

The Complete Technology Book on Alcoholic and Non-Alcoholic Beverages(Fruit Juices, Whisky, Beer, Rum and Wine)

Author: NPCS Board of Consultants & Engineers

Format: Hardcover

ISBN: 9788178331126

Code: NI209

Pages: 824

Price: Rs. 2,575.00 US\$ 200.00

Publisher: Asia Pacific Business Press Inc.

Usually ships within 5 days

The alcoholic and non alcoholic beverages are being used by human being since centuries back. Accompanying the increase in the variety of consumption there has been a parallel increase in the variety of alcoholic and non alcoholic beverages offered for sale. The alcoholic drinks market is broadly classified into five classes, starting from beers, wines, hard liquors, liqueurs and others. Similarly non alcoholic drinks market is broadly classified into carbonated drinks, non carbonated drinks and hot beverages. These include juices, energy drinks, carbonated drinks, tea, coffee and bottled water. The commercial success of a soft drink formulation depends upon a number of factors. A strong, well placed advertising campaign will bring the consumer to purchase the new product but, thereafter, the level of repeat sales will reflect the degree of enthusiasm with which the new drink has been received. The dramatic growth of fruit juice and non carbonated fruit beverage markets worldwide has been made possible by the development of new packs and packing systems and improvements in traditional packaging. Tropical fruits are the newest arrivals on the juice and fruit beverage market. Whisky is the portable spirit obtained by distillation of aqueous extract of an infusion of malted barley and other cereals that has been fermented. It can be considered as the product of distillation of an unhopped beer. Beer is the world most widely consumed alcoholic beverage; it is the third most popular drink overall, after water and tea. Rum is a distilled alcoholic beverage made from sugarcane by products such as molasses, or directly from sugarcane juice, by a process of fermentation and distillation. The Indian alcoholic market has been growing rapidly for the last ten years, due to the positive impact of demographic trends and expected changes like rising income levels, changing age profile, changing lifestyles and reduction in beverages prices.

Some of the fundamentals of the book are flavourings and emulsions, syrup room operation, fruit juices and comminuted bases, acids, colours, preservatives and other additives, high intensity sweeteners, packaging systems for fruit juices and non carbonated beverages, grape juice processing, processing of citrus juices, juice processing for pasteurized single strength, equipment for extraction and processing of soft and pome fruit juices, chemistry and technology of citrus juices and by products, legislation controlling production, labelling and marketing, biochemical events during brewing fermentations, outline of the whisky producing process, types of beer brewed, aroma compounds of rum and their formation, cider and perry etc.

The alcoholic and non alcoholic beverages described in this book are beer, wine, rum, whisky, cider and different types of fruit juices with packaging systems and other relevant parameters related to their manufacturing. The book will be very helpful to technocrats, new entrepreneurs, research scholars and for those who are already in to this field.

Contents

1. CARBONATION AND FILLING

Introduction

Carbonation

The nature and effects of carbonation

Properties of carbondioxide

Equilibrium pressure

Measurement of carbonation

Carbonation determination

Carbonators

Designs of carbonators

Air exclusion

Proportioners

Fillers and Filling Valves

Basic filling valve operation

Filling valve development and the
influence of ambient filling

2. EFFECTIVE APPLICATION OF QUALITY CONTROL

Introduction

Evolution of QC in the Soft Drinks Industry

Concept of quality

Evolution of soft drinks QC

The Small-to-Medium-Sized Business

Contract packing

Setting up a cost-effective system for QC

Product and packaging innovation

National Operations with Multiple Plants

Impact of industry concentration

Organisation of QC at plant level

Centralised organisation for quality

Bottling versus canning QC requirements

Equipment selection for quality

Development of in-line quality-monitoring equipment

Potential quality problem areas

Product recall

Water quality and treatment

Statistical QC

Microbiology

Dispensed soft drinks

International QC and QA of Soft Drink Operations

The franchise system

Technical services

The international quality assurance laboratory

Ingredient quality

Packaging quality

Trouble-shooting the theory in practice

The Future

Influence of packaging

New ingredients formulation and sanitation requirements

Role of the soft drinks associations

The final word

3. FLAVOURINGS AND EMULSIONS

Flavourings

Legislation

Creation

Production

Emulsions

Manufacture

Application of Flavourings and Emulsions

Selection

Methods of use

Evaluations

4 SYRUP ROOM OPERATION

Introduction

Syrup Room Design

Wall finishes

Floors and drainage

Ceilings and lighting

Heating, ventilating and air conditioning

Syrup Room Equipment

Storage, mixing tanks and systems

Pipework, fittings and connections

Ingredient flow

Pumps

Measurement of liquid

Filtration of ingredients

Ultraviolet sterilisation

Pasteurisation

Homogenisation

Syrup Room Materials Storage and Handling

Sugar

High-fructose glucose (Corn) syrup

Acids

Sweeteners

Preservatives

Flavourings

Colours

Fruit juices and comminuted bases

Syrup Room CIP Systems and Detergents

Design of a CIP unit

Rate of flow in pipelines for CIP

Calculation of reynolds number

Choice of detergents

Automaton and computerisation in syrup rooms

Typical system description

Typical operating sequence for syrup manufacture

Multiple Component Mixing Plant

Construction

Control and operation

Future Developments

5 ACIDS, COLOURS, PRESERVATIVES

AND OTHER ADDITIVES

Introduction

Acids

Carbonic acid
Citric acid
Tartaric acid
Phosphoric acid
Lactic acid
Acetic acid
Malic acid
Fumaric acid
Ascorbic acid
Colours
Preservatives
Micro-organisms and soft drinks
Sulphur dioxide
Benzoic acid and benzoates
Esters of para-hydroxy-benzoic acid
Sorbic acid and sorbates,
Other Additives
Emulsifiers
Stabilisers
Saponins
Anti-oxidants
The Safety of Food Additives

6. HIGH-INTENSITY SWEETENERS

Introduction
Use of Intense Sweeteners
Current Sweeteners
Acesulfame K
Aspartame
Cyclamate
Saccharin
Stevioside/Stevia
Thaumatococcus
Dihydrochalcones
Potential New Sweeteners
Alitame
Sweetener Approval and Regulation
Future Use of Intense Sweeteners

7. CARBOHYDRATE SUGARS

Introduction
History
Carbohydrate Sugars
Granulated sugar
Liquid sugar
Glucose syrup: high-fructose syrup
Quality
Trade requirement
Quality assurance management
Sugar analysis
Transportation and Delivery
Bulk delivery of granulated sugar
Bulk delivery of Liquid carbohydrate Sugars
Security of delivery
Storage

Granulated sugar in bags
Granulated sugar in bulk
Liquid carbohydrate sugars
On-site Dissolving of Granulated Sugar
Batch dissolving
Continuous dissolving
High-capacity dissolving

8. PACKAGING SYSTEMS FOR FRUIT JUICES AND NON-CARBONATED BEVERAGES

Introduction
The Fresh Cold Fill System
The Hot Fill System
Filling Equipment for Gable Top Cartons
Packing Materials for Gable Top Cartons
Product Protection and Product/Pack Interaction
General considerations
Cold filled juices
Hot filled juices
Flavour
Packaging of Frozen Concentrated Juices (FCJ)
Filling in Glass Containers
Plastic Containers and Pouches

9. GRAPE JUICE PROCESSING

History of Grape Juice Processing in North America
Grape Cultivars
The Chemistry of Grape Juice
Carbohydrates
Acids
Mineral content
Phenolic
Volatiles
Modern Grape Juice Processing
Harvesting/ripening
Stemmer/crusher operation
Hot-break process
De-juicing/pressing operation
Coarse filtration
Bulk storage and tartrate precipitation
Enzyme clarification
Polish (fine) filtration
Hot fill
Process Alternatives
Cold-pressing
Aseptic process
Concentration
Sulfur dioxide preservative

10. PROCESSING OF CITRUS JUICES

Introduction
Fruit Harvesting and Transport
Unloading and Storage of Fruit
Fruit Transfer from Storage Bins to Extractors
Juice Extraction and Finishing
Extractors

Finishing
Juice Processing for Pasteurized Single Strength
Juice Processing for Concentrate
Characteristics of 1950s evaporators
Modern evaporators for citrus fruit
Essence Recovery
Chilled Juice from Concentrate
Pulp Wash
Frozen Pulp Processing
Manufacture of Citrus Cold Pressed Oil
Manufacture of Livestock Feed from Citrus Peel
Peel dryer
Waste heat evaporator
11. APPLE JUICE
General Background
Juice extraction
Pomace disposal
Blending and packaging
Natural Style Juices
Clarified Juice and Concentrate
Enzyming
Pulp enzyming
Fining
Concentrates
Hazes and deposits
Authentication and Adulteration
Composition of Apple Juice
Sugars and sorbitol
Starch & pectin
Organic acids
Protein and amino acids
Polyphenols and colour
Minerals
Volatile components
Other flavour aspects
Microbiology
Food Tests
Test for the presence of pectin in clarified Juice
Test for the presence of starch
Test fining with gelatin
Test fining with gelatin/kieselsohl
Test for overfining
12. EQUIPMENT FOR EXTRACTION AND PROCESSING
OF SOFT AND POME FRUIT JUICES
Introduction
Modern juice processing methods
Juice Extraction Systems
Fruit storage and handling
Milling
Pressing
Comparison of pressing systems
European grape pressing
Pre-treatment with Pectolytic Enzymes

Post-press Clarification
Decantation
Centrifugation
Earth filtration
Rotary vacuum filters
Sheet filtration
Cartridge filters
Membrane filtration
Concentration/Aroma Recovery
Rising film evaporators
Falling film evaporators
Centrifugal evaporators
Heat recovery from evaporated water
Aroma recovery
Pasteurisation
Flash pasteurisation
Batch pasteurisation
In-pack pasteurisation/hot filling
Fruit Juice Plant Layout
Materials of construction
Fruit reception
Handling and washing fruit
Seasonal problems
Effluent treatment
Juice storage
Summary

13. CHEMISTRY AND TECHNOLOGY OF CITRUS JUICES AND BY-PRODUCTS

Principal Citrus Cultivars
Origin of citrus
Commercial citrus regions
Citrus growing areas
Effect of frost
Effect of soil
Composition and Structure of Citrus Fruits and Juices of Various Cultivars
General relationship
Organic acids
Carbohydrates
Color pigments
Vitamins and inorganic constituents
Flavonoids
Lipids
Operational Procedures and Effects on Quality and Shelf Life of Citrus Juices
Outline of good manufacturing and processing procedures
Concentrate handling for reprocessing and/or reconstruction
Sanitation or stabilization
Water for reconstitution use
Processing of chilled high and low pulp reconstituted orange juice
Finished product handling and storage
Citrus Juice Flavor Enhancement with Natural Citrus Volatiles
Components of citrus juice flavor
Citrus flavor enhancement technology
Citrus oils and aroma and their recovery

Pectic Substances and Relationship of Citrus Enzymes to Juice Quality

Effect of Time, Temperature and other Factors on Citrus Products

14. LEGISLATION CONTROLLING PRODUCTION, LABELLING AND MARKETING

Fruit Juices, Concentrated Fruit Juices and Fruit Nectars, Introduction

Fruit juice regulations in EEC countries

Fruit juice regulations in the United States and Canada

Fruit juice regulations in other major countries

Fruit juice standards produced by codex alimentarius

Non-Carbonated Fruit Beverages

Introduction

Fruit drink regulations in EEC countries

Fruit drink regulations in other European countries

Fruit drink regulations in the United states and Canada

Fruit drink regulations in other major countries

15. TROPICAL FRUIT JUICES

Introduction

Guava

Mango

Passion fruit

Pineapple

Other Tropical Fruits

Acerola

Banana

Kiwifruit

Lulo

Papaya

Soursop

Umbu

Tropical Fruit Juices in Europe Today

The Future

16. WHISKY 418

Introduction

History of Whisky Production

Outline of the Whisky-producing Process

Individual Operations

Raw materials

Mashing and cooking

Fermentation

Distillation

Maturation and ageing

Blending and colouring

Effluent disposal and spent grains recovery

Organoleptically Important Components of Whisky

Concentrations of organoleptically important compounds

Chemical nature of organoleptically important compounds

Contribution of compounds to organoleptic properties

Origin of organoleptically important compounds

17. BEER

Introduction

Historical Aspects of Brewing

Prehistoric and early historic

Brewing in Europe

Outline of the Brewing Process

Malting
Suitability of barley for brewing
the malting process
Kilning
Mashing
Brewing liquor
Mash-tun ingredients other than malt
Mashing systems
Enzymolysis in the mash tun
Sparging
Direct Conversion of Barley to wort
Wort Boiling and Cooling
General
Hops and hopping
Wort clarification and cooling
Fermentation
Brewing yeasts
Biochemical events during brewing fermentations
Physical behaviour of yeast
Fermentation systems
Beer Treatments
Maturation and conditioning
Haze prevention
Yeast removal
Pasteurization
Post-fermentation bittering
Beer Properties
Colour and clarity
Foam
Flavour and aroma
General composition and dietary value of beer
Beer Defects
Gushing
Microbiological spoilage
Oxidation flavour, stale flavour and other off-flavours
The State of the Industry
Types of beer brewed
18. RUM
Introduction
Production of Rum
Types of rum and the raw materials used
Pretreatment of the raw materials
Fermentation
Distillation
Maturing
Aroma Compounds of Rum and their Formation
Higher alcohols
Fatty acids
Esters
Phenolic compounds
Nitrogenous compounds
Sulphur-containing compounds
Lactones

Carbonyl compounds

19. TABLE WINES

Introduction

Some Economic Aspects of the History of Wine Making

Grapes

Must Treatment

Alcoholic Fermentation

Post Fermentation Operations

Microbiological Stabilization

Malo-lactic fermentation

Microbiological spoilage,

Sulphur dioxide addition

20. CIDER AND PERRY

Introduction

Definition of cider and perry

Outline of the process of cidermaking

Historical aspects

Composition

Juice

Fermentation and storage

Disorders

Technology

Fruit supply

Juice production

Juice treatment

Fermentation and storage

The final cider

Ancillary products

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.

Our various services are: Detailed Project Report, Business Plan for Manufacturing Plant, Start-up Ideas, Business Ideas for Entrepreneurs, Start up Business Opportunities, entrepreneurship projects, Successful Business Plan, Industry Trends, Market Research, Manufacturing Process, Machinery, Raw Materials, project report, Cost and Revenue, Pre-feasibility study for Profitable Manufacturing Business, Project Identification, Project Feasibility and Market Study, Identification of Profitable Industrial Project Opportunities, Business Opportunities, Investment Opportunities for Most Profitable Business in India, Manufacturing Business Ideas, Preparation of Project Profile, Pre-Investment and Pre-Feasibility Study, Market Research Study, Preparation of Techno-Economic Feasibility Report, Identification and Section of Plant, Process, Equipment, General Guidance, Startup Help, Technical and Commercial Counseling for setting up new industrial project and Most Profitable Small Scale Business.

NPCS also publishes various 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.

