	Unit ID: 253
Domain	**METAL FABRICATION-WELDER**
Title:	**Perform advanced tungsten inert gas welding on aluminium in all positions**
Level: 4	**Credits: 6**

Purpose

This unit standard is intended for those who perform advanced tungsten inert gas welding on aluminium in all positions. People credited with this unit standards are able to prepare materials and equipment; weld aluminium in all positions; conduct post weld inspection.

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*
   - *Unit 229 – Plan and organize metal fabrication work*

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

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

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

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

6. Materials to be used are to be limited to aluminium.

7. Regulations and legislation relevant to this unit standard include:
   - Labour Act 11 of 2007
   - 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 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 manufacturer's instructions.

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 aluminium in all positions

Range

Welding positions 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 commencing of task.

2.2 Appropriate personal safety clothing and personal protective equipment is used in accordance with workplace procedures.

2.3 Distortion prevention measures are identified and applied as required and appropriate action to prevent distortion is taken.

2.4 Equipment start up procedure is undertaken in line with task requirements.

2.5 Materials are welded to specifications and in line 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 accordance with enterprise procedures.

3.2 Welds are visually inspected for correctness and quality in accordance with specified method.

Registration Data

Subfield:	Manufacturing Engineering
Date first registered:	
Date this version registered:	
Anticipated review:	2024
Body responsible for review:	Namibia Training Authority