

1. Record Nr.	UNINA9910131542603321
Autore	Dincer Ibrahim <1964->
Titolo	Drying phenomena : theory and applications // Ibrahim Dincer and Calin Zamfirescu
Pubbl/distr/stampa	Chichester, West Sussex, United Kingdom : , : John Wiley & Sons, Incorporated, , [2016]
ISBN	1-118-53491-3 1-118-53489-1 1-118-53490-5
Edizione	[1st ed.]
Descrizione fisica	1 online resource (672 p.)
Disciplina	664/.0284
Soggetti	Drying
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	Title Page; Table of Contents; Preface; Nomenclature; 1 Fundamental Aspects; 1.1 Introduction; 1.2 Fundamental Properties and Quantities; 1.3 Ideal Gas and Real Gas; 1.4 The Laws of Thermodynamics; 1.5 Thermodynamic Analysis Through Energy and Exergy; 1.6 Psychometrics; 1.7 Heat Transfer; 1.8 Mass Transfer; 1.9 Concluding Remarks; 1.10 Study Problems; References; 2 Basics of Drying; 2.1 Introduction; 2.2 Drying Phases; 2.3 Basic Heat and Moisture Transfer Analysis; 2.4 Moist Material; 2.5 Types of Moisture Diffusion; 2.6 Shrinkage; 2.7 Modeling of Packed-Bed Drying 2.8 Diffusion in Porous Media with Low Moisture Content 2.9 Modeling of Heterogeneous Diffusion in Moist Solids; 2.10 Conclusions; 2.11 Study Problems; References; 3 Drying Processes and Systems; 3.1 Introduction; 3.2 Drying Systems Classification; 3.3 Main Types of Drying Devices and Systems; 3.4 Processes in Drying Systems; 3.5 Conclusions; 3.6 Study Problems; References; 4 Energy and Exergy Analyses of Drying Processes and Systems; 4.1 Introduction; 4.2 Balance Equations for a Drying Process; 4.3 Performance Assessment of Drying Systems 4.4 Case Study 1: Analysis of Continuous-Flow Direct Combustion Dryers 4.5 Analysis of Heat Pump Dryers; 4.6 Analysis of Fluidized Bed Dryers; 4.7 Conclusions; 4.8 Study Problems; References; 5 Heat and

Moisture Transfer; 5.1 Introduction; 5.2 Transient Moisture Transfer During Drying of Regularly Shaped Materials; 5.3 Shape Factors for Drying Time; 5.4 Moisture Transfer Coefficient and Diffusivity Estimation from Drying Curve; 5.5 Simultaneous Heat and Moisture Transfer; 5.6 Models for Heat and Moisture Transfer in Drying; 5.7 Conclusions; 5.8 Study Problems; References

6 Numerical Heat and Moisture Transfer 6.1 Introduction; 6.2 Numerical Methods for PDEs; 6.3 One-Dimensional Problems; 6.4 Two-Dimensional Problems; 6.5 Three-Dimensional Problems; 6.6 Influence of the External Flow Field on Heat and Moisture Transfer; 6.7 Conclusions; 6.8 Study Problems; References; 7 Drying Parameters and Correlations; 7.1 Introduction; 7.2 Drying Parameters; 7.3 Drying Correlations; 7.4 Conclusions; 7.5 Study Problems; References; 8 Exergoeconomic and Exergoenvironmental Analyses of Drying Processes and Systems; 8.1 Introduction; 8.2 The Economic Value of Exergy

8.3 EXCEM Method 8.4 SPECO Method; 8.5 Exergoenvironmental Analysis; 8.6 Conclusions; 8.7 Study Problems; References; 9 Optimization of Drying Processes and Systems; 9.1 Introduction; 9.2 Objective Functions for Drying Systems Optimization; 9.3 Single-Objective Optimization; 9.4 Multiobjective Optimization; 9.5 Conclusions; 9.6 Study Problems; References; 10 Sustainability and Environmental Impact Assessment of Drying Systems; 10.1 Introduction; 10.2 Sustainability; 10.3 Environmental Impact; 10.4 Case Study: Exergo-Sustainability Assessment of a Heat Pump Dryer; 10.5 Conclusions

10.6 Study Problems
