

Domain	METAL FABRICATION-CORE	Unit ID: 247
Title:	Weld mild steel in the metal inert gas welding process in all positions	
Level: 3		Credits: 6

Purpose

This unit standard specifies the competencies required to weld mild steel using the metal inert gas welding process in all positions in metal fabrication operations. It includes preparation of materials and equipment, welding work pieces in specified position, post welding inspection and completion of work as well as cleaning up. This unit standard is intended for those who work as welders and boilermakers.

Special Notes

1. Entry information

Prerequisite:

- *Unit 228* - Apply safety rules and regulations in a metal fabrication work environment or demonstrated equivalent knowledge and skills.

2. To demonstrate competence, at a minimum, evidence is required of performing one butt, one T-joint and one lap joint weld in all positions. These tasks should be performed ensuring correct identification of requirements and finishing of the tasks, correct selection and use of appropriate processes, tools and equipment and completing all work to specification.

3. Materials are limited to mild steel not exceeding 3 millimetres in thickness.

4. Assessment evidence may be collected from a real workplace or a simulated real workplace or an appropriate simulated realistic environment in which metal fabrication operations are carried out.

5. Performance of all elements in this unit standard must comply with manufacturers' specifications and workplace specific requirements.

6. '*Specifications*' refers to any or all of the following: manufacturers' specifications and recommendations, site and workplace specific requirements.

7. Regulations and legislation relevant to this unit standard include the following:

- Labour Act 6 of 1992
- Occupational Health and Safety Regulations No.18, 1997 and all subsequent amendments.

Quality Assurance Requirements

This unit standard and others within this Subfield may be awarded by institutions which meet the accreditation requirements set by the Namibia Qualifications Authority and the Namibia Training Authority and which comply with the national assessment and moderation requirements. Details of specific accreditation requirements and the national assessment arrangements are available from the Namibia Qualifications Authority and the Namibia Training Authority on www.nta.com.na.

Elements and Performance Criteria

Element 1: Prepare materials and equipment

Range

Test procedures may include voltage drop, amperage setting, earthing, electrode and wire conductivity, electrode flux condition.

Preparation of materials is to include pre-heating, setting up jigs, fixtures and clamps.

Performance Criteria

- 1.1 Weld requirements are identified from specifications and drawings.
- 1.2 Personal protective clothing and equipment is selected and inspected in accordance with workplace procedures.
- 1.3 Appropriate material is selected, prepared and aligned in accordance with job requirements.
- 1.4 Welding equipment is assembled and set up safely and in accordance with workplace procedures and manufacturers' specifications.
- 1.5 Welding machine settings and electrodes are identified against predetermined specifications and welding procedures.
- 1.6 Test runs are undertaken and verified in accordance with specifications.

Element 2: Weld mild steel in all positions

Range

Welding positions are to include down hand, vertical up, vertical down, overhead and horizontal.

Performance Criteria

- 2.1 Risks associated with metal inert gas welding are identified and minimised prior to commencement of task.

- 2.2 Appropriate personal safety clothing and personal protection equipment is used in accordance with workplace procedures.
- 2.3 Equipment start up procedure is undertaken in accordance with task requirements.
- 2.4 Distortion prevention measures are identified and applied as required and appropriate action to prevent distortion is taken.
- 2.5 Materials are welded to specifications in accordance with job requirements.

Element 3: Conduct post weld inspection

Range

Visual inspection of work piece to include but not limited to metal control, penetration, undercutting and porosity.

Performance criteria

- 3.1 Welds are cleaned in accordance with workplace procedures.
- 3.2 Welds are visually inspected for correctness and quality in accordance with specified method.

Element 4: Complete work and clean up

Performance Criteria

- 4.1 Work is completed and appropriate personnel notified in accordance with worksite or workshop procedures.
- 4.2 Work area is cleared of waste, cleaned, restored and secured in accordance with worksite or workshop procedures.
- 4.3 Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with worksite and workshop procedures.
- 4.4 Work completion details are finalised in accordance with worksite and workshop procedures.

Registration Data

Subfield:	Mechanical Engineering
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