

<b>Title</b>	<b>Weld stainless steel sheet using the gas tungsten arc welding process</b>		
<b>Level</b>	<b>3</b>	<b>Credits</b>	<b>6</b>

<b>Purpose</b>	<p>This unit standard is for people welding stainless steel sheet for the food, dairy, marine, and transport industries using the gas tungsten arc welding (GTAW) process.</p> <p>People credited with this unit standard are able to: prepare to weld stainless steel sheet using the GTAW process; weld stainless steel sheet using the GTAW process; and inspect and repair stainless steel sheet GTAW welds.</p>
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<b>Classification</b>	Mechanical Engineering > Welding
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<b>Available grade</b>	Achieved
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<b>Prerequisites</b>	Unit 33135, <i>Demonstrate knowledge of safety and health while welding and thermal cutting</i> , or demonstrate equivalent knowledge and skills.
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## Guidance Information

### 1 Legislation and references

Legislation, regulations and/or industry standards relevant to this unit standard include but are not limited to the:

Health and Safety at Work Act 2015.

WorkSafe Good Practice Guide “Health and Safety in Welding”. Available at:

<https://www.worksafe.govt.nz/assets/dmsassets/WKS-13-Welding-GPG.pdf>.

Weld Australia (formerly Welding Technology Institute of Australia (WTIA) Technical Note 7 – Health and Safety in Welding. Available at: [Product Details Weld Australia Member Portal](#).

Industry Standard – AS/NZS 1554.6:2012 *Structural steel welding – Welding stainless steels for structural purposes*, or equivalent. Available at:

<https://www.standards.govt.nz/>.

Welder qualification Standard – AS/NZS ISO 9606.2:2004 *Qualification testing of welders - Fusion welding - Part 1: Steels*, or equivalent. Available at:

<https://www.standards.govt.nz/>.

Any new, amended or replacement Acts, regulations, standards, codes of practice, guidelines, or authority requirements or conditions affecting this unit standard will take precedence for assessment purposes.

## 2 Definitions

*Accepted industry practice* – approved codes of practice and standardised procedures accepted by the engineering industry as examples of best practice.

*GTAW* – Gas Tungsten Arc Welding, also referred to as *Tungsten Inert Gas (TIG) welding*.

*Industry standard* – Category B of AS/NZS 1554.6, or equivalent.

*Manufacturer's instructions* – instructions provided by manufacturers of substances, equipment, and machinery. These instructions may include details on safe and correct handling, use and storage of substances and/or details on substance properties. Examples are labels on substance containers, product data sheets, and operator's manuals.

*Stainless steel* – typically the austenitic stainless steel grades AISI 304L and 316L, but may also include other materials such as the duplex stainless steels.

*Welding procedure* – a work instruction providing all the necessary technical details for a specific welding application.

## 3 Assessment information

Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with legislative requirements and workplace procedures and meet accepted industry practice. This includes but is not limited to the knowledge, use and maintenance of relevant tools and equipment.

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## Outcomes and performance criteria

### Outcome 1

Prepare to weld stainless steel sheet using the GTAW process.

#### Performance criteria

1.1 Equipment is selected to meet welding procedure requirements.

Range power source rating and duty cycle, torch, shielding gas supply, welding cables, work clamp.

1.2 Equipment is assembled, set up, and maintained ready for use in accordance with manufacturer's instructions.

Range torch, tungsten electrode, nozzle, collet, and cap; shielding gas supply; welding cables; work clamp.

1.3 Stainless steel sheet components are prepared and assembled in accordance with welding procedure.

Range cleaning, providing root face where required, tack welding to correct alignment and pre-set.

1.4 Consumables are selected in accordance with welding procedure.

Range filler wire for parent metal by specification and classification; shielding gases by brand name and composition; tungsten electrode type and diameter.

## Outcome 2

Weld stainless steel sheet using the GTAW process.

Range 5 welds;  
stainless steel sheet in the range 1 to 3 mm;  
welding positions – 1G, 2F, 2G, 3F, 3G (ISO 6947 PA, PB, PC, PF, PG)

### Performance criteria

2.1 Workplace safety procedures are followed.

Range examples are – use of personal protective equipment, checking of equipment for faults, use of fume extraction equipment, elimination of risk of fire or explosion, protection from arc radiation, protection from electrocution.

2.2 Welds are deposited on stainless steel sheet to industry standard and in accordance with welding procedure.

2.3 Component damage is minimised and distortion is controlled during welding and handling in accordance with accepted industry practice.

2.4 Welds are cleaned in accordance with accepted industry practice.

## Outcome 3

Inspect and repair stainless steel sheet GTAW welds.

### Performance criteria

3.1 Weld imperfections are identified by visual examination and workshop tests.

Range examples of workshop tests are – nick break, bend, macro examination;  
one visual examination is required for each weld from Outcome 2.

3.2 Weld imperfections are evaluated using acceptance levels in industry standard.

3.3 A weld defect is repaired in accordance with welding procedure and to industry standard.

<b>Planned review date</b>	31 December 2027
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#### Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	30 November 1994	31 December 2022
Revision	2	14 April 1997	31 December 2022
Revision	3	5 January 1999	31 December 2022
Review	4	28 October 1999	31 December 2022
Review	5	4 April 2001	31 December 2022
Rollover and Revision	6	20 April 2006	31 December 2022
Review	7	22 May 2009	31 December 2022
Review	8	20 July 2017	31 December 2025
Review	9	26 January 2023	N/A

<b>Consent and Moderation Requirements (CMR) reference</b>	0013
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

#### Comments on this unit standard

Please contact Hanga-Aro-Rau Manufacturing, Engineering and Logistics Workforce Development Council [qualifications@hangaarorau.nz](mailto:qualifications@hangaarorau.nz) if you wish to suggest changes to the content of this unit standard.