Soap is the traditional washing compound made from oil fats and caustic alkali. It is an item of daily necessity as cleaning agent. There are few specialty soaps like the washing soaps, castile soaps, sandal soap, specially flavored soaps, medicated soaps, toilet soaps and baby soaps. Population growth, especially households with children has a proportional impact on the growth of the manufacturing sector of the industry. The soap industry is vivacious, varied, creative and tricky, and has the prospective to provide a gratifying career. With increasing popularity there has been increase in potential competitors but it still has the opportunity of further exploitation.

Today with increase in disposable incomes all around the world, demand for these products expected to increase because consumers are moving up towards premium products. With increasing awareness of hygienic standards, the market for the Soap is growing at a rate higher than 8% annually. People have become more creative in trying to find new ways in which they can make soap either for domestic use or commercial purposes. This book will provide all the basic facts and information you need to get started. You will be able to slowly build your way up to completely master the art of soap making.

The book contains processes formulae, Photographs of Plant & Machinery with Supplier’s Contact Details, Addresses of Raw Material Suppliers and providing information regarding manufacturing method of different washing and toilet soaps. Some of the fundamentals of the book are raw material oil and fats, fatty acids, manufacture of soap products, technology of soap manufacturing, various formulations of soaps, soap perfumery, management of soap factories, analytical methods.

This book will be a mile stone for its readers who are new to this sector, will also find useful for professionals, entrepreneurs, those studying and researching in this important area.
1. Introduction

Definition
Uses
Cleansing Mechanism
Characteristics of Soap
Saponification of Fats - The Basic Chemical
Reaction Making Soap

2. Raw Materials Oil and Fats
(The Main Raw Materials for Soaps)
Classification of Fats/Oils
Some of the Most Useful Fats and Oils
Tallow
Coconut Oil
Palm Oil
Palm Kernel Oil
Cottonseed Oil
Castor Oil
Chinese Vegetable Tallow
Corn Oil
Rice Bran Oil
Linseed Oil
Olive Oil
Groundnut Oil
Tall Oil
Mahua Oil
Babassu Oil
Neat's-Foot Oil
Lard
Greases
Fish Oil
Hydrogenated Oils
Purification of Soap Fats
Acid Washing
Alkali Refining
Bleaching
Absorbent Bleaching
Bleaching By Using Oxidizing Agents
Testing Of Soap Fats
Properties
Non Fatty Raw Materials For Soap
The Alkalis
Soap Builders
Filler
Stabilizers, Anti-oxidants
Other Additives (Foam Producers)
Foaming Agents Used in Soap
Solvents
Medicaments/Deodorants/Bacteriostatic Agents
Clarifiers
Colouring Matters
Preparation of Colours
Water Soluble
Oil Soluble
Alcohol Soluble
Milled Soaps
Full-boiled/Semi-boiled/cold-made Soaps
Soap Bases and Liquid Soaps
Washing/Laundry Soaps
Medicated Soaps
Perfumes
Comprehensive Details
Essential Oils
Isolates
Synthetic Chemicals

3. Fatty Acids
Types of fatty acids and their physical properties
Physical properties of fatty acids
Melting point

Boiling point
Viscosity
Density
Solubilities
Refractive Index
Heat of crystallisation
Polymorphism
Fatty acids of oils and fats
Raw materials of fatty acids
Animal fats
Tall oil
Vegetable oils and soap stocks
Manufacture of fatty acids
Pretreatment of feed stock
Fat splitting
High pressure catalytic splitting
High pressure steam splitting
Continuous fat splitting
Refining of crude fatty acids
Distillation of fatty acids
Mazzoni fat splitting and distillation process
Distillation of crude fatty acid
Splitting
Distillation
Splitting plant using thermic fluid instead of steams
Fractional distillation of fatty acids
Development trends in fatty acid distillation
Panning & pressing process
Solvent crystallisation process
Lurgi Wetting Method
Recovery of glycerine
Pre-treatment and evaporation of spent-lye
Pre-treatment and evaporation of sweet water
Distillation of crude glycerine
Synthesis of fatty acids

4. Manufacture of Soap Products
Health and safety Factors
Classification of Soap Products
Methods of Manufacture
Various Finishing Methods
Production
Full Boiling Process (Description)
The Process
First Stage
Second Stage
Third Stage
Fourth Stage
Fifth Stage
Washing Bar/Cake Soap From Neat Soap
Jet Saponification Process
Glycerine Recovery
Semi-Boiling Process and Cold-Made Process
General Description
Production of Washing Bar/Cake Soap
by Semi-Boiling/Cold-Made Process
Equipments
Process Operations
Examination of Cold-Made Products
Formulations for Washing Soaps
Washing Soap Using Soap Stock as Main
Fatty Raw Material
A Typical Batch
Toilet Soap
Milling Process
Floating Toilet Soap Cake
Manufacture of Toilet Soap by Semi-Boiled/
Cold-Made Process
Procedure
Alkali
Milled Finished Soap
A Typical Batch For Toilet Soap
Mottled Soap
Carbolic Acid Soap
Suggested Formulation
Procedure
Medicated Soaps
Castile Soap
Castile Soap by Boiling Process
Some Suggested Formulations for Castile Soap
Deodorant Soaps
Various Industrial Soaps
Textile Soaps
Laundry Washing Aids
A Fabric Cleaning Compound
Cotton Scouring Soap
Dry Cleaner's Soap
Water Softener
Jelly Soap/Soft Soap
Automobile Soap
Wire Drawing Soap
Scouring Soap
Preparation of Washing Soap Powder
Simplified Method
Powdered By Pulverising Method
Washing Powder by Spray-Crystallization
Soap Beads or Granules by Spray-Drying
Soap Flakes
Shaving Soaps
Procedure
Shaving Cream
Other Formulation
Brushless/Latherless Shaving Cream
Liquid Shaving Cream
Basic Combination
Thicker Cream
Aerosol Package
Liquid Soaps/Shampoos
Process of Manufacture
Equipments
Liquid Toilet Soap Concentrates
Liquid Washing Soap Concentrate
Shampoos
Classification
Physical States
Characteristics
Various Additives of Shampoos Imparting
Special Properties
Solubilizer
Opacifiers
Thickeners for Body or Viscosity
Foam Stabilizers
Conditioning Agents
Agents for Resistance of Hard-Water
Germicidal Agents
Preservatives
Soap Shampoos
Older Methods
Modern Methods
Some Typical Formulations
Shampoos Based on Synthetic Surfactants
General Formulations
Liquid Cream Shampoos and Paste Cream
Foamless Oil Shampoos
Baby Shampoos
Medicated Dandruff Shampoos
Other Miscellaneous Shampoos
Aerosol Shampoos (Pressure Dispersed)
Method of Continuous Saponification of Fats
by Alkali Solution
Method of Continuous Splitting of fats into fatty Acids and Glycerol with Simultaneous Neutralization of free fatty Acids with Alkali Yielding Soap
Continuous Neutralization Process
Description of A Process
Advantages
Disadvantages
Continuous Neutralization Process using Fatty Acids Instead of fats
Batch Methods of Splitting fats into fatty Acids and Glycerol
Purification of Fatty Acids

5 Technology of Soap Manufacturing
Manufacturing Soap
Techniques
Saponification Equipments used by the Small-scale sector
Equipment for batch soapmaking
Improved methods of saponification
Lye Absorption
Saponification Loop
Saponification of Distilled Fatty Acids
Alfa Laval Continuous Saponification
Washing of saponified soap
Straight washes
Counter current washes using a set of pans
Counter current washes in a single divided pan
Rotating disc contactor (RDC)
Fitting of Soap
Method of Expressing Free Alkali, Chloride and TFM
Plant for Total Soapmaking Operation
Construction Materials for Soapmaking Plants
Earth bleaching of oils
Chemical bleaching
Fatty acids
Lye treatment
Storage of raw lye
Output of Soap and Glycerine
Analysis of oils
Ester value of oils
Glycerine Recovery
Introduction
Glycerine Recovery Procedure
Purpose of Lye Treatment
Method of Lye Treatment
Treatment of Sweet Water
First treatment
Second treatment
Evaporation
Continuous Finisher
Refining of Crude Glycerine
Production of Laundry and Toilet Soaps
Introduction
Frame Cooling of Soap
Production of Filled Soaps on the Mazzoni Billeting
Technology of Toilet Soaps
Introduction
Oil blend
Production of toilet soap
Mixing of soap
Preservatives
Perfumes
Colours
Opacifiers
Optical brighteners
Super-fatting agent
Structurants
Bactericides and germicides
Miscellaneous additives
Design of mixers
Refiners vs. Mills
Plodding
Stamping
Wrapping
Packing
Carbolic Soap
Transparent Soaps
Introduction
Manufacturing methods
Manufacturing method
Translucent Soaps
Oil blend
Floating Soap
Marbled Soap
Process Control
Introduction
Pre-treatment of Raw Materials
Soapmaking
Fat charge control
Colour of soap base
Free alkali and chloride
Unsaponified fat
Glycerol in soap
Process Controls Beyond Pan Room:
Domestic Soap
Toilet Soap
Other Soaps
Soap Chips
Soap Noodles
Soap Flakes
Soap Powder for Laundries
Shaving Cream
Soft Soap
Medicated Soap
Shaving Soap

6 Various Formulations of Soaps
Toilet Soap of Inferior Quality
Process
Toilet Soap of Lux Type
Process
Khas Soap
Amla Soap
Rose Soap
Sandal Soap
Musk Soap
Almond Soap
Transparent Soaps
Process
Medicated Soaps
Stock Soap
Formulae and Process Description for Various Medicated Soaps
Process
Carbolic Soap
Process
Procedure
Neem Soap
Process
Camphor Soap
Procedure
Chaulmogra Soap
Procedure
Shaving Soaps and Creams
Shaving Soaps
Solid Shaving Preparation
Lather Shaving Cream
Liquid Soaps and Shampoos
Process of Manufacture
Liquid Shampoos
Egg Shampoos
Herbal Shampoos
Washing Soap (Various Types)
Precautions regarding Manufacture of Soap
Nerol Washing Soap
Process
Soap Removal Procedure
Formulae for Nerol Soap

7 Soap perfumery
Soap compounds
Brown Windsor
Carnation
Chypre
Cologne
Cyclamen
Fougere
Heliotrope
Hyacinth
Jasmin
Lavender
Lilac
Lily

8 Management of Soap factories
Technical Efficiency
Introduction
Yield
Fatty acid yield
Glycerol yield
Active detergent yield
Over/under usage of materials
Packing loss/gain
Oil usage pattern
Scrap and downgrading losses
Productivity
Steam, water, electricity
Financial Summary
Pollution Control
Introduction
Source of Pollution
Oil spills
Chemical spills
Bleaching
Chemical treatment
Soap-making
Glycerine Recovery
Laundry Soaps
Toilet Soap
Synthetic Detergents
Sulphonation
Detergent powder manufacture
Boiler House
Coal spillages
Water treatment Section
Boiler Blow Down
Chimney exhaust
Boiler ash
Effluent Treatment
Space and location
Effluent characteristics
The requirements of treated effluent
Effluent treatment methodology
Treatment of Gaseous Effluents
Chemical bleaching
Saponification of oils
Toilet Soaps
Base odour
Rancidity
Discoloration of soap
Cracking
Blisters
Sandiness
Mushiness
Wear
Hardness
Lather
Efflorescence
Storage and Product Assessment Tests
Storage
Product Assessment
Assessment in laundry soaps
Detergency
Lather
Perfume Impact
Wear
Cracking
Assessment of toilet soaps
Feel of soap in use
Mush
Common Quality Problems of Detergents
Detergent Powder
Solubility
Skin irritation
Poor lather/detergency
Detergent Cake
Sogginess
Roughness
Whitish deposit
Poor colour
Poor lather and detergency
Stain Removal
Introduction
Type of stains
Removal of Stains
Lime soap
Protein stains
Iron compounds
Stains due to dyes
Mildew stains
Physical methods of stain removal
Assessment of stain removal

9 Analytical Methods
Determination of Soap Composition
For Nature of Fatty acids in soap
For Anhydrous soap and total alkali content
Procedure
Isolation of Fatty Acids and Rosin Acid
From Soap
Acid Value
Saponification Value
The Saponification
Iodine Value
Wijs Solution (Iodine monochloride solution) Determination
Titer Test Procedure
Rosin Value Procedure
Determination of Total Anhydrous Soap and Combined Alkali Content
Procedure
Unsaponified and Unsaponifiable Matter Determination
Testing of Fatty Oils used for Soap Moisture and Volatile Matter
Insoluble Impurities
Soluble Mineral Matter Determination of Total Fatty Acids of soap stock and acidulated soap stock
Acid value
Ester value Determination of rancidity
Rosin Test Colour Test
Bleach Test Smoke Point
Flash Point Turbidity Point
Cloud Point

10 Plant and Machinery
Four Blades Chipping Machine
Other Chipping Machines
Packing Machine
Spray Drier for making Detergent Powder
Portal Stirrer (Mechanical Agitator)
High Speed Dissolver
Planetary Mixer
Centrifuge
Emulsifier
Edge Runners
Ball and Pebble Mills
Automatic Liquid Filling and Weighing Machine
Automatic Paste Filling and Crimping Machine
Automatic Power Filling Machine
Marking and Printing Machine
Bottle Washing Machine
Ribbon Blender
Batch Mixer
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.

Our Detailed Project report aims at providing all the critical data required by any entrepreneur vying to venture into Project. While expanding a current business or while venturing into new business, entrepreneurs are often faced with the dilemma of zeroing in on a suitable product/line.