

Stainless Steel for Designers





If you are looking for a key property of stainless steels without going through a tedious search, then this document should help you.

The most comprehensive, recent and unbiased publications on stainless steel properties are just here at your fingertips.

ISSF hopes this will be useful to you!

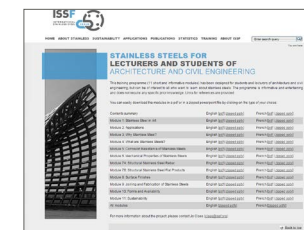
If you should have any comments or suggestions, please let us know by clicking [here](#).

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Stainless Steels for Lecturers of Architecture and Civil Engineering

This training programme (11 short and informative modules) has been designed for students and lecturers of architecture and civil engineering, but can be of interest to all who want to learn about stainless steels. The programme is informative and entertaining and does not require any specific prior knowledge. Links for references are provided.

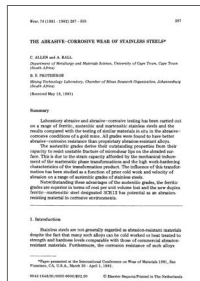


You can easily download the modules in a pdf or in a zipped powerpoint file. The modules are available in English and French.

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Cleaning



Cleaning Architectural Stainless Steel



Recommended reading to all building contractors, architects and maintenance cleaning personnel: the dos and the don'ts.

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Corrosion Resistance



Stainless Steel in Contact with Other Materials

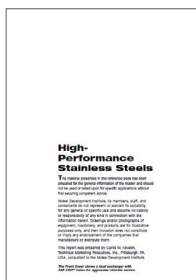


A publication dedicated to the issue of galvanic coupling between stainless and other materials, its causes and how to avoid it.

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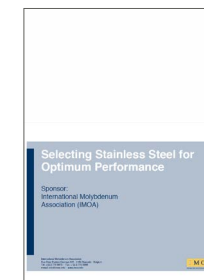
High Performance Stainless Steels

Focused on stainless steel grades with a very high corrosion resistance, i.e. typically above that of EN1.4404/AISI316L. Provides data on corrosion resistance in various aggressive media, as well as tables of mechanical and physical properties. Advice on welding and machining is also provided.



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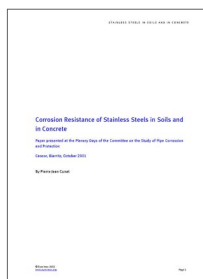
Selecting Stainless... for Optimum Performance



A couple of publications which will help specifiers select appropriate stainless steels and surface finishes for applications where corrosion staining is aesthetically unacceptable, even if there is no structural deterioration.

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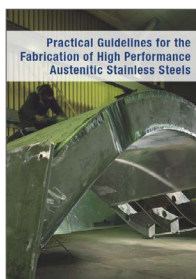
Corrosion Resistance of Stainless Steels in Soils and in Concrete



Reviews what causes corrosion in soils, provides recommendations on grade selection. Standard and lean duplex grades are not included, however.

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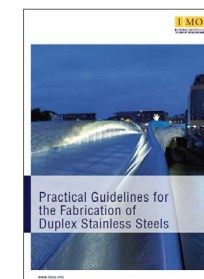
Practical Guidelines for the Fabrication of High Performance Austenitic Stainless Steels



Provides metallurgical background, corrosion resistance, physical, mechanical, forming and joining properties of austenitic stainless steels. Good sections on fabrication, cleaning and surface finishes.

DOWNLOAD

Practical Guidelines for the Fabrication of Duplex Stainless Steels



A comprehensive review of the properties of duplex stainless steels: metallurgical, mechanical and physical properties, corrosion resistance, processing (forming, machining, welding, ...). Specifications are also available.

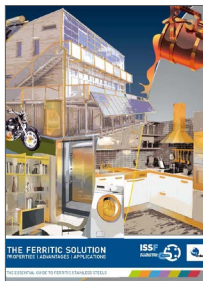
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Corrosion Resistance



The Ferritic Solution

Lists chemical compositions, corrosion resistance, physical, mechanical, forming and joining properties of ferritic stainless steels. Plus products, applications and references.



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Austenitic Cr-Mn Stainless Steels

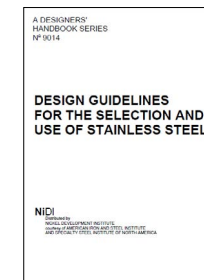
Document on austenitic manganese-containing grades (a.k.a. 200-series), with particular emphasis on grade EN1.4618.



DOWNLOAD

Design guidelines for the selection and use of stainless steel

A general purpose document on stainless steels. There is little to help designers to choose a grade, but a good set of tables provides a lot of technical information on corrosion resistance, mechanical and physical properties, particularly at high temperatures.



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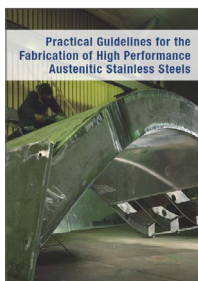
ISSF Stainless Steel Specialist Course



This stainless steel specialist training course is designed for all those who want to improve their knowledge of stainless steel, its properties, performance and uses. It consists of modules delivered and marked online. A small enrollment fee is required.

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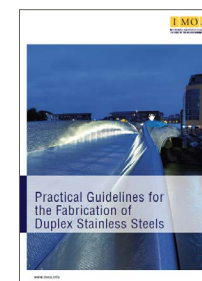
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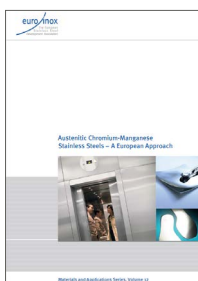
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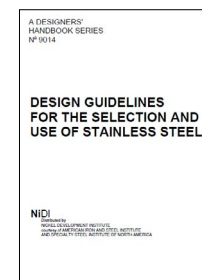

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Die Verarbeitung von Edelstahl Rostfrei



An overview of the fabrication
processes used to process
stainless steels.
Publication in German.

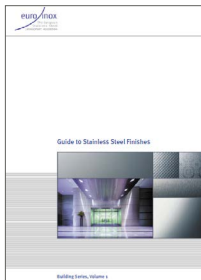
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Finishes



Guide to Stainless Steel Finishes

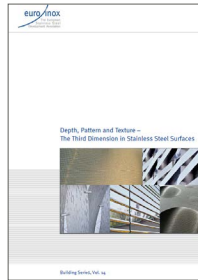
A review of the finishes available for flat products, including colours.



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Depth, Pattern and Structure - The third dimension in stainless steel surface

A review of the “3D” finishes flat products, i.e. involving depth, patterns, textures, perforated, expanded sheets and more.



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The Ferritic Solution

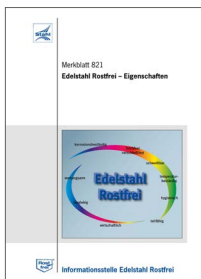
Lists chemical compositions, corrosion resistance, physical, mechanical, forming and joining properties of ferritic stainless steels. Plus products, applications and references.



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Edelstahl Rostfrei - Eigenschaften

An overview of families, grades, properties, processing and some applications.



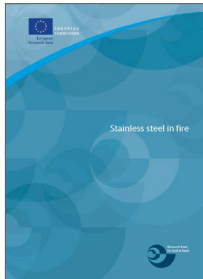
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Fire Resistance



Stainless Steel in Fire

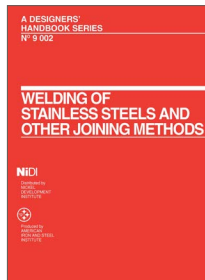
Detailed report on the mechanical behaviour of austenitic stainless steels in fire are available: tests on materials, members and connections, numerical analysis and development of design guidance aligned to the Eurocodes.



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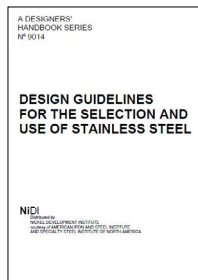
Welding of Stainless ... and Other Joining Methods



A guide on welding and soft soldering. Includes dissimilar metals and advice on how to avoid intergranular corrosion and SCC in service.

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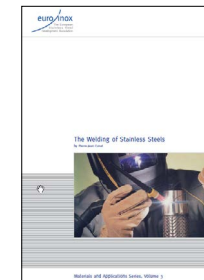
Design Guidelines for the Selection and Use of Stainless



A general purpose document on stainless steels. There is little to help designers to choose a grade, but a good set of tables and of technical information.

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The Welding of Stainless Steels



A guide on welding processes, filler metals, welding gases, finishing treatments and safety

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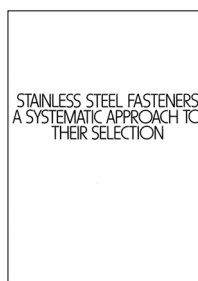
Adhesive Bonding of Stainless Steels



Advantages and limitations of adhesive bonding, recommended adhesives, surface preparation and joint design.

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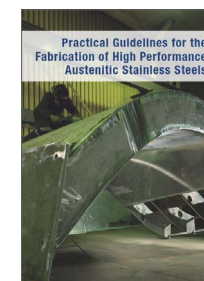
Stainless Steel Fasteners - A Systematic Approach to their Selection



Advice on the selection of stainless fasteners.

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Practical Guidelines for the Fabrication of High Performance Austenitic Stainless Steels

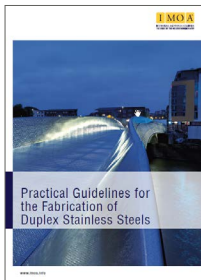


Provides metallurgical background, corrosion resistance, physical, mechanical, forming and joining properties of austenitic stainless steels. Good sections on fabrication, cleaning and surface finishes.

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Practical Guidelines for the Fabrication of Duplex Stainless Steels



A comprehensive review of the properties of duplex stainless steels: metallurgical, mechanical and physical properties, corrosion resistance, processing (forming, machining, welding, ...). Specifications are also available.

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Austenitic Cr-Mn Stainless Steels

Document on austenitic manganese-containing grades (a.k.a. 200-series), with particular emphasis on grade EN1.4618.



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Guidelines on the welded fabrication of stainless steels

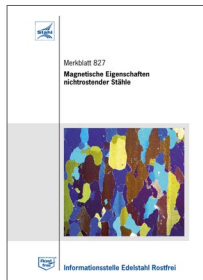


This animation is addressed to welding experts, who are familiar with the welding of carbon steel and want to extend their knowledge into the additional aspects necessary for successful stainless steel fabrication.

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Magnetische Eigenschaften nichtrostender Stähle



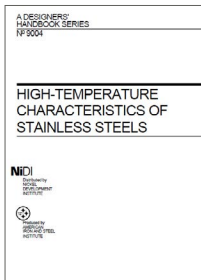
Reviews the magnetic properties of stainless steels: ferritics, martensitics, non-magnetic austenitics and duplex. Provides processing information and answers to FAQs.

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Mechanical and Physical Properties

Temperature properties

High Temperature Characteristics of Stainless Steels



Provides detailed mechanical properties, creep resistance, corrosion resistance as well as advice for design and grade selection of stainless steels at high temperatures.

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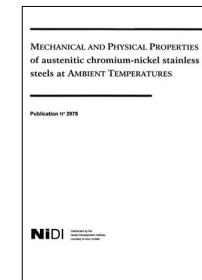
Mechanical and Physical Properties of the Austenitic Cr-Ni Stainless Steels at Subzero Temperatures



Mechanical and physical properties of stainless steels at cryogenic temperatures, down to 0°K.

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Mechanical and Physical Properties of Austenitic Cr-Ni Stainless Steels at Ambient Temperatures

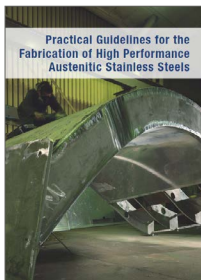


Lots of data on the mechanical and physical properties of austenitic grades in the annealed as well as in the cold-worked condition.

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Grades

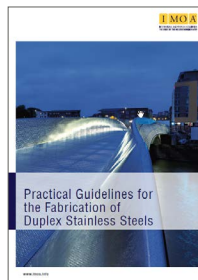
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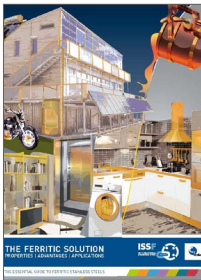
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Mechanical and Physical Properties



The Ferritic Solution

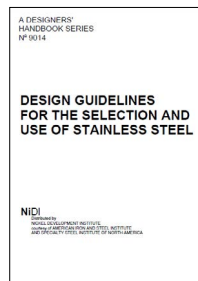
Lists chemical compositions, corrosion resistance, physical, mechanical, forming and joining properties of ferritic stainless steels. Plus products, applications and references.



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Design Guidelines for the Selection and Use of Stainless

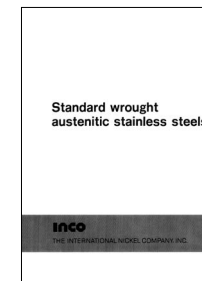
A general purpose document on stainless steels. There is little to help designers to choose a grade, but a good set of tables and of technical information.



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Standard Wrought Austenitic Stainless Steels

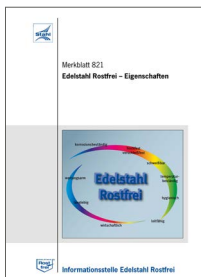
Lists the engineering properties of austenitic stainless steels, including low and high temperatures.



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Edelstahl Rostfrei - Eigenschaften

An overview of families, grades, properties, processing and some applications.



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Physical and Mechanical Properties of Stainless Steels

Tables of physical and mechanical properties of stainless steels.

This document is in Italian.



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Béton armé d'Inox: le Choix de la Durée

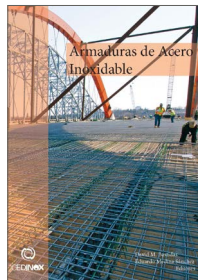


A joint book by concrete and stainless experts on all aspects of stainless steel rebar. An important part is devoted to grade selection, standards, marking, good practices. This book is in French.

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Armaduras de Acero Inoxidable

A book written by university experts on stainless steel reinforcing bar: corrosion resistance, mechanical properties, life cycle cost, ... This book is in Spanish.



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Stainless Rebar

A website dedicated to stainless steel reinforcing bar.



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Guide to Stainless Steel Specifications



Book for sale by BSSA. It lists the European and American specifications for all product forms.



Basic Rules for Stainless Steel Specifications

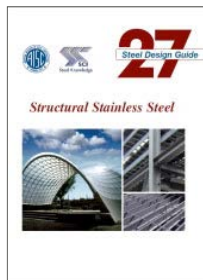


Provides advice on how to order stainless steel and a list of American, European with some ISO specifications.





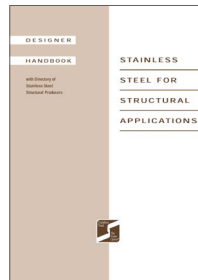
AISC Design Design Guide: Structural Stainless



Provides guidance for the design of structural stainless steel.

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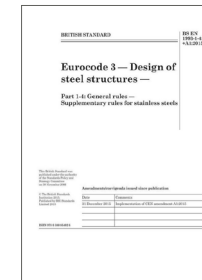
Stainless Steel for Structural Applications



A short publication describing the product forms used in structural applications.

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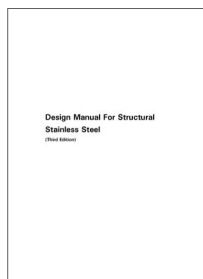
Eurocode 3: Design of Steel Structures Part 1-4 General Rules



Supplementary rules for stainless steels, latest version, including the A1:2005 annex which is now normative. This document is unfortunately not freely available.

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Design Manual for Structural Stainless Steel



A very comprehensive manual based on a European joint work for designers of stainless steel structures. Includes practical advice on fabrication and design examples.

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Stainless Steel and CO₂: Facts and Scientific Observations

Sustainability, with emphasis on recycling and CO₂ emissions.



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Stainless Steel for a Sustainable Future

Applications of stainless steel that help sustainability.



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Sustainable Stainless

The stainless steel industry is constantly looking for ways to improve its environmental performance. More information about stainless steel and sustainability can be found on this website.



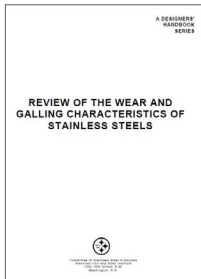
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Wear and Galling



Review of the Wear and Galling Characteristics of Stainless Steels

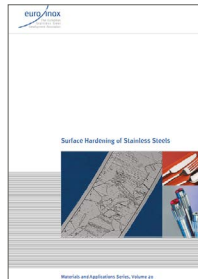
The only review on wear and galling.



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Surface Hardening of Stainless Steels

Describes the various processes used to harden stainless steel surfaces and the properties typically obtained.

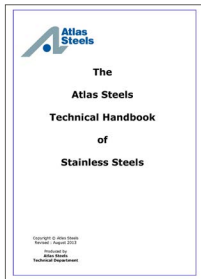


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The Atlas Steels Technical Handbook of Stainless Steels

A review by Atlas Steels of the grades, properties and processing.



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About ISSF

The International Stainless Steel Forum (ISSF) is a non-profit research and development organisation which was founded in 1996 and which serves as the focal point for the international stainless steel industry.

Who are the members?

ISSF has two categories of membership: company members and affiliated members. Company members are producers of stainless steel (integrated mills and rerollers). Affiliated members are national or regional stainless steel industry associations. ISSF now has 65 members in 25 countries. Collectively they produce 80% of all stainless steel.

Vision

Stainless steel provides sustainable solutions for everyday life.

More information

For more information about ISSF, please consult our website worldstainless.org.

For more information about stainless steel and sustainability, please consult the sustainablestainless.org website.

Contact us

issf@issf.org

+32 2 702 89 00

Disclaimer

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worldstainless.org