

Herbal Soaps & Detergents Handbook

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The use of herbs for medicinal and cosmetic purpose goes back to the ancient times. The emphasis at the present hour has been laid on the spectacular growth of the herbal and ayurvedic products. The demand in past is found to have increased with increase in number of middle class population. People are now a days very much aware of the ingredients in cosmetic products, the benefits of plant products and the harmful effects of chemical ingredients. The presence of artificial and chemical ingredients in cosmetic products has made people to rethink about suitable alternatives to suit their personal care regime. The herbal products have finally made their appearance in packaged form in the domestic markets, as cosmetics and personal care preparation such as soaps, shampoos, detergent bars, liquid soaps, liquid detergents, etc. These products play a vital role in our sense of well being and quality of life. The herbal soaps and detergents directly influence our emotions and can trigger moods. These creations not only protect the skin from harmful sun radiations but also leave behind a pleasant fragrance. Due to the increasing awareness and importance of cleanliness and healthiness, the use of herbal products is also increasing. Future demand for herbal products depends upon the per capita rate of consumption and segment of population using these products.

This handbook provides detailed information on the manufacturing process of herbal soaps and detergents. This book contains numerous formulae, manufacturing process of different type of soaps and detergents which are used in day to day life. The book is an unique compilation and will be very helpful to all its readers, new entrepreneurs, professionals, beauty care product manufacturers, existing units, technical institutions, etc.

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Important Essentials, Isolates, Synthetic Odourous
Chemicals and Fixatives
Isolates
Synthetic Odourous Chemicals
Fixatives

Raw Materials : Herbal Products

Acacia arabica

A. indica Benth

Parts Used : Bark, gum, leaves, seeds, pods.

Acalypha Indica

(N.O. - Euphorbiaceae)

ANDROPOGON MURICATUS. Retz. or A. Squarrosus

Angelica (Angelica archangelica)

Anise (Pimpinella anisum)

Associated Oil

AZADIRACHTA INDICA

Basil (Ocimum basilicum)

BALSAMODENDRON MUKUL, HOOK. or B. agollocha

Parts Used - Gum

BALSAMODENDRON MYRRHA

(N.O. Burseraceae)

Parts Used : Gum from the bark of the tree

Bay (Laurus nobilis)

Associated Oils

Benzoin (*Styrax benzoin*)
Associated Oils
Bergamot (*Citrus bergamia*)
Birch (*Betula lenta*)
Associated Oils
Calendula (*Calendula Officinalis*)
Associated Oil
Caraway (*Carum carvi*)
Cardamom (*Elettaria cardamomum*)
CITRUS MEDICA, Linn
(N.O.—Rutaceae)
Carrot Seed (*Daucus carota*)
Caulophyllum Inophyllum
Cedarwood (*Cedrus species*)
Cinnamon (*Cinnamomum zeylanicum*)
Associated Oils
Clary Sage (*Salvia sclarea*)
Associated Oils
Celery (*Apium graveolens*)
Chamomile, German
(*Matricaria recutita*, formerly *M. chamomilla*)
Associated Oils
Coriander (*Coriandrum sativum*)
Curculigo orchioides Gaertn
(N.O.—Amaryllidaceae)
Ayurvedic Properties
CURCUMA LONGA, Linn
(N.O.—Scitaminaceae)
Associated Oil
Cypress (*Cupressus sempervirens*)
Eucalyptus (*Eucalyptus globulus*)
Associated Oils
Fennel (*Foeniculum vulgare*)
Associated Oil
Fir (*Abies alba* and other species)
Associated Oils
Associated Oils
FICUS RELIGIOSA LINN
(N.O. Moraceae)
Parts Used : Bark, Fruit, Root
Ayurvedic Properties
Galbanum (*Ferula galbaniflua*)
Associated Oils
Geranium (*Pelargonium graveolens*)
Associated Oil
Ginger (*Zingiber officinale*)
Associated Oil
Helichrysum (*Helichrysum angustifolium*)
Hyssop (*Hyssopus officinalis*)
Associated Oil
Inula, Sweet (*Inula graveolens*, or *I. odorata*)
Associated Oil
HEMIDESMUS INDICUS, R. BR.,

Asclepias pseudosarsa, var. latifolia
(N.O. Asclepiadaceae)
Jasmine
(Jasminum officinale and J. grandiflorum)
Associated Oil
Juniper (Juniperus communis)
Associated Oils
Labdanum (Cistus labdaniferus)
Associated Oils
Lavender (Lavandula angustifolia, previously L.
vera and L. Officinale)
Associated Oils
Lemon (Citrus limon)
Associated Oil
Associated Oils
Lemongrass Cochin (C. flexuosus)
Grown in India primarily for isolation of citral
Lovage (Levisticum officinale)
Marjoram
(Origanum marjorana or Marjorana hortensis)
Associated Oils
Melissa (Melissa Officinalis)
Associated Oil
Mimosa (Acacia decurrens var. dealbata)
Associated Oil
Myrrh (Commiphora myrrha)
Associated Oils
Myrtle (Myrtus communis)
Oakmoss (Evernia prunastri)
Associated Oil
Orange (Citrus sinensis)
Associated Oils
Orange Blossom (Neroli)
(Citrus aurantium var. amara)
Associated Oils
Patchouli (Pogostemon cablin)
Pepper, Black (Piper nigrum)
Associated Oils
Cubeb (Piper cubeba)—A litsea substitute
Peppermint (Mentha piperita)
Associated Oils
PSORALEA CORYLIFOLIA LINN.
(N.O. Papilionaceae, Fabaceae)
Parts Used : Roots, leaves, fruits, seeds
Ayurvedic Properties
Ravensare (Ravensara aromatica)
Rose (Rosa damascena, R. gallica, and others)
Associated Oils
Rosemary (Rosmarinus officinalis)
Associated Oils
Rosewood (Aniba rosaeodora)
Sage (Salvia officinalis)
Sandalwood (Santalum album)

Associated Oil
Spikenard (*Nardostachys jatamansi*)
Associated Oils
SMILAX CHINA
(N.O. - Liliaceae)
TERMINALIA CHEBULA RETZ.
(N.O. Combretaceae)
Parts Used : Fruit
Ayurvedic Properties
TERMINALIA BELERICA ROXB
(N.O. Combretaceae)
Parts Used : Fruit (unripe and ripe)
Ayurvedic Properties
Healing Power and Curative Properties
Cough
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Sore Throat
Chronic Constipation
Intestinal Worms
Eye Disorders
Other Diseases
Tea Tree (*Melaleuca alternifolia*)
Associated Oils
Thyme (*Thymus vulgaris*)
Associated Oils
Thymus vulgaris has many chemotypes
Tuberose (*Polianthes tuberosa*)
Vanilla (*Vanilla planifolia*)
Vetiver (*Vetiveria zizanoides*)
Violet (*Viola odorata*)
Associated Oil
Yarrow (*Achillea millefolium*)
Ylang-Ylang (*Canaga odorata*)
Associated Oils

Preparation and Properties of Surface Active Agents from Castor Oil

Manufacture of Turkey Red Oil
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Hexane Extraction of the Sulphated Product
Typical Experimental Details
Major raw materials
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Products

Cottonseed Oil for Soapstock
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Refining of three oils of different types
Refining of a highly colour-fixed sample of
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Points requiring specific emphasis

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Narrow distribution ethoxylate ('Peaked' ethoxylates)
and its derivatives
Biodegradable surfactants
Surfactants arising from natural materials
Reactive Surfactants
Effect of TREM LF-40 concentration (2.03 mM initiator)
on the particle size of poly (vinyl acetate) latex particles

Herbal based Soaps & Shampoos

Formulations for Herbal Washing Soaps
Hard Fats are
Soft Fats are
Some Suggested Formulations for Washing Soaps
Good Quality
Cheaper Quality
A Typical Batch for Herbal Based Toilet Soap
Oriental type
Perfume mixture as formulated below
Perfumes as formulated below
Perfume Mixtur
Formulation of fancy Soap Type
Perfume Mixture
Himalayan Boquet Type
Perfume Mixture
Rose Soap Type
Perfume Mixture
Transparent Soap – No. 1.
(glycerine soap of market)
A suggested formulation
Transparent Soap-No.2
(by special milling method)
Mottled Soap
Carboli Acid Soap
Suggested Formulation
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Medicated Soaps
Castile Soap
CASTILE SOAP BY BOILING PROCESS
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Some Suggested Formulations for Castile Soap
Translucent Coconut Oil Soap
Some Suggested Formulations for Disinfectant

Liquid Antiseptic Soap

Deodorant Soaps

Combination in Soap No. 1.

Combination in Soap No. 2

VARIOUS INDUSTRIAL SOAPS

Textile Soaps

Some of the uses are

Textile Bleaching-Washing Soap Powder

Laundry Soap Formulations

More Formulations

Laundry Washing Aids

More Laundry Wash Mixtures

(Soap and Sodium Metasilicate Solution)

A Fabric Cleaning Compound

Cotton Scouring Soap

Dry Cleaner's Soap

A suggested Formulation of Dry Cleaner's Soap

WATER SOFTNER

(Chemicals which may be used for prevention of soap curds)

JELLY SOAP/ SOFT SOAP

AUTOMOBILE SOAP

WIRE DRAWING SOAP

SCOURING SOAP

PREPARATION OF WASHING SOAP POWDER

Simplified Method

SHAVING SOAPS

Procedure

A Typical Charge

Shaving Cream

A Typical Charge

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

Some suggested Formulations

For Office use

For Workshop use

Soap Bubble Liquid

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
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Modern Methods
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A General Formulation
Foamless oil Shampoos
A Formulation
Baby Shampoos
Medicated Dandruff Shampoos
Other miscellaneous shampoos
Aerosol Shampoos (Pressure Dispersed)
HERBAL TOILET SOAPS
To Prevent Pimples
To Fight Dandruff
To Kill Germs
To Prevent Prickly Heat
HERBAL SHAMPOOS
Lime Shampoo
Lavender Shampoo
Methi-Shikakai Shampoo
Sandalwood Shampoo
Neem Shampoo
Hair Rinses
Apple Hair Rinse
Barley Hair Rinse
Chamomile Hair Rinse
Rosemary-Chamomile Hair Rinse
Rosemary Hair Rinse
Hair Setting Preparations for all Hair Types
Bay-Rum Hair Setting Preparation
Clove Hair Setting Preparation
Gum Tragacanth Hair Setting Preparation
Lime Hair Setting Preparation
HAIR CONDITIONERS FOR ALL HAIR TYPES
Avocado Hair Conditioner
Sunflower Hair Conditioner
Wheat Hair Conditioner
Shampooing
ANTI-DANDRUFF PREPARATIONS FOR ALL HAIR TYPES
Anti Dandruff Lemon Preparation
Anti-Dandruff Egg Preparation
Anti-Dandruff Vinegar Preparation
Anti-Dandruff Sesame Preparation
Anti-Dandruff Sesame Preparation
Anti-Dandruff Rosemary Preparation

Technology of Manufacturing Herbal Synthetic Detergents

Performance Criteria

Washing habits

Quality of water

Soiling

White vs. coloured clothes

Manufacturing facilities

Safety and pleasant 'in-use' qualities

Colour, odour and flow characteristics

Shelf life

Pricing

Formulation Requirements

Alkalinity

Good building and active matter

Approach to Product Formulation

Non Soapy Detergent Powder Formulations

Production Procedure

FORMULATIONS OF SYNTHETIC DETERGENT POWDERS

A TYPICAL BATCH OF FINISHED PRODUCT

(A good quality household detergent granules)

For 1000 kg. yield

Surfactants

Builders

Additives

A TYPICAL BATCH USING ACID SLURRY OF

UNSEPARATED SPENT ACID

For 1000 kg. of finished detergent

Surfactant

Builders

Additives

Detergent Powder Prepared Without

Using Spray Dryer (High Bulk Density)

A TYPICAL FORMULATION OF HOUSEHOLD

DETERGENT POWDER

For 1000 kg. finished product

Procedure

Foam Regulation

Typical Suds Regulated Surfactant Compounds

General Formulations for Industrial Detergent Powder

Woollen Piece Goods Scouring Preparation

Formulation with anionic and soap as active surfactants

Light Duty

Machine Dish Washing Powder

Scouring Powders Including Kitchen Cleaners

Abrasives

Surfactants

Other Chemicals

Soap Powder

Manufacturing Process

Floor Washing Compound

Heavy-duty Household Washing Powder

White Household Heavy-duty washing Powder

Spray-dried Heavy-duty Household Hand-washing Powder

Household Spray-dried Powder

General-purpose Spray-dried Powder

General Purpose Powder

High-foam Food/Dairy Detergent Cleaner

Heavy-duty Detergent Powder

Light-duty Detergent Powder

General Formula for Detergent Powders

Spray-dried Enzyme Detergent

Medium-foam Detergent Powder

Glass Rinsing Sanitizer

Industrial Sanitary Cleaner

General Cleaning Compound

Dishwashing Compound

Heavy-duty Detergent

Household Laundry Bleach

Low Sudsing Detergent Powder

Hand Laundering Powder

Plastic-ware Destaining Compounds

Magic Dip Bleach

Purex Bleach

All-purpose Metal Cleaning Compound

Standards

Scheme for the Manufacture of Detergent powder on small scale

Land and Building

Projecting Cost

Plant and Machinery

Labour & Staff

Monthly Requirements of Raw Materials,

Utilities and Factory Overheads

Working Capital (3 months basis)

Total Capital Investment

Own Capital Requirements

Factory cost of Production (Monthly Basis)

Profitability

Detergent Bars

Introduction

Requirements of a Detergent Bar

NSD Bar Vs. Soap

Components of Detergent Bars

Active detergent

Sodium tripolyphosphate

Talc

Starch

China clay

Calcite

Soda ash

Sodium sulphate

Sodium silicate

Coconut mono ethanolamide

Soapstock

Dicalcium phosphate
Rosin
Titanium dioxide
Colour
Fluorescer
Perfume
Water
Processing of NSD Bars
Handling of Raw Materials
Processing
Process Control
Some Typical Formulations of Detergent Bar
Formulations for detergent bar manufacture
Plant & Machinery for Small Scale Detergent
Cake Manufacture
Kneader
Milling Machine
Plodder
Bar Cutter or Billet Cutter
Embossing or Stamping Machine
Pulverizer
Formulations of Detergent Cakes
Soap-Surfactant Combination
Detergent Bar
Low-soap Syndet Bar
Soap-Synthetic All-purpose Bar
All Syndet Bar
Alkyl-Sulfate Syndet Bar
Proctor & Gamble's Soap Syndet Formulation
Proctor and Gabmle's Syndet Laundry Bar
SCHEME FOR THE MANUFACTURE OF
DETERGENT CAKES ON SMALL SCALE
Capacity : 1 tonne per day per shift basis
Land and Building
Projecting Cost
Plant and Machinery
Monthly requirements of Raw Materials, Utilities and Factory
Overheads
Labour and Staff
Working Capital requirements (3 months basis)
Total Capital Investment
Own Capital Requirements
Cost of Production (Monthly Basis)
Profitability

Herbal Liquid and Paste Detergents
Requisites of surfactants for formulating liquid detergents
Surfactants most commonly used
Consumption of Surfactants in Detergents (in kilotons)*
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Viscosity Controlers
Other Ingredients
HOUSEHOLD LIQUID DETERGENTS FOR LAUNDERING

Heavy Duty

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FORMULATIONS OF LIQUID AND PASTE DETERGENTS

Heavy Duty liquid Detergents

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Liquid Shampoo

Liquid Shampoo Formulation

TYPICAL FORMULATIONS

Opaque viscous solution

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Light Duty : (for silk, wool etc.)

TYPICAL FORMULATIONS

Procedure

Shampoos

Rug Cleaning Liquid Detergent Formulations

A Recommended Formulation

Heavy-duty Liquid Detergents

Heavy-duty Liquid Detergent with 'Controlled

Opaque Lotion-type Light-duty Liquid Detergent

Light-duty Household Liquid Detergent

40% Detergent Paste

20 % Detergent Paste

Metal Degreasing Liquid Detergent

General-purpose Solvent-based Detergent

Textile Scouring Paste

Textile Degumming Detergent Paste

Low Foaming Liquid Detergents

Other Formulations of Synthetic Liquid Detergents

Light-duty Liquid Detergent

Light-duty Liquid Detergent for Dishwashing

Household Liquid Detergent Cleaner

Light-duty Clear Detergent Liquids

Light-duty Liquid Detergent Lotion

Heavy-duty Liquid Detergent

Scheme for the Manufacture of Liquid

Detergents on Small Scale

Land and Building

Projecting Cost

Plant and Machinery

Labour and Staff

Monthly Requirements of Raw Materials,

Utilities & Factory Overheads

Working Capital Requirements (3 months basis)

Total Capital Investment

Own Capital Requirements

Cost of Production (Monthly basis)

Profitability

Determination of Physical, Surface Active and Performance Characteristics of Surfactants

Physical Characteristics

Density of Powdered Detergents

Apparent Bulk Density

Apparent density, g/ml = 40/V
Cup Density
Particle Size of Powdered Detergents
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Cloud Point of Non-ionic Detergents
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Calculation of Surface Tension
Calculation of Interfacial Tension
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Dishwashing Tests
Laundry Evaluation
Split Item Tests
Bundle Test
Foam Tests
Dynamic Foam Test
Pour Foam Test
Wetting Test
Canvas Disc Test
Skein Test

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Cationics
Non-ionics
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Total Organic Active Ingredient
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Correction for Sodium Chloride Content
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Preliminary Estimate of Mol. Wt.
Titration with Cationic Surfactants
Preparation and Standardization of Titrant
Titration of Sample
Amine Complexation Method
Determination of Alkylaryl Sulfonates
Determination of Alkylaryl Sulfonates in the
Presence of Short Alkyl Chain Sulfonates
Determination of Fatty Alcohol Sulfates
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Determination of Amine Oxides
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Procedure

Chemical Characteristics

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Typical Analysis of a Linear Alkylate Sample

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Total Organic Active Ingredients

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Anionic Detergents

Procedure

Procedure

Cationic Detergents

Procedure

Nonionic Detergents

Procedure

DETERMINATION OF COMPONENTS

OTHER THAN SURFACTANTS

Abrasives

Procedure

Ammonia

Procedure

Carbonates

Procedure

Carboxymethylcellulose

Chlorides and Available Chlorine

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Ethanol and Isopropyl Alcohol

Specific Gravity of Ethanol-Water Solutions at

Varying Concentrations

Specific Gravity of Isopropyl Alcohol-Water

Solutions at Varying Concentrations

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Fatty Acids

Procedure

Glycerine

Hydrotropes

Procedure

Metallic Impurities

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Neutral Oil (Free Oil) and Free Fatty Alcohol

Procedure

Perborates

Procedure

Phosphates

Procedure

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Solids

Procedure

Steam-Distillable Matter

Procedure

Sulfates

Procedure

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Procedure

Performance Tests

Procedure

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Methods of Analysis

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DETERMINATION OF INORGANIC FILLERS AND
SOAP BUILDERS

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DETERMINATION OF OTHER ADDITIVES

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Munson and Walker Sugar Equivalents

Procedure

DETERMINATION OF IMPURITIES

Procedure

OTHER QUALITY CONTROL TESTS

ANALYSIS OF SOAPS CONTAINING SYNTHETIC DETERGENTS

ANALYSIS OF METALLIC SOAPS

Procedure

Beauty with Fruits and Vegetables

Apple

Apricot (Khubani)

Banana

Barley

Carrot

Castor Oil

Clove

Cucumber

Dhania

Egg

Honey

Lavender

Lemon

Orange

Palak

Peach

Potato

Pudina

Rose

Sage

Salt

Saunf

Tea

Thyme

Tomato

Yoghurt

Sulfonated Oils

Historical Background

Chemistry of Sulfation and Sulfonation

Applications of Sulfonated Oils

MANUFACTURE OF SULFONATED OILS

Sulfation

Sulfonation

SULFATION OF INDIVIDUAL OILS

Characteristics and Analysis of Sulfonated/Sulfated Oils

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