



Australian Government

CPCPCM2052A Weld using oxy-acetylene equipment

Release 1

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Modification History

Prerequisite unit updated

Changes to performance criteria, required skills, range statement and critical aspects

Not equivalent to CPCPCM2032A

Unit Descriptor

This unit of competency specifies the outcomes required to weld/braze metals associated with the fabrication, installation and repair of plumbing components and systems, using oxy-acetylene equipment.

Application of the Unit

This unit of competency supports the development of oxy-acetylene welding skills used in plumbing work but not specialist welding skills used in other occupations.

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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.

Elements and Performance Criteria

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|---|--|---|
| 1 | Prepare for work. | <p>1.1 Plans and specifications are obtained from job supervisor.</p> <p>1.2 <i>Work health and safety</i> (WHS) and <i>environmental requirements</i> associated with oxy-acetylene welding tasks are adhered to throughout the work.</p> <p>1.3 <i>Quality assurance requirements</i> are identified and adhered to according to workplace requirements.</p> <p>1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work.</p> <p>1.5 Personal protective equipment applicable to oxy-acetylene welding is selected and checked for serviceability.</p> <p>1.6 Work area is prepared to support efficient welding with oxy-acetylene equipment.</p> <p>1.7 <i>Sustainability principles and concepts</i> are observed when preparing for and undertaking work process.</p> |
| 2 | Prepare materials and welding equipment. | <p>2.1 Weld requirements are identified from plans and specifications or given information.</p> <p>2.2 <i>Materials</i> to be welded are identified and selected according to workplace procedures.</p> <p>2.3 Material is cleaned and prepared using appropriate tools and techniques according to workplace procedures.</p> <p>2.4 Welding equipment, including cylinders and regulators, are assembled and set up according to workplace</p> |

- procedures.
- 2.5 Welding tips, settings and consumables are selected to meet job requirements and welding procedures according to workplace procedures.
- 3 Perform welding.
- 3.1 Materials are welded to job requirements using safe welding practices.
- 3.2 Appropriate action is taken to report or remedy defects in materials or welding equipment, including adjustments to settings and welding technique.
- 3.3 Welds are cleaned according to workplace requirements.
- 4 Clean up.
- 4.1 Work area is cleared and materials disposed of, reused or recycled according to legislation, regulation, codes of practice and job specification.
- 4.2 **Tools and equipment** are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
- 4.3 Information is accessed and documentation completed according to workplace requirements.

Required Skills and Knowledge

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

Required skills

- communication skills to:
 - access information
 - determine requirements
 - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
 - follow instructions
 - use language and concepts appropriate to cultural differences
 - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
 - complete workplace documentation
 - read and interpret:
 - documentation from a variety of sources
 - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
 - plan and sequence tasks with others
 - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to weld mild steel plate, non-ferrous materials and pipe by oxy-acetylene welding
- technology skills to:
 - access and understand site-specific instructions in a variety of media
 - use mobile communication technology

Required knowledge

- dangers associated with oxy-acetylene welding in the fabrication and installation of plumbing systems
- effect of heat on the properties and shape of welded metals
- job safety analysis (JSA) and safe work method statements (SWMS)
- operating principles of oxy-acetylene welding equipment

- organisational quality procedures and processes within the context of oxy-acetylene welding
- SI system of measurement
- workplace and equipment safety requirements, including relevant statutory regulations, codes and standards

Evidence Guide

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.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications for oxy-acetylene welding
- applying safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- given the plans and specifications, welding two of the following:
 - a flat butt weld up to 6mm mild steel plate, 150mm long
 - a vertical butt weld up to 6mm mild steel plate, 150mm long
 - a rotated butt weld around up to DN100 mild steel pipe located in a horizontal position and rotated during welding
 - silver braze fabricated non-ferrous pipes, fittings and components
- welding should ensure:
 - application of sustainability principles and concepts
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
 - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a

- period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

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.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control and hazardous materials and substances
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
 - electricity
 - pressurised and inflammable gases
 - surrounding structure and facilities

- trip hazards
- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- use of tools and equipment
- workplace environment and safety.

Environmental requirements may include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
 - selecting appropriate material to ensure minimal environmental impact
 - efficient use of materials
 - recycling material.

Materials may include:

- copper (Cu)
- copper alloy
- low carbon mild steel (plate and pipe)
- oxy-LPG-acetylene.

Tools and equipment may include:

- clamps
- hand and power tools
- jigs
- measuring equipment
- oxy-acetylene welding equipment.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.