



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **MEM05022C Perform advanced welding using oxy acetylene welding process**

**Release: 1**

## **MEM05022C Perform advanced welding using oxy acetylene welding process**

### **Modification History**

Not Applicable

## Unit Descriptor

<b>Unit descriptor</b>	This unit covers performing advanced oxy acetylene welding, carried out using a range of materials for general fabrication.
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to comprehensive preparation as required in a range of environments. It also includes maintaining weld records and rectifying defects. The term 'oxy acetylene' is used here to describe a range of fuel gases, including acetylene, LPG, hydrogen etc.</p> <p>This unit covers the competencies required for welding quality that would meet the Australian Standard 1554 Special Purpose, appropriate industrial standards, or equivalent outcomes.</p> <p>Where welds comply with one of the certificates covered by Australian Standard 1796, then Unit MEM05026C (Apply welding principles) should also be selected.</p> <p>Where advanced manual thermal cutting, gouging and shaping is carried out, Unit MEM05008C (Perform advanced manual thermal cutting, gouging and shaping) should also be selected.</p> <p><b>Band: A</b></p> <p><b>Unit Weight: 6</b></p>
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## Licensing/Regulatory Information

Not Applicable

## Pre-Requisites

Prerequisite units		
<b>Path 1</b>	MEM05004C	Perform routine oxy acetylene welding
	MEM05007C	Perform manual heating and thermal cutting
	MEM05051A	Select welding processes
	MEM05052A	Apply safe welding practices
	MEM09002B	Interpret technical drawing
	MEM18001C	Use hand tools
	MEM18002B	Use power tools/hand held operations

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Select welding equipment and consumables	1.1. Correct welding equipment and consumables are selected from weld procedure specifications.
2. Prepare welding materials and equipment	2.1. Welding equipment and consumables are prepared according to job requirements. 2.2. Welding equipment appropriate to the task is assembled and adjusted correctly and safely. 2.3. Materials are prepared to achieve required weld specification.
3. Assemble welding equipment	3.1. Welding equipment, including cylinders, regulators, hoses, torches and tips is assembled and set up safely in accordance with standard operating procedures.
4. Weld joints to Australian Standard 1554 SP or equivalent	4.1. Materials are welded to Australian Standard 1554 SP or equivalent in all positions. 4.2. Instructions, symbols, specifications are interpreted correctly including bead size, bead placement, reinforcement etc. and in accordance with weld procedure sheet, if available, and standard operating procedures.
5. Inspect welds	5.1. Weld joints are visually inspected against specifications. 5.2. Weld defects are identified.
6. Correct faults	6.1. Defects are removed with minimum loss of sound metal using correct and appropriate techniques and tools to Australian Standard 3992 or equivalent.
7. Maintain weld records	7.1. Weld records are maintained in accordance with specifications and standard operating procedures.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Look for evidence that confirms skills in:

**REQUIRED SKILLS AND KNOWLEDGE**

- selecting equipment and consumables
- assembling welding equipment
- welding to AS1554 SP
- inspecting welds to specification
- correcting weld faults to AS3992
- entering information on to proformas and standard workplace forms
- using hand and power tools to prepare and weld materials
- interpreting weld requirements and specifications/procedures
- using measurement and numeracy skills for advanced oxy acetylene welding
- selecting equipment and consumables appropriate to given task
- using visual identification of defects/faults

**Required knowledge**

Look for evidence that confirms knowledge of:

- preparatory requirements
- the purpose and examples of pre-welding and post-welding heating of the weld materials
- the appropriate settings for the given task and the selected equipment/consumables
- the purpose of reinforcing areas to be welded
- the methods of weld defect removal and their application
- material and consumable properties and characteristics
- requirements of AS1554SP and AS3992 or equivalent
- fuel gas properties and applications
- post treatments
- recording procedures
- safe welding practices
- use and application of personal protective equipment for oxy acetylene welding
- relevant hazards and control measures related to the competency

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
<p>The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.</p>	
<p><b>Overview of assessment</b></p>	<p>A person who demonstrates competency in this unit must be able to perform advanced oxy acetylene welding carried out using a range of materials for general fabrication. Competency in this unit cannot be claimed until all prerequisites have been satisfied.</p>
<p><b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b></p>	<p>Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.</p>
<p><b>Context of and specific resources for assessment</b></p>	<p>This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.</p> <p>This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with performing advanced welding using oxy acetylene welding process or other units requiring the exercise of the skills and knowledge covered by this unit.</p>
<p><b>Method of assessment</b></p>	<p>Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.</p>

**EVIDENCE GUIDE**

<b>Guidance information for assessment</b>	
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**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Equipment and consumables</b>	Fuel gases, including acetylene, LPG, hydrogen etc., cylinders, regulators, hoses, torches, tips, range of filler rods and fluxes
<b>Weld</b>	Fillet and butt in the horizontal, vertical and overhead positions
<b>Preparing materials</b>	Preheating, setting up of jigs, fixtures, clamps, etc., joint preparation e.g. bevelling
<b>Materials</b>	Low carbon steel, plate, pipe, tube and round bar

**Unit Sector(s)**

<b>Unit sector</b>	
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**Co-requisite units**

<b>Co-requisite units</b>	



<b>Co-requisite units</b>		

## Competency field

<b>Competency field</b>	Fabrication
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