AN ISO 9001 : 2015 CERTIFIED COMPANY

Petroleum & Petroleum Products Technology Handbook (Thermal Cracking of Pure Saturated Hydrocarbons, Petroleum Asphalts, Refinery Products, Blending and Compounding, Oil Refining and Residual Fuel Oils)

AN ISO 9001 : 2015 CERTIFIED COMPANY

Author: NPCS Board of Consultants & Engineers
Format: paperback
Code: NI528
Pages: 440
Price: Rs 1875 | US$ 150
Publisher: NIIR PROJECT CONSULTANCY SERVICES
Shipping: 5 days

About the Book

Petroleum asphalt is a sticky, black and highly viscous liquid or semi-solid that is present in most petroleum crude oils and in some natural deposits. Petroleum crude oil is a complex mixture of a great many different hydrocarbons. Refined petroleum products are derived from crude oils through processes such as catalytic cracking and fractional distillation. Refining is a necessary step before oil can be burned as fuel or used to create end products.
Residual fuel oil is a complex mixture of hydrocarbons prepared by blending a residuum component with a flux stock which is a distillate component diluent, to give the desired viscosity of the fuel oil produced.Petroleum refining is the process of separating the many compoundspresent in crude petroleum.An Oil refinery or petroleum refinery is an industrial process plant wherecrude oil is processed and refined into more useful products
The global Petroleum Asphalt market is valued at USD 48.8 Billion in 2017 and is expected to reach USD 77.67 Billion by the end of 2024, growing at a Growth Rate of 6.87% between 2017 and 2024.The global bunker fuel market was valued at $137,215.5 million in 2017 and is expected to reach $273,050.4 million by 2025, registering a CAGR of 9.4% from 2018 to 2025.
Some of the fundamentals of the book are composition of radiation effects on lubricants, thermal cracking of pure saturatedhydrocarbons, petroleum asphalts, refinery products, refinery feedstocks, blending and compounding, oil refining, residual fuel oils, distillate heating oils, formulations of petroleum, photographs of machinery withsuppliers contact details.
A total guide to manufacturing and entrepreneurial success in one of today's most lucrative petroleum industry. This book is one-stop guide to one of the fastest growing sectors of the petroleum industry, where opportunities abound for manufacturers, retailers, and entrepreneurs. This is the only complete handbook on the commercial production of petroleum products. It serves up a feast of how-to information, from concept to purchasing equipment.

Contents

1. RADIATION EFFECTS ON LUBRICANTS
Introduction
Interaction of Radiation with Organic Matter
General Physical Effects of Radiolysis
Base Oils
The Radiation Environment
Hydrocarbons (Petroleum Oils)
Alkylaromatics
Ethers
Esters
Silicones
Halogenated Compounds
Additives
Radiation Damage Inhibitors
Antioxidants
Viscosity Index Improvers
Antiwear Additives
Extreme Pressure (EP) Agents
Foam Inhibitors
Rust Inhibitors
Environmental Factors
Effects of Radiation Type and Intensity
Role of Temperature
Influence of Oxygen
Oil Lubricants
General: Commerical formulations
Based on Alkylaromatic Fluids
Fluids Based on Poly (phenyl ethers)
Steam Turbine Oils
Aircraft Turbine Oils
Hydraulic Fluids
Lubricating Greases
Gelling Agents
CONTENTS
Base Oils
Commerical Greases
Greases of Enhanced Radiation Resistance
Dynamic Tests
Principles

2. THERMAL CRACKING OF PURE SATURATED HYDROCARBONS 65-102
Introduction
Experimental Methods
Batch Reactors
Flow Reactors
Residence Time
Volume Change on Reaction
Kinetics of the Cracking Process
Rates of Decomposition
Straight Chain Paraffins

Correlation of the Rate Constants for n-Paraffins
Effect of Branching on the Rate of Decomposition
Effect of Pressure on the Decomposition of Paraffinic
Hydrocarbons
Rates of Decomposition–Saturated Cyclic Hydrocarbons
Estimation of Rate Constant of Decomposition
APPENDIX
Calculation of Product Distribution from Paraffin Cracking by the Rice-Kossiakoff Method.

3. PETROLEUM ASPHALTS
Chemical and Physical Composition
Possible Structures of the Nuclei in Resins and Asphaltenes
Manufacture of Asphalt from Petroleum
uses of Asphalts

4. REFINERY PRODUCTS
Low-boiling Products
Gasoline
Gasoline Specifications
Distillate Fuels
Jet and Turbine Fuels
Automotive Diesel Fuels
Railroad Diesel Fuels
Heating Oils
Residual Fuel Oils

5. REFINERY FEEDSTOCKS
Crude Oil Properties
1. API Gravity
2. Sulfur Content, Wt%
3. Pour Point, °F (°C)
4. Carbon Residue, Wt%
5. Salt Content, 1lb/1000 bbl
6. Characterization Factors
7. Nitrogen Content, Wt%
8. Distilation Range
9. Metals Content, ppm
10. Total Acid Number
Composition of Petroleum
1. Paraffins
2. Olefins
3. Naphthenes (Cycloparaffins)
4. Aromatics
Crudes Suitable for Asphalt Manufacture
Crude Distillation Curves
Problems

6. BLENDING AND COMPOUNDING

7. OIL REFINING
Introduction

General Aspects of Oil Refining
Crude Oils and Products
Crude Oil Constituents
Classification of Crude Oils
Oil Products
1. Gas Fuels
2. Liquid Fuels
Nonfuel Applications
Oil Refining Processes
Crude Oil Distillation
Atmospheric Distillation
Vacuum Distillation
Crude Oil Desalting
Catalytic Cracking (Cat Cracking)
Hydrotreating
Distillate Hydrotreating
Pyrolysis Gasoline Hydrotreating
Desulfurizing by Adsorption
Catalytic Reforming
Introduction
Semiregenerative Reformer
Fully Regenerative Reformer
Continuously Regenerative Reformer
Hydrocracking
Residue Conversation Process Introduction
Fundamentals of Residue Conversion and Process Options
Hydrogen Addition (‘‘H-in’’) Processes
Residue Hydrotreating (Demetallization, Desulfurization, Denitrification)
Residue Hydrocracking (Hydroconversion)
Carbon Rejection (‘‘C-out’’) Processes
Thermal Processes (Visbreaking, Coking)
Catalytic Processes (Residue Cat Cracking)
Other Processes
Extraction of Asphaltenes
Partial Oxidation
Process Combinations
Gasoline Upgrading Processes
1. Alkylation
2. Polymerization
3. Isomerization
4. Production of Ethers (MTBE, ETBE)
Other Processes
Gas Treating
Sulfur Recovery
Catalysts
Environmental Protection in Oil Refining
Introduction
Manufacturing Emissions
Hydrocarbons
Hydrocarbons in Air

Hydrocarbons in Wastewater
Hydrocarbons in Soil and Groundwater
Sulfur and Nitrogen Compounds
Sulfur Compounds
Nitrogen Compounds
Consumer Related Emissions
Transportation Fuels
Motor Gasoline
Diesel Fuel
Marine Fules
Fuels for Heat Generation
Cost of Environmental Conservation
Integrated Refinery Models
Trends of Refinery Structures
Hydroskimming Refinery
Conversion Concepts
Cat Cracking – Visbreaking Refinery
Hydrocraking- Cat Cracking Refinery
Hydrocracking – Coking Refinery
Integration of Existing Refineries
Corrosion and Materials
Testing and Analysis
Crude Oil and Product Properties
Testing Methods and Standards
Storage and Transport

8. RESIDUAL FUEL OILS
History
Specifications For Residual Fuels
Fluidity
Thermal Stability
Explosiveness
Pacific Specifications for Fuel Oils
Detailed Inspections of Heavy Fuels
End uses of Residual Fuel Oils
Steam Boilers
Industrial Applications
Diesel Engines
Gas Turbines
Gas-enrichment Oils
Problems Associated with Utilization
Sulfur in Residual Fuel Oils
Ash Possible Source of Contaminants
Soot and Carbon Particles
Instability and Incompatibility
The Combustion of Residual Fuels
Heating Value
Chemistry of Combustion
Flue-gas Analysis
Humidity in Air and Flue Gases
Heat Content of Flue Gases

Specific Heat of Fuel Oils
Residual Fuel Oil Burners

9. DISTILLATE HEATING OILS
Status of the Heating-Oil Industry
Burners, Controls and Tanks
Central-Heating Systems
Burning Qualities in Oils
Stability in Heating Oils
Handling and Delivery
10. FORMULATIONS OF PETROLEUM

11. PHOTOGRAPHS OF MACHINERY WITH SUPPLIERS CONTACT DETAILS

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, Market Research, Manufacturing Process, Machinery, Raw Materials, Project Feasibility, Investment Opportunities, Technical Consultancy and Startup Help.

NPCS also publishes process technology books, technical books, startup books, directory, business database, detailed project reports and market research reports.

Our Detailed Project Report aims at providing all the critical data required by entrepreneurs for starting new business ventures.

NIIR PROJECT CONSULTANCY SERVICES
106-E, Kamla Nagar, New Delhi-110007, India

Email: npcs.india@gmail.com **Website:** https://www.niir.org/