

## PERFORM TUNGSTEN INERT GAS (TIG) WELDING

UNIT CODE: ENG/OS/WEF/CR/03/6/A

### UNIT DESCRIPTION

This unit specifies competencies required for material preparation, setting up of Tungsten Inert Gas (TIG) welding equipment and application of safety in TIG welding. It also includes competencies in thermal joining of metals using non-consumable electrodes. It is also known as Gas Tungsten Arc Welding (GTAW).

### ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA ( <i>Bold and italicized terms are elaborated in the Range</i> )
1. Set up TIG welding equipment and materials	1.1 Interpreted working drawings as per job specifications 1.2 Materials, tools and equipment are selected as per job specifications 1.3 Joints are prepared as per working drawings 1.4 Set up <b><i>TIG welding equipment</i></b> as per job specifications
2. Carry out TIG welding	2.1 Safety and health is observed as per Workplace procedures and OSHA 2.2 Welded work pieces using TIG process as per job specifications and ISO 9606-01 standard 2.3 Examined weld joint as per ISO 17637 standard 2.4 Housekeeping is conducted as per workplace procedures

### RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

Variable	Range
1. TIG welding equipment may include but is not limited to:	<ul style="list-style-type: none"><li>• TIG welding PPE</li><li>• TIG Welding machine</li><li>• TIG welding accessories</li><li>• Electrodes</li></ul>

Variable	Range
2. Materials may include but is not limited to:	<ul style="list-style-type: none"> <li>• Metal tubing</li> <li>• Metal sheets</li> <li>• Metal plates</li> <li>• Metal bars</li> </ul>

### REQUIRED KNOWLEDGE

The individual needs to demonstrate knowledge of:

- Workplace procedures and OSHA
- TIG welding equipment
- Joint preparation
- TIG welding techniques and specification procedure
- Setting of wire feed rate
- BS and ISO standards
- TIG welding safety procedures
- Applications of TIG
- Workplace housekeeping procedures

### REQUIRED SKILLS

The individual needs to demonstrate the following skills:

- Interpreting working drawings
- Preparing joints
- TIG welding techniques and specification procedure
- Product assessment
- TIG electrode manipulation
- Observation of safety
- Workplace housekeeping procedures

### EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

<p>1. Critical aspects of competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1 Observed safety as per Workplace procedures and OSHA</li> <li>1.2 Selected materials, tools and equipment</li> <li>1.3 Prepared joints as per working drawings</li> <li>1.4 Set up TIG welding equipment in accordance with job specifications</li> <li>1.5 Welded workpieces using TIG process as per job specifications and ISO 9606-1 standard</li> <li>1.6 Welded work pieces are examined as per ISO 17637 standard</li> <li>1.7 Conducted housekeeping as per workplace procedures</li> </ul>
<p>2. Resource implications</p>	<p>The following resources must be provided:</p> <ul style="list-style-type: none"> <li>2.1 Fully equipped welding workshop meeting OSHA standards</li> <li>2.2 TIG welding consumables, non-consumables and equipment</li> <li>2.3 Personal Protective Equipment</li> </ul>
<p>3. Methods of assessment</p>	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> <li>3.1 Observation</li> <li>3.2 Oral questioning</li> <li>3.3 Written tests</li> <li>3.4 Projects</li> </ul>
<p>4. Context of Assessment.</p>	<p>Candidate will be assessed</p> <ul style="list-style-type: none"> <li>4.1 On job</li> <li>4.2 Off job</li> <li>4.3 During industrial attachment</li> </ul>
<p>5. Guidance</p>	<p>Holistic assessment with other units relevant to the industry</p>

information for assessment.	sector, workplace and job role is recommended.
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