

Title	Weld aluminium in all positions using the gas metal arc welding process		
Level	4	Credits	10

Purpose	<p>This unit standard covers welding of aluminium structures in all positions to Category B of AS/NZS 1665 or equivalent, using the gas metal arc welding process (GMAW).</p> <p>People credited with this unit standard are able to prepare to weld and weld aluminium to industry standard in all positions using the GMAW process, and inspect and repair GMAW aluminium welds.</p>
----------------	--

Classification	Mechanical Engineering > Welding
-----------------------	----------------------------------

Available grade	Achieved
------------------------	----------

Guidance Information

- 1 References
 - Health and Safety at Work Act 2015.
 - AS/NZS 1665:2004, *Welding of aluminium structures*.
 - Health and Safety in Welding*. Wellington: Department of Labour, 2006. Available from <http://www.worksafe.govt.nz/>.
- 2 Definitions
 - Accepted industry practice* – approved codes of practice and standardised procedures accepted by the wider mechanical engineering industry sectors as examples of best practice.
 - Aluminium* – weldable aluminium alloys.
 - Industry standard* – Category B of AS/NZS 1665:2004, or equivalent.
 - Welding procedure* – written work instruction providing all the necessary technical details for a specific welding application.
- 3 Recommended for entry
 - Unit 2675, *Weld aluminium to industry standard in the downhand positions using the gas metal arc welding process*.
- 4 Related unit standards
 - This unit standard is one of an aluminium gas metal arc welding set:
 - Unit 22907, *Demonstrate and apply knowledge of welding aluminium and stainless steel* (Level 3); an introductory standard to provide foundation awareness for aluminium and stainless steel, generally delivered off job.

- Unit 2675, *Weld aluminium to industry standard in downhand positions using the gas metal arc welding process* (Level 3); a progressive aluminium specific industry standard.
- Unit 2686, *Weld aluminium in all positions using the gas metal arc welding process* (Level 4); A trade level aluminium specific industry standard.

5 Timeframe

All activities are expected to be completed within commercially acceptable timeframes.

Outcomes and performance criteria

Outcome 1

Prepare to weld aluminium in all positions using the GMAW process.

Performance criteria

1.1 Equipment is selected to meet welding procedure requirements.

Range power source rating and duty cycle, wire feed system and gun, shielding gas supply, welding cables, work clamp.

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

Range wire feed system, gun, gun liner, nozzle and contact tip, shielding gas supply, welding cables, work clamp.

1.3 Aluminium is prepared and assembled in accordance with welding procedure.

Range edge preparation, cleaning, tack welding to correct alignment, preset.

1.4 Consumables are selected in accordance with welding procedure.

Range electrodes are identified by specification and classification; shielding gases are identified by brand name and composition.

Outcome 2

Weld aluminium to industry standard in all positions using the GMAW process.

Range material thickness – 5 to 10 mm;
welding positions – 2G, 3G, 4G, 3F, 4F.

Performance criteria

2.1 Workplace safety procedures are followed.

Range 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.

2.2 Measures to minimise welding distortion are applied in accordance with accepted industry practice.

Range examples are – weld sequence, restraint, backstepping.

2.3 Welds are deposited on aluminium to industry standard and in accordance with welding procedure.

2.4 Welds are cleaned in accordance with accepted industry practice.

Outcome 3

Inspect and repair GMAW aluminium welds.

Performance criteria

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

Range examples of workshop tests – nick break, fillet break-over, bend, macro examination. One workshop test is required for each weld from outcome 2.

3.2 Weld imperfections are compared to the permissible levels allowed by the industry standard.

3.3 A weld defect is repaired to industry standard.

Range one of the following positions – 2G, 3G, 4G, 3F, 4F.

Planned review date	31 December 2022
----------------------------	------------------

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	4 April 2001	31 December 2022
Rollover and Revision	5	20 April 2006	31 December 2022
Review	6	22 May 2009	31 December 2022
Review	7	20 July 2017	N/A

Consent and Moderation Requirements (CMR) reference

0013

This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

Please contact Competenz qualifications@competenz.org.nz if you wish to suggest changes to the content of this unit standard.