

Domain	METAL FABRICATION-WELDER	Unit ID: 251
Title:	Weld mild steel using the tungsten inert gas welding process in all positions	
Level: 3		Credits: 6

Purpose

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

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 joint weld, one T joint weld and one lap joint in all welding positions. These tasks should be performed ensuring correct identification of requirements and finishing of the tasks, and completing all work to specification.
 3. Assessment evidence may be collected from a real workplace or simulated real workplace or an appropriate simulated realistic environment in which metal fabrication operations are carried out.
 4. All welding positions are to include but are not limited to down hand, vertical up, vertical down, overhead and horizontal.
 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. Materials are limited to mild steel not exceeding 3 millimetres in thickness.
 8. 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 includes 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 line with workplace procedures.
- 1.3 Appropriate material is selected, prepared and aligned in line with job requirements.
- 1.4 Welding equipment is assembled and set up safely and in line with workplace procedures.
- 1.5 Welding machine settings and electrodes are identified against predetermined specifications and welding procedures.
- 1.6 Test runs are undertaken and verified in line 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 tungsten inert gas welding are identified and minimised prior to commencement of task.
- 2.2 Appropriate personal protective clothing and equipment is used in line with workplace procedures.

- 2.3 Equipment start up procedure is undertaken in line 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 and in accordance with requirements and instructions.

Element 3: Conduct post weld inspection

Range

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

Performance criteria

- 3.1 Welds are cleaned in line 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 line with workplace procedures.
- 4.2 Work area is cleared of waste, cleaned, restored and secured in line with workplace procedures.
- 4.3 Tools and equipment are cleaned, checked, maintained and stored in line with workplace procedures.
- 4.4 Work completion details are finalised in line with workplace procedures.

Registration Data

Subfield:	Mechanical Engineering
Date first registered:	29 March 2007
Date this version registered:	29 March 2007
Anticipated review:	2012
Body responsible for review:	Namibia Training Authority