

# Stainless Steel Specialist Course

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Training for a stronger stainless  
steel industry



**ASSOA**  
AUSTRALIAN STAINLESS STEEL  
DEVELOPMENT ASSOCIATION

**ISSF**  
INTERNATIONAL  
STAINLESS STEEL  
**FORUM**

## About the course

The **Stainless Steel Specialist Course** is a breakthrough educational tool that provides a standard level of knowledge and qualification across the industry. It provides comprehensive information about every aspect of stainless steel practice in Australia and abroad.

It is an advanced and effective learning tool, and is designed to improve your knowledge of stainless steel, its properties, performance and uses. It consists of 17 challenging and rewarding modules delivered and marked online, covering a wide range of topics from introductory to more complex material. Input from the industry has ensured that topics covered are relevant to the workplace. It is useful to anyone specifying, manufacturing or working with stainless steel.

There are two levels of certification. An **Intermediate Certificate** is awarded on the successful completion of 5 modules and usually takes 3 months. A **Full Certificate** is awarded on the successful completion of 12 modules and usually takes 6 months.

### Benefits for companies

Individual modules may also be purchased, allowing companies the flexibility to select modules for training staff according to company operations.

- › Skills participants in the benefits and limitations of stainless steel
- › Upskills individuals and organisations already established in the stainless steel industry, as well as those who have little knowledge about stainless steel
- › Modular form of the course allows companies the flexibility to tailor the training of their employees
- › Authoritative, up-to-date reference document

### Benefits for participants

- › Participant gains an understanding of why they are doing what they are doing in their job
- › Completion of course at own pace and in own time

### Benefits for the stainless steel industry

- › Provides a standard level of knowledge and recognised level of achievement
- › Translates into a higher level of productivity for existing and new workers by promoting a greater depth of understanding of stainless

## Course content

- 1. Introduction to stainless steel** – austenitic, ferritic, duplex, martensitic, and precipitation hardening stainless steel.

In this module you will learn the fundamentals of working with stainless steel. You will find out which type of stainless steel is suitable in different circumstances and what the advantages and limitations of the material are. This is the starting point of the Stainless Steel Specialist Course and is a compulsory unit for both levels of certification.

- 2. Stainless steel vs. Corrosion** – How stainless steel is affected by and resists corrosion – corrosion process, passivity, general corrosion, pitting corrosion, crevice corrosion, and stress corrosion cracking.

Stainless steel's resistance to corrosion makes it the product of choice for conditions other materials cannot withstand. However, stainless steel must be treated correctly to achieve corrosion resistance. This module gives you an understanding of corrosion mechanisms and how to use stainless steel to maximise its durability and prevent corrosion problems. It is critical to understanding stainless steel and is a compulsory unit for both levels of certification.

- 3. Mechanical properties of stainless steel** – mechanical properties, austenitic, ferritic, martensitic, duplex, and precipitation hardening stainless steels.

This module will give you knowledge about stainless steel's outstanding strength, ductility and other mechanical properties, giving you the ability to specify or supply the right material for a given application. It is a compulsory unit for both levels of certification.

- 4. Surface finish on stainless steels** – design, finish and fabrication, mill forms, fabrication and special finishing methods, pickling and passivation, cleaning stainless steel, care on site and erection, and routine cleaning and maintenance.

Both the durability and appearance of stainless steel are greatly enhanced by the most appropriate surface finish. This module gives you a wealth of knowledge about standard finishes, their uses and how they are achieved. As one of the key components of successful stainless steel use, this module is compulsory for the Full Certificate.

- 5. Fabricating corrosion resisting and stainless steels** – corrosion resistance, storage, handling, forming and cutting, welding, fabrication, and passivating.

This module outlines the skills required and precautions to be taken in the fabrication process. Following the procedures explained here will maximise your ability to fulfil contracts to your clients' satisfaction.

- 6. Cutting of stainless steels** – mechanical cutting, thermal cutting, and new technology.

This module shows you how to eliminate problems with cutting stainless steel by explaining how stainless steel reacts to a variety of cutting techniques and how it differs from carbon steel.

- 7. Metallurgy of stainless steels** – history, classifications, and characteristics of stainless steels.

You will achieve a thorough understanding of the chemical structure of stainless steel by completing this module, which is compulsory for both levels of certification. With this knowledge you will be able to make informed decisions that impact on your operation's bottom line.

- 8. Welding and joining of stainless steels** – nature of stainless steel, weldability, processes, shielding gases, dissimilar metals, and fume control.

This module will give you the knowledge to successfully weld and join stainless steel. This is a comprehensive module containing critical information for successful fabrication and is compulsory for the Full Certificate.

- 9. Machining stainless steels** – tooling, cutting fluids, corrosion resistance, drilling, turning, tapping, die threading, thread rolling, reaming, and milling.

This is an important module for anyone involved in machining stainless steel. It is divided into two parts: Part 1 covers the properties of stainless steel and how these affect machining; Part 2 deals with the principles of mechanical machining processes and practical considerations.

- 10. Practical considerations for designing in stainless steel** – resistance to environment, mechanical properties, fabrication, economic considerations.

This module will help you avoid costly failures by giving you the knowledge to develop designs which optimise the advantages of stainless steel while minimising fabrication problems and eliminating failures due to incorrect grade selection and poor design. This module is critical to the successful use of stainless steel at a design level and is compulsory for the Full Certificate.

- 11. Stainless steel and stainless alloy castings** – processes, classifications, chemical composition, microstructure, heat treatment, machining, welding, mechanical properties, and applications of stainless steel castings.

This module explains the specialised area of manufacturing complex shapes by pouring molten stainless steel into a mould. You will learn how moulds are made, how stainless steel behaves chemically when it melts and solidifies, and how castings respond to welding.

- 12. Forging stainless steels** – production of forging, starting stock for forging, heating for forging, cooling after forging, and post forging requirements.

Forging is the oldest method of shaping solid metal, using controlled impact or pressure usually at high temperatures. This module teaches you how the forging method, temperature, and grade of stainless steel are selected to achieve optimal results.

- 13. Stainless steel pipe and tube** – production manufacturing processes, welding processes, finishing operations, longitudinally welded vs seamless, forming, and applications.

This module will give you a solid understanding of how stainless steel tube is manufactured. You will learn how to bend tube while minimising wrinkling, buckling or flattening. Stainless steel tube applications and specifications are provided.

- 14. Cold forming stainless steel** – stainless steel formability and forming processes.

In this module you will learn about the different cold forming processes used in metal processing and how they need to be adapted for stainless steel. You will also learn how to select appropriate forming processes for the different grades of stainless steel.

- 15. Deep drawing of stainless steels** – properties and practical considerations for deep forming processes.

This module teaches you how to shape stainless steel sheet into cylindrical or box-shaped forms using punches and dies. You will learn how to avoid flaws, how to select for drawability, how to determine die and punch radii, what percentage reduction is possible and the reasons for using single or double action presses.

- 16. Stainless steel and stainless alloys at high temperature** – mechanical properties and corrosion resistance.

This module will give you specialised knowledge about the behaviour of stainless steel and related stainless alloys when exposed to temperatures exceeding 650 degrees celsius.

- 17. Ferritic stainless steels**

This module deals with the ferritic family of stainless steels. It examines properties, performance, availability and considerations for fabrication.

## Stainless steel - The first step

A free 10 minute introductory presentation to stainless steel is available online at [www.issftraining.org](http://www.issftraining.org)

View it to get a taste of what the course can offer you and learn why stainless steel is an integral part of our everyday life.

## Enrolment and costs

Each training module is AU\$27.50 for ASSDA members or AU\$38.50 for non-members (prices include GST).

An Intermediate Certificate is \$137.50 for ASSDA members or \$192.50 for non-members, and a Full Certificate is \$330 for ASSDA members or \$462 for non-members (prices include GST).

For overseas enrolments (excluding New Zealand), modules are US\$30 each for non-members of ASSDA.

To enrol in the Stainless Steel Specialist Course, please fill out the attached enrolment form with your preferences, and return to ASSDA using the contact details below. Alternatively for overseas enrolments, please visit [www.issftraining.org](http://www.issftraining.org) and register online.

### Contact ASSDA

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## About ASSDA

The **Australian Stainless Steel Development Association** (ASSDA) aims to increase the consumption and proper use of stainless steel in Australia.

To this end, ASSDA provides cohesive industry representation and support to all those involved in the design, specification, manufacture and use of stainless steel. The Association also produces a range of technical and promotional publications written *by* the stainless steel industry *for* the stainless steel industry.

ASSDA provides the highest quality training for the industry in Australia and globally. Visit [www.assda.asn.au](http://www.assda.asn.au) for further information.

ASSDA represents more than 160 member companies representing the stainless steel spectrum. It could not continue without the valuable support of its sponsors and members, who work with ASSDA to grow the market for stainless steel.

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