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 Alloying
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 ASM Specialty Handbook
 High Performance Stainless Steels
 Steels
 Fastener Design Manual
 Gear Materials, Properties, and Manufacture
 ASM Handbook. : Vol.5, Surface Engineering
 Spray Drying Handbook
 High-Performance Ferrous Alloys
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NATHANIEL BRAIDEN

[Copper and Copper Alloys](#) Springer Science & Business Media

Alloying: Understanding the Basics is a comprehensive guide to the influence of alloy additions on mechanical properties, physical properties, corrosion and chemical behavior, and processing and manufacturing characteristics. The coverage considers "alloying" to include any addition of an element or compound that interacts with a base metal to influence properties. Thus, the book addresses the beneficial effects of major alloy additions, inoculants, dopants, grain refiners, and other elements that have been deliberately added to improve performance, as well the detrimental effects of minor elements or residual (tramp) elements included in charge materials or that result from improper melting or refining techniques. The content is presented in a concise, user-friendly format. Numerous figures and tables are provided. The coverage has been weighted to provided the most detailed information on the most industrially important materials.

ASM Specialty Handbook John Wiley & Sons

All of the critical technical aspects of gear materials technology are addressed in this new reference work. Gear Materials, Properties, and Manufacture is intended for gear metallurgists and materials specialists, manufacturing engineers, lubrication technologists, and analysts concerned with gear failures who seek a better understanding of gear performance and gear life. This volume complements other gear texts that emphasize the design, geometry, and theory of gears. The coverage begins with an overview of the various types of gears used, important gear terminology, applied stresses and strength requirements associated with gears, and lubrication and wear. This is followed by in-depth treatment of metallic (ferrous and nonferrous alloys) and plastic gear materials. Emphasis is on the properties of carburized steels, the material of choice for high-performance power transmission gearing.

Welding Metallurgy and Weldability of Nickel-Base Alloys ASM International

How can I use my HPLC/UHPLC equipment in an optimal way, where are the limitations of the technique? These questions are discussed in detail in the sequel of the successful "HPLC Expert" in

twelve chapters written by experts in the respective fields. The topics encompass - complementary to the first volume - typical HPLC users' problems and questions such as gradient optimization and hyphenated techniques (LC-MS). An important key aspect of the book is UHPLC: For which analytical problem is it essential, what should be considered? Besides presentation of latest developments directly from the main manufacturers, also UHPLC users and independent service engineers impart their knowledge. Consistent with the target groups, the level is advanced, but the emphasis is on practical applications.

Welding Engineering CRC Press

"This book emphasizes the physical and practical aspects of fatigue and fracture. It covers mechanical properties of materials, differences between ductile and brittle fractures, fracture mechanics, the basics of fatigue, structural joints, high temperature failures, wear, environmentally-induced failures, and steps in the failure analysis process."--publishers website.

The HPLC Expert II ASM International

The completely revised Second Edition of Metallurgy for the Non-Metallurgist provides a solid

understanding of the basic principles and current practices of metallurgy. This major new edition is for anyone who uses, makes, buys or tests metal products. For both beginners and others seeking a basic refresher, the new Second Edition of the popular Metallurgy for the Non-Metallurgist gives an all-new modern view on the basic principles and practices of metallurgy. This new edition is extensively updated with broader coverage of topics, new and improved illustrations, and more explanation of basic concepts. Why are cast irons so suitable for casting? Do some nonferrous alloys respond to heat treatment like steels? Why is corrosion so pernicious? These are questions that can be answered in this updated reference with many new illustrations, examples, and descriptions of basic metallurgy.

Abrasive Erosion And Corrosion Of Hydraulic Machinery ASM International

"Advanced Steels: The Recent Scenario in Steel Science and Technology" contains more than 50 articles selected from the proceedings of the International Conference on Advanced Steels (ICAS) held during 9-11, Nov, 2010 in Guilin, China. This book covers almost all important aspects of steels from physical metallurgy, steel grades, processing and fabrication, simulation, to properties and applications. The book is intended for researchers and postgraduate students in the field of steels, metallurgy and materials science. Prof. Yuqing Weng is an academician of Chinese Academy of Engineering and the president of The Chinese Society for Metals. Prof. Han Dong is the vice president of Central Iron & Steel Research Institute and the director of National Engineering Research Center of Advanced Steel Technology, China. Prof. Yong Gan is an academician of Chinese Academy of Engineering, the vice president of Chinese Academy of Engineering and the president of Central Iron & Steel Research Institute, China.

Molybdenum Steels Asm International

Designed as a basic and introductory reference, this book not only addresses stainless steels in the light of their resistance to corrosion for which they are more commonly recognised, but also explains the wide range of other useful properties attributable to the various and specific categories of these alloys. This book is a concise, easy-to-read introduction to one of the most widely used industrial materials. Each chapter explains an important concept related to the selection, application, processing and use of stainless steels. This book is indexed and includes appendices: (1) Identification of Stainless Steels in Service (2) Toxicity of Stainless Steel (3) Table of Equivalent Designations (this is not intended to be complete, but includes the more commonly used stainless steels and the most widely used designation systems). First published in 1965 and updated in 1986, this third edition is a completely new text.

Advanced Steels ASM International

Steels: Metallurgy and Applications deals with the metallurgy and applications of steel and covers the broad spectrum of the mainstream commercial grades as well as the service or manufacturing requirements that govern their use. Standard specifications and some of the design considerations that provide satisfactory service performance are considered. Brief reference is also made to some of the steel prices that were effective on January 1, 1991. Comprised of five chapters, this book begins with an overview of technological trends in the steelmaking industry since 1980s, paying particular attention to energy conservation, iron-making, continuous casting, and product requirements. The next chapter is devoted to low-carbon strip steels and their cold-forming behavior, applications, and metallurgical factors affecting cold formability. The third chapter focuses on low-carbon structural steels and their strengthening mechanisms, while the fourth chapter considers engineering steels and their heat treatment aspects. The final chapter describes stainless steels and their composition-structure relationships, commercial grades, corrosion resistance, welding, and cold working. The mechanical properties of stainless steels at elevated and sub-zero temperatures are also examined. This monograph will be of interest to students and practicing metallurgists.

ASM Specialty Handbook ASM International

This book gives a systematic exposition of abrasive erosion and corrosion of hydraulic machinery in both theory and engineering practice, and is the first comprehensive volume to cover this area in depth. All the important subjects are discussed including fundamentals, calculation, analysis and numerical simulation of liquid-solid flow design, erosion-resistant materials, interaction between cavitation and abrasive erosion, and corrosion of hydraulic machinery.

High Interstitial Stainless Austenitic Steels Elsevier

This publication presents cleaning and etching solutions, their applications, and results on

inorganic materials. It is a comprehensive collection of etching and cleaning solutions in a single source. Chemical formulas are presented in one of three standard formats - general, electrolytic or ionized gas formats - to insure inclusion of all necessary operational data as shown in references that accompany each numbered formula. The book describes other applications of specific solutions, including their use on other metals or metallic compounds. Physical properties, association of natural and man-made minerals, and materials are shown in relationship to crystal structure, special processing techniques and solid state devices and assemblies fabricated. This publication also presents a number of organic materials which are widely used in handling and general processing...waxes, plastics, and lacquers for example. It is useful to individuals involved in study, development, and processing of metals and metallic compounds. It is invaluable for readers from the college level to industrial R & D and full-scale device fabrication, testing and sales. Scientific disciplines, work areas and individuals with great interest include: chemistry, physics, metallurgy, geology, solid state, ceramic and glass, research libraries, individuals dealing with chemical processing of inorganic materials, societies and schools.

Fatigue and Fracture ASM International(OH)

This handbook is an excellent reference for materials scientists and engineers needing to gain more knowledge about these engineering materials. Following introductory chapters on the fundamental materials properties of titanium, readers will find comprehensive descriptions of the development, processing and properties of modern titanium alloys. There then follows detailed discussion of the applications of titanium and its alloys in aerospace, medicine, energy and automotive technology.

CRC Handbook of Metal Etchants Springer Nature

The current state of understanding of emerging iron alloys and high-alloy ferrous systems, in comparison with some conventional steels, is compiled in this single volume to further their development. While most of the conventional steels are produced routinely today, many advanced high strength steels and iron-based alloys are still in the laboratory stage. The iron-based emerging alloys can yield high levels of mechanical and physical properties due to their new alloy concepts and novel microstructures leading to multiple benefits of their use in terms of sustainability and environmental impact. This book contains introductory chapters that present the requisite background knowledge on thermodynamics, phase diagrams, and processing routes used for the ferrous alloys to enable the readers a smooth understanding of the main chapters. Then, an overview of the conventional microalloyed steels and advanced high strength steels is given to present the benchmark of the existing steels and ferrous alloys manifesting their current state-of-the-art in terms of physical metallurgy and engineering applications. Subsequent chapters detail novel, emerging ferrous alloys and high-alloy ferrous systems. Summarizes the state-of-the-art of emerging iron-based alloys and the new processing and physical metallurgy-related developments of high-alloy iron systems; Explores new iron-based systems driven by the need for new properties, enhanced performance, sustainable processes and reduced environmental impact; Compiles cutting-edge research on the progress of materials science of iron-based systems, from physical metallurgy to engineering applications, and possible avenues for future research.

Techniques for Corrosion Monitoring ASM International

This one-stop reference is a tremendous value and time saver for engineers, designers and researchers. Emerging technologies, including aluminum metal-matrix composites, are combined with all the essential aluminum information from the ASM Handbook series (with updated statistical information).

Metallurgy for the Non-Metallurgist, Second Edition ASM International

If you are involved with machining or metalworking or you specify materials for industrial components, this book is an absolute must. It gives you detailed and comprehensive information about the selection, processing, and properties of materials for machining and metalworking applications. They include wrought and powder metallurgy tool steels, cobalt base alloys, cemented carbides, cermets, ceramics, and ultra-hard materials. You'll find specific guidelines for optimizing machining productivity through the proper selection of cutting tool materials plus expanded coverage on the use of coatings to extend cutting tool and die life. There is also valuable information on alternative heat treatments for improving the toughness of tool and die steels. All new material on the correlation of heat treatment microstructures and properties of tool steels is supplemented with dozens of photomicrographs. Information on special tooling considerations for

demanding applications such as isothermal forging, die casting of metal matrix composites, and molding of corrosive plastics is also included. And you'll learn about alternatives to ferrous materials for metalworking applications such as carbides, cermets, ceramics, and nonferrous metals like aluminum, nickel, and copper base alloys.

Aerospace Alloys ASM International

This book is a comprehensive guide to the compositions, properties, processing, performance, and applications of nickel, cobalt, and their alloys. It includes all of the essential information contained in the ASM Handbook series, as well as new or updated coverage in many areas in the nickel, cobalt, and related industries.

Introduction to Stainless Steels World Scientific

This book provides a solid overview of the important metallurgical concepts related to the microstructures of irons and steels, and it provides detailed guidelines for the proper metallographic techniques used to reveal, capture, and understand microstructures. This book provides clearly written explanations of important concepts, and step-by-step instructions for equipment selection and use, microscopy techniques, specimen preparation, and etching. Dozens of concise and helpful "metallographic tips" are included in the chapters on laboratory practices and specimen preparation. The book features over 500 representative microstructures, with discussions of how the structures can be altered by heat treatment and other means. A handy index to these images is provided, so the book can also be used as an atlas of iron and steel microstructures.

The Metals Black Book Elsevier

Provides an introduction to all of the important topics in welding engineering. It covers a broad range of subjects and presents each topic in a relatively simple, easy to understand manner, with emphasis on the fundamental engineering principles. • Comprehensive coverage of all welding engineering topics • Presented in a simple, easy to understand format • Emphasises concepts and fundamental principles

Powder Metallurgy Stainless Steels ASM International

The rate of growth of stainless steel has outpaced that of other metals and alloys, and by 2010 may surpass aluminum as the second most widely used metal after carbon steel. The 2007 world production of stainless steel was approximately 30,000,000 tons and has nearly doubled in the last ten years. This growth is occurring at the same time that the production of stainless steel continues to become more consolidated. One result of this is a more widespread need to understand stainless steel with fewer resources to provide that information. The concurrent technical evolution in stainless steel and increasing volatility of raw material prices has made it more important for the engineers and designers who use stainless steel to make sound technical judgments about which stainless steels to use and how to use them.

Welding Metallurgy of Stainless Steels Springer Science & Business Media

High Interstitial Stainless Austenitic Steels is of interest to all engineers and researchers working with stainless steel, either at universities or R&D departments in Industry. The new applications described appeal to design engineers while process engineers find interesting challenges. These novel steels enter more and more industrial applications. Their development is presented by this book in its entirety, starting from the electronic scale of components. This makes it particularly attractive to Materials Scientists and Metal Physicists.

Handbook of Stainless Steels John Wiley & Sons

The most up-to-date coverage of welding metallurgy aspects and weldability issues associated with Ni-base alloys Welding Metallurgy and Weldability of Nickel-Base Alloys describes the fundamental metallurgical principles that control the microstructure and properties of welded Ni-base alloys. It serves as a practical how-to guide that enables engineers to select the proper alloys, filler metals, heat treatments, and welding conditions to ensure that failures are avoided during fabrication and service. Chapter coverage includes: Alloying additions, phase diagrams, and phase stability Solid-solution strengthened Ni-base alloys Precipitation strengthened Ni-base alloys Oxide dispersion strengthened alloys and nickel aluminides Repair welding of Ni-base alloys Dissimilar welding Weldability testing High-chromium alloys used in nuclear power applications With its excellent balance between the fundamentals and practical problem solving, the book serves as an ideal reference for scientists, engineers, and technicians, as well as a textbook for undergraduate and graduate courses in welding metallurgy.