The Complete Technology Book on Detergents (2nd Revised Edition)

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The Indian detergent industry is about three decades old. An interesting and unique feature of detergent industry in India is the existence of non power operated units which do not use any electrical power for the production of detergent powder. But the production technology of detergents have been changed involving high technique in process control, more skilled personnel and requiring large input. There are various forms of detergents; liquid detergents, paste detergents, solid detergents etc. Whether in liquid or in powdered forms, present detergent products are complex mixtures of several ingredients including performance additives such as bleaches, bleach activators etc. The scope and spectrum of methods and techniques applied in detergent analysis have changed significantly during the last decade..
The book outlines features and experimental parameters for many essential procedures, and emphasizes the latest techniques and methods. This book emphasizes practical aspects of detergent production with latest development and other special products based on synthetic surfactants. This book basically deals with the builders, additives and components of detergents, recent developments in surfactant, manufacture of active Ingredients for detergents, manufacture of finished detergents, application and formulation of detergents, packaging of detergents, analysis of detergents, machinery photographs with their suppliers, directory of raw material suppliers etc.. This is an attempt to fill the need of those desirous of starting detergent industry in small scale sector and necessarily contains analytical methods for testing and evaluation of raw as well as final products.

Alkylolamides
Cationic Surfactants

2. Builders, Additives and components of detergents
Phosphates
Silicates
Soluble glass
Water glass
Soluble powders
Contribution by the alkaline radical (Na2O or K2O)
Contribution by the SiO2 radical
Zeolites
Carbonates
Sodium Carbonate or Soda Ash-Na2CO3
Sodium Bicarbonate-NaHCO3
Sodium Sesquicarbonate, or Modified Soda
Potassium Carbonate
Oxygen-releasing Compounds
Sundry Inorganic Builders
Borax
Sodium Chloride
Magnesium Sulphate
Insoluble Inorganic Fillers
Caustic Alkalis
Ammonia
Colloidal Silica
Sodium Hypochlorite

3. Recent Developments in Surfactant Synthesis
Sulphation of glycerine
Nonionic surfactants
Amphoteric surfactants
Anionic surfactants
Nonionic surfactants
Cationic surfactants
Amphoteric surfactants
Miscellaneous surfactants
Surfactant synthesis
Toxicological studies
Effluent decolorisation
Synthesis of Surfactants and their Toxicity-IV
Diastereoisomers
Fructose C6H12O6
Saccharose or sucrose or table sugar C12H22O11
D-Mannose
D-Galactose
b-Glucosamine
Anionic surfactants
Cationic surfactants

Nonionic surfactants
Sugar-based surfactants
Toxicity of surfactants

4. Manufacture of Active Ingredients for Detergents
Sulphonation Process
Manufacture of Alkyl benzene sulphonic acid (Acid Slurry)
Alkyl benzene
Process to obtain straight chain normal paraffins of desired chain length
Major technologies using molecular sieves for separation of n-parraffins
Process for alkylation of benzene by narrow cut (C10-C14) n-paraffin
Review of technologies for production of LAB from n-paraffins
UOP technology to manufacture lab from kerosene
Prefractionation unit
Feed preparation (hydrotreater) unit-hydrobon
n-Paraffin Extraction Unit (MOLEX)
Catalytic partial dehydrogenation unit-PACOL
HF alkylation unit
Advance in technology in production of LAB
Improvements in dehydrogenation catalysts and process
Introduction of additional step to achieve reduction of by-product diolefins-Define process
Introduction of a solid catalyst in place of liquid HF catalyst-UPO-Detal Process
Other raw materials for sulphonation
Sulphuric acid and oleum (fuming sulphuric acid)
Liquid SO3
Sulphur
Sulphonation with sulphuric acid and oleum
Batch sulphonation
Manufacturing process
Sulphonation with 98% sulphuric acid
Sulphonation with oleum
Continuous sulphonation with oleum
Chemithon Process
Bellestra sulfan process
Proctor & Gamble Process
Rifenberick process
Sulphonation with SO3
Production of sulphur trioxide
Sulphur burning SO3 plant
Oleum stripping
Stabilised liquid sulphur trioxide

vapourisation
Batch sulphonation
Continuous sulphonation with sulphur trioxide
Cascade sulphonation
SO3 withdrawal
Sulphonation plant
Exhaust gas scrubbing
Ballestra Sulphurex Process
Air drying
SO2/SO3 production
Film sulphonation & sulphation (Sulphurex F)
Double-step Neutralisation
Alpha olefins hydrolysis
Gas scrubbing
SO3 absorption in H2SO4 column
Heat recovery
Mazzoni SOCS Process
Chemithon SO3 Sulphonation
SO3 generation
Sulphonation
Annular falling film reactor
Neutraliser system
Exhaust gas cleaning up system
Allied chemical thin film sulphonation
Stepan chemical process
Manufacture of fatty alcohol sulphonates
Sulphonation with chloro sulphonic acid
Manufacture of alpha olefin sulphonate
Wax cracking
Ethylene polymerisation
The natural route
Comparison of AOS and methyl ester sulphonate
Comparison of AOS and LABs in various products
Dish-washing liquids
Fine cloths washing liquids
Laundry soaps
Toilet soaps
Personal care products
Detergent cakes
Comparison of AOS with alcohol based surfactants
Alfodet
Product usage
Ethoxylation Process
Ethylene oxide
Fatty acid
Fatty alcohol
Natural process
Synthetic process

Sodium reduction process
High pressure hydrogenation
OXO Process
ALFOL Process
Alkyl phenols
Manufacture of lauric d-ethanol amide
(Ninol AA 62)
Method of manufacture
Manufacture of super amide (2:1 type)
Manufacture of methyl ester
Manufacture of super-amide
Manufacture of sulphate alkanolamides
IGEPON B
Manufacture of Igepon B conc. paste
Recent Developments in Sulphonation
Technology
Direct Production of Extremely Viscous
Sulphonic Acids Without the Use of Solvents
Developments in Detergent Manufacture
for Consumer Products
Minimization of 1, 4-Dioxane
Sodium Alpha Sulpho Methyl Ester
(SASMA) Production
Dry Active Detergent Manufacturing

5. Manufacture of Finished Detergents
Powders
Simple Absorption
Combined Absorption and Neutralization
Dry Mixing of Powders
Spray-drying of Powders
Colour
Particle Size and Spread
Bulk Density
Residual Moisture
Stickiness
Product Uniformity
Separation of Powder
Wet Scrubbing
Use of Fines
Combination of Spray-dried and Dry-mixed
Powders
Ballestra 'Complex' System
Patterson-Kelley Systems
Anhydro System
Drum-Drying of Powders
Liquid Detergents
Toilet Preparations
Paste Detergents
Calcium Sulphonates
Solid Detergents
Detergent Toilet Bars
Household Scrub Bars

Fabric Softeners
Abrasive Cleaners

6. Application and Formulation of Detergents
Foam
Household Cleaning
Heavy-Duty Laundering
Foam Control
Light-Duty Household Products
General-Purpose Detergents
Choice of Non-ionic
Concentrated Powders
Cold Water Washing
Hard-Surface Cleaners
Machine Dishwashing
Abrasive-Type Cleaners
Miscellaneous Household Cleaners
Commercial Laundering
Solvent Detergents
Carpet and Upholstery Cleaners
Textile Dressing
Mercerizing
Food and Dairy Industries
Advantage of sulphamic acid
Detergent Sanitizers
Metal Cleaners
Miscellaneous Cleaners
Lavatory Cleaner
Hand Cleansers
Waterless Hand Cleansers

7. Important Formulations of Synthetic Detergent
Detergent Powder
Market Potential & Scope
Synthetic Detergent Powder
Manufacture of Household Detergent Powders Process
Formulations for Detergent Powders
General Purpose Powder
Raw Material Requirements (per month)
Process of Manufacture and Formulations
Heavy Duty Liquid Detergents
Opaque Lotion-Type Heavy Duty Liquid Detergent
Process of Manufacture of Liquid Detergent
Dish Washing Liquid Detergents
Process of Manufacture
Liquid and Cream Soap Products
Liquids for the Washing of Fabrics
Thick Liquids and Creams
Machine Dishwashing Products

Machine direction of paper and board
Stiffness of board
Miscellaneous Tests
Packaged Commodities Rules
Introduction
Declarations to be Made on Every Package
Permissible Errors of Quantity
Commodities to be Packed in Specified Quantities
Management of Detergent Factories
Technical Efficiency
Introduction
Yield
Fatty acid yield
Glycerol yield
Active detergent yield
Over/under usage of materials
Packing loss/gain
Oil usage pattern
Scrap and downgrading losses
Productivity
Steam, water, electricity
Financial Summary
Pollution Control
Introduction
Sources of Pollution
Oil spills
Chemical spills
Bleaching
Chemical treatment
Glycerine Recovery
Synthetic Detergents
Sulphonation
Detergent powder manufacture
Handling of Raw Materials
Slurry Making, Wash Water
Tower and Air Lift Exhausts
Powder Spillages
Fluidiser Exhaust Air
Boiler House
Coal spillages
Water treatment section
Boiler Blow Down
Chimney exhaust
Boiler ash
Space and location
Effluent characteristics
The requirements of treated effluent
Effluent treatment methodology
Treatment of Gaseous Effluents
Chemical bleaching
Saponification of oils
Toilet soap mixer

Refrigeration system
Oleum handling in the sulphonation plant
Oleum still furnace
NSD bar mixer exhaust
Boiler exhaust
Analytical Support
Introduction
Oils
Chemicals
Packaging Materials
In-process Materials
Finished Products
Microbiological Controls
Analytical Equipments
General Comments
Quality Control
Introduction
Organisation
Facilities
Specifications
Chemicals
Packaging materials
Finished product
Sampling
Sampling of Raw Materials
Packing materials
Finished products
Vendor education and rating
Process audit
Reporting
Microbiological Controls
Bureau of Indian Standards Specifications
Quality Assurance
Introduction
Conventional Approach to Quality
Recommended Approach to Quality
Company Quality Policy
Brand Quality Objectives
Implementation of Quality Assurance
Quality Control
Quality Audit
Summary
Total Quality Management (TQM)
ISO 9000 Series Standards
Common Quality Problems of Detergents
Detergent powder
Detergent Cake
Stain Removal
Introduction
Type of Stains
Removal of Stains
Lime soap
Protein stains

Iron compounds
Stains due to dyes
Mildew stains
Physical methods of stain removal
Assessment of stain removal

9. Analysis of Detergents
Introduction
Synthetic Detergents
Active Matter
Principle
Standard sodium lauryl sulphate solution-0.004M
Determination of the purity of sodium lauryl sulphate
Molarity of sodium lauryl sulphate
Standard benzethonium chloride (hyamine 1622) soln. 0.004M
Determination of anionic active matter
Moisture of Detergent Powders and Cakes
Principle
Process
pH of 1% solution
Principle
Procedure
TFM and Combined Glycerol in Oils
Combined glycerol in oils
Principle
Procedure
Estimation of TFA

10. Enzymatic Detergents Empower, Metrizyme Detergezyme
The importance of cleaning instruments prior to disinfection
The definition and properties of enzymes
The benefits associated with incorporation of enzymes into detergents
The properties and benefits of surfactants in enzymatic detergents
Practical usage of enzymatic detergents
Comparative assessment of Metrex and competitor enzyme products

Directory Section

List of Raw Material Suppliers
Plant and Machinery Suppliers
Photographs of Machinery and Equipment

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

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