

<b>Domain</b>	<b>METAL FABRICATION-CORE</b>	<b>Unit ID: 241</b>
<b>Title:</b>	<b>Join metals using oxyacetylene brazing and silver soldering equipment as part of metal fabrication operations</b>	
<b>Level: 3</b>		<b>Credits: 4</b>

### Purpose

This unit standard specifies the competencies required to join metals using oxyacetylene brazing and silver soldering equipment. It includes the selection, preparation of materials and equipment, brazing and silver soldering of metals to specifications, as well as completion of work and 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 joining four work pieces to specifications, on any of the materials listed in Special Note 6, using oxyacetylene brazing and silver soldering equipment. 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. 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.

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. Metals to be joined include but are not limited to mild steel, cast iron and non-ferrous metals.

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](http://www.nta.com.na).

## **Elements and Performance Criteria**

### **Element 1: Select and prepare materials and equipment**

#### **Performance Criteria**

- 1.1 Oxy-acetylene brazing and soldering equipment is identified, selected and tested prior to operation.
- 1.2 Appropriate personal protective clothing and equipment is selected and inspected.
- 1.3 The required filler material and fluxes are selected in line with job requirements.
- 1.4 Work pieces are prepared prior to brazing and soldering in accordance with job requirements.

### **Element 2: Join metals using oxy-fuel brazing and silver soldering processes**

#### **Range**

Soldering processes to include heating of soldering bolt by means of but not limited to electrical and oxy-fuel heating.

Brazing processes to include heating by means of the oxy-fuel flame, heating of parent metal to manufacturers' specifications, use of filler rod with appropriate fluxes and correct flame setting.

#### **Performance Criteria**

- 2.1 Appropriate personal protective equipment and clothing is used in line with workplace procedures.
- 2.2 Safety precautions are adhered to during the brazing and soldering process.
- 2.3 Work piece is correctly lined up to minimise distortion.
- 2.4 Working temperature is set in accordance with metal characteristics.
- 2.5 The pre-heating process is undertaken in accordance with material and metal characteristics.
- 2.6 Work piece is tacked in position as per drawing specifications.

- 2.7 Work piece is soldered and brazed in position in accordance with specifications and requirements.

### **Element 3: Conduct post brazing and silver soldering inspection**

#### **Range**

Inspection methods are to include visual and destructive. Visual inspection of work pieces include but is not limited to metal control, penetration, undercutting and porosity.

Destructive tests include but are not limited to bend test and peel test.

Non destructive tests to include but are not limited to pressure test (where applicable), dye pen test and ultra-sonic test. Evidence of at least non-destructive test is required for assessment purposes.

#### **Performance Criteria**

- 3.1 Work piece is inspected for distortion using the appropriate method.
- 3.2 Joined metal is inspected for correctness and quality in accordance with drawing specifications.

### **Element 4: Complete work and clean up**

#### **Performance Criteria**

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

### **Registration Data**

<b>Subfield:</b>	Mechanical Engineering
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