

Lubricants And Lubrication

Completely revised, this new edition includes the latest material on oil analysis, the energy conservation aspects of lube oil application and selection and bearing protector seals. Information on synthesized hydrocarbons and oil mist lubrication is thoroughly revised. It addresses the full scope of industrial lubricants, including general purpose oils, hydraulic fluids, food-grade and environmentally friendly lubricants, synthetic lubricants, greases, pastes, waxes and tribosystems. Detailed coverage is provided on lubrication strategies for electric motor bearings, gear lubrication, compressors and gas engines, and steam and gas turbines. Other topics include proper lubricant handling and storage, as well as effective industrial plant oil analysis practices.

Lubrication of Electrical and Mechanical Components in Electric Power Equipment presents an analysis of multiple applications of lubricants in the power industry for both electrical and mechanical parts. One of the key features of this book includes a look at the use of lubricants for surfaces of electrical and mechanical parts protection from mechanical wear and friction. Also included are examples of degradation due to fretting, as well as corrosion protection when lubricant is a barrier between metallic surfaces and atmospheric pollutants. This book analyzes the effects of chemical composition and consistency (fluids, greases, solid lubricants) and the durability of lubricants in regard to various types of contacts and mechanical parts material, design and load. Focused on the importance of carefully choosing the lubricants to maintain a stable contact resistance; preserve the physical integrity of the contact surface; and extend the useful life of mechanical parts, such as bearings, the author presents an exhaustive list of lubricants manufacturers and products recommended for use in the electrical industry.

As the subject of tribology comprises lubrication, friction and wear of contact components highly relevant to practical applications, it challenges scientists from chemistry, physics and materials engineering around the world on today's sophisticated experimental and theoretical foundation to complex interdisciplinary research. Recent results and developments are preferably presented and evaluated in the context of established knowledge. Consisting of eleven chapters divided into the four parts of Lubrication and Properties of Lubricants, Boundary Lubrication Applications, Testing and Modeling, and Sustainability of Tribosystems, this textbook therefore merges basic concepts with new findings and approaches. Tribology Fundamentals and Advancements, supported by competent authors, aims to convey current research trends in the light of the state of the art to students, scientists and practitioners and help them solve their problems.

In most tribological applications, liquid or grease based lubricants are used to facilitate the relative motion of solid bodies to minimize friction and wear between interacting surfaces. The challenges for liquid lubricants arise in extreme environmental conditions, such as very high or low temperatures, vacuum, radiation, and extreme contact pressure. At these conditions, solid lubricants may be the alternative choice which can help to decrease friction and wear without incorporating liquid lubricants. Challenges with solid lubricants are to maintain a continuous supply of solid lubricants on the contact surfaces to act as lubricous layer between two sliding surfaces. Such a continuous supply of solid lubricant is more easily maintained in the case of liquid lubricants when compared to solid lubricants. The most innovative development to ensure a continuous supply of solid lubricant to the contact surface during sliding is to introduce solid lubricant as reinforcement into the matrix of one of the sliding components. Composite materials are engineered or naturally occurring materials which contain two or more distinct constituents with significantly different chemical, physical and mechanical properties. Composites consist of reinforcement and matrix (metal, polymer and ceramics). Among various reinforcements, recent emerging material, solid lubricant, is found to have many favorable attributes such as good self-lubricant property. Self-lubrication is the ability of

material to transfer embedded solid lubricants to the contact surface to decrease wear rate and friction in the absence of an external lubricant. Self-lubricating metal matrix composites (SLMMCs) are an important category of engineering materials that are increasingly replacing a number of conventional materials in the automotive, aerospace, and marine industries due to superior tribological properties. In SLMMCs, solid lubricant materials including carbonous materials, molybdenum disulfide (MoS₂), and hexagonal boron nitride (h-BN) are embedded into the metal matrices as reinforcements to manufacture a novel material with attractive self-lubricating properties. Several studies have been investigated the tribological properties of self-lubricating materials. This book fills that gap to have a reference book about self-lubricating materials and their properties to help scientists, engineers, and industries. This book will try to discuss technically about self-lubricating materials and their properties and the applications for industries. The chapters will be written by authoritative expertise in the field. Additionally, this book will demonstrate fundamental study and most advanced innovations in self-lubricating materials as regards to friction and wear. The chapters also include tribological properties of composites and coatings and some practical application of self-lubricating materials.

KEY FEATURES: Assists scientists, engineers and researchers in the development of a new high performance lubricant. An essential review of the state of knowledge in tribochemistry.

DESCRIPTION: This latest title takes a new and unconventional look at engine oil as a micellar system. It is the first book of its kind to focus on the tribochemistry of oils and is thus an essential resource to practicing scientists and engineers in the petroleum industry and to all interested in the development of a superior high performance lubricant. Guaranteeing its broad appeal the book gives an invaluable review of the state of knowledge in the rapidly growing area of tribochemistry. The concept of miscelles is clearly explained along their application to stimulate the quality of engine oil, improve fuel efficiency and maintain adequate wear protection formulation. This represents a fresh approach to the formation of anti-wear tribofilms. A new look at engine design trends is given further assisting engineers in the development of a superior lubricant

The use of lubricants began in ancient times and has developed into a major international business through the need to lubricate machines of increasing complexity. The impetus for lubricant development has arisen from need, so lubricating practice has preceded an understanding of the scientific principles. This is not surprising as the scientific basis of the technology is, by nature, highly complex and interdisciplinary. However, we believe that the understanding of lubricant phenomena will continue to be developed at a molecular level to meet future challenges. These challenges will include the control of emissions from internal combustion engines, the reduction of friction and wear in and continuing improvements to lubricant performance and machinery, life-time. More recently, there has been an increased understanding of the chemical aspects of lubrication, which has complemented the knowledge and understanding gained through studies dealing with physics and engineering. This book aims to bring together this chemical information and present it in a practical way. It is written by chemists who are authorities in the various specialisations within the lubricating industry, and is intended to be of interest to chemists who may already be working in the lubricating industry or in academia, and who are seeking a chemist's view of lubrication. It will also be of benefit to engineers and technologists familiar with the industry who require a more fundamental understanding of lubricants.

The importance of lubricants in virtually all fields of the engineering industry is reflected by an increasing scientific research of the basic principles. Energy efficiency and material saving are just two core objectives of the employment of high-tech lubricants. The encyclopedia presents a comprehensive overview of the current state of knowledge in the realm of lubrication. All the aspects of fundamental data, underlying concepts and use cases, as well as theoretical research and last but not least terminology are covered in hundreds of essays and definitions,

authored by experts in their respective fields, from industry and academic institutes. Lubricants are essential in engineering, however more sustainable formulations are needed to avoid adverse effects on the ecosystem. Bio-based lubricant formulations present a promising solution. *Biolubricants: Science and technology* is a comprehensive, interdisciplinary and timely review of this important subject. Initial chapters address the principles of lubrication, before systematically reviewing fossil and bio-based feedstock resources for biodegradable lubricants. Further chapters describe catalytic, (bio) chemical functionalisation processes for transformation of feedstocks into commercial products, product development, relevant legislation, life cycle assessment, major product groups and specific performance criteria in all major applications. Final chapters consider markets for biolubricants, issues to consider when selecting and using a lubricant, lubricant disposal and future trends. With its distinguished authors, *Biolubricants: Science and technology* is a comprehensive reference for an industrial audience of oil formulators and lubrication engineers, as well as researchers and academics with an interest in the subject. It provides an essential overview of scientific and technological developments enabling the cost-effective improvement of biolubricants, something that is crucial for the green future of the lubricant industry. A comprehensive, interdisciplinary and timely review of bio-based lubricant formulations

Addresses the principles of lubrication
Reviews fossil and bio-based feedstock resources for biodegradable lubricants

Tribology is an interdisciplinary area that studies the reduction of friction between moving parts combining chemistry, physics and engineering disciplines. Lubricants are typically substances used to reduce friction. This book contains two sections: the first section examines the chemistry of lubricants and additives, while the second section looks at the lubrication of different types of materials.

Tribology in Materials and Manufacturing - Wear, Friction and Lubrication brings an interdisciplinary perspective to accomplish a more detailed understanding of tribological assessments, friction, lubrication, and wear in advanced manufacturing. Chapters cover such topics as ionic liquids, non-textured and textured surfaces, green tribology, lubricants, tribolayers, and simulation of wear.

The book gives an overview of environmental friendly gaseous and vapour, refrigerated compressed gas, solid lubricant, mist lubrication, minimum quantity lubrication (MQL) and vegetable oils that can be used as lubricants and additives in industrial machining applications. This book introduces vegetable oils as viable and good alternative resources because of their environmental friendly, non-toxic and readily biodegradable nature. The effectiveness of various types of vegetable oils as lubricants and additives in reducing wear and friction is discussed in this book. Engineers and scientist working in the field of lubrication and machining will find this book useful.

Provides a fundamental understanding of lubricants and lubricant technology including emerging lubricants such as synthetic and environmentally friendly lubricants

- Teaches the reader to understand the role of technology involved in the manufacture of lubricants
- Details both major industrial oils and automotive oils for various engines
- Covers emerging lubricant technology such as synthetic and environmentally friendly lubricants
- Discusses lubricant blending technology, storage, re-refining and condition monitoring of lubricant in equipment

This book will appeal to a broad range of engineers and managers in all sectors of manufacturing engineering, power generation and transport. Drawing on their specialist experience and knowledge, the many contributors show how the careful application of correct lubrication can lead to improved productivity, longer plant and equipment life and higher profits. Throughout the emphasis is on showing what lubricants can do, and how they can best be used. After introductory chapters that summarise the basic theory and the general types and properties of lubricants, there follow eleven chapters that cover such specific applications as diesel and petrol engines, hydraulics, compressors, machine tools and cutting oils. The last

two chapters discuss the storage and handling of lubricants, and lubrication planning. The majority of the authors and editors, have worked for Esso Petroleum Company Limited and have a unique range of experience in this area. Many of the authors have contributed to advances in techniques for improved lubrication in their specialist areas.

Building on the cornerstone of the first edition, *Lubrication Fundamentals Second Edition* outlines the emergence of higher performance-specialty application oils and greases and emphasizes the need for lubrication and careful lubricant selection. Thoroughly updated and rewritten since the previous edition reached its 10th printing, the book discuss

This indispensable book describes lubricant additives, their synthesis, chemistry, and mode of action. All important areas of application are covered, detailing which lubricants are needed for a particular application. Laboratory and field performance data for each application is provided and the design of cost-effective, environmentally friendly technologies is fully explored. This edition includes new chapters on chlorohydrocarbons, foaming chemistry and physics, antifoams for nonaqueous lubricants, hydrogenated styrene–diene viscosity modifiers, alkylated aromatics, and the impact of REACH and GHS on the lubricant industry.

This comprehensive resource discusses all the major aspects of automotive and engine lubrication - presenting state-of-the-art advances in the field from both research and industrial perspectives. This book should be of interest to mechanical, lubrication and automotive engineers, automotive and machinery designers as well as undergraduate and graduate students in these fields. Written by over 100 experts from 16 countries, it reviews the methods developed to measure bearing film thickness and the correlations that have been calculated between film thickness and viscosity, introduces a physio-mechanical model to explain the role played between the detergency phenomenon for engines by the internal stress developed in the film during its gels state, considers the factors affecting oil consumption and the tests created to ensure acceptable levels of service in the field under arduous operating conditions, details lubricant specification for farm tractors as well as technical aspects of the compromises to consider in attempting rationalization, examines the function, use and application of automatic transmission fluids and the requirements, test procedures and original equipment manufacturers' specifications. Containing more than 675 literature references and over 650 drawings, photographs and equations.

As the field of tribology has evolved, the lubrication industry is also progressing at an extraordinary rate. Updating the author's bestselling publication, *Synthetic Lubricants and High-Performance Functional Fluids*, this book features the contributions of over 60 specialists, ten new chapters, and a new title to reflect the evolving nature of the

This completely revised second edition incorporates the latest data available and reflects the knowledge of one of the largest companies active in the business. The authors take into account the interdisciplinary character of the field, considering aspects of engineering, materials science, chemistry, health and safety. The result is a volume providing chemists and engineers with a clear interdisciplinary introduction and guide to all major lubricant applications, focusing not only on the various products but also on specific application engineering criteria.

Hydrodynamic Lubrication is the culmination of over 20 years close, collaborative work by the five authors and discusses the practical use of the formalization of low pressure lubrication. The work concentrates on the developments to journal and thrust bearings and includes subjects such as: • the dynamic behaviour of plain and tilting-pads • the thermal aspects • the positive and negative effects of non-cyclindricity and shape defects resulting from manufacturing or operation • the effects of inertia • the appearance of Taylor's vortices and of turbulence and their repercussions. The book contains an abundance of test results objectively compared with theoretical conclusions and a chapter on "technical considerations" to ensure that draft mechanisms will work satisfactorily under the imposed conditions. *Hydrodynamic*

Lubrication is an essential reference book for future and practising engineers who want to put hydrodynamic and hydrostatic journal bearings and thrust bearings into operation under conditions of total safety.

Cost, environmental, and performance issues coupled with legislative changes, new engine oil requirements, and technology development for exploration of space and the oceans are changing the lubrication additive market. Reflecting how the need for new applications drives the development of new lubricant additives, *Lubricant Additives: Chemistry and Applications, Second Edition* presents methods to: Improve the performance, efficiency, and stability of lubricants Protect metal surfaces from wear Select lubricant additives for the food processing industry Select the most appropriate ashless additives Avoid microbial degradation of lubricants Lower toxicity And describes: Standard lubricant testing methods and product specifications Mechanisms and benefits of specific types of lubricant additives Recent industry trends Up-to-Date Coverage of Lubricant Additive Chemistry and Technology Addressing new trends in various industrial sectors and improvements in technology, this second edition provides detailed reviews of additives used in lubricant formulations, their chemistry, mechanisms of action, and trends for major areas of application. It explores the design of cost-effective, environmentally friendly lubricant technologies and lubricants for automotive, industrial, manufacturing, aerospace, and food-processing applications. An extensive list of online industry resources is available for download at crcpress.com.

Those working with tribology often have a background in mechanical engineering, while people working with lubricant development have a chemistry/chemical engineering background. This means they have a tradition of approaching problems in different ways. Today's product development puts higher demands on timing and quality, requiring collaboration between people with different backgrounds. However, they can lack understanding of each other's challenges as well as a common language, and so this book aims to bridge the gap between these two areas. *Lubricants: Introduction to Properties and Performance* provides an easy to understand overview of tribology and lubricant chemistry. The first part of the book is theoretical and provides an introduction to tribological contact, friction, wear and lubrication, as well as the basic concepts regarding properties and the most commonly made analyses on lubricants. Base fluids and their properties and common additives used in lubricants are also covered. The second part of the book is hands-on and introduces the reader to the actual formulations and the evaluation of their performance. Different applications and their corresponding lubricant formulations are considered and tribological test methods are discussed. Finally used oil characterisation and surface characterisation are covered which give the reader an introduction to different methods of characterising used oils and surfaces, respectively. Key features: Combines chemistry and tribology of lubricants into one unified approach Covers the fundamental theory, describing lubricant properties as well as base fluids and additives Contains practical information on the formulations of lubricants and evaluates their performance Considers applications of lubricants in hydraulics, gears and combustion engines *Lubricants: Introduction to Properties and Performance* is a comprehensive reference for industry practitioners (tribologists, lubricant technicians, and lubricant chemists, etc) and is also an excellent source of information for graduate and undergraduate students.

Lubrication: A Practical Guide to Lubricant Selection provides a guide to modern lubrication practice in industry, with emphasis on practical application, selection of lubricants, and significant factors that determine suitability of a lubricant for a specific application. Organized into 13 chapters, this book begins with a brief theoretical opening chapter on the basic principles of lubrication. A chapter then explains the choice of lubricant type, indicating how to decide whether to use oil, grease, dry lubricant, or gas lubrication. Subsequent chapters deal with detailed selection of lubricating oils, oil systems, oil changing, greases, dry lubricants, gas lubrication, sealing, testing, monitoring, and handling of lubricants. The final chapter describes

the main hazards associated with lubricants and some of the techniques for controlling those hazards. This book will be of value to technical staffs who use lubricants in their work; to students of mechanical, production, or maintenance engineering; and to others, such as buyers and storekeepers concerned with lubricants.

When it was first published some two decades ago, the original Handbook of Lubrication and Tribology stood on technology's cutting-edge as the first comprehensive reference to assist the emerging science of tribology lubrication. Later, followed by Volume II, Theory and Design and Volume III, Monitoring, Materials, Synthetic Lubricants, and Ap Lubricants and Lubrication, 2 Volume Set John Wiley & Sons

This handbook helps engineers in industry with the operation and maintenance of machinery. It provides the information that these engineers need in a form that is instantly accessible and easy to read. The manufacturers of machinery give guidelines on the operation, lubrication and maintenance required for their particular equipment. There are however many different machines in an industrial plant or service organisation, often supplied by many different manufacturers, and there is a need to select as many similar lubricants as possible and to use related machine techniques. This book bridges the gap which exists between the available data on the various machines by providing overall guidance on how to co-ordinate the recommendations of the various equipment makers. The book is structured in a number of sections that will make it easier to use, and to bring together related topics so that when a reader is focusing on a particular problem they can also refer to related material that is also likely to be of interest. THE handbook for an industrial audience consisting of plant engineers and maintenance managers. It describes the essential theory and practice relating to matters of lubrication and reliability. Unique layout and presentation of information makes this one of the best practical reference books available.

Careful selection of the right lubricant(s) is required to keep a machine running smoothly. Lubrication Fundamentals, Third Edition, Revised and Expanded describes the need and design for the many specialized oils and greases used to lubricate machine elements and builds on the tribology and lubrication basics discussed in previous editions. Utilizing knowledge from leading experts in the field, the third edition covers new lubrication requirements, crude oil composition and selection, base stock manufacture, lubricant formulation and evaluation, machinery and lubrication fundamentals, and environmental stewardship. The book combines lubrication theory with practical knowledge, and provides many useful illustrations to highlight key industrial, commercial, marine, aviation, and automotive lubricant applications and concepts. All previous edition chapters have been updated to include new technologies, applications, and specifications that have been introduced in the past 15 years. What's New in the Third Edition: Adds three new chapters on the growing renewable energy application of wind turbines, the impact of lubricants on energy efficiency, and best practice guidelines on establishing an in-service lubricant analysis program Updates API, SAE, and ACEA engine oil specifications, descriptions of new engine oil tests, impact of engine and fuel technology trends on engine oil Includes the latest environmental lubricant tests, definitions, and labelling programs Compiles expert information from ExxonMobil publications and the foremost international equipment builders and industry associations Covers key influences impacting lubricant formulations and technology Offers data on global energy demand and interesting statistics such as the worldwide population of nuclear reactors, wind turbines, and output of hydraulic turbines Presents new sections on the history of synthetic lubricants and hazardous chemical labeling for lubricants Whether used as a training guide for industry novices, a textbook for students to understand lubrication principles, or a technical reference for experienced lubrication and tribology professionals, Lubrication Fundamentals, Third Edition, Revised and Expanded is a "must read" for maintenance professionals, lubricant formulators and marketers, chemists, and lubrication,

surface, chemical, mechanical, and automotive engineers.

These proceedings review progress in the development of lubricants and in the understanding of the phenomena of lubrication. The contents include papers on the impact of automotive technology and environmental factors upon lubricant requirements, elasto-hydrodynamic lubrication, boundary lubrication, machine elements, bio-tribology, metal forming, rheology, lubricated wear and very thin film (nano metre) lubrication. Presented by leading scientists from 22 different countries, these proceedings provide an up-to-date review of developments in this field.

Solid Lubricants and Self-Lubricating Solids provides a concise treatment of solid lubricants and self-lubricating solids and their applications. These solid lubricants include graphite, molybdenum disulfide, plastics and thermoplastics, nylon, soft metals, fluorocarbons, and phenolics. Low-friction inorganic solids as well as miscellaneous inorganic compounds such as dichalcogenides and fluorides are also discussed. This book is comprised of 11 chapters and begins with an overview of some basic facts about friction and lubrication. The reader is then introduced to inorganic solid lubricants, their crystal structure, advantages and disadvantages, and the forms in which they are most commonly used. The following chapters focus on the lubricating qualities of graphite, molybdenum disulfide, plastics and thermoplastics, nylon, soft metals, and fluorocarbons. Miscellaneous inorganic compounds with special applications involving friction and wear are also considered. The final chapter is devoted to phenolic laminates, their properties, and their mechanical applications such as gears and bearings. This monograph will be a useful resource for designers and operating engineers.

Many people, including those involved in the manufacturing, marketing and selling of lubricants, believe that blending lubricants is simply a matter of putting one or more base oils and several additives into a tank of some kind and stirring them around to mix them. Blending lubricants that meet customers' demands requires much more than this. The correct ingredients of the right quality need to be used in precisely controlled quantities. The ingredients need to be tested prior to blending and the finished products need to be tested following blending. The ingredients need to be stored and mixed under carefully controlled conditions. The finished lubricants need to be stored and packaged carefully and then delivered to customers correctly. This book discusses all of these issues, describes the different types of equipment used to blend lubricants, provides guidance on how best to use this equipment, and offers tips and techniques to help to avoid problems. It focuses on liquid lubricants. Greases are not discussed, as their manufacture involves very different manufacturing procedures compared with those concerned with liquid lubricants. The book starts with descriptions and discussion of the properties and characteristics of the main types of mineral and synthetic base oils, as well as the properties and characteristics of the main types of additives that are used in lubricant formulations. Criteria and methodologies used to design both new and upgraded blending plants are covered next. The types and operation of the equipment used in lubricant blending plants are described and discussed, together with a chapter on how to avoid problems before, during, and after blending. Testing and analysis of base oils, additives, and blended lubricants are covered in two separate chapters. Procedures for quality control and quality management in lubricant blending plants are also discussed in two separate chapters. Types of packages for lubricants are reviewed, together with methods for filling packages and methods for transporting lubricants in bulk. The storage of lubricants and supply chain management is also covered in depth.

Used lubricating oil is a valuable resource. However, it must be re-refined mainly due to the accumulation of physical and chemical contaminants in the oil during service. Refining Used Lubricating Oils describes the properties of used lubricating oils and presents ways these materials can be re-refined and converted into useful lubricants as well as other products. It provides an up-to-date review of most of the processes for used lubricating oil refining that have been proposed or implemented in different parts of the world, and addresses feasibility and criteria for selecting a particular process. The book begins with an overview of lubricating oil manufacturing, both petroleum-based and synthetic-based. It reviews the types and properties of lubricating oils and discusses the characteristics and potential of used lubricating oils. The authors describe the basic steps of used oil treatment including dehydration, distillation or solvent extraction, and finishing. They explore the combustion of used oil for use as fuel, covering chemistry and equipment, fuel oil properties, and combustion emissions. The book considers alternative processing options such as refinery processing and re-refining. It also reviews the major refining processes that have been suggested over the years for used oil. These include acid/clay, simple distillation, combinations of distillation and hydrogenation, solvent extraction, filtration, and coking processes. The book addresses economic, life cycle assessment, and other criteria for evaluating the attractiveness of an oil recycling project, examining various costs and presenting an economic evaluation method using an Excel spreadsheet that can be downloaded from the publisher's website. The book concludes with a chapter offering insights on how to choose the most suitable process technology.

A-Z Guide for Maximum Cost Reduction and Increased Equipment Reliability To remain globally competitive, today's manufacturing operations have greatly improved, but there is one last link in the advancement evolution. The reliability of manufacturing equipment must be improved in order to maximize the productive life of the equipment, eliminate unscheduled shut downs, and reduce operating costs. These are key components to maintaining a smooth work flow and a competitive edge. Written by peer-recognized industry experts, Lubrication and Maintenance of Industrial Machinery: Best Practices and Reliability provides the necessary tools for maintenance professionals who are responsible for the overall operational functions. With chapters culled from the second edition of the Handbook of Lubrication and Tribology, Volume 1 and a new introductory chapter, this more specialized and focused work supplies critical lubrication information that can be used on a daily basis to achieve greater machine reliability. Incorporating lean methods, this resource can be used by everyone involved in the production process, from supervisors to floor personnel. Recommended for STLE's Certified Lubrication Specialist® Certification In addition to lubrication program development and scheduling, this volume also covers critical elements of the reliability equation, such as: Deterioration detection and measurement Lubrication cleanliness and contamination control Environmental implications of various lubricants Energy conservation Storage and handling Recycling of used oils This book fills a niche by specifically and comprehensively focusing on lubrication as part of the overall maintenance program. Under the editorial guidance of two of the most respected names in the field, this seminal work is destined to become an industry standard. Praise for the previous edition: "Contains something for everyone involved in lubricant technology" — Chemistry & Industry This completely revised third edition incorporates

the latest data available and reflects the knowledge of one of the largest companies active in the business. The authors take into account the interdisciplinary character of the field, considering aspects of engineering, materials science, chemistry, health and safety. The result is a volume providing chemists and engineers with a clear interdisciplinary introduction and guide to all major lubricant applications, focusing not only on the various products but also on specific application engineering criteria. A classic reference work, completely revised and updated (approximately 35% new material) focusing on sustainability and the latest developments, technologies and processes of this multi billion dollar business Provides chemists and engineers with a clear interdisciplinary introduction and guide to all major lubricant applications, looking not only at the various products but also at specific application engineering criteria All chapters are updated in terms of environmental and operational safety. New guidelines, such as REACH, recycling alternatives and biodegradable base oils are introduced Discusses the integration of micro- and nano-tribology and lubrication systems Reflects the knowledge of Fuchs Petrolub SE, one of the largest companies active in the lubrication business 2 Volumes wileyonlinelibrary.com/ref/lubricants

Lubrication and Lubricant Selection provides engineers with guidance to lubrication practice in industry, with emphasis on practical application. Specific guidance is given regarding the appropriate selection of lubricants for a wide range of uses. Factors determining the suitability of a lubricant for a particular purpose are described and explained.

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