1. Record Nr. UNINA9910144005903321

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| Titolo | Process development [[electronic resource] ] : from the initial idea to the chemical production plant / / G. Herbert Vogel |
| Pubbl/distr/stampa | Weinheim, : Wiley-VCH, c2005 |
| ISBN | 1-280-51995-9<br>9786610519958<br>3-527-60587-8<br>3-527-60471-5 |
| Descrizione fisica | 1 online resource (494 p.) |
| Disciplina | 660<br>660.28 |
| Soggetti | Chemical processes<br>Manufacturing processes<br>Electronic books. |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Note generali | Description based upon print version of record. |
| Nota di bibliografia | Includes bibliographical references and index. |
| Nota di contenuto | Process Development; Preface; Contents; 1 Introduction; 1.1 The Goal of Industrial Research and Development; 1.2 The Production Structure of the Chemical Industry; 1.3 The Task of Process Development; 1.4 Creative Thinking; 2 The Chemical Production Plant and its Components; 2.1 The Catalyst; 2.1.1 Catalyst Performance; 2.1.1.1 Selectivity; 2.1.1.2 Activity; 2.1.1.3 Lifetime; 2.1.1.4 Mechanical Strength; 2.1.1.5 Production Costs; 2.1.2 Characterization of Catalysts; 2.1.2.1 Chemical Composition; 2.1.2.2 Nature of the Support Material; 2.1.2.3 Promoters; 2.1.2.4 Phase Composition<br>2.1.2.5 Particle Size2.1.2.6 Pore Structure; 2.1.2.7 Surface Structure; 2.1.2.8 Byproducts in the Feed; 2.1.3 Kinetics of Heterogeneous Catalysis; 2.1.3.1 Film Diffusion; 2.1.3.2 Pore Diffusion; 2.1.3.3 Sorption; 2.1.3.4 Surface Reactions; 2.1.3.5 Pore Diffusion and Chemical Reaction; 2.1.3.6 Film Diffusion and Chemical Reaction; 2.2 The Reactor; 2.2.1 Fundamentals of Chemical Reaction Technology; 2.2.1.1 Ideal Reactors; 2.2.1.2 Reactors with Real Behavior; 2.2.1.3 Nonisothermal reactors; 2.2.1.4 Design of Reactors; 2.3 Product |

Processing (Thermal and Mechanical Separation Processes)
2.3.1 Heat Transfer, Evaporation, and Condensation2.3.1.1 Fundamentals; 2.3.1.2 Dimensioning; 2.3.2 Distillation, Rectification; 2.3.2.1 Fundamentals of Gas-Liquid Equilibria; 2.3.2.2 One-Stage Evaporation; 2.3.2.3 Multistage Evaporation (Rectification); 2.3.2.4 Design of Distillation Plants; 2.3.4.5 Special Distillation Processes; 2.3.3 Absorption and Desorption, Stripping, Vapor-Entrainment Distillation; 2.3.3.1 Fundamentals; 2.3.3.2 Dimensioning; 2.3.3.3 Desorption; 2.3.3.4 Vapor-Entrainment Distillation; 2.3.4 Extraction; 2.3.4.1 Fundamentals; 2.3.4.2 Dimensioning; 2.3.4.3 Apparatus
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2.7 Waste Disposal [Rothert 1992]2.7.1 Off-Gas Collection System and Flares; 2.7.2 Combustion Plants for Gaseous and Liquid Residues; 2.7.3 Special Processes for Off-Gas Purification; 2.7.4 Wastewater Purification and Disposal; 2.7.4.1 Clarification Plant; 2.7.4.2 Special Processes for Wastewater Purification; 2.7.5 Slop System; 2.8 Measurement and Control Technology; 2.8.1 Metrology; 2.8.1.1 Temperature Measurement; 2.8.1.2 Pressure Measurement; 2.8.1.3 Measuring Level; 2.8.1.4 Flow Measurement; 2.8.2 Control Technology; 2.8.3 Control Technology; 2.9 Plant Safety; 2.10 Materials Selection
2.10.1 Important Materials and their Properties

Sommario/riassunto

Guiding readers through all steps of the complex process, this book covers the most diverse aspects of chemicals production, including those not or insufficiently covered in natural science courses. These comprise economic feasibility, patenting and licensing, demands on the location and the problem of waste disposal.Throughout, the author does not rely on simple references to other literature but instead reiterates many facts and places them in context, as well as succinctly explaining formulas, thus removing the need to look up items in secondary reference works.As such, the book is