

Herbal Soaps & Detergents Handbook

Author: H. Panda

Format: Paperback

ISBN: 9789381039007

Code: NI53

Pages: 536

Price: Rs. 1,275.00 **US\$** 125.00

Publisher: NIIR PROJECT CONSULTANCY SERVICES

Usually ships within **5** days

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.

Contents

CONTENT

Soaps and Detergents

Soaps

Synthetic Detergents

Physical Properties of Soap

Viscosity

Specific heat

Latent heat

Density of soap

66% Rule

Salt distribution between curd and lye

Glycerol distribution between curd and lye

Rate of drying of soap

Uses

Raw Materials

Classification of Fats/Oils

Fatty Oils are Further Classified as

Colour

Availability of oils for Soapmaking

Saponification Value

Iodine Value

Free fatty acids

Titre

Fatty acids containing—OH and —CO groups, hydroxy and keto-stearic acids

Characteristics of individual Oils

Rice bran oil

Sal

Castor oil

Coconut oil

Linseed oil

Mowrah

Kusum oil

Neem oil

Acid oils

Karanja Oil

Palm Oil

Plam kernel oil

Tallow

Rosin

Other indigenous oils

Abbreviations of Fatty Acids

Fatty Acid Isomers

Pre-Treatment and Upgradation of oils and fats

Introduction

Techniques for Upgrading Oils

De-gumming

Earth bleaching

Air bleaching

Chemical bleaching

Hydrogen peroxide

Benzoyl peroxide

Chlorine

Sodium chlorite or chlorate

Hydrogenation

De-odorisation

Formulation of oil Blends for Soaps

Introduction

Choice of oils and fats

Iodine value, titre and fatty acid composition

Facilities for upgrading oils

Toilet Soaps

FA Composition of Toilet Soap

Typical Oils Blends for Toilet Soap (Compositions %)

Non Fatty Raw Materials for Soap

The Alkalis
Soap Builders
Filler
Stabilizers, Antioxidants
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
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 orchioides Gaertn
(N.O.—Amaryllidaceae)
Ayurvedic Properties
CURCUMA LONGA, Linn
(N.O.—Scitamineae)
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 zizanioides*)
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 Present 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)*
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, 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

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.

NIIR PROJECT CONSULTANCY SERVICES , 106-E, Kamla Nagar, New Delhi-110007, India. **Email:** npcs.india@gmail.com **Website:** NIIR.org

Sat, 23 Jun 2018 23:08:39 +0530