

Elements Of Fuels Furnaces And Refractories By O P Gupta

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Industrial Burners Handbook Jr., Charles E. Baukal 2003-10-29 Rapid development in the field precipitated by the increased demand for clean burner systems has made the Industrial Burners Handbook into the fields go-to resource. With this resource, bestselling author, editor, and combustion expert Charles Baukal, Jr. has put together a comprehensive reference dedicated to the design and applications of indust

Fuels, Furnaces, Refractories and Pyrometry A V K Suryanarayana 2015-10 Present day technology is vibrant and changing rapidly. But the essential characteristics remain the same; when a fuel is burnt, the aim will always be to completely burn it and derive maximum heat out of it. A furnace and its refractory linings are must to utilize the fuel. When the fuel is burnt and some process(s) are performed in the furnace, it becomes a consequential necessity to measure the temperature in the furnace, to have a proper control over the operations. An effort is made to give the students a deep insight into the utilization of fuels, with some fundamentals, essential to have a grasp of the subject. This book thus tries to encompass the fuel utilization to a satisfactory level. Salient features - Units are converted to S.I. Units from CGS or FPS systems - More material is added in Nuclear and Solar Energy topics

Risk Management of Non-Renewable Energy Systems Ajit Kumar Verma 2015-05-09 This book describes the basic concepts of risk and reliability with detailed descriptions of the different levels of probabilistic safety assessment of nuclear power plants (both internal and external). The book also maximizes readers insights into time dependent risk analysis through several case studies, whilst risk management with respect to non renewable energy sources is also explained. With several advanced reactors utilizing the concept of passive systems, the reliability estimation of these systems are explained in detail with the book providing a reliability estimation of components through mechanistic model approach. This book is useful for advanced undergraduate and post graduate students in nuclear engineering, aerospace engineering, industrial engineering, reliability and safety engineering, systems engineering and applied probability and statistics. This

book is also suitable for one-semester graduate courses on risk management of non renewable energy systems in all conventional engineering branches like civil, mechanical, chemical, electrical and electronics as well as computer science. It will also be a valuable reference for practicing engineers, managers and researchers involved in reliability and safety activities of complex engineering systems.

Chemical and Bioprocess Engineering Shirish Sonawane 2015-04-15 Examining energy, environment, and sustainability from the chemical engineering point of view, this book highlights critical issues faced by chemical engineers and biochemical engineers worldwide. The book covers recent trends in chemical engineering and bioprocess engineering, such as CFD simulation, statistical optimization, process control, waste water treatment, micro reactors, fluid bed drying, hydrodynamic studies of gas liquid mixture in pipe, and more. Other chapters cover important ultrasound-assisted extraction, process intensification, polymers and coatings, as well as modelling of bioreactor and enzyme systems and biological nitrification.

Khanna's Objective Type Questions & Answers in Chemical Engineering OP Gupta This book is meant for diploma students of chemical engineering and petroleum engineering both for their academic programmes as well as for competitive examination. This book Contains 18 chapters covering the entire syllabus of diploma course in chemical engineering and petrochemical engineering. This book in its present form has been designed to serve as an encyclopedia of chemical engineering so as to be ready reckoner apart from being useful for all types of written tests and interviews faced by chemical engineering and petrochemical engineering diploma students of the country. Since branch related subjects of petrochemical engineering are same as that of chemical engineering diploma students, so this book will be equally useful for diploma in petrochemical engineering students.

Refractories Handbook Charles Schacht 2004-08-11 This comprehensive reference details the technical, chemical, and mechanical aspects of high-temperature refractory composite materials for step-by-step guidance on the selection of the most appropriate system for specific manufacturing processes. The book

surveys a wide range of lining system geometries and material combinations and covers a broad

Fuels and Furnaces 1926

PHYSICAL METALLURGY: PRINCIPLES AND PRACTICE, Third Edition RAGHAVAN, V. 2015-11-10 This well-established book, now in its Third Edition, presents the principles and applications of engineering metals and alloys in a highly readable form. This new edition retains all the basic topics covered in earlier editions such as phase diagrams, phase transformations, heat treatment of steels and nonferrous alloys, shape memory alloys, solidification, fatigue, fracture and corrosion, as well as applications of engineering alloys. A new chapter on 'Nanomaterials' has been added (Chapter 8). The field of nano-materials is interdisciplinary in nature, covering many disciplines including physical metallurgy. Intended as a text for undergraduate courses in Metallurgical and Materials Engineering, the book is also suitable for students preparing for associate membership examination of the Indian Institute of Metals (AMIIM) and other professional examinations like AMIE.

Frontiers in Bioenergy and Biofuels Eduardo Jacob-Lopes 2017-01-25 *Frontiers in Bioenergy and Biofuels* presents an authoritative and comprehensive overview of the possibilities for production and use of bioenergy, biofuels, and coproducts. Issues related to environment, food, and energy present serious challenges to the success and stability of nations. The challenge to provide energy to a rapidly increasing global population has made it imperative to find new technological routes to increase production of energy while also considering the biosphere's ability to regenerate resources. The bioenergy and biofuels are resources that may provide solutions to these critical challenges. Divided into 25 discreet parts, the book covers topics on characterization, production, and uses of bioenergy, biofuels, and coproducts. *Frontiers in Bioenergy and Biofuels* provides an insight into future developments in each field and extensive bibliography. It will be an essential resource for researchers and academic and industry professionals in the energy field.

Fuels, Furnaces, and Refractories James Duncan Gilchrist 1977

Refractories Book Laclede-Christy Company 1919

Heat Treatment : Principles and Techniques T. V. Rajan 2011-01-01

Energy Efficiency Guide for Industry in Asia 2006 This guide has been developed for Asian companies who want to improve energy efficiency through Cleaner Production and for stakeholders who want to help them. It includes a methodology, case studies for more than 40 Asian companies in 5 industry sectors, technical information for 25 energy equipments, training materials, a contact and information database.--Publisher's description.

Handbook on Energy Audit and Environment Management Y. P. Abbi 2006-01-01 Released on 24 Aug 2006,

by Shri Sushil Kumar Shinde, Hon'ble Union Minister of Power, Govt. of India, the handbook presents a detailed account of energy conservation and environmental management in small, medium as well as large enterprises. It is a must-read for every professional interested in energy management and auditing.

Engineered Materials Handbook, Desk Edition ASM International. Handbook Committee 1995-11 A comprehensive reference on the properties, selection, processing, and applications of the most widely used nonmetallic engineering materials. Section 1, General Information and Data, contains information applicable both to polymers and to ceramics and glasses. It includes an illustrated glossary, a collection of engineering tables and data, and a guide to materials selection. Sections 2 through 7 focus on polymeric materials-- plastics, elastomers, polymer-matrix composites, adhesives, and sealants--with the information largely updated and expanded from the first three volumes of the Engineered Materials Handbook. Ceramics and glasses are covered in Sections 8 through 12, also with updated and expanded information. Annotation copyright by Book News, Inc., Portland, OR

Coal Processing and Utilization D.V. Subba Rao 2016-05-05 This book is a direct outgrowth of classes that the authors gave over a period of three decades to a university audience taking a Mineral Beneficiation course as a major that included coal processing and utilization. It is designed to be used as a student's (or layman's) first introduction to coal processing and utilization, motivating the concepts before illustrating them by means of concrete situations. As such, this book gives an integrated overview of coal processing and utilization along with clean coal technology, presenting all the basic principles, theory and practice in a systematic way. Every topic covered is dealt with in a self-explanatory manner so that any new reader may find this book interesting and easy to understand. The book makes available the hard core of fundamentals of coal processing and utilization in a form which is general enough to meet the needs of many and yet is unburdened by excess baggage best discussed in research journals. The salient feature is that all the technical terminology used in this book has been sufficiently explained in order to allow the reader to understand the concepts effectively without needing to consult additional literature. Problems are introduced not so much to be solved as to be tackled. Some of them are included to lay the ground work for the subsequent theory and will help the readers in teaching, research and operating plants. Overall, this book will be of interest to professionals and engineers in the fields of energy, mining, mineral, metallurgical and geological engineering, as well as to engineering geologists and earth sciences professionals.

Chemical Metallurgy Chiranjib Kumar Gupta 2006-03-06 Chemical metallurgy is a well founded and fascinating branch of the wide field of metallurgy. This book provides detailed information on both the first steps of separation of desirable minerals and the subsequent mineral processing operations. The complex

chemical processes of extracting various elements through hydrometallurgical, pyrometallurgical or electrometallurgical operations are explained. In the choice of material for this work, the author made good use of the synergy of scientific principles and industrial practices, offering the much needed and hitherto unavailable combination of detailed treatises on both compiled in one book.

Elements of Petroleum Refinery Engineering O.P. Gupta 2015 This book is targeted to benefit the diploma in engineering students. Degree in engineering students (B.Tech-Chemical Engineering, Petroleum Engineering, Petrochemical Engineering, Aeronautical Engg., AMIE, AMIICHE, students etc. M. Tech students of various disciplines pursuing courses on petroleum refining. Faculty members/ teaching staff of engineering college/IIT's/NIT"s etc. Practicing petroleum engineers/consultants/refiners in various private sector/public sector undertakings, state/central government departments, NGO's etc. Students of foreign universities of developing countries pursuing diploma/degree/postgraduate courses in various engineering disciplines having a paper in petroleum refinery engineering.

Khanna's Multichoice Questions & Answers in Metallurgical Engineering O.P. Gupta 2017 This book is meant for diploma & degree student of metallurgical engineering for their academic programs as well as for various competitive examination for securing jobs. This book has been structured in three section. First section contains multiple choice type questions of various subjects of metallurgical engineering. Second section contains chapter wise question of GATE (Graduate Aptitude Test in Engineering) from 1991 to 2016. Third section contains SHORT QUESTIONS & ANSWERS in METALLURGICAL ENGINEERING. Fourth section contains APPENDICES containing Glossary of terms related to Metallurgical Engineering and Q&A of GATE-2017. This book has been designed to serve as "Hand Book of Metallurgical Engineering" which will be useful for various competitive examinations for recruitment in various public sector & Private Sector companies as well as for GATE Examination. Question have been arranged subject wise and answers are given at the bottom of the page.

Blast-furnace Refractories 1968

IRON MAKING AND STEELMAKING AHINDRA GHOSH 2008-02-29 This authoritative account covers the entire spectrum from iron ore to finished steel. It begins by tracing the history of iron and steel production, right from the earlier days to today's world of oxygen steelmaking, electric steelmaking, secondary steelmaking and continuous casting. The physicochemical fundamental concepts of chemical equilibrium, activity-composition relationships, and structure-properties of molten metals are introduced before going into details of transport phenomena, i.e. kinetics, mixing and mass transfer in ironmaking and steelmaking processes. Particular emphasis is laid on the understanding of the fundamental principles of the processes and their application to

the optimisation of actual processes. Modern developments in blast furnaces, including modelling and process control are discussed along with an introduction to the alternative methods of ironmaking. In the area of steelmaking, BOF plant practice including pre-treatment of hot metal, metallurgical features of oxygen steelmaking processes, and their control form part of the book. It also covers basic open hearth, electric arc furnace and stainless steelmaking, before discussing the area of casting of liquid steel—ingot casting, continuous casting and near net shape casting. The book concludes with a chapter on the status of the ironmaking and steelmaking in India. In line with the application of theoretical principles, several worked-out examples dealing with fundamental principles as applied to actual plant situations are presented. The book is primarily intended for undergraduate and postgraduate students of metallurgical engineering. It would also be immensely useful to researchers in the area of iron and steel.

FUELS, FURNACES AND REFRACTORIES GUPTA, R. C 2016-01-02 Written in a student-friendly manner, the book begins with the introduction to fuels, furnaces and refractories. It further exposes the reader to the different types of fuels with their testing methods. Besides covering the recent developments in the field of non-recovery coke ovens, dry coke cooling, use of coal in DRI and blast furnace, and new energy recovery system, the book also covers all the aspects of refractory systems. For better understanding of the text, the book includes a large number of illustrations. The book also facilitates a thorough understanding of different environmental issues associated with the use of fuel. Finally, the reader is made familiar with the Indian industrial scenario regarding fuels, furnaces and refractories.

Industrial Furnaces Willibald Trinks 1961

Elements of Refractory Technology Elements of Refractory Technology This book describes the essential features of refractory technology and is useful for degree & diploma courses in engineering. AMIE, AMIIM and IChE examinations. Short question & answers and multiple choice question & answers drawn from the examination paper of various engineering colleges and professional bodies examinations given at the end of the book enhances its utility for the students.

Encyclopedia of Glass Science, Technology, History, and Culture Two Volume Set Pascal Richet 2021-02-05 This Encyclopedia begins with an introduction summarizing its scope and content. Glassmaking; Structure of Glass, Glass Physics, Transport Properties, Chemistry of Glass, Glass and Light, Inorganic Glass Families, Organic Glasses, Glass and the Environment, Historical and Economical Aspect of Glassmaking, History of Glass, Glass and Art, and outline possible new developments and uses as presented by the best known people in the field (C.A. Angell, for example). Sections and chapters are arranged in a logical order to ensure overall consistency and avoid useless repetitions. All sections are introduced by a brief introduction and attractive

illustration. Newly investigated topics will be addressed, with the goal of ensuring that this Encyclopedia remains a reference work for years to come.

An Introduction to Ceramics and Refractories A. O. Surendranathan 2014-12-10 All Refractories Are Ceramics but Not All Ceramics Are Refractories Ceramics and refractories cover a wide range of fields and applications, and their relevance can be traced as far back as 24,000 BC to the first man-made piece of earthenware, and as recently as the late 1900s when ceramics and ceramic matrix composites were developed to withstand ultra-high temperatures. Beginning with a detailed history of ceramics, *An Introduction to Ceramics and Refractories* examines every aspect of ceramics and refractories, and explores the connection between them. The book establishes refractories as a class of ceramics with high fusion points, introduces the fundamentals of refractories and ceramics, and also addresses several applications for each. **Understand Ceramic Properties and Refractory Behavior** The book details applications for natural and synthetic ceramics, as well as traditional and engineering applications. It focuses on the various thermal and thermo-mechanical properties of ceramics, classifies refractories, describes the principles of thermodynamics as applied to refractories, and highlights new developments and applications in the ceramic and refractory fields. It also presents end-of-chapter problems and a relevant case study. Divided into three sections, this text: Introduces and details the applications of ceramics and refractories Discusses the selection of materials and the two stages in selection Describes the phase equilibriums in ceramic and refractory systems Outlines the three important systems: unary, binary, and ternary Considers corrosion of ceramics and refractories, failures in ceramics and refractories, and the design aspects Addresses bonding, structures of ceramics, defects in ceramics, and ceramics' microstructures Covers the production of ceramic powders starting from the raw materials Explains four forming methods Highlights three types of thermal treatments Defines mechanical properties, and thermal and thermo-mechanical properties Classifies materials and designates classes Addressing topics that include corrosion, applications, thermal properties, and types of refractories, *An Introduction to Ceramics and Refractories* provides you with a basic knowledge of the fundamentals of refractories and ceramics, and presents a clear connection between refractory behavior and ceramic properties to the practicing engineer.

Energy Sources Balasubramanian Viswanathan 2016-08-24 *Energy Sources: Fundamentals of Chemical Conversion Processes and Applications* provides the latest information on energy and the environment, the two main concerns of any progressive society that hopes to be sustainable in the future. Continuous efforts have to be exercised in both these areas by any of the developing communities, as concern over energy conversion continues to evolve due to various ecological imbalances, including climate change. This book

provides the fundamentals behind all energy conversion processes, identifies future research needs, and discusses the potential application of each process in a clear-and-concise manner. It is a valuable source for both chemists and chemical engineers who are working to improve current and developing future energy sources, and is a single reference that deals with almost all energy sources for these purposes, reviewing the fundamentals, comparing the various processes, and suggesting future research directions. Compiles, in a single source, all energy conversion processes, enabling easy evaluation and selection Explains the science behind each conversion process and facilitates understanding Contains many illustrations, diagrams, and tables, enabling a clear and comprehensible understanding of the pros and cons of the various processes Includes an exhaustive glossary of all terms used in the conversion processes Presents current status and new direction, thus enabling the planning process for future research needs Provides a concise and comprehensive overview of all energy sources

Fuels, Furnaces and Refractories J. D. Gilchrist 2013-10-22 *Fuels, Furnaces and Refractories* focuses on the sources and efficient use of energy available to modern industry. This book begins with the classification, properties, tests, and different kinds of fuels, as well as trends in fuel utilization. This text also tackles the generation and distribution of electricity from both chemical and nuclear energy sources. Subsequent chapters focus on the thermodynamics, physics, chemistry, and kinetics of combustion of fuels; the burner design; the heat transfer and flow of gases through furnaces and flues; and ways of controlling energy supply rates and temperatures. The refractory materials, which are heat-resisting substances, are also described.

Fuels and Combustion Samir Sarkar 2010-01-21 *Fuels and Combustion* is a systematic and comprehensive work on a subject that forms an integral part of the undergraduate degree courses in chemical, mechanical, metallurgical, and aeronautical engineering. While emphasizing the fundamental principles, the book provides a balanced treatment of energy resources, processing of fuels, fundamentals of combustion, and combustion appliances. The book takes a different approach by dealing with the topics in an Indian context. The third edition of the book has a completely new introduction, layout, and design, and new statistics have been added to provide up-to-date information.

New Optimization Techniques in Engineering Godfrey C. Onwubolu 2013-03-14 Presently, general-purpose optimization techniques such as Simulated Annealing, and Genetic Algorithms, have become standard optimization techniques. Concerted research efforts have been made recently in order to invent novel optimization techniques for solving real life problems, which have the attributes of memory update and population-based search solutions. The book describes a variety of these novel optimization techniques which in most cases outperform the standard optimization techniques in many application areas. *New Optimization*

Techniques in Engineering reports applications and results of the novel optimization techniques considering a multitude of practical problems in the different engineering disciplines – presenting both the background of the subject area and the techniques for solving the problems.

Proceedings of the Unified International Technical Conference on Refractories (UNITECR 2013) Dana Goski 2014-03-18 Proceedings containing 231 manuscripts that were submitted and approved for the 13th biennial worldwide refractories congress recognized as the Unified International Technical Conference on Refractories(UNITECR), held September 10-13, 2013.

Elements of Fuel & Combustion Technology O.P. Gupta This book contains detailed description of solid, liquid, gaseous fuels, combustion and furnaces. Beside short questions and answers and multiple choice questions & answers and multiple choice questions; answers drawn from the examination papers of various engineering Colleges and professional bodies examinations are also included. The book will be useful for degree & diploma curriculum of various branches of Engineering and for various associate membership examinations conducted by professional bodies like Institution of Engineers (AMIE), Indian Institute of Metals(AMIIM), Indian Institute of Chemical Engineers(AMIEChE), Institute of Chemicals etc.

Fuels and Fuel Technology Wilfrid Francis 2016-01-22 Fuels and Fuel Technology, Volume One: A Summarized Manual provides information pertinent to the fundamental aspects of fuels and fuel technology. This book presents a reasonably accurate summary of the existing knowledge and literature relating to fuel technology. Organized into two sections encompassing 72 data sheets, this volume begins with an overview of fuels as organic combustible substances used mainly or solely for the production of useful heat that are divided into three classes, namely, solid, liquid, and gaseous fuels. This text then examines the main chemical components of wood. This book discusses as well the commercial production of peat. The final section deals with the calculations of theoretical and actual air requirements, dry and wet flue gases, and carbon dioxide in flue gases. This book is a valuable resource for chemists and fuel technologists. Students who are interested to obtain a qualification in the subject of fuels or fuel technology will also find this book useful.

Industrial and Process Furnaces Barrie Jenkins 2013-10-23 Furnaces sit at the core of all branches of manufacture and industry, so it is vital that these are designed and operated safely and efficiently. This reference provides all of the furnace theory needed to ensure that this can be executed successfully on an industrial scale. **Industrial and Process Furnaces: Principles, 2nd Edition** provides comprehensive coverage of all aspects of furnace operation and design, including topics essential for process engineers and operators to better understand furnaces. This includes: the combustion process and its control, furnace fuels, efficiency, burner design and selection, aerodynamics, heat release profiles, furnace atmosphere, safety and emissions.

These elements and more are brought together to illustrate how to achieve optimum design and operation, with real-world case studies to showcase their application. Up-to-date and comprehensive reference encompassing not only best practice of operation but the essential elements of furnace theory and design, essential to anyone working with furnaces, ovens and combustion-based systems. More case studies, more worked examples. New material in this second edition includes further application of Computational Fluid Dynamics (CFD), with additional content on flames and burners, costs, efficiencies and future trends.

The Proceedings of the International Conference on Information Engineering, Management and Security 2014 JBV Subramanyam, Kokula Krishna Hari K 2014-05-15 The Proceedings of the International Conference on Information Engineering, Management and Security 2014 which happened at Christu Jyoti Institute of Technology.

MATERIALS SCIENCE AND ENGINEERING V. RAGHAVAN 2015-05-01 This well-established and widely adopted book, now in its Sixth Edition, provides a thorough analysis of the subject in an easy-to-read style. It analyzes, systematically and logically, the basic concepts and their applications to enable the students to comprehend the subject with ease. The book begins with a clear exposition of the background topics in chemical equilibrium, kinetics, atomic structure and chemical bonding. Then follows a detailed discussion on the structure of solids, crystal imperfections, phase diagrams, solid-state diffusion and phase transformations. This provides a deep insight into the structural control necessary for optimizing the various properties of materials. The mechanical properties covered include elastic, anelastic and viscoelastic behaviour, plastic deformation, creep and fracture phenomena. The next four chapters are devoted to a detailed description of electrical conduction, superconductivity, semiconductors, and magnetic and dielectric properties. The final chapter on 'Nanomaterials' is an important addition to the sixth edition. It describes the state-of-art developments in this new field. This eminently readable and student-friendly text not only provides a masterly analysis of all the relevant topics, but also makes them comprehensible to the students through the skillful use of well-drawn diagrams, illustrative tables, worked-out examples, and in many other ways. The book is primarily intended for undergraduate students of all branches of engineering (B.E./B.Tech.) and postgraduate students of Physics, Chemistry and Materials Science. **KEY FEATURES** • All relevant units and constants listed at the beginning of each chapter • A note on SI units and a full table of conversion factors at the beginning • A new chapter on 'Nanomaterials' describing the state-of-art information • Examples with solutions and problems with answers • About 350 multiple choice questions with answers

Elements of Fuels, Furnaces and Refractories Om Prakash Gupta 1997

Boilers Kumar Rayaprolu 2012-11-20 Following the publication of the author's first book, Boilers for Power

and Process by CRC Press in 2009, several requests were made for a reference with even quicker access to information. *Boilers: A Practical Reference* is the result of those requests, providing a user-friendly encyclopedic format with more than 500 entries and nearly the same number of supporting illustrations.

Written for practicing engineers and dealing with practical issues rather than theory, this reference focuses exclusively on water tube boilers found in process industries and power plants. It provides broad explanations for the following topics: A range of boilers and main auxiliaries, as well as steam and gas turbines Traditional firing techniques—grates, oil/gas, and modern systems Industrial, utility, waste heat, MSW and bio-fuel-fired boilers, including supercritical boilers The scientific fundamentals of combustion, heat transfer, fluid flow, and more The basics of fuels, water, ash, high-temperature steels, structurals, refractory, insulation, and more

Additional engineering topics like boiler instruments, controls, welding, corrosion, and wear Air pollution, its abatement techniques and their effect on the design of boilers and auxiliaries Emerging technologies such as carbon capture, oxy-fuel combustion, and PFBC This reference covers almost every topic needed by boiler engineers in process and power plants. An encyclopedia by design and a professional reference book by focus and size, this volume is strong on fundamentals and design aspects as well as practical content. The scope and easy-to-navigate presentation of the material plus the numerous illustrations make this a unique reference for busy design, project, operation, and consulting engineers.

Industrial Furnaces Willibald Trinks 1925

Principles of Blast Furnace Ironmaking Anil Kumar Biswas 1981