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Herbal Soaps & Detergents Handbook

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Description

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 personnel 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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Iodine Value

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Water Soluble

Oil Soluble

Alcohol Soluble

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For a batch of 100 kg. soap colour required is

Full-boiled/Semi-boiled/cold-made Soaps

The oil soluble colours recommended are

Soap Bases and Liquid Soaps

Popular shades and the colours used to obtain them are

Washing/Laundry Soaps

Medicated Soaps

Perfumes

(Comprehensive Details)

Essential Oils

Isolates

Synthetic Chemicals

Fixatives (Listed in Table 4)

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 orchiodes 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

Stomach Disorders

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 (*Cananga odorata*)

Associated Oils

Preparation and Properties of Surface Active Agents from Castor Oil

Manufacture of Turkey Red Oil

Preparation of Esters by Alcoholysis

Sulphation of Esters

Hexane Extraction of the Sulphated Product

Typical Experimental Details

Major raw materials

Method

Products

Cottonseed Oil for Soapstock

Genesis of Investigation

Novel Features and Method of Utilisation of the Process

Refining of three oils of different types

Refining of a highly colour-fixed sample of
solvent extracted cottonseed oil

Likely scope of its application

The stage to which the laboratory investigations have been conducted
The scale and duration of pilot-plant working
Availability of Raw Materials
Estimates of the cost of utilisation of the method
Capital outlay required
Flow Sheet
Points requiring specific emphasis

Development and Application of New Herbal Functional Surfactants

Introduction

New Trend of Surfactants

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

Procedure

Medicated Soaps

Castile Soap

CASTILE SOAP BY BOILING PROCESS

Process Description

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

SOAP SHAMPOOS

Older Methods

Modern Methods

Some Typical Formulations

SHAMPOOS BASED ON SYNTHETIC HERBAL SURFACTANTS

GENERAL FORMULATIONS

Liquid Cream Shampoos and Paste Cream

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 Gamble'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)*
Builders
Viscosity Controlers
Other Ingredients
HOUSEHOLD LIQUID DETERGENTS FOR LAUNDERING
Heavy Duty
Manufacture of Paste Detergents

FORMULATIONS OF LIQUID AND PASTE DETERGENTS

Heavy Duty liquid Detergents

A few formulations are listed in Table 2

Light Duty Detergents

Liquid Shampoo

Liquid Shampoo Formulation

TYPICAL FORMULATIONS

Opaque viscous solution

Procedure

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, $\text{g/ml} = 40/V$
Cup Density
Particle Size of Powdered Detergents
Hand Sieving
Machine Sieving
pH and Alkalinity
Free Alkalinity
Cloud Point of Non-ionic Detergents
Viscosity
Surface-Active Properties
Ring Method
Experimental Procedure
Determination of Surface Tension
Determination of Interfacial Tension
Calculation of Surface Tension
Calculation of Interfacial Tension
Correction Factor 'F' for the Ring Method Factor 'F' for

PERFORMANCE CHARACTERISTICS

Dishwashing Tests
Laundry Evaluation
Split Item Tests
Bundle Test
Foam Tests
Dynamic Foam Test
Pour Foam Test
Wetting Test
Canvas Disc Test
Skein Test

Analysis of Surfactants

Separation of Surfactants

IDENTIFICATION OF COMPONENTS

Anionics

Cationics

Non-ionics

DETERMINATION OF SURFACTANTS

Total Organic Active Ingredient

Procedure

Correction for Sodium Chloride Content

ANIONIC SURFACTANTS

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

CATIONIC SURFACTANTS

Determination of Amine Oxides

Non-Ionic Surfactants

Column Techniques

Batch Technique

Analysis of Fats and Fatty Oils

Methods of Analysis

DETERMINATION OF PROPERTIES

Physical Characteristics

Procedure

Procedure

Chemical Characteristics

Procedures

COMPOSITION ANALYSIS

Gas Chromatography

Procedures

Spectroscopic Methods

Procedure

OTHER TESTS

Procedure

Analysis of Detergents

Methods of Analysis

Sampling

Separation

Procedure

IDENTIFICATION OF COMPONENTS

Procedures

Infrared Absorption Bands of Typical Commercial Detergents

Typical Analysis of a Linear Alkylate Sample

Procedure

DETERMINATION OF SURFACTANTS

Total Organic Active Ingredients

Procedure

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

Procedures

Enzymes

Procedure

Ethanol and Isopropyl Alcohol

Specific Gravity of Ethanol-Water Solutions at

Varying Concentrations

Specific Gravity of Isopropyl Alcohol-Water

Solutions at Varying Concentrations

Procedure
Fatty Acids
Procedure
Glycerine
Hydrotropes
Procedure
Metallic Impurities
Procedure
Neutral Oil (Free Oil) and Free Fatty Alcohol
Procedure
Perborates
Procedure
Phosphates
Procedure
Silicates
Procedure
Solids
Procedure
Steam-Distillable Matter
Procedure
Sulfates
Procedure
Water
Procedure
Performance Tests
Procedure
Analysis of Soaps
Methods of Analysis
SAMPLING
Procedures
SEPARATION
Procedures
IDENTIFICATION
Procedures
DETERMINATION OF SOAP COMPOSITION
Procedures
DETERMINATION OF INORGANIC FILLERS AND
SOAP BUILDERS
Procedures
DETERMINATION OF OTHER ADDITIVES

Procedure

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

About NIIR Project Consultancy Services (NPCS)

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