

Modern Technology of Petroleum, Greases, Lubricants & Petro Chemicals (Lubricating Oils, Cutting Oil, Additives, Refining, Bitumen, Waxes with Process and Formulations) 3rd Revised Edition

Author: NIIR Board of Consultants & Engineers

Format: Paperback

ISBN: 9789381039618

Code: NI45

Pages: 624

Price: Rs. 1,995.00 US\$ 52.95

Publisher: NIIR PROJECT CONSULTANCY SERVICES

Usually ships within 5 days

Lubricants, greases and petrochemicals are most versatile on the Industrial Plateau now a day. The significance of Lubricants, Greases and specialty products in the day to day functioning of nearly every machine part, instrument, appliance & device cannot be over emphasized lubricants reduce friction & wear between rubbing parts, thereby enhancing their life. A lubricant is a substance introduced to reduce friction between moving surfaces. It may also have the function of transporting foreign particles. The property of reducing friction is known as lubricity. The broad types of lubricating oils are as under; crankcase oils, gear oils, metal working oils, metal drawing oils, spindle and other textile oils, steam turbine oils. Synthetic lubricants have a higher viscosity index, but are less stable to oxidation. They are suitable for high temperature applications. In the modern industrial year, greases have been increasingly employed to cope with a variety of difficult lubrication problems, particularly those where the liquid lubricant is not feasible. Greases are essentially solid or semi solid lubricants consisting of gelling or thickening agent in a liquid lubricant. Greases and lubricants are one of the important products derived from crude petroleum. Petroleum is formed by hydrocarbons (a hydrocarbon is a compound made up of carbon and hydrogen) with the addition of certain other substances, primarily sulphur. Petroleum in its natural form when first collected is usually named crude oil, and can be clear, green or black and may be either thin like gasoline or thick like tar. The principal product of petroleum refining are motor gasoline, aviation gasoline, kerosene, jet fuels, diesel fuels, lubricating oils and fuel oils. Considerable quantities of petroleum wax, bitumen, liquid petroleum gases (LPG), industrial naphtha and coke are also produced. Petrochemicals are chemicals made from petroleum (crude oil) and natural gas. Petroleum and natural gas are made up of hydrocarbon molecules, which are comprised of one or more carbon atoms, to which hydrogen atoms are attached. The Indian lubricants industry claims to be the sixth largest in the world. The petrochemical industry in India has been one of the fastest growing industries in the country. This industry also has immense importance in the growth of economy of the country and the growth and development of manufacturing industry as well. Some of the fundamentals of the book are types of lubricating oils, crankcase oils, gear oils, metal working oils, metal drawing oils, spindle and other textile oils, steam turbine oils, synthetic lubricants, formulations and compounding of lubricants, additives for straight mineral oil gear lubricants, raw materials for lubricants, equipments for lubricants manufacture, reclamation of used lubricating oil, nature of contaminants in used lubricating oil, gravity methods of purification, metal forming and deforming lubricant, cutting oils, heat

treatment oils, greases, sodium soap greases, lithium soap greases, aluminium soap greases, mixed soap greases, complex soap greases etc.

The objective of this book is to furnish comprehensive information about nearly all prominent types of lubricants, greases and petrochemicals. This book covers formulae, processes of various petroleum items. This book is an invaluable resource for entrepreneurs, existing units, professionals, institutions etc.

Contents

1. TYPES OF LUBRICATING OILS

Crankcase Oils

Gear Oils

Metal Working Oils

Metal Drawing Oils

Spindle and Other Textile Oils

Steam Turbine Oils

Synthetic Lubricants

Miscellaneous Oils

Fatty Oils

Residual and Petrolatums as Lubricants

Asphalt Residual as Lubricants

Application of Asphalt Residual as Lubricants

Petrolatums as Lubricants

Paraffin Wax as Lubricant

Resinous Materials as Lubricants

Solid Lubricants

Thickeners

Carbohydrates and Proteins as Thickeners

Polymers as Thickening Agents

Acetylene Black as a Thickener

Petroleum Lubricants

Bolt Lubricants

Cryogenic Bearing Lubricants

Lubricants for Missile Systems

Lubrication with Glass

2. FORMULATIONS AND COM-POUNDING OF LUBRICANTS

Additives for straight Mineral Oil gear Lubricants

Formulation of Open or Exposed Lubricants

Formulation of mild type E.P. Lubricants

Aircraft Lubricant

Miscellaneous Formulation

3. RAW MATERIALS FOR LUBRICANTS

Test for good fatty acid

Preformed Soaps

Advantages and the Use of Preformed Soaps

Lubricating Oil

Gravity of Lubricating Oil

Pour Point of Oil

Dyes for Colour

Perfume

Filler

Synthetic Lubricants

4. EQUIPMENTS FOR LUBRICANTS MANUFACTURE

Equipments

Handling Packaged Raw Material

Equipment for Saponification

Equipment for Dispersion of Thickening Agents

Manufacture of Lubricating Oils

Milling Equipment

5. RECLAMATION OF USED LUBRICATING OIL

Nature of Contaminants in Used Lubricating Oil

Gravity Methods of Purification

Filtration

Regenerating Process of Used Lube Oil

Contaminants present in Used Lube Oil

Principles of Used Lube Oil

Existing Process for Regeneration of Used Lubricating Oils

Lubricant Recycling

Reprocessing

Reclamation

6. ADDITIVES FOR LUBRICANTS

Antioxidants, Rust & Corrosion Inhibitors

Extreme Pressure Additives Antiwear Agents

Foam Inhibitors

Viscosity Index Improvers

Detergents and Dispersants

Pour Point Depressants

Antiknock Agents

Antiscrackers Agents

7. CHARACTERISTICS OF LUBRICATING OILS

Viscosity Index of Lubricating Oils

Vapour Pressure

Gravity of Lab Oil

Thermal Properties

Electrical Properties

Properties under High Pressure

Surface Properties

Carbon Residue

Colour of Tube Oils

Neutralisation No

Saponification No of Petroleum Products

Aniline Point of Petroleum Products

Ash content of Petroleum Oils

Precipitation No of Lube Oils

8. CUTTING OILS

Metal Forming and Deforming Lubricant

Cutting Oils

Heat Treatment Oils

Industrial Applications

Types of Cutting Oils

E.P. Additives or Anti Weld

Future Trend of Cutting Oil

Formulations of cutting oils

Hydrogenation Process in Lube Oil Production

Choice of Catalyst

9. GREASES

Solid Lubricants

Semi Solid Lubricants

Solid Lubricants

Greases Lubricants

Type of Greases

Calcium Soap

Sodium Soap Greases

Lithium Soap Greases

Aluminium Soap Greases

Mixed Soap Greases

Complex Soap Greases

Non-Soap Greases

Properties of Greases

Grease Applications

Market Position

Fillers

Carbon Black

Asbestos

Mica

Vermiculite

Talc

Various clay or silicate

Metal Powder

Metal Oxide

Manufacturing Process for Grease

Industrial Grease

Manufacturing Process of Greases in General

Fire Hazards in the Manufacture

Processing of aluminium base lubricants and greases

Production of another Barium Base Lubricating Grease

Preparation of Lead Soaps

Preparation of Lead Base Lube Greases

10. FORMULATION OF GREASES

Mixed Base Lubricating Greases

Colouring Lubricating Oils

Refining of Lube Oil

Purification of Lube Oil

Reclaiming Used Lube Oil

Non-Bleeding Grease

11. LUBRICANTS AND THEIR MANUFACTURE

Composition of Mineral Oil

Refining

Blending

Synthetic Hydrocarbon

Synthetic Non hydrocarbons

Polyalkylene Glycols

12. VARIOUS FORMULATIONS OF LUBRICANTS AND GREASES

Textile Lubricant for Spinning Jute, etc.

Application of Lead Base Lubricating Greases

Preparation of Lube Grease from Normal Strontium Soap

Mixture Base Strontium Soap Lubricating Greases

Complex Soap Lubricating Greases

Importance of Soap Salt complexes and their characteristics

13. ANALYSIS OF QUALITY ASSESSMENT OF LUBRICATING GREASES AND PETROLEUM PRODUCTS

Lubricating Greases

Analysis

Tests for Melting or Liquefaction

14. REFINING OF PETROLEUM PRODUCTS

Chemical Refining

Physical Refining

Solvent Extraction Processes

Dewaxing

Propane Dewaxing

Benzol-Acetone Dewaxing

Benzol Sulphur Dioxide Dewaxing

15. MANUFACTURE OF ASPHALTIC BITUMEN

Steam-Refined Asphaltic Bitumen

Blown Asphaltic Bitumen

Pitch-Type Asphaltic Bitumen

16. CHEMICALS FROM PETROLEUM

Feedstocks

Chemicals from saturated hydrocarbons

Chemicals from Olefins

Oxidation of Olefins

Chlorination of Ethylene

Chlorination of Olefins

Chlorination of Propylene

Chlorination of Butenes

Chlorhydrination of Olefins

Hydrochlorination of Olefins

Sulphonation of Olefins

Oxo Process

Ketones and their derivatives

Aldehydes and their derivatives

Acids and their derivatives

Acetic Acid and Acetic Anhydride

Olefin oxides and their derivatives

Aromatics

Naphthenes and Naphthenic Acids

Carbon Monoxide-hydrogen system

Inorganic Compounds

17. NATURAL AND CRACKED GASES

General Properties

Natural Gas

Refinery gas

Liquefied petroleum gas

18. PETROLEUM WAXES

Nature of the petroleum waxes

Composition of the petroleum waxes

Production of waxes

The properties of petroleum waxes

Paraffin Waxes

Microcrystalline waxes

Solid state transitions in paraffin waxes
The effect of crystallinity modifying agents on the properties of paraffin wax
Utilization of petroleum waxes
19. BITUMEN
Emulsions and cutbacks
Rheological Properties
Wetting and adhesive properties
Application
Industrial applications
20. PETROLEUM PRODUCTS
L.P.G. (Liquefied Petroleum Gas)
Synthesis Gas
Motor Gasoline
Aviation Gasoline
Kerosene
Jet Fuels
Diesel Fuels
Industrial Naphthas
Heating Oils and Residual Fuel Oils
Light, Medium and Heavy Fuel Oils
Petroleum Waxes
Micro Crystalline Wax from slack wax
Petroleum Jelly
Bitumen
Petroleum Coke
Carbon Black
21. ABS RESIN
Uses and Applications
Manufacturing Process
22. ACETALDEHYDE
23. ACETIC ACID
24. ACETONE
25. ACRYLAMIDE MONOMER
26. ACRYLONITRILE
27. BENZALDEHYDE
28. ADIPIC ACID
29. BENZENE HEXACHLORIDE (B.H.C.)
30. BENZOIC ACID
31. BENZYL CHLORIDE
32. BISPHENOL -A
33. BUTADIENE
34. DIETHYL TOLUAMIDE
35. DIMETHYL FORMAMIDE
36. ETHYL ACETATE
37. ETHYLENE OXIDE
38. FORMALDEHYDE
39. FORMIC ACID
40. FUMARIC ACID
41. ISO PROPYL ALCOHOL
42. METHYL AMINES
43. NITROBENZENE
44. PHTHALIC ANHYDRIDE

45. POLY CARBONATES
46. POLYOLS
47. POLYURETHANE FOAM
48. VINYL CHLORIDE
49. STRUCTURE OF PETROLEUM
Molecular Species in Petroleum
Volatile Fractions
Nonvolatile Constituents
Resin Constituents
Composition
Structure
Molecular Weight
50. SCOPE AND LIMITS OF LUBRICANT TESTING
Fresh oil testing of industrial oils
Fresh oil testing of engine oils
51. LUBRICANT STORAGE
Lubricant life
52. COLLOIDAL STABILITY OF LUBRICANTS
Low-Temperature Stability
Hot-Temperature Stability
53. REFINERY WASTES
Process Wastes
Desalting
Distillation
Thermal Cracking
Coking Processes
Fluid Catalytic Cracking
Hydro cracking and Hydro treating
Catalytic Reforming
Alkylation
Isomerization
Polymerization
Deasphalting
Dewaxing
Gas Processing
54. TYPES OF WASTE
Gases and Lower Boiling Constituents
Higher Boiling Constituents
Waste Water
Spent Caustic
Solid Waste
55. WASTE TOXICITY
56. MANAGEMENT OF REFINERY WASTE
57. PLANT & MACHINERY PHOTOGRAPHS

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.

Our Detailed Project report aims at providing all the critical data required by any entrepreneur vying to venture into Project. 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.

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

Sat, 21 Sep 2024 09:22:10 +0530