

# Soaps, Detergents and Disinfectants Technology Handbook

*(3rd Revised Edition)*

**(Washing Soap, Laundry Soap, Handmade Soap, Detergent Soap, Liquid Soap, Hand Wash, Liquid Detergent, Detergent Powder, Bar, Phenyl, Floor Cleaner, Toilet Cleaner, Mosquito Coils, Naphthalene Balls, Air Freshener, Hand Sanitizer and Aerosols Insecticide)**

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# **Introduction**

Soaps are cleaning agents that are usually made by reacting alkali (e.g., sodium hydroxide) with naturally occurring fat or fatty acids. A soap is a salt of a compound known as a fatty acid. A soap molecule consists of a long hydrocarbon chain (composed of carbons and hydrogen's) with a carboxylic acid group on one end which is ionic bonded to a medallion, usually a sodium or potassium. The hydrocarbon end is nonpolar and is soluble in nonpolar substances (such as fats and oils), and the ionic end (the salt of a carboxylic acid) is soluble in water. Soap is made by combining tallow (or other hard animal fat) or vegetable or fish oil with an alkaline solution. The two most important alkalis in use are caustic soda and caustic potash.

**Related Projects: - Soap, Detergents, Surfactants, Cleaners, Cleaning Powder, Laundry Care, fabric care and wash**

Soaps are potassium or sodium salts of a carboxylic acid having a long aliphatic chain attached to it. They are surfactants (compounds that reduce the surface tension between a liquid and another substance) and therefore help in the emulsification of oils in water. Soaps are generally prepared via the saponification of fats and oils. The carboxylate end of the soap molecule is hydrophilic whereas the hydrocarbon tail is hydrophobic.

**Related Books:- Soaps, Detergents, Acid Slurry, Cleaners, Toiletries, Washing Powder, Cake (Bar), Laundry Care**



A detergent is an effective cleaning product because it contains one or more surfactants. Because of their chemical makeup, the surfactants used in detergents can be engineered to perform well under a variety of conditions. Such surfactants are less sensitive than soap to the hardness minerals in water and most will not form a film. Soaps and Detergents are chemical compound or mixture of compounds used as a cleansing agent. Soap is a sodium salt or potassium salt of many combinations of fatty acids having cleansing action in water whereas Detergent surfactants are much better solutions for the cleaning purpose as the hardness of water does not affect them.

**Related Videos:- Soap, Detergents, Surfactants, Cleaners, Cleaning Powder, Laundry Care, fabric care and wash, Household and Industrial Detergents**

## Types of Soaps

**Toilet Soaps:** Toilet soaps use a higher quality of oils and fatty acids to give them better quality. Sometimes perfumes and colours are added for cosmetic purposes.

**Medicated Soaps:** In these types of soaps we add antiseptics to the soap as an ingredient. The antiseptic is to help kill germs from the surface along with the dirt and dust.

**Floating Soaps;** as the name suggests, these soaps float in the water instead of sinking like normal soaps. This is done by whipping air into the soap in the soap mixture before they set in their moulds.

**Related Book:- Soaps, Detergents and Disinfectants Technology Handbook (3rd Revised Edition)**

**Shaving Soaps:** These soaps must not dry too fast. So glycerol is added to it to keep it from drying. Also, we add a substance known as rosin to help the soap lather.

**Soap Chips:** These are leftover pieces of soap that are left over in soap production. They can also be made by the scrapping of small pieces of soap from a thin sheet of soap.

**Market Research: - Market Research Report**



## Types of Detergents

### **Anionic Detergents**

These are anion active synthetic detergents. There are sulphate salts of long chains of hydrocarbons. The anion active part is the cleansing agent. One common example is sodium alkyl sulphate. The preparation involves treating a long chain alcohol with a concentrated sulphuric acid. Then it is neutralized by Sodium hydroxide.

Anion detergents are the most common type of detergents. They are used in household work mostly, like washing clothes, mopping floors etc. We even use anionic detergents in toothpaste.

**Projects: - Project Reports & Profiles**



## Cationic Detergents

Cationic detergents are ammonia salts, usually of chlorides or acetates. They have a long chained molecular structure of hydrocarbons. And the active part of the molecule is a positive ion. I.e. action. This explains the name cationic detergents. A popular example is cetyltrimethylammonium bromide.

Cationic detergents also have bactericidal properties. One common use for them is in hair conditioners. Cationic detergents tend to be expensive and so they do not have many industrial uses.

**Books:- BOOKS & DATABASES**



## Non-ionic Detergents

As the name suggests they do not have any ions in their molecules, so they are uncharged. To produce nonionic detergents we react polyethene glycol with stearic acid. There are two main types of nonionic detergent polyoxyethylene and glycosidic.

**Related Book:- Soaps, Detergents and Disinfectants Technology Handbook (3rd Revised Edition)**



## Manufacturing Process

### Soap

Saponification processes are chemical soap manufacturing processes that produce soap from fatty acid derivatives. Saponification process for soap manufacturing involves hydrolysis of esters under basic conditions to form an alcohol and the salt of a carboxylic acid (carboxylates). Saponifiable substances are the soaps and detergent ingredients that can be converted into soap.

**Related Book:- Modern Technology of Soaps, Detergents & Toiletries (with Formulae & Project Profiles) 4th Revised Edition**



In Saponification soap manufacturing processes, vegetable oils and animal fats are used for making soaps. Trimesters or Triglycerides are the greasy materials derived from these diverse fatty acids. Soap manufacturing is done in a one-step or a two-step process. In the one-step soap manufacturing process, the triglyceride is treated with a strong base, for example, lye, that accelerates cleavage of the ester bond and releases the fatty acid salt and glycerol. This one step soap manufacturing process is the key industrial method for producing glycerol.

**Related Book:- Handbook on Soaps, Detergents & Acid Slurry (3rd Revised Edition)**



Sometimes soaps may be precipitated by salting it out with saturated sodium chloride. For soap manufacturing, triglycerides are highly purified but saponification process includes other base hydrolysis of unpurified triglycerides. For example the conversion of the fat of a corpse into adipoceros, sometimes known as "grave wax." This soap manufacturing process is more common where the amount of fatty tissue is high, the agents of decomposition are absent or are negligibly present, and the burial ground is particularly alkaline.

**Related Book:- Herbal Soaps & Detergents Handbook**



## Detergents Manufacturing Process

Detergents are manufactured using a synthetic surfactant in place of the metal fatty acid salts that are used in soaps. Made in powder detergents, these detergents are sold as laundry powders, hard surface cleansers, dishwashing detergents, fabric conditioners etc. Most of the powder detergents have soap in their mixture of ingredients, however it generally functions more as a foam depressant than as a surfactant.

**Related Book:- The Complete Technology Book on Detergents (2nd Revised Edition)**



## **Chemical Processes**

Powder detergents are manufactured using various processes, such as spray drying, agglomeration, dry mixing or a combination of these. A brief description of these different processes is given below –

### **Spray Drying Process**

The different stages / operations performed in a spray drying process, are –

Dry and liquid ingredients are first combined into a slurry, or thick suspension, in a tank known as cruncher. The slurry is heated and then pumped to the top of a tower where it is sprayed through nozzles (under high pressure) to create small forming hollow granules as they dry. Droplets. The droplets fall through a current of hot air, thereby

**Related Book:- The Complete Technology Book on Soaps (2nd Revised Edition)**

Collected from the bottom of the spray tower, the dried granules are screened to obtain a relatively standard size. After the granules have been cooled, heat sensitive ingredients, which are not compatible with the spray drying temperatures (like bleach, enzymes and fragrance) are added.

Traditional spray drying process produces relatively low-density detergent powders. Advancements in technology have enabled the soap and detergent manufacturers to reduce the air inside the granules during spray drying to obtain higher densities. The high-density detergent powders can be packed in much smaller packages than those needed previously.

**Related Book:- Soaps, Detergents and Disinfectants Technology Handbook (3rd Revised Edition)**



## **Agglomeration**

Agglomeration is detergent powder manufacturing chemical technique that results in high-density powders. The process involves blending of dry raw materials with liquid ingredients. The technique involves machines, such as a liquid binder, rolling or shear mixing that causes the ingredients to collide and adhere to each other, producing larger particles.

## **Dry Mixing**

Dry mixing is a detergent powder manufacturing technique, which is used to blend dry raw materials. The technique may also involve the addition of small quantities of a liquid.

**Related Book:- Soaps, Detergents and Disinfectants Technology Handbook (3rd Revised Edition)**

## **Application**

### **Laundry Cleaning Products:-**

Detergent Powder

Detergent Cake

Fabric Softener

Laundry Liquid

Stain and Odor Eliminator

### **Household Cleaning Products**

Floor Cleaners

Glass Cleaners

Toilet Bowl Cleaners

Wood Cleaners

**Market Research: - Market Research Report**

## **Dishwashing Products**

Dishwasher Liquid

Dishwasher Powder

Dishwasher Gel

Dishwasher Tablets

## **Fuel Additives**

## **Biological Reagent**

## **Other Applications**

Projects: - [Project Reports & Profiles](#)



## Soap and Detergent Market

The rising disposable income and rapid urbanization in developing countries are expected to increase the demand for soaps and detergents. The manufacturers are continuously focusing on innovative product development to cater the unmet needs of their customers. For instance, anti-allergy soaps and natural ingredients containing detergents are heavily adopted by consumers with delicate skin. The market is witnessing globalization in the sector, as more and more global vendors are branching out in the market to increase their market share. With rising globalization, vendors of the market are facing new challenges to sustain their growth and compliant as per the laws and regulations directed by various government agencies. The potential opportunities in the developing economies are expected to provide ample of demand for the product over the forecast period

The detergents market is expected to grow during the forecast period owing to the increasing demand for laundry cleaning products segment. Liquid laundry detergent is primarily used in cleaning laundry and has two main end-user segments, such as residential and commercial. The commercial applications are in textile industry, hospitality industry, laundry services, and other industries, whereas residential applications include its use in household cleaning. The demand for liquid laundry detergent is growing, owing to the comfort and ease of application and lesser wastage, compared to detergent powders.

**Projects: - Project Reports & Profiles**



Soap is defined as a chemical compound or mixture of compounds used mainly as a cleaning agent. Soaps are prepared when animal fats or vegetable oils are treated with an alkaline solution. The fats and oils used in soap-making are derived from animal or plant sources. Every fat or oil is made up of a distinctive mixture of several different triglycerides. Similarly, detergent is also a cleaning agent, prepared from synthetic or man-made materials. Both soap and detergent are used for cleaning purposes but in some scenarios detergent can perform better cleaning jobs than soap. Detergents are frequently used in products for personal hygiene, dish washing, and laundry. They are also used as ingredients in antiseptic agents, dry-cleaning solutions, lubricating oils, and gasoline.

**Books:- BOOKS & DATABASES**

Detergents are the potassium or sodium salts of a long alkyl chain ending with a sulfonate group. They are soluble in hard water. This solubility is attributed to the fact that the sulfonate group does not attach itself to the ions present in hard water. Commonly, anionic detergents such as alkyl benzene sulfonate are used for domestic purposes.

Disinfectants are chemical agents applied to non-living objects in order to destroy bacteria, viruses, fungi, mold or mildews living on the objects. Disinfectants are chemical substances used to destroy viruses and microbes (germs), such as bacteria and fungi, as opposed to an antiseptic which can prevent the growth and reproduction of various microorganisms, but does not destroy them. The ideal disinfectant would offer complete sterilization, without harming other forms of life, be inexpensive, and non-corrosive.

**Related Book:- Modern Technology of Soaps, Detergents & Toiletries (with Formulae & Project Profiles) 4th Revised Edition**

The global soap and detergent market is expected to reach USD 207.56 billion by 2025. The industrial soaps & detergents are extensively used by the commercial laundries, hotels, restaurants, and healthcare providers. Increasing demand from healthcare and food industries will continue to drive the market. Aerosol and liquid products are the common disinfectants used in hospitals, although growing number of healthcare facilities are implementing ultraviolet disinfection systems as further measure. Increasing demand for disinfectants from water treatment and healthcare industries is fuelling growth of the global disinfectants market.

**Related Book:- Handbook on Soaps, Detergents & Acid Slurry (3rd Revised Edition)**



The major contents of the book are Liquid Soaps and Hand Wash, Liquid Soap and Detergents, Washing Soap: Laundry Soap Formulation, Antiseptic and Germicidal Liquid Soap, Manufacturing Process And Formulations Of Various Soaps, Handmade Soap, Detergent Soap, Liquid Detergent, Detergent Powder, Application and Formulae Of Detergents, Detergent Bar, Detergents Of Various Types, Formulating Liquid Detergents, Phenyl, Floor Cleaner, Toilet Cleaner, Mosquito Coils, Naphthalene Balls, Air Freshener (Odonil Type), Liquid Hand Wash and Soaps, Hand Sanitizer, Aerosols—Water and Oil Based Insecticide (Flies, Mosquitoes Insect and Cockroach Killer Spray), Ecomark Criteria for Soaps & Detergents, Plant Layout, Process Flow Chart and Diagram, Raw Material Suppliers List and Photographs of Machinery with Supplier's Contact Details.

**Related Book:- [Herbal Soaps & Detergents Handbook](#)**

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.

**Related Book:- Soaps, Detergents and Disinfectants Technology Handbook (3rd Revised Edition)**



# Table of Contents

**1. INTRODUCTION**

**2. LIQUID SOAPS AND HAND WASH**

Method of Manufacture

Raw Material Required

**3. LIQUID SOAP AND DETERGENTS**

Product Introduction

Method of Manufacture

Liquid Detergents

Weight Equivalents of DDBSA

Molecular Weights

Special Procedures for Compounding

#### **4. WASHING SOAP : LAUNDRY SOAP FORMULATION**

Manufacture of Laundry Neat Soap from Oil, Blend

Harding of RBD

Acid Wash for RBHT

Salt Wash for Neem Oil

Blending

Neem Soap Manufacture

Manufacture of Laundry Soap

Step 1: Mixing of Sodium Silicate, China Clay and Salt

Step 2: Cratcher Mixing Operation

Step 3: Spray Drying

Step 4: Cutting

Step 5: Stamping

Step 6: Wrapping

Step 7: Packing

Theory

Process and Raw Material

Product Profile

Washing Soaps

Brand Name

Process

**5. ANTISEPTIC AND GERMICIDAL LIQUID SOAP**

Hexachlorophene Soaps

Control of Clarity

Filtration

Bottling and Packaging

**6. MANUFACTURING PROCESS AND FORMULATIONS OF VARIOUS SOAPS**

(A) Washing Soaps

1. Washing Soap with Soap Stone (by Cold Process)

Process

2. Washing Soap with Soda Silicate (by Cold Process) Process
3. Washing Soap Process
4. Sunlight Type Washing Soap Process
5. Sunlight Type Washing Soap (Other Formula) Process
6. Washing Soap Made of Groundnut Oil Residue Process
7. Washing Soap (from Linseed Oil) Process
8. Washing Soap (made of Cottonseed Oil) Process



Nerol Shop

Process of Manufacturing

9. Other Selected Formulas of Washing Soaps

Process

(B) Nerol Washing Soap

Process of Manufacturing

(C) Toilet Soaps

Selected Formulas for Toilet Soaps

For Toilet Soap Perfumes

(D) Carbolic Soaps

Process

2. +-Lifeboy Type Soap Process

### 3. Transparent Soap (Pears Types) Process

Transparent Soap (Another Formula) Process

(E) Shaving Soaps Process

Process

(F) Special Soaps

1. Borax Soap (For Pimples) Process
2. Borax Soft Soap Process
3. Soft Soap (Other Formula) Process
4. Rug Cleaning Soap Process
5. Dry-Cleaning Soap (Liquid) Process
6. Soap used in the Bleaching of Jute Process

7. Built Soaps for Cottons and Linens Process

8. Sandle Soap Process

(G) Vaseline Soap Process

(H) Liquid Soap Process

(I) Girt Soaps Process

2. Hand Soap Paste with Mineral Abrasive Process

3. Powdered Hand Soap with Vegetable Abrasive and Lanolin Process

(J) Depilatory Soaps Process

(K) Metallic Soaps in protective coating industry Metals

Method of Precipitation

(L) Liquid Dental Soap

(M) Medicated Soap

Neem Soap

Formulation

## 7. **HANDMADE SOAP**

Properties

Benefits of Handmade Soap

Types of Handmade Soap

Cold Process Soap

Hot Process Soap

Liquid Soap

Transparent Soap

Glycerin Soap

Ready-Made Soap Bases

## Basic Ingredients in Handmade Soap

Tools and Equipments

Temperature Chart

Handmade Soap Formulae

Lavender Soap

Sweet Almond Oil Soap

Seagrass Soap

Cocoa and Shea Butter Soap

Column Swirl Soap

Spoon Swirl Handmade Soap

Cocoa Butter Soap

Coffee Soap

Creamy Coconut Milk Soap

Rose Milk Soap

Sweet Citrus Honey

White Camellia Oil Soap

Basic Soap-Making Processes

Cold Process

Hot Processes

Moulds

Purification and Finishing

## **8. DETERGENT SOAP**

Properties

Uses & Applications

Detergent Cake Formulation

Manufacturing Process

Process Flow Diagram

## **9. PACKAGING OF SOAPS**

Soap Packaging Benefits

Factors to Consider

Types of Soap Packaging

Soap Packaging Machines

## **10. LIQUID DETERGENT**

Uses of Liquid Detergent

Liquid Detergent Formulations

1. Heavy Duty Liquid Detergent
2. Light Duty Liquid Detergent

Manufacturing Process

Process Flow Diagram

**11. DETERGENT POWDER**

Properties of Detergent Powder

Uses & Application

Manufacturing Process

Process Flow Diagram

**12. APPLICATION AND FORMULAE OF DETERGENTS**

Foam

Household Cleaning

Heavy-Duty Laundering

Formula 9

Spray-dried Heavy-duty Household Hand-washing Powder

Foam Control

Formula 10

Heavy-duty Fully Automatic Washing Machine Powder

Formula 11

## Low-foaming Machine Powder for Soft-water Areas

Formula 12

Low-foaming Machine Powder for Soft-water Areas Using  
Formulae 13-14

Spray- dried Household Low-foaming Laundry Powders  
Formulae 15, 16, 17, 18

Heavy-duty Liquid Detergents

Formula 19

Heavy-duty Liquid Detergent with 'Controlled Foam'  
Formula 20

Heavy-duty Liquid Detergent and Bleach  
Formula 21

Light-duty Household Liquid Detergent  
Formula 22

Lotion-type Light-duty Liquid Detergent  
Formulae 23-27

## Light-duty Liquid Detergents

Formula 28

Household Fine-wash Spray-dried Powder

Formula 29

40 per cent Detergent Paste

Formula 30

Spray-dried General-purpose Powder

Formula 31

General-purpose Powder

Formula 32

General-purpose Powder

## Choice of Non-Ionic

Concentrated Powders

Mix Together

Cold Water Washing

Hard-Surface Cleaners

Formula 33

Hard-surface Cleaner

Formula 34

Hard-surface Cleaner

Formula 35

Aerosol Oven Cleaner

Machine Dishwashing

Formula 36

Machine Dish-washing Powder for Soft-water Areas

Formula 37

Machine Dish-washing Powder for Moderately Hard-water Areas

Formula 38

Machine Dish-washing Powder for Hard-Water Areas

Abrasive-Type Cleaners

Formula 39

Household Scouring Powder

Formula 40

Formula 41

Household Scouring Liquid

Miscellaneous Household Cleaners

Formula 42

Household Window-cleaning Liquid

Formula 43

Floor Cleaner

Commercial Laundering

Formula 44

## Spray-dried Industrial Laundry Powder

Formula 45

Industrial Laundry Powder not Spray-dried

Solvent Detergents

Formula 46

Detergent-solvent Combination

Formula 47

Detergent-solvent Combination

Formula 48

Kerosene Water Solution

Formula 49

Solvent detergent Combination

Formula 50

Solvent-detergents based on 100 per cent ABS (So<sub>3</sub> produced)

Formula 51

Dry-cleaning Detergent

Carpet and Upholstery Cleaners

Textile Dressing

Formula 52

Textile Scouring Paste

Formula 53

Textile Degumming Detergent Paste

Mercerizing

Food and Dairy Industries

Formulae 54-56

Food and Dairy Alkaline Detergent Cleaner

Formula 57

## Bottle-washing Compound

Detergent Sanitizers

Formula 58 and Formula 59

Metal Cleaners

Formula 60

Acid Cleaner for Water-cooling Systems

Miscellaneous Cleaners

Lavatory Cleaner

Hand Cleaners

Formula 75

Hand Cleanser

Formula 76

Detergent Hand Cleanser

Formula 77

Hand Cleanser in Powder Form

Waterless Hand Cleansers

Formula 78

Waterless Hand Cleanser

Formula 79

Waterless Hand Cleanser

Formula 80

Waterless Hand Cleanser

**13. DETERGENT BAR**

Formulation

Sequence of Additions

Type of Defects

Manufacturing Process of Detergent Bar

**14. DETERGENTS OF VARIOUS TYPES**

(A) Detergent Powder

Method

Other Formulaes

Process

List of Plant and Machinery

Raw Materials Used per day

## Dairy Equipment Cleaners

Bottle Cleaners

Preparation of Caustic Gluconate Solution

Dairy Equipment Cleaners

Dish Washing Detergents

- (a) For China Dishes by Soft Water
- (b) In Soft as well as Moderately Hard Water
- (c) For China Dishes by Hard Water
- (d) For Plasticware/Chinaware

## Other Dish-Washing Compounds (Vim Type Cleaning-Powder)

1. For Aluminium Ware
2. For Glass, China and Silverware
3. Washing Powder (For Cottons)
4. Washing compounds (For Woollens)
5. Washing Compound (For Wool)

## 6. Rug Cleaners

7. Floor Cleaners (Building Surface)

8. Wall Cleaner

9. Floor Cleaner (Light Duty Powder)

10. Heavy Duty Cleaner

11. Various Head Cleaning Compounds

12. Cleaner for Artificial Teak

13. Stoneware Glaze

14. Paint Brush Cleaner

15. Auto Polish

Process

Direction for Use

Process

Direction for Use

Process

## Direction for Use

Scouring Powders

Floor Cleaners

1. Common Wall Cleaner
2. Light Duty Cleaner (Powder)
3. Heavy Duty Cleaner
4. Cleaner for Building Surface

Sanitary Cleaner

List of Plants and Machinery

Raw Material

Metal cleaners

Aluminium Cleaner

Steel Cleaner

Cleaner for Iron Applied Prior to Galvanishing

Liquid Pine Scrub Soap for General Floor Scrubbing

Wax Removing Cleaner (Liquid)

Sweeping Compound (Oil Base)

Painted Surface Cleaner (Powder)

(B) Liquid Detergents

All Purpose Liquid Cleaners

Dish Washing Liquid Detergents

Formulations for Mechanical Dishwasher

Hand Washing Liquid Detergent

Miscellaneous Cleaners

Textile Scouring Paste

Degumming Paste for Wool

Liquid Cleaners for Hard Surface

Window Panes Cleaning Liquid

Dry Cleaning Detergent Process

## (C) Detergent (Nirma Type)

Formulations for the Nirma Type Detergent Powder

List of Plant and Machinery

Raw Materials Required/Month

## (D) Detergent Cake

Manufacturing Process for Detergent Cake Basis 1 TPD

1. Sulfonation of Alkyl Benzene
2. Separation Step
3. Neutralization Stop
4. Mixing of Ingredients
5. Concentration of Slurry
6. Making of Cake
7. Packing
8. Despatching

List of Plant and Machinery

Raw Materials Required per day

## 15. **FORMULATING LIQUID DETERGENTS**

Requisites of Surfactants for Formulating Liquid Detergents

Surfactants Most Commonly Used

Builders

Viscosity Controllers

Other Ingredients

Household Liquid Detergents For Laundering

Heavy Duty

Typical Formulations

Process

Light Duty : (for Silk, Wool etc.)

Shampoos

Rug Cleaning Liquid Detergent Formulations

A Recommended Formulation

**16. PHENYL**

Uses

Properties

Manufacturing Process

**17. FLOOR CLEANER**

Composition of Floor Cleaner

Uses of Floor Cleaner

Raw Material Required for Floor Cleaner

Manufacturing Process of Floor Cleaner

Process Flow Diagram of Floor Cleaner



## **18. TOILET CLEANER**

Properties

Features

Formulations of Toilet Cleaner

Manufacturing Process of Toilet Cleaner

Process Flow Diagram of Toilet Cleaner

## **19. MOSQUITO COILS**

Uses and Application

Properties

Basic Raw Material

Manufacturing Process

Process Flow Diagram

**20. NAPHTHALENE BALLS**

Uses & Application

Properties

Manufacturing Process

Process Flow Diagram

**21. AIR FRESHENER (ODONIL TYPE)**

Properties

Uses and Applications

Formulation for Preparing Odonil Type Solid Deodorant Cake

Manufacturing Process

Process Flow Diagram

**22. LIQUID HAND WASH AND SOAPS**

Method of Manufacture

Raw Material Required

## **23. HAND SANITIZER**

Physical and Chemical Properties

Ingredients

Uses

Formulation of Herbal Hand Sanitizer

Manufacturing Process

## **24. AEROSOLS-WATER AND OIL BASED INSECTICIDE (Flies, Mosquitoes Insect and Cockroach Killer Spray)**

Aerosol Container

Formulation of Insecticide Aerosols

Oil-Based Aerosol (OBA)

Water-Based Aerosols (WBA)

Alcohol-Based Aerosol

Filling Process of Oil-based Insecticide Aerosols (U-t-C)

The Production Process of Oil-Based Insecticide Aerosol

The Preparation of Concentrate

The Preparation of Diluent Solution

## Filtration

Filling Process of Water-Based Insecticide Aerosols (T-t-V method)

Filling Process of Water-Based Insecticide Aerosols (U-t-C)

Instruction of Process

A. Procedures of Water-Based Aerosols

B. Procedures of Oil-Based Aerosols

C. Aerosol Production Line

Water-Based Aerosol Insecticide Formulation

The Biological Efficacy of Typical Formulation

FE Insecticide Aerosols

A. Features

B. Composition and the Physical Feature

C. Comparison of Efficacy to Insects Between FE and Other Knock

Down Agent

Insecticide Aerosols for Special Uses

**25. ECOMARK CRITERIA FOR SOAPS & DETERGENTS**

A. Toilet Soaps

1. General Requirements
2. Product Specific Requirements

B. Detergents

1. General Requirements
2. Product Specific Requirements
3. General Requirements

**26. PLANT LAYOUT**

**27. PROCESS FLOW CHART AND DIAGRAM**

**28. RAW MATERIAL SUPPLIERS LIST**

## **29. PHOTOGRAPHS OF MACHINERY WITH SUPPLIER'S CONTACT DETAILS**

Liquid Soap Making Machine

Three Roll Mill

Blender

Heat Exchanger

Plodder

Centrifuge

Flash Tank

Water Strainer

Cyclone Separator

Vaccum Pump

Hammer Mill

Jacketed Kettle

Condenser

Storage Tank

Steam Heater

Agitator

Soap Packing Machine

Transfer Pump

Hopper

Spray Dryer

Pulverizer Machine

Washing Powder Making Machinery

Bath Soap Making Machine

Soaps Wrapping Machine

Detergent Cake Making Machine

Manual Soap Cutter

Soap Extruders

Soap Mixer

## Soap Presses

Soap Crutcher

Soap Flaker

Detergent Making Machine

Hand Wash Liquid Soap Making Machine

Ribbon Blender

Cage Mill

Automatic Production Line for High Laundry Detergent Filling and Capping

Soap Finishing Line

Canned Fresh Air Filling Machine Assembly Line 2800E

Air Filling Machine 1600D1

Aerosol Filling Machines Automatic Single Platform 2800A

Aerosol Filling Machines

Aerosol Contract Filling Machine

Aerosol Filling Plant

Aerosol Filling Equipment With 5 in 1 Function 1600C

Toilet Soap Line

Laundry Soap Making Process Chart

Soap Production Line Machine

Soap Production Line Plant

Soap Making Line Machinery Soap Production Line



# Tags

**#SoapsMarket**      **#soapsindustry**      **#chemicalindustry**      **#chemicals**  
**#personalcare**      **#DetergentProduction**      **#soapproductionplant**  
**#detergentmarket**      **#liquiddetergentmarket**      **#LiquidDetergent**  
**#detergentindustry**      **#DetergentProject**      **#DetergenthandBook**  
**#SurfaceDisinfectantMarket**      **#DisinfectantMarket**      **#Disinfectant**  
**#DisinfectantMarketShare**      **#SurfaceDisinfectantMarketSize**  
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## OUR CLIENTS

Our inexhaustible Client list includes public-sector companies, Corporate Houses, Government undertaking, individual entrepreneurs, NRI, Foreign investors, non-profit organizations and educational institutions from all parts of the World. The list is just a glimpse of our esteemed & satisfied Clients.

**Click here to take a look**  
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## **Select and Choose the Right Business Startup for You**

### **(Instant Online Project Identification and Selection)**

**Finding the right startup business is one of the most popular subject today. Starting a business is no easy endeavor, but the time, effort, and challenges can be worth it if you succeed. To give yourself the best chance to be successful, take your time to carefully find the right business for you. We, at NPCS, endeavor to make business selection a simple and convenient step for any entrepreneur/startup. Our expert team, by capitalizing on its dexterity and decade's long experience in the field, has created a list of profitable ventures for entrepreneurs who wish to diversify or venture. The list so mentioned is updated regularly to give you a regular dose of new emerging opportunities.**

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**Our Market Survey cum Detailed Techno Economic Feasibility Report provides an insight of market in India. The report assesses the market sizing and growth of the Industry. 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.**

**And before diversifying/venturing into any product, they wish to study the following aspects of the identified product:**

- **Good Present/Future Demand**
- **Export-Import Market Potential**
- **Raw Material & Manpower Availability**
- **Project Costs and Payback Period**

**The detailed project report covers all aspect of business, from analyzing the market, confirming availability of various necessities such as Manufacturing Plant, Detailed Project Report, Profile, Business Plan, Industry Trends, Market Research, Survey, Manufacturing Process, Machinery, Raw Materials, Feasibility Study, Investment Opportunities, Cost and Revenue, Plant Economics, Production Schedule,**

**Working Capital Requirement, uses and applications, Plant Layout, Project Financials, Process Flow Sheet, Cost of Project, Projected Balance Sheets, Profitability Ratios, Break Even Analysis. The DPR (Detailed Project Report) is formulated by highly accomplished and experienced consultants and the market research and analysis are supported by a panel of experts and digitalized data bank.**

**We at NPCS, through our reliable expertise in the project consultancy and market research field, have demystified the situation by putting forward the emerging business opportunity in India along with its business prospects.....[Read more](#)**

# Contact us

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# Niir PROJECT CONSULTANCY SERVICES

AN ISO 9001: 2015 CERTIFIED COMPANY



## Who are we?

- *One of the leading reliable names in industrial world for providing the most comprehensive technical consulting services*
- *We adopt a systematic approach to provide the strong fundamental support needed for the effective delivery of services to our Clients' in India & abroad*



*We at NPCS want to grow with you by providing solutions scale to suit your new operations and help you reduce risk and give a high return on application investments. We have successfully achieved top-notch quality standards with a high level of customer appreciation resulting in long lasting relation and large amount of referral work through technological breakthrough and innovative concepts. A large number of our Indian, Overseas and NRI Clients have appreciated our expertise for excellence which speaks volumes about our commitment and dedication to every client's success.*

*We bring deep, functional expertise, but are known for our holistic perspective: we capture value across boundaries and between the silos of any organization. We have proven a multiplier effect from optimizing the sum of the parts, not just the individual pieces. We actively encourage a culture of innovation, which facilitates the development of new technologies and ensures a high quality product.*



## What do we offer?

- *Project Identification*
- *Detailed Project Reports/Pre-feasibility Reports*
- *Market Research Reports*
- *Business Plan*
- *Technology Books and Directory*
- *Industry Trend*
- *Databases on CD-ROM*
- *Laboratory Testing Services*
- *Turnkey Project Consultancy/Solutions*
- *Entrepreneur India (An Industrial Monthly Journal)*

## How are we different ?

- *We have two decades long experience in project consultancy and market research field*
- *We empower our customers with the prerequisite know-how to take sound business decisions*
- *We help catalyze business growth by providing distinctive and profound market analysis*
- *We serve a wide array of customers , from individual entrepreneurs to Corporations and Foreign Investors*
- *We use authentic & reliable sources to ensure business precision*

# Our Approach

Requirement collection

Thorough analysis of the project

Economic feasibility study of the Project

Market potential survey/research

Report Compilation

## Who do we Serve?

- Public-sector Companies
- Corporates
- Government Undertakings
- Individual Entrepreneurs
- NRI's
- Foreign Investors
- Non-profit Organizations, NBFC's
- Educational Institutions
- Embassies & Consulates
- Consultancies
- Industry / trade associations

## Sectors We Cover

- Ayurvedic And Herbal Medicines, Herbal Cosmetics
- Alcoholic And Non Alcoholic Beverages, Drinks
- Adhesives, Industrial Adhesive, Sealants, Glues, Gum & Resin
- Activated Carbon & Activated Charcoal
- Aluminium And Aluminium Extrusion Profiles & Sections,
- Bio-fertilizers And Biotechnology
- Breakfast Snacks And Cereal Food
- Bicycle Tyres & Tubes, Bicycle Parts, Bicycle Assembling

## Sectors We Cover *Cont...*

- Bamboo And Cane Based Projects
- Building Materials And Construction Projects
- Biodegradable & Bioplastic Based Projects
- Chemicals (Organic And Inorganic)
- Confectionery, Bakery/Baking And Other Food
- Cereal Processing
- Coconut And Coconut Based Products
- Cold Storage For Fruits & Vegetables
- Coal & Coal Byproduct

## Sectors We Cover *Cont...*

- Copper & Copper Based Projects
- Dairy/Milk Processing
- Disinfectants, Pesticides, Insecticides, Mosquito Repellents,
- Electrical, Electronic And Computer based Projects
- Essential Oils, Oils & Fats And Allied
- Engineering Goods
- Fibre Glass & Float Glass
- Fast Moving Consumer Goods
- Food, Bakery, Agro Processing

## Sectors We Cover *Cont...*

- Fruits & Vegetables Processing
- Ferro Alloys Based Projects
- Fertilizers & Biofertilizers
- Ginger & Ginger Based Projects
- Herbs And Medicinal Cultivation And Jatropha (Biofuel)
- Hotel & Hospitality Projects
- Hospital Based Projects
- Herbal Based Projects
- Inks, Stationery And Export Industries

## Sectors We Cover

*Cont...*

- Infrastructure Projects
- Jute & Jute Based Products
- Leather And Leather Based Projects
- Leisure & Entertainment Based Projects
- Livestock Farming Of Birds & Animals
- Minerals And Minerals
- Maize Processing(Wet Milling) & Maize Based Projects
- Medical Plastics, Disposables Plastic Syringe, Blood Bags
- Organic Farming, Neem Products Etc.

## Sectors We Cover *Cont...*

- Paints, Pigments, Varnish & Lacquer
- Paper And Paper Board, Paper Recycling Projects
- Printing Inks
- Packaging Based Projects
- Perfumes, Cosmetics And Flavours
- Power Generation Based Projects & Renewable Energy Based Projects
- Pharmaceuticals And Drugs
- Plantations, Farming And Cultivations
- Plastic Film, Plastic Waste And Plastic Compounds
- Plastic, PVC, PET, HDPE, LDPE Etc.

## **Sectors We Cover** *Cont...*

- Potato And Potato Based Projects
- Printing And Packaging
- Real Estate, Leisure And Hospitality
- Rubber And Rubber Products
- Soaps And Detergents
- Stationary Products
- Spices And Snacks Food
- Steel & Steel Products
- Textile Auxiliary And Chemicals

## Sectors We Cover *Cont...*

- Township & Residential Complex
- Textiles And Readymade Garments
- Waste Management & Recycling
- Wood & Wood Products
- Water Industry(Packaged Drinking Water & Mineral Water)
- Wire & Cable



# MARKET RESEARCH REPORTS



## Objective

- ⌘ To get a detailed scenario of the industry along with its structure and classification
- ⌘ To provide a comprehensive analysis of the industry by covering aspects like:
  - ⌘ Growth drivers of the industry
  - ⌘ Latest market trends
  - ⌘ Insights on regulatory framework
  - ⌘ SWOT Analysis
  - ⌘ Demand-Supply Situation
  - ⌘ Foreign Trade
  - ⌘ Porters 5 Forces Analysis

## Objective

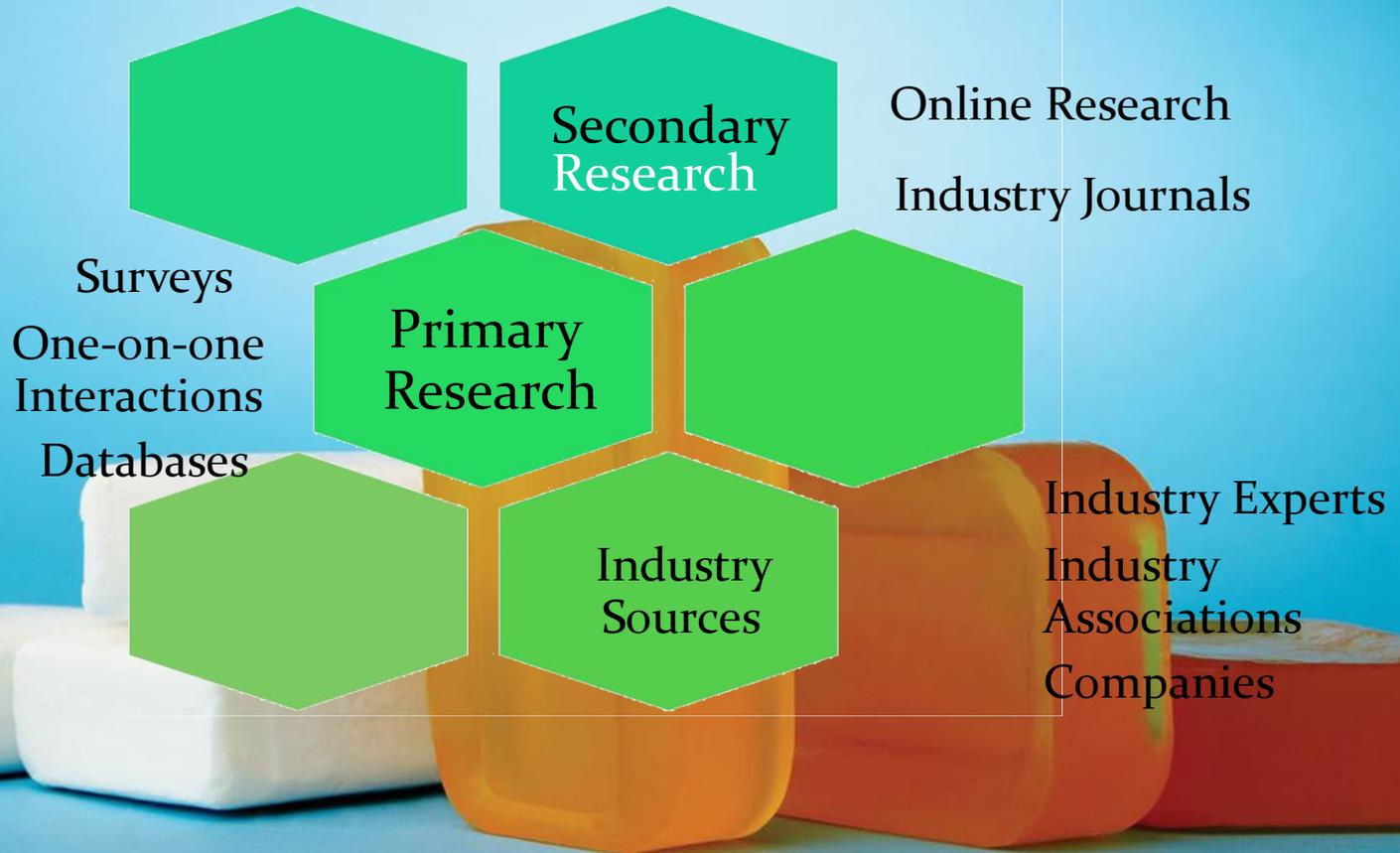
- ∞ To provide forecasts of key parameters which helps to anticipate the industry performance
- ∞ To help chart growth trajectory of a business by detailing the factors that affect the industry growth
- ∞ To help an entrepreneur/manager in keeping abreast with the changes in the industry
- ∞ To evaluate the competitive landscape of the industry by detailing:
  - ∞ Key players with their market shares
  - ∞ Financial comparison of present players

## **Clientele**

- ⌘ Venturist/Capitalists
- ⌘ Entrepreneur/Companies
- ⌘ Industry Researchers
- ⌘ Investment Funds
- ⌘ Foreign Investors, NRI's
- ⌘ Project Consultants/Chartered Accountants
- ⌘ Banks
- ⌘ Corporates

**[Click here for list](#)**

# Data Sources



# Scope & Coverage



## Our Team

⌘ Our research team comprises of experts from various financial fields:

⌘ MBA's

⌘ Industry Researchers

⌘ Financial Planners

⌘ Research veterans with decades of experience

# Structure of the Report

- 1. Overview
- 2. Market Analysis
  - 2.1 Growth Drivers
  - 2.2 Emerging Trends in the Industry
  - 2.3 Regulatory Framework
  - 2.4 SWOT Analysis
  - 2.5 Herfindahl–Hirschman Index (HHI)
- 3. Market Forecasts
- 4. Key Players

# Structure of the Report

*Cont*

⌘5. Key Financials and Analysis

⌘5.1 Contact Information

⌘5.2 Key Financials

⌘5.3 Financial comparison

⌘6. Industry Size & Outlook

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