

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

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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.

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

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Formulation of Open or Exposed Lubricants

Formulation of mild type E.P. Lubricants

Aircraft Lubricant

Miscellaneous Formulation

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Test for good fatty acid

Preformed Soaps

Advantages and the Use of Preformed Soaps

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Gravity of Lubricating Oil

Pour Point of Oil

Dyes for Colour

Perfume

Filler

Synthetic Lubricants

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Equipment for Saponification

Equipment for Dispersion of Thickening Agents

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Milling Equipment

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Gravity Methods of Purification

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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

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Antioxidants, Rust & Corrosion Inhibitors

Extreme Pressure Additives Antiwear Agents

Foam Inhibitors

Viscosity Index Improvers

Detergents and Dispersants

Pour Point Depressants

Antiknock Agents

Antiscrakers Agents

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Electrical Properties

Properties under High Pressure

Surface Properties

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Saponification No of Petroleum Products

Aniline Point of Petroleum Products

Ash content of Petroleum Oils

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Cutting Oils

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Semi Solid Lubricants

Solid Lubricants

Greaves Lubricants

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Sodium Soap Greases

Lithium Soap Greases

Aluminium Soap Greases

Mixed Soap Greases

Complex Soap Greases

Non-Soap Greases

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Market Position

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Carbon Black

Asbestos

Mica

Vermiculite

Talc

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Metal Oxide

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Industrial Grease

Manufacturing Process of Greases in General

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Preparation of Lead Base Lube Greases

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About NIIR

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