
Table of Contents

Part I: Fundamentals of Freezing

Chapter 1 Physical–Chemical Principles in Freezing 3

Noemi Zaritzky

Chapter 2 Glass Transitions in Frozen Foods and Biomaterials 33

Stefan Kasapis

Chapter 3 An Overview of Refrigeration Cycles 57

Da-Wen Sun

Chapter 4 Microbiology of Frozen Foods 85

C.O. Gill

Chapter 5 Thermophysical Properties of Frozen Foods 101

Lijun Wang and Curtis L. Weller

Chapter 6 Freezing Loads and Freezing Time Calculation 127

Gauri S. Mittal

Chapter 7 Mathematical Modeling of Freezing Processes 141

Q. Tuan Pham

Chapter 8 Innovations in Freezing Process 175

Da-Wen Sun and Liyun Zheng

Part II: Facilities for the Cold Chain

Chapter 9 Freezing Methods and Equipment 199

Mike F. North and Simon J. Lovatt

Chapter 10 Cold Store Design and Maintenance 211

Laurence Ketteringham and Stephen James

Chapter 11	Transportation of Frozen Foods	227
<i>Silvia Estrada-Flores</i>		
Chapter 12	Retail Display Equipment and Management	243
<i>Giovanni Cortella and Paola D'Agaro</i>		
Chapter 13	Household Refrigerators and Freezers	259
<i>Rodolfo H. Mascheroni and Viviana O. Salvadori</i>		
Chapter 14	Monitoring and Control of the Cold Chain	279
<i>Maria C. Giannakourou, Petros S. Taoukis, and G.J.E. Nychas</i>		
Part III. Quality and Safety of Frozen Foods		
Chapter 15	Quality and Safety of Frozen Meat and Meat Products	311
<i>Sandra Moorhead</i>		
Chapter 16	Quality and Safety of Frozen Poultry and Poultry Products	325
<i>Nahed Kotrola</i>		
Chapter 17	Safety and Quality of Frozen Fish, Shellfish, and Related Products	341
<i>Jacek Jaczynski, Angela Hunt, and Jae W. Park</i>		
Chapter 18	Quality and Safety of Frozen Vegetables	377
<i>Wenceslao Canet Parreño and María Dolores Alvarez Torres</i>		
Chapter 19	Quality and Safety of Frozen Fruits	417
<i>Danila Torreggiani and Andrea Maestrelli</i>		
Chapter 20	Quality and Safety of Frozen Dairy Products	441
<i>H. Douglas Goff</i>		
Chapter 21	Quality and Safety of Frozen Ready Meals	459
<i>Philip G. Creed</i>		
Chapter 22	Quality and Safety of Frozen Bakery Products	481
<i>Virginia Giannou, Constantina Tzia, and Alain Le Bail</i>		

Chapter 23 Quality and Safety of Frozen Eggs and Egg Products 503

Lih-Shiu Lai

Part IV. Monitoring and Measuring Techniques for Quality and Safety

Chapter 24 Physical Measurements 521

Parameswarakumar Mallikarjunan

Chapter 25 Chemical Measurements 535

Marilyn C. Erickson

Chapter 26 Sensory Analysis of Frozen Foods 561

Edgar Chambers, IV, Sherry McGraw, and Kathleen Smiley

Chapter 27 Foodborne Illnesses and Detection of Pathogenic Microorganisms 577

Amalia Scannell

Chapter 28 Shelf-Life Prediction of Frozen Foods 603

Brian McKenna

Part V. Packaging of Frozen Foods

Chapter 29 Introduction to Frozen Food Packaging 615

John M. Krochta

Chapter 30 Plastic Packaging of Frozen Foods 641

Kwang Ho Lee

Chapter 31 Paper and Card Packaging of Frozen Foods 653

David Tanner and Nevin Amos

Chapter 32 Packaging of Frozen Foods with Other Materials 667

Gerrit Hasselmann and André Wötzl

Chapter 33 Packaging Machinery 679

Rajeshwar S Matche

Chapter 34 Future Developments in Frozen Food Packaging 713

Martin George

Index 725