more than 75% new homework problems, all tested in the author's Purdue University classes. Coverage includes Detailed problems with real data, organized in a common format for easier understanding Modular simulation exercises that support courses taught with simulators without creating confusion in courses that do not use them Extensive new coverage of membrane separations, including gas permeation, reverse osmosis, ultrafiltration, pervaporation, and key applications A detailed introduction to adsorption, chromatography and ion exchange: everything students need to understand advanced work in these areas Discussions of standard equilibrium stage processes, including flash distillation, continuous column distillation, batch distillation, absorption, stripping, and extraction
Handbook of Separation Techniques for Chemical Engineers Wiley Global Education

Surveys the selection, design, and operation of most of the industrially important separation processes. Discusses the underlying principles on which the processes are based, and provides illustrative examples of the use of the processes in a modern context. Features thorough treatment of newer separation processes based on membranes, adsorption, chromatography, ion exchange, and chemical complexation. Includes a review of historically important separation processes such as distillation, absorption, extraction, leaching, and crystallization and considers these techniques in light of recent developments affecting them.

Separation Process Engineering John Wiley & Sons
 All-in-one database of 38 proven Separation Techniques helps you design efficient, cost-effective systems the first time, every time Batch distillation problems solved! Melt crystallization techniques that save time and money! Air Stripping simplified! and much, much more. This new edition of the one and only handbook covering all major methods used to separate chemicals shares with you the knowledge and experience of 44 experts-- and information that is vital to your industry and job. This solutions-oriented book explains in detail all the industrially accepted techniques for separating chemicals from one another without the use of chemical reactions. Look to this book for every method of dealing with every mixture, including liquid-liquid, liquids with dissolved solids, liquid-solid, solid-solid, gas-liquid, and gas-solid. New sections in the third edition cover design of tray columns, air stripping, melt crystallization, dust collectors, and hot gas barrier filtration. In addition, the chapters on batch distillation, steam distillation and stripping, design of packed

columns, evaporation, crystallization from solutions, centrifugation, drying of solids in liquids, and gas-solid separation have been completely rewritten.

Separation Process Principles Pearson Education

Market_Desc: · Chemical Engineers · Students of Engineering
Special Features: · A new section on Dimensions and Units to facilitate the use of the SI, AE, and CGS systems, which permeate applications to separation processes. · Increased emphasis on the many ways used to express the composition of chemical mixtures. · New material on the thermodynamics of difficult mixtures, including electrolytes, polymer solutions, and mixtures of light gases and polar organic compounds. · New sections on the hybrid systems and membrane cascades. · New section on optimal control as a third mode of operation for batch distillation. · New discussion on concentration polarization and fouling. About The Book: Updated to reflect advances in the field, the second edition of this highly respected text examines rate-based and equilibrium-based approaches to separation operations. It describes the fundamentals of all separation operations of commercial interest, and includes theory and application examples in each chapter, as well as over 600 exercises.

Separation Process Principles John Wiley & Sons

Chemical separations are of central importance in many areas of environmental science, whether it is the clean up of polluted water or soil, the treatment of discharge streams from chemical processes, or modification of a specific process to decrease its environmental impact. This book is an introduction to chemical separations, focusing on their use in environmental applications. The authors first discuss the general aspects of separation

technology as a unit operation. They also describe how property differences are used to generate separations, the use of separating agents, and the selection criteria for particular separation techniques. The general approach for each technology is to present the chemical and/or physical basis for the process and explain how to evaluate it for design and analysis. The book contains many worked examples and homework problems. It is an ideal textbook for undergraduate and graduate students taking courses on environmental separations or environmental engineering.

Equilibrium Staged Separations Elsevier Publishing Company

This much-needed book presents a clear and very practice-oriented overview of thermal separation processes. An extensive introduction elucidates the physical and physicochemical fundamentals of different unit operations used to separate homogenous mixtures. This is followed by a concise text with numerous explanatory figures and tables referring to process and design, flowsheets, basic engineering and examples of separation process applications. Very helpful guidance in the form of process descriptions, calculation models and operation data is presented in an easy-to-understand manner thereby assisting the practicing engineer in the choosing and evaluation of separation processes and facilitating the modeling and design of innovative equipment. A comprehensive reference list provides further opportunity for the following up of special separation problems. Chemical and mechanical engineers, chemists, physicists and biotechnologists in research and development, plant design and environmental protection, as well as students in chemical engineering and natural sciences will find this all-embracing

reference guide of tremendous value and practical use.

Separation Techniques 2 - Gas/Liquid/Solid Systems Courier Corporation

Get Cutting-Edge Coverage of All Chemical Engineering Topics—from Fundamentals to the Latest Computer Applications First published in 1934, Perry's Chemical Engineers' Handbook has equipped generations of engineers and chemists with an expert source of chemical engineering information and data. Now updated to reflect the latest technology and processes of the new millennium, the Eighth Edition of this classic guide provides unsurpassed coverage of every aspect of chemical engineering—from fundamental principles to chemical processes and equipment to new computer applications. Filled with over 700 detailed illustrations, the Eighth Edition of Perry's Chemical Engineering Handbook features: Comprehensive tables and charts for unit conversion A greatly expanded section on physical and chemical data New to this edition: the latest advances in distillation, liquid-liquid extraction, reactor modeling, biological processes, biochemical and membrane separation processes, and chemical plant safety practices with accident case histories Inside This Updated Chemical Engineering Guide - Conversion Factors and Mathematical Symbols • Physical and Chemical Data • Mathematics • Thermodynamics • Heat and Mass Transfer • Fluid and Particle Dynamics Reaction Kinetics • Process Control • Process Economics • Transport and Storage of Fluids • Heat Transfer Equipment • Psychrometry, Evaporative Cooling, and Solids Drying • Distillation • Gas Absorption and Gas-Liquid System Design • Liquid-Liquid Extraction Operations and Equipment • Adsorption and Ion Exchange • Gas-Solid Operations

and Equipment • Liquid-Solid Operations and Equipment • Solid-Solid Operations and Equipment • Size Reduction and Size Enlargement • Handling of Bulk Solids and Packaging of Solids and Liquids • Alternative Separation Processes • And Many Other Topics!

Separation processes, 2 Cambridge University Press

Separation Process Technology is a comprehensive guide to the fundamentals, selection, applications, and installation methods of innovative separation technologies.

Separation Process Engineering John Wiley & Sons

Separation operations are crucial throughout the process industry with respect to energy consumption, contribution to investments and ability to achieve the desired product with the right specifications. Our main objective in creating this graduate level textbook is to present an overview of the fundamentals underlying the most frequently used industrial separation methods. We focus on their physical principles and the basic computation methods that are required to assess their technical and economical feasibility. The textbook is organized into three main parts. Separation processes for homogeneous mixtures are treated in the parts on equilibrium based molecular separations and rate-controlled molecular separations. The part on mechanical separation technology presents an overview of the most important techniques for heterogeneous mixture separation. Each chapter provides a condensed overview of the most commonly used equipment types. The textbook is concluded with a final chapter on the main considerations in selecting an appropriate separation process for a separation task. As the design of separation processes can only be learned by

doing, we have included exercises at the end of each chapter. Short answers are given at the end of this book; detailed solutions are given in a separate solution manual.

Separation Processes Walter de Gruyter

This book examines rate-based and equilibrium-based approaches to separation operations. It describes the fundamentals of all separation operations of commercial interest, and includes theory and application examples in each chapter, as well as over 600 exercises.

Alternative Separation Processes

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.