



**Australian Government**

# **MEM05055 Weld using oxy fuel gas welding process**

**Release: 2**

# MEM05055 Weld using oxy fuel gas welding process

## Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05055 Weld using oxy fuel gas welding process (Release 1).

Release 1. New unit.

## Application

This unit has been primarily developed for Engineering Tradesperson - Fabrication apprenticeship training and the recognition of trade-level skills in oxy fuel gas welding on heavy or light metal fabrications. It may also apply to other trade occupations requiring higher level oxy fuel gas welding skills.

Weld quality would typically conform to AS 1554 General Purpose and American Bureau of Shipping (ABS) or equivalent.

Where manual thermal processes associated with preparation, pre-heat and/or post-heat is required unit MEM05007 Perform manual heating and thermal cutting and unit MEM05008 Perform advanced manual thermal cutting, gouging and shaping, should also be selected as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

**Band: A**

**Unit Weight: 4**

## Pre-requisite Unit

|          |                                                              |
|----------|--------------------------------------------------------------|
| MEM05004 | Perform routine oxy fuel gas welding                         |
| MEM05051 | Select welding processes                                     |
| MEM05052 | Apply safe welding practices                                 |
| MEM09002 | Interpret technical drawing                                  |
| MEM11011 | Undertake manual handling                                    |
| MEM12023 | Perform engineering measurements                             |
| MEM12024 | Perform computations                                         |
| MEM13015 | Work safely and effectively in manufacturing and engineering |
| MEM14006 | Plan work activities                                         |

|          |                                      |
|----------|--------------------------------------|
| MEM16006 | Organise and communicate information |
| MEM18001 | Use hand tools                       |
| MEM18002 | Use power tools/hand held operations |

## Competency Field

Fabrication

### Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

|   |                                                                      |     |                                                                                          |
|---|----------------------------------------------------------------------|-----|------------------------------------------------------------------------------------------|
| 1 | <b>Determine job requirements</b>                                    | 1.1 | Follow standard operating procedures (SOPs)                                              |
|   |                                                                      | 1.2 | Comply with work health and safety (WHS) requirements at all times                       |
|   |                                                                      | 1.3 | Use appropriate personal protective equipment (PPE) in accordance with SOPs              |
|   |                                                                      | 1.4 | Identify job requirements from specifications, drawings, job sheets or work instructions |
| 2 | <b>Prepare materials for oxy fuel gas welding oxy fuel gas</b>       | 2.1 | Prepare materials to achieve the required weld requirements                              |
|   |                                                                      | 2.2 | Assemble/align materials to specification, where required                                |
| 3 | <b>Select, assemble and set up welding equipment and consumables</b> | 3.1 | Identify and select welding equipment and consumables appropriate to job requirements    |
|   |                                                                      | 3.2 | Assemble welding equipment and set up in accordance with SOPs                            |
| 4 | <b>Minimise and rectify distortion</b>                               | 4.1 | Apply appropriate distortion prevention measures                                         |
|   |                                                                      | 4.2 | Rectify any distortion using appropriate techniques                                      |

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

|   |                                                     |     |                                                                                              |
|---|-----------------------------------------------------|-----|----------------------------------------------------------------------------------------------|
| 5 | <b>Weld to job specification using oxy fuel gas</b> | 5.1 | Ensure weld deposit is to specifications                                                     |
|   |                                                     | 5.2 | Clean joints to specifications                                                               |
| 6 | <b>Ensure weld conformance</b>                      | 6.1 | Inspect weld joints visually for conformance to specifications                               |
|   |                                                     | 6.2 | Rectify any weld defects with minimum loss of sound metal using correct techniques and tools |
|   |                                                     | 6.3 | Complete weld records, where required                                                        |

## Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

## Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

**Welds include the following:**

- fillet
- butt

**Weld positions include the following:**

- horizontal
- vertical
- overhead

**Materials include one (1) or more of the following:**

- ferrous materials
- non-ferrous metals
- alloys suitable for oxy fuel gas welding

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

**Preparation of materials includes one (1) or more of the following:**

- pre-heating
- setting up of jigs
- fixtures and clamps
- joint preparation (e.g. bevelling)

**Distortion prevention measures include one (1) or more of the following:**

- pre-heating
- setting up:
  - jigs
  - fixtures
  - clamps

**Equipment includes the following:**

- gas cylinders
- hoses
- blowpipes
- tips and nozzles
- regulators
- flashback arrestors

**Defects include one (1) or more of the following:**

- porosity
- slag inclusions
- discontinuities
- lack of penetration
- undercut

## Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM05055 Weld using oxy fuel gas welding process (Release 1).

Release 1. New unit.

## Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

# Assessment Requirements for MEM05055 Weld using oxy fuel gas welding process

## Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05055 Weld using oxy fuel gas welding process (Release 1).

Release 1. New unit.

## Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures and safe work practices
- identifying and interpreting specifications from drawings, sketches and verbal or written job instructions for oxy fuel gas to AS 1554 General Purpose or equivalent
- selecting appropriate weld and joint preparation methods
- setting up:
  - gas cylinders
  - hoses
  - blowpipes
  - tips and nozzles
  - regulators
  - flashback arrestors
- weld materials to AS 1554 General Purpose or equivalent using oxy fuel gas welding equipment while preventing distortion
- rectifying any defects
- completing weld records related to oxy fuel gas onto standard workplace forms.

## Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe welding practices and procedures and use of personal protective equipment (PPE)
- purpose of and setting up requirements of:
  - gas cylinders
  - hoses
  - blowpipes
  - tips and nozzles
  - regulators
  - flashback arrestors

- material preparation for oxy fuel gas welding
- weld joint preparations
- filler rod materials
- causes of distortion for materials when welded
- causes of weld defects and methods of rectification
- standards for oxy fuel gas welding, including AS 1554 General Purpose or equivalent.

## Assessment Conditions

- Assessors must:
  - have vocational competency in oxy fuel gas welding at least to the level being assessed with relevant industry knowledge and experience
  - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

## Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>