

# The Complete Technology Book on Soaps (2nd Revised Edition)

**Author:-** NIIR Board of Consultants & Engineers

**Format:** hardcover

**Code:** NI110

**Pages:** 496

**Price: Rs.1425US\$ 150**

**Publisher:** NIIR PROJECT CONSULTANCY SERVICES

Usually ships within **5** days

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 soap mixer

Refrigeration system

Oleum handling in the sulphonation plant

Oleum still furnace

Exhaust from spray drying tower and air lift

NSD bar mixer exhaust

Boiler exhaust

Analytical Support  
Introduction  
Oils  
Chemicals  
Packaging Materials  
In-process Materials  
Finished Products  
Microbiological Controls  
Analytical Equipments  
General Comments  
Quality Control  
Introduction  
Organisation  
Facilities  
Specifications  
Chemicals  
Packaging materials  
Finished Product  
Manufacturing Method  
Fat Charge  
Chemicals for soap-making  
Sampling  
Sampling of Raw Materials  
Packing materials  
Finished Products  
Vendor education and rating  
Process audit  
Reporting  
Micro-biological Controls  
Bureau of Indian Standards Specifications  
Quality Assurance  
Introduction  
Conventional Approach to Quality  
Recommended Approach to Quality  
Implementation of Quality Assurance  
Quality Control  
Quality Audit  
Summary  
Total Quality Management (TQM)  
ISO 9000 Series Standards  
Common Quality Problems of Soaps  
Introduction  
Laundry Soaps  
Lather  
Cracking  
Detergency  
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  
Marking and Printing Machine  
Bottle Washing Machine  
Ribbon Blender  
Batch Mixer  
Plodders  
Cutters  
Soap Press

11 Addresses of Raw Material Suppliers

12 Photographs of Plant & Machinery with Supplier's Contact Details

# 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.

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.

---

**NIIR PROJECT CONSULTANCY SERVICES**, 106-E, Kamla Nagar, New Delhi-110007, India.  
**Email:** [npcs.india@gmail.com](mailto:npcs.india@gmail.com) **Website:** [NIIR.org](http://NIIR.org)

Fri, 02 May 2025 03:44:41 +0000