Baking is a food cooking method that uses prolonged dry heat by convection, rather than by thermal radiation. Heat is gradually transferred “from the surface of cakes, cookies and breads to their centre. As heat travels through it transforms batters and dough into baked goods with a firm dry crust and a softer centre”. Bakery products have become essential food items of the vast majority of population. The present day consumer looks for new bakery products, better appeal, taste and convenience from bakery foods. Bakery industry has also an important role in popularizing wheat in non-wheat consuming region of the World. With good planning and access to good staff, raw materials and markets, setting up a bakery can represent an excellent enterprise opportunity. The book is invaluable reading for those starting their own baking business or any baker looking to improve their existing business in order to increase profits.

The book covers various aspects related to different bakery products with their manufacturing process and also provides contact details of raw material, plant and machinery suppliers with equipment photographs and their technical specifications. It provides a thorough understanding of the many new developments shaping the industry and offers detailed technical coverage of the manufacturing processes of bakery products. It examines the nature of bakery products, the role of the ingredients in determining their quality, processing methods and their control.

Various bakery products covered in the book are wheat ingredients, other grain ingredients, shortenings, emulsifiers, antioxidants, water and salt, different types of breads and biscuits, cakes, buns, icings, production of cookie and cracker, spices, flavours, colors, leavened and unleavened products, air-leavened products, chemically leavened bread and rolls, chemically leavened sweet goods, Yeast-leavened plain bread, rolls, dough, preservation of bakery products, milk and egg ingredients, fruits, vegetables, nuts and many more.

Food Mixer, Cookie Extruder, Rotary Oven, Biscuit Sandwiching Machine, Tunnel Gas Oven, Flour Mixer, Cookies Rotary Moulder, Bun Divider Moulder, Planetary Mixer, Spiral Mixer, Pillow Packing Machine, Oil Spray Machine are the various equipments described in the book with their photographs and technical specifications.

The book aims to provide comprehensive information on different types of bakery products. The book is aimed for food technologist, scientists, research scholars, as well as for new entrepreneurs and those who are engaged in this industry.

Contents
1. Ingredients Made From Wheat
   Introduction
   Wheat
   Commercial Wheat Varieties
   Composition of Wheat
   Lipids
   Utilization of Wheat
   Determining the Quality of Wheat
2. Other Grains Ingredients
   Introduction
   Durum
   Special Quality Considerations
   Utilization
   Rye
   Chemical Physical Characteristics
   Triticale
   General Characteristics
   Quality, Composition, and Nutritional Factors
   Utilization
   Rice
   Structure and Composition
   Quality Factors
   Use of Rice in the Baking Industry
   Millet
   Varieties and Distribution
   Structure of the Seed
   Food Uses
   Corn
   Structure and Composition
   Quality Factors
   Traditional Food Products From Corn
   Oats
   Classification
   Structure and Composition
   Barley
   Description of Plant and Seed
   Utilization of Barley
   Structure and Composition of Barley Kernels
   Quality Factors
3. Shortenings, Emulsifiers and Antioxidants
   Introduction
   The Chemistry of Fats and Oils
   Shortenings From Natural Sources
   Animal Fats and Oils
   Vegetable Shortenings
   Quality Assurance of Fat and Oil Products
   Tests
   Specifications
   Emulsifiers
   Lecithin
   Monoglycerides and Deglycerides
   Other Food Emulsifiers
   Antioxidants
Synthetic Antioxidants
Natural Antioxidants
Fat Substitutes and Replacements

4. Water and Salt

Introduction

Water

Regulations Affecting Potable Water

Water Treatment

Effects of Water Impurities on Bakery Products

Water Treatment Methods Used by Bakeries

Analyses of Water

Salt

Salt in the Human Diet

Containers and Storage

Types of Salt

Salt with Additives

Salt Substitutes in Bakery Products

Analytical Methods

5. Products of Bakery Industries

Bread

Introduction

Market Potential

Raw Materials

Flour

Yeast

Water

Salt

Sugar

Bulk Solids

Flavourings

Enrichment

Bread Manufacture

Straight Dough Method

Sponge Dough Method (Semi-Automatic)

Make Up

Comparison of Straight and Sponge Dough Method

Advantages and Disadvantages of two Methods

Automatic Process to Manufacture Bread

Recipes for Breads

White Pan Bread

Milk Bread

Sweet Bread

Rice Bread

Closed Pan Bread

Sponge Dough

Final Dough

Make up and Baking of the Bread

Egg Bread

French Bread

Straight Dough Method

Raisin Bread

Whole Wheat Bread (Straight Dough Method)

Rye Bread
Rye Bread (Leay Sow)

Vienna Bread
Special Breads
Date-Nut Bread
Low Sodium Bread
Cheese Bread

Specification for Various Types of Breads
White Bread

Other Requirements
Mass of the Bread
Wheat Meal Bread
Other Requirements

Crust and Crumb
(a) Optional Ingredients
(b) Mould Inhibitors

Bread Improver
Requirements
Biscuits

Introduction
Biscuit Raw Materials
Cereals
Sweetener
Shortening
Milk

Leavening Agents and Nutrients
Miscellaneous Products

Market Potential
Statewise Units of Biscuits in Organised Sector

Manufacturing Process
Recipes for Various Types of Biscuits
Arrowroot Biscuit
Shell Biscuits
Digestive Biscuits
Honey Comb or Crimp Biscuits
Almond Fruit Biscuits
Walnut Biscuits
Soda Biscuit
Coconut Biscuits
Nice Biscuits
Saltish Biscuits
Marie Biscuits
Ester Biscuits
Sandwich Type Biscuits
Cheese Biscuits
Rice Biscuits
Corn Flour Biscuits
Coffee Biscuits
Victoria Biscuits
Edinburg Biscuits
Snow Drop Biscuits
Luncheon Biscuits
Special Combination Wheat Biscuits
Simple All Purpose Biscuits
Soojee Biscuits
Special Nut Biscuits
Directions
Corn Flour Coconut Biscuit
Chocolate Vanilla Biscuit
For Icing
Peppermint Cream Biscuits
Biscuit Coatings
White Coating
Dark Chocolate Coating
Lemon Coating
Orange Coating
Malt Milk Coating
Few Points for Making Good Biscuits
Cookies
Basic Ingredients
Bonding Materials or Toughers
Tenderizing Materials
Floors
Shortening
Sugar
Lecithin
Milk
Eggs
Rotary Moulded Cookie
Cutting Machine Cookie
Wire Cut Cookie
Spread of the Cookies
Equipments For the Manufacture of Cookies
Wire Cut Machine
Stamping and Rotary Cutting Machines
Rotary Moulded Cookies
Formula for Sugar Wafer Butter
Processing of Sugar Wafer
Coatings for Cookies
Coatings for Cookies Enrobing
Vanilla Coating
Dark Chocolate
Dark Cocoa
Coconut
Peanut Coating
Pie Fillings
Fruit Fillings
Apple Pie Fillings
Banana Cream Starch-Based Gel Filling
Strawberry Flavoured Fillings
Cream Style Fillings
Pie Crusts
The Flour
The Shortening
The Salt
Sugar
Flaky Crusts
Mealy Crusts
Formulations and Procedures for Pie Crusts
Long Flake Pie Crusts
Dough for Fried Peas
Fruit Pie Dough
Mealy Crust Dough
Fried Pies
Faults in Pie Crusts
Soda Crackers
Flour
Water
Shortening
Salt
Yeast Food
Formulas for Soda Crackers
Fermentation
Manufacturing
Absorption
Salt
Sugars
Amylolytic Enzymes
Cakes
The Flour
Soft Straight Flour
Sugar
Shortening
Egg
Milk
Formulation Guidelines
Cake Processing
Common Faults in Cakes
Texture Defects
Defects of Crust Appearance
Too Low Volume
Irregular or Coarse Grain
Various Types of Cakes
Corn Flour Cake
Fruit Cake
Rece Cake
Petha Cake
Maize Floor Cake
Cream Cake
Cheese Cake
Sponge Cake
White Layer Cakes
Rich White Layer Cake
Universal Cake Mix
Yellow Layer Cake
Chocolate Cake
Devil's Food Cake
Chiffon Cake
Layer Cake
Pound Cake
Hard Rolls
Soft Rolls
Vienna (Kaiser) Rolls
Make up of the Rolls
Hamburger Rolls
Make up and Baking of the Rolls
Buns
Bath Buns
Saffron Buns
Cross Buns
German Buns
Sweet Crumb Buns
Round Shaped Filled Bun
Dough
Syrup Wash
Braid Buns
Square Buns
Figure 8 Shaped Buns
Muffins, Nankhati and Pizza
Mufins
Bran Muffins
Whole Wheat Muffins
Nankhatai
Pizzas
Recipe for Pizza
Icings
Some Guidelines for Icing Preperation
Flavours Development in Icings
Fluffy Icings
Recipes for Various Types of Icing
Chocolate Icing
Butter Icing
Water Icings
Royal Icings
Icing Paste (General)
Vanilla Icing
Butter Scotch Icing
Butter Scotch Paste Icing
Banana Icing
Caramel Boiled Icing
Honey Macaroon Icing
Spice Cake Icing
Orange Icing
Orange Sunshine Icing
Chocolate Fudge Icing
Butter Cream Icing
6. Milk and Eggs Ingredients
Introduction
Ingredients Derived From Milk
Composition of Milk
Types of Milk Ingredients
Milk Protein Concentrate
Dairy Blends and Milk Replacers
Cheese
Quality Tests for Milk and Milk Products
Ingredients From Eggs
Functional Properties
Composition
Commercial Products
Storage
7. Fruits, Vegetables and Nuts
Introduction
Nuts
Almonds, Almond Butter, and Almond Paste
Coconut
Kernel Paste
Peanuts and Peanut Butter
Pecans
Poppy Seeds
Walnuts
Nut Substitutes and Defetted Nuts
Fruits
Dried Fruits
Candied or Glace Fruit
Canned Fruits
Frozen Fruits
Fruit Jams, Jellies and Preserves
Vegetables
Potatoes
Onions
Tomatoes
Carrots
8. Bakery Machinery and Equipment
Weighing Equipment
Manual Scales
Automatic Weighing Equipment
Liquid Measuring Equipment
Mixing
Mixing Equipment
Dry Blenders
Ribbon Blenders
Tumbler with Agglomerate Breakers
Vertical Screw Mixer
Equipment Selection
Continuous Pre-Mixing Equipment
Horizontal Dough Mixer
Banbury Mixers
Miscellaneous Horizontal Dough Mixing Equipment
Mixing Mechanism
Vertical Planetary Mixers
Continuous Mixers
Temperature and Mixing
Make-up Equipment
Dividers
Effect of Dividing Action on Dough Properties
Divider
Post Conditioning
Secondary Process
Icings
Enrobing
Sandwiched Cookies and Crackers
Biscuit Packaging
11. Unleavened Bakery Products
Introduction
Pie Crusts
General Considerations
Types of Pie Crusts
Baked Pies
Long-Flake Crust
Short-Flake Crust
Mealy Crust
Pressed Crumb Crusts
Savory Pies
Fried Pies
Causes of Faults in Pie Crusts
Strudel, Phyllo and Egg Rolls
Unleavened Cookies
12. Products Leavened Primarily With Water Vapor
Puff Pastry
Theoretical Considerations Affecting Layering
Practical Methods of Puff Pastry Production
Traditional Puff Pastry method
Automated Puff Pastry Production
Formin and Baking Puff Pastry
Trouble Shooting Puff Pastry
Crispbread
Eclair Shells, Cream Puffs, and Popovers
Cookies and Crackers
Beaten Biscuits
Puff Biscuits
Sugar Wafers
13. Air-Leavened Products
Introduction
Angel Food Cakes
General Considerations
Ingredients and Formulas
Procedures
Meringue Layer for Tortes
Foam Type Angel Food Cake
Continuous Mix Angel Food Cake
Cakes Made With Foams of Whole Eggs or Egg Yolks
Effects of Whole Eggs
Pound Cakes
Sponge Cakes
Chiffon Cakes
Cheese Cakes
Snow White California Cheese Cake
Fruit Cakes
Cookies
14. Chemically Leavened Bread and Rolls
Introduction
Chemical Leavening Systems
Effects of Air, Water Vapor, and Carbon Dioxide on Volume
Characteristics of Chemical Leavening Systems
Function of Ingredients
Soda Breads
Buttermilk Bread
Irish Soda Bread
Boston Brown Bread
Chemically Leavened White Bread
Other Bread Varieties
Soda Biscuits
Scones
Muffins
Veggie Muffins
Snack Crackers
15. Chemically Leavened Sweet Goods
Composition
General Rules For Developing Formulas
Layer Cakes
Examples of Cake Formulas
Processing Chemically Leavened Sweet Goods
Trouble Shooting Cake Faults
Cup-Cakes
Cake Doughnuts
Formulation and Processing
Doughnut Trouble Shooting
Cookies
Relationship of Formula to Processing Method
Ingredients
Representative Formulas
16. Yeast-Leavened Plain Bread and Rolls
Principles of Plain Bread and Roll Production
White Bread
French Bread
White Rolls
Wheat Bread
Two Traditional Bread Processing Schemes
Straight Dough Method
Sponge-and-Dough Method
Reaction During Mixing
Dough Development
Establishing Vesicle Size
Conditioning the Dough
Temperature Rise During Mixing
Fermentation
Bulk Fermentations
Proofing
Pan Proofing
Dividing and Rounding
Bread-Molding Processes
Roll-Forming Processes
Baking
Effect of Form and Size of the Dough Piece
Cooling and Depanning
Defects of the Crust
Defects in the Crumb
Defects of Volume
Defects of Taste or Odor
Defects in Shelf-Life
17. Doughs
Introduction
Continuous Processing of White Bread and Rolls
Principles of Operation
Formulating White Bread for Continuous Plants
Making Fermentation Processes More Efficient
Three Kinds of Sponge Replacement Systems
Conditioning by Mechanical or Chemical Means
Systems Relying Principally on Chemical Modification
18. Breads
Sour Dough Breads
Microflora of Sour Doughs
San Francisco (Pacific Slope) Sour Dough Bread
Sour Dough French Bread
Panettone
Sal-Rising Bread
Rye and Multi-Grain Breads
Multi-Grain Breads
Rye Bread
Rye Bread Formula and Process
Other Variety Breads
Breads with Vegetable Ingredients
Breads with Dairy Ingredients
Dietetic Bakery Products
Reduced Salt
Reduced Fat
Gluten-Free
"Diabetic" or Sugar-Free
Reduced Calorie
No Cholesterol
19. Yeast-Leavened Sweet Doughs
Plain and Roll-In Sweet Doughs
Ingredients
Formulas, General
Straight Sweet Dough Formula and Procedure
Sponge Sweet Dough Formula and Procedure
Roll-in Sweet Dough Formula and Procedure
Procedures
Fruited Rolls and Stollen
Doughnuts and Other Fried Goods
General Formulas
Ingredient Specificaions and Functions
Procedures
Danish Pastry
History
Experimental Studies
Ingredients and Formulas
Procedures
Examples of Products
Almond Crumb Coffee Cake
Apple Filled Coffee Cakes
Yeast-Leavened Cookies
Fried Yeast-Leavened Cookie

20. Preservation of Bakery Products
Introduction
Refrigerated Dough Products
Freezing Preservation
Freezing Equipment and Methods
Freezing Doughs and Batters
Freezing Baked Products and Adjuncts
Heat Processing in Hermetically Sealed Containers
Modified Atmosphere Packaging
Chemical Preservation
Irradiation
Other Methods

21. Photographs of Machinery and Equipment
Food Mixer
Cookie Extruder
Rotary Oven
Pillow Packing Machine
180º Layout Turning Machine
Oil Spray Machine
Biscuit Sandwiching Machine
Tunnel Gas Oven
Rotary Print Biscuit Forming Machine (Soft Biscuit)
Tunnel Electric Oven
Flour Mixer
Cookies Rotary Moulder
Bun Divider Moulder
Bread Moulder
Double Trolley Bakery Oven
Cookie Dropping Machine
Planetary Mixer
Spiral Mixer

22. Raw Material Suppliers
Starch
Bakery Chemicals
Baking Enzymes
Baking Powder
Bread Improver
Cake Gel
Egg Powder
Flavouring Emulsion
Flexible Packaging
Glucose
Lecithin
Plastic Crates
About NIIR

NIIR PROJECT CONSULTANCY SERVICES (NPCS) is a reliable name in the industrial world for offering integrated technical consultancy services. NPCS is manned by engineers, planners, specialists, financial experts, economic analysts and design specialists with extensive experience in the related industries.


NPCS also publishes varies process technology, technical, reference, self employment and startup books, directory, business and industry database, bankable detailed project report, market research report on various industries, small scale industry and profit making business. Besides being used by manufacturers, industrialists and entrepreneurs, our publications are also used by professionals including project engineers, information services bureau, consultants and project consultancy firms as one of the input in their research.