

Download Use Of Duplex Stainless Steels In The Oil Refining Industry Second Edition

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Duplex Stainless Steels-R Gunn 1997-10-21 Two very successful conferences - in Glasgow and Beaune - were held on duplex stainless steels during the first half of the '90s. This book takes keynote papers from each, and develops and expands them to bring the topics right up to date. There is new material to cover grades, specifications and standards, and the book is fully cross-references and indexed. The first reference book to be published on the increasingly popular duplex stainless steels, it will be widely welcomed by metallurgists, design and materials engineers, oil and gas engineers and anyone involved in materials development and properties. The first reference book on this relatively new engineering material Based on keynote papers from major international contributors Covers grades, standards and specifications

Duplex Stainless Steels-Iris Alvarez-Armas 2013-01-16 Duplex Stainless Steels (DSSs) are chromium-nickel-molybdenum-iron alloys that are usually in proportions optimized for equalizing the volume fractions of austenite and ferrite. Due to their ferritic-austenitic microstructure, they possess a higher mechanical strength and a better corrosion resistance than standard austenitic steels. This type of steel is now increasing its application and market field due to its very good properties and relatively low cost. This book is a review of the most recent progress achieved in the last 10 years on microstructure, corrosion resistance and mechanical strength properties, as well as applications, due to the development of new grades. Special attention will be given to fatigue and fracture behavior and to proposed models to account for mechanical behavior. Each subject will be developed in chapters written by experts recognized around the international industrial and scientific communities. The use of duplex stainless steels has grown rapidly in the last 10 years, particularly in the oil and gas industry, chemical tankers, pulp and paper as well as the chemical industry. In all these examples, topics like welding, corrosion resistance and mechanical strength properties (mainly in the fatigue domain) are crucial. Therefore, the update of welding and corrosion properties and the introduction of topics like texture effects, fatigue and fracture strength properties, and mechanical behavior modeling give this book specific focus and character.

Stainless Steels and Alloys-Zoia Duriagina 2019-02-13 Materials science is the magic that allows us to change the chemical composition and microstructure of material to regulate its corrosion-mechanical, technological, and functional properties. Five major classes of stainless steels are widely used: ferritic, austenitic, martensitic, duplex, and precipitation hardening. Austenitic stainless steels are extensively used for service down to as low as the temperature of liquid helium (-269oC). This is largely due to the lack of a clearly defined transition from ductile to brittle fracture in impact toughness testing. Steels with ferritic or martensitic structures show a sudden change from ductile (safe) to brittle (unsafe) fracture over a small temperature difference. Even the best of these steels shows this behavior at temperatures higher than -100oC and in many cases only just below zero. Various types of stainless steel are used across the whole temperature range from ambient to 1100oC. This book will be useful to scientists, engineers, masters, graduate students, and students. I hope readers will enjoy this book and that it will serve to create new materials with unique properties.

The Corrosion of Duplex Stainless Steels-Roger Francis 2018-04-23 Duplex stainless steels have been adopted by many industries to varying degrees. They are the workhorse corrosion resistant alloy (CRA) of the oil and gas industry, and are also widely used in the chemical and process industries for their SCC and corrosion resistance

Stainless Steels for Design Engineers-Michael F. McGuire 2008 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-Erich Folkhard 2012-12-06 When considering the operational performance of stainless steel weldments the most important points to consider are corrosion resistance, weld metal mechanical properties and the integrity of the welded joint. Mechanical and corrosion resistance properties are greatly influenced by the metallurgical processes that occur during welding or during heat treatment of welded components. This book is aimed, therefore, at providing information on the metallurgical problems that may be encountered during stainless steel welding. In this way we aim to help overcome a certain degree of insecurity that is often encountered in welding shops engaged in the welding of stainless steels and is often the cause of welding problems which may in some instances lead to the premature failure of the welded component. The metallurgical processes that occur during the welding of stainless steel are of a highly intricate nature. The present book focuses in particular on the significance of constitution diagrams, on the processes occurring during the solidification of weld metal and on the recrystallization and precipitation phenomena which take place in the area of the welds. There are specific chapters covering the hot cracking resistance during welding and the practical welding of a number of different stainless steel grades. In addition, recommendations are given as to the most suitable procedures to be followed in order to obtain maximum corrosion resistance and mechanical properties from the weldments.

Subsea Engineering Handbook-Yong Bai 2012 Subsea production systems, overview of subsea engineering, subsea field development, subsea distribution system. Flow assurance and system engineering. Subsea structure and equipment. Subsea umbilical, risers and flowlines.

Practical Guidelines for the Fabrication of Duplex Stainless Steels-International Molybdenum Association 2009

Welding Metallurgy and Weldability of Stainless Steels-John C. Lippold 2005-04 Preface. Chapter 1. Introduction. Chapter 2. Phase Diagrams. Chapter 3. Alloying Elements and Constitution Diagrams. Chapter 4. Martensitic Stainless Steels. Chapter 5. Ferritic Stainless Steels. Chapter 6. Austenitic Stainless Steels. Chapter 7. Duplex Stainless Steels. Chapter 8. Precipitation Hardening Stainless Steels. Chapter 9. Dissimilar Welding of Stainless Steels. Appendix 1. Appendix 2.

Proceedings of the 1st International Joint Symposium on Joining and Welding-H. Fujii 2014-08-27 This book contains the papers from the Proceedings of the 1st international joint symposium on joining and welding held at Osaka University, Japan, 6-8 November 2013. The use of frictional heating to process and join materials has been used for many decades. Rotary and linear friction welding are vital techniques for many industrial sectors. More recently the development of friction stir welding (FSW) has significantly extended the application of friction processing. This conference is the first event organized by the three major institutes for joining and welding to focus on the broad range of friction processes. This symposium will provide the latest valuable information from academic and industrial experts from around the world on FSW, FSP, linear and rotary friction welding.

The History of Stainless Steel-Harold M. Cobb 2010 The History of Stainless Steel provides a fascinating glimpse into a vital material that we may take for granted today. Stainless steel, called "the miracle metal" and "the crowning achievement of metallurgy" by the prominent metallurgist Carl Zapffe, is a material marvel with an equally fascinating history of people, places, and technology. As stainless steel nears the hundredth anniversary of its discovery, The History of Stainless Steel by Harold Cobb is a fitting perspective on a vital material of our modern life. Aptly called the miracle metal by the renowned metallurgist Carl Zapffe, stainless steel is not only a metallurgical marvel, but its history provides an equally fascinating story of curiosity, competitive persistence, and entrepreneurial spirit. The History of Stainless Steel is the world's first book that captures the unfolding excitement and innovations of stainless steel pioneers and entrepreneurs. Many new insights are given into the work of famous pioneers like Harry Brearley, Elwood Haynes, and Benno Strauss, including significant technical contributions of lesser known figures like William Krivsky. This fascinating history of stainless steel exemplifies the great push of progress in the 20th Century. From the stainless steel cutlery of Brearley in 1913, stainless steel burst on the modern scene in many tangible ways. Excerpted text by William Van Alen, architect of the Chrysler Building, describes the early architectural use of stainless steel. Another historic application of stainless steel is the revolution in rail travel by the Edward G. Budd Company, which built the first light-weight stainless steel passenger trains--with an astounding 90% reduction in fuel costs.

This remains recognized today as one of the technological marvels of the modern world. Harold Cobb, a metallurgist who has spent much of his career in the stainless steel industry, uncovers many interesting stories and insights, including a special perspective on the prominent role of stainless steel in the activities of emerging technical societies such as the American Society for Metals and the American Society for Testing and Materials. Amply illustrated and with a 78-page timeline, this publication truly evokes the inspirations created by and from stainless steel.

Alloy Steels-Robert Tuttle 2018-05-04 This book is a printed edition of the Special Issue "Alloy Steels" that was published in Metals

Stainless Steels-Joseph R. Davis 1994-01-01 ASM Specialty Handbook® Stainless Steels The best single-volume reference on the metallurgy, selection, processing, performance, and evaluation of stainless steels, incorporating essential information culled from across the ASM Handbook series. Includes additional data and reference information carefully selected and adapted from other authoritative ASM sources.

Austenitic Stainless Steels-Wojciech Borek 2017-12-20 Stainless steel is still one of the fastest growing materials. Today, the austenitic stainless steel with the classic composition of 18% Cr and 8% Ni (grade 304L) is still the most widely used by far in the world. The unique characteristic of stainless steel arises from three main factors. The versatility results from high corrosion resistance, excellent low- and high-temperature properties, high toughness, formability, and weldability. The long life of stainless steels has been proven in service in a wide range of environments, together with low maintenance costs compared to other highly alloyed metallic materials. The retained value of stainless steel results from the high intrinsic value and easy recycling. Stainless steel, especially of austenitic microstructure, plays a crucial role in achieving sustainable development nowadays, so it is also important for further generations.

Stainless Steels-Joseph Ki Leuk Lai 2012 "Stainless Steels: An Introduction and Their Recent Developments explains issues related to surface treatment, grain refinement, coloration, defect detection and powder metallurgy of stainless steels in detail with reference to new research findings. It all"

Corrosion of Stainless Steels-A. John Sedriks 1996-04-19 A Complete, Up-to-Date Introduction to Corrosion of Stainless Steels and Metallurgical Factors This fully updated Second Edition of Corrosion of Stainless Steels covers the tremendous advances made with stainless steels in recent decades, including applications in many new areas--from marine technologies and off-shore oil production to power plants and the kitchen sink. This book offers unique insights into the corrosion mechanisms affecting stainless steels, details problem-avoidance strategies, and helps identify corrosion-resistant capabilities for these remarkable alloys Sponsored by the Electrochemical Society, Corrosion of Stainless Steels * Provides a comprehensive introduction to the selection, development, and production of all types of stainless steels * Emphasizes how metallurgical factors affect corrosion resistance * Examines the limitations of stainless steels within the context of a discussion on higher alloys * Takes an interdisciplinary approach that demonstrates the combined effects of metallurgy, chemistry, and electrochemistry on corrosion resistance * Provides baseline knowledge and testing standards for stainless steels, and facilitates failure analysis for industrial purposes or litigation related to equipment failure This is a much-needed text for materials scientists, chemical engineers, corrosion specialists, graduate students, and anyone who needs to be brought up to date on this subject.

Ferrous Materials-Hans Berns 2008-08-26 Ferrous materials have made a major contribution to the development of modern technology. They span a tremendous range of properties and applications. Part A of this book is dedicated to the fundamental relationships between the structure and the properties of ferrous materials. The considerably larger Part B deals with standardised materials, recent developments and industrial applications, which also affect processing aspects. Details are given for general engineering materials, tool and functional materials, as well as high-strength, creep-resistant and wear-resistant grades. This book closes the gap in the treatment of steel and cast iron. Each chapter takes into account the gradual transitions between the two types of ferrous materials. The authors demonstrate that steel and cast iron are versatile and customisable materials which will continue to play a key role in the future.

Duplex Stainless Steels-R. A. Lula 1983

Stainless Steel Castings-V. G. Behal 1982

Heat Treatment of Welded Steel Structures-D Croft 1996-11-14 An updated, revised and expanded version of Professor Burdekin's earlier work of the same title, this book explains this branch of thermal engineering in clear, practical terms. It concentrates on steels - the most predominant engineering media - and is essential reading for all those involved in the study or practice of welding high performance steel structures.

A Century of Stainless Steels-Vivekanand Kain 2013-09-04 At the completion of one century of discovery of stainless steels, it is appropriate to take stock of the latest trends in wide ranging fields that relate to stainless steels. The book covers advances in all the major aspects related to stainless steels namely melting & refining, fabrication & forming, welding & joining, physical metallurgy, corrosion and its control and experience from use of stainless steels in various industries including newer varieties of stainless steels. The book will be a good source of information regarding various aspects of stainless steels. Volume is indexed by Thomson Reuters CPCI-S (WoS).

Stainless Steel-Animesh Kumar Basak 2015-04-01 Stainless steel, termed as the "miracle metal" is all around us in numerous applications ranging from everyday household items to sophisticated biomedical applications. Stainless steel is one of the fastest growing segments in metal industries. New developments and a wide range of research on stainless steel is taking place all around the world in order to obtain superior quality stainless steel and expand its applications to meet growing demands. Taking those facts into account, this book compiles recent developments in the properties, applications and further processing of stainless steel and recent research trends. The book includes high-tech characterisation techniques of stainless steel to address the decomposition behaviour; decomposition-induced transformation to the correlated property-microstructure; powder metallurgy to produce difficult-to-cast stainless steel components, depassivation / repassivation behaviour, various surface treatment processes as well as a wide range of machining techniques to address the need of machinability of stainless steel.

Introduction to Stainless Steels-Jonathan Carl Beddoes 1999 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.

Manufacturing and Application of Stainless Steels-Andrea Di Schino 2020-04-15 Stainless steels represent a quite interesting material family, both from a scientific and commercial point of view, following to their excellent combination in terms of strength and ductility together with corrosion resistance. Thanks to such properties, stainless steels have been indispensable for the technological progress during the last century and their annual consumption increased faster than other materials. They find application in all these fields requiring good corrosion resistance together with ability to be worked into complex geometries. Despite to their diffusion as a consolidated materials, many research fields are active regarding the possibility to increase stainless steels mechanical properties and corrosion resistance by grain refinement or by alloying by interstitial elements. At the same time innovations are coming from the manufacturing process of such a family of materials, also including the possibility to manufacture them starting from metals powder for 3D printing. The Special Issue scope embraces interdisciplinary work covering physical metallurgy and processes, reporting about experimental and theoretical progress concerning microstructural evolution during processing, microstructure-properties relations, applications including automotive, energy and structural.

Developments in Corrosion Protection-Mahmood Aliofkhazraei 2014-02-20 One of the first thing that comes to your mind after hearing the term "corrosion" is corrosion of a metal. Corrosion is a basically harmful phenomenon, but it can be useful in some cases. For instance, environment's pollution with corrosion products and damage to the performance of a system are among its harmful effects, whereas electric energy generation in a battery and cathodic protection of many structures are among its advantages. However, these advantages are almost nothing as compared to the costs and effects imposed by its detrimental influences. The enormous costs of this phenomenon can be better understand through studying the published statistics on direct and indirect corrosion damages on economy of governments. The direct cost of corrosion is near 3 % of the gross domestic product (GDP) of USA. Considering this huge cost, it is necessary to develop and expand the corrosion science and its protection technologies.

Stainless Steels-Joseph Ki Leuk Lai 2012 "Stainless Steels: An Introduction and Their Recent Developments explains issues related to surface treatment, grain refinement, coloration, defect detection and powder metallurgy of stainless steels in detail with reference to new research findings. It all"

Corrosion Resistance of Stainless Steels-C.P. Dillon 1995-05-04 This work examines the corrosion of stainless steels and similar chromium-bearing nickel-containing higher alloys, detailing various corrosive environments, including atmospheric and fire-side corrosion, corrosion by water and soil, and corrosion caused by particular industrial processes. It presents the acceptable isocorrosion parameters of concentration and temperature for over 250 chemicals for which stainless alloys are the preferred materials of construction.

Production, Properties, and Applications of High Temperature Coatings-Pakseresht, Amir Hossein 2018-01-12 Heat resistant layers are meant to withstand high temperatures while also protecting against all types of corrosion and oxidation. Therefore, the micro-structure and behavior of such layers is essential in

understanding the functionality of these materials in order to make improvements. Production, Properties, and Applications of High Temperature Coatings is a critical academic publication which examines the methods of creation, characteristics, and behavior of materials used in heat resistant layers. Featuring coverage on a wide range of topics such as, thermal spray methods, sol-gel coatings, and surface nanoengineering, this book is geared toward students, academicians, engineers, and researchers seeking relevant research on the methodology and materials for producing effective heat resistant layers. Advances in Steel Research and Application: 2013 Edition- 2013-06-21 Advances in Steel Research and Application / 2013 Edition is a ScholarlyBrief™ that delivers timely, authoritative, comprehensive, and specialized information about ZZZAdditional Research in a concise format. The editors have built Advances in Steel Research and Application: 2013 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about ZZZAdditional Research in this book to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Advances in Steel Research and Application / 2013 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>.

Bridge Maintenance, Safety Management, Health Monitoring and Informatics - IABMAS '08-Hyun-Moo Koh 2008-06-26 An extensive collection of 550 revised papers on most recent advances in bridge maintenance, safety, management and life-cycle performance. This is a major contribution to the state-of-the-art in all aspects of the field, containing papers from leading experts. Set of Book with keynote papers and extended abstracts plus a 4500 pages, searchable, full-paper CD-ROM.

Fundamentals of Metallic Corrosion-P.E., Philip A. Schweitzer 2006-12-22 Understanding corrosion is essential for selecting and maintaining equipment and structural components that will withstand environmental and process conditions effectively. Fundamentals of Metallic Corrosion: Atmospheric and Media Corrosion of Metals focuses on the mechanisms of corrosion as well as the action of various corrodents on metals and th

Toughness of Ferritic Stainless Steels-R. A. Lula 1980-01-01

Mechanical and Materials Engineering of Modern Structure and Component Design-Andreas Öchsner 2015-06-06 This book presents the latest findings on mechanical and materials engineering as applied to the design of modern engineering materials and components. The contributions cover the classical fields of mechanical, civil and materials engineering, as well as bioengineering and advanced materials processing and optimization. The materials and structures discussed can be categorized into modern steels, aluminium and titanium alloys, polymers/composite materials, biological and natural materials, material hybrids and modern nano-based materials. Analytical modelling, numerical simulation, state-of-the-art design tools and advanced experimental techniques are applied to characterize the materials' performance and to design and optimize structures in different fields of engineering applications.

High Nitrogen Steels-J. Foct 1989

Fire Design of Steel Structures-Jean-Marc Franssen 2016-10-10 This book explains and illustrates the rules that are given in the Eurocodes for designing steel structures subjected to fire. After the first introductory chapter, Chapter 2 explains how to calculate the mechanical actions (loads) in the fire situation based on the information given in EN 1990 and EN 1991. Chapter 3 is dedicated to the models which represent the thermal actions created by the fire. Chapter 4 describes the procedures to be used to calculate the temperature of the steelwork from the temperature of the compartment and Chapter 5 shows how the information given in EN 1993-1-2 is used to determine the load bearing capacity of the steel structure. Chapter 6 presents the essential features that characterize the advanced calculation models, for thermal and mechanical response. The methods used to evaluate the fire resistance of bolted and welded connections are described in Chapter 7. Chapter 8 describes a computer program called `Elefir-EN? which is based on the simple calculation model given in the Eurocode and allows designers to quickly and accurately calculate the performance of steel components in the fire situation. Chapter 9 looks at the issues that a designer may be faced with when assessing the fire resistance of a complete building. This is done via a case study and addresses most of the concepts presented in the previous chapters. For this second edition the content has been revised and extended. The book contains some new sections, e.g. a comparison between the simple and the advanced calculation, as well as additional examples.

Localized Corrosion-Fumio Hine 1988

Pitting Corrosion of Metals-Z. Szklarska-Smialowska 1986

Welding Metallurgy and Weldability-John C. Lippold 2014-11-24 Describes the weldability aspects of structural materials used in a wide variety of engineering structures, including steels, stainless steels, Ni-base alloys, and Al-base alloys Welding Metallurgy and Weldability describes weld failure mechanisms associated with either fabrication or service, and failure mechanisms related to microstructure of the weldment. Weldability issues are divided into fabrication and service related failures; early chapters address hot cracking, warm (solid-state) cracking, and cold cracking that occur during initial fabrication, or repair. Guidance on failure analysis is also provided, along with examples of SEM fractography that will aid in determining failure mechanisms. Welding Metallurgy and Weldability examines a number of weldability testing techniques that can be used to quantify susceptibility to various forms of weld cracking. Describes the mechanisms of weldability along with methods to improve weldability Includes an introduction to weldability testing and techniques, including strain-to-fracture and V-restraint tests Chapters are illustrated with practical examples based on 30 plus years of experience in the field Illustrating the weldability aspects of structural materials used in a wide variety of engineering structures, Welding Metallurgy and Weldability provides engineers and students with the information needed to understand the basic concepts of welding metallurgy and to interpret the failures in welded components.

Materials Design and Applications II-Lucas F. M. da Silva 2018-12-31 This book highlights fundamental research on the design and application of engineering materials, and predominantly mechanical engineering applications. This area includes a wide range of technologies and materials, including metals, polymers, composites, and ceramics. Advanced applications include manufacturing cutting-edge materials, testing methods, and multi-scale experimental and computational aspects. The book introduces readers to a wealth of engineering applications in transport, civil, packaging and power generation.

Research and Applications in Structural Engineering, Mechanics and Computation-Alphose Zingoni 2013-08-15 Research and Applications in Structural Engineering, Mechanics and Computation contains the Proceedings of the Fifth International Conference on Structural Engineering, Mechanics and Computation (SEMC 2013, Cape Town, South Africa, 2-4 September 2013). Over 420 papers are featured. Many topics are covered, but the contributions may be seen to fall

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