



**Australian Government**

# **CPCPCM2049A Cut using oxy-LPG-acetylene equipment**

**Release 1**

# **CPCPCM2049A Cut using oxy-LPG-acetylene equipment**

## **Modification History**

Prerequisite unit updated

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

Not equivalent to CPCPCM2029A

## **Unit Descriptor**

This unit of competency specifies the outcomes required to use oxy-LPG-acetylene equipment to carry out basic cutting of mild steel in support of plumbing applications and fabrication to meet job specifications.

## **Application of the Unit**

This unit of competency supports skills for specific plumbing oxy-LPG-acetylene cutting activities but does not cover specialist cutting and welding skills.

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

- |   |                                |     |  |
|---|--------------------------------|-----|--|
| 1 | Prepare for work.              | 1.1 | Job drawings and specifications are obtained from job supervisor and job requirements are adhered to.  |
|   |                                | 1.2 | <b><i>Work health and safety</i></b> (WHS) and <b><i>environmental requirements</i></b> associated with cutting with oxy-LPG-acetylene are adhered to throughout the work. |
|   |                                | 1.3 | <b><i>Quality assurance requirements</i></b> are identified and adhered to according to workplace requirements.  |
|   |                                | 1.4 | Tasks are planned and sequenced in conjunction with others involved in or affected by the work.  |
|   |                                | 1.5 | <b><i>Tools and equipment</i></b> , including personal protective equipment (PPE), are selected and checked for serviceability.  |
|   |                                | 1.6 | Work area is prepared to support efficient cutting with oxy-LPG-acetylene.   |
| 2 | Identify cutting requirements. | 2.1 | Cutting requirements are identified from plans and specifications.   |
|   |                                | 2.2 | Safety precautions are undertaken prior to cutting in compliance with the job specification and standards.   |
| 3 | Perform cuts and inspect.      | 3.1 | Oxy-LPG-acetylene cutting equipment is set up according to manufacturer guidelines.  |
|   |                                | 3.2 | Tip size is selected as appropriate for the materials to be cut.   |

- 3.3 Cutting pressures are adjusted to manufacturer recommendations for the materials to be cut.
  - 3.4 **Materials** are prepared for cutting according to plans and specification and **sustainability principles and concepts**.
  - 3.5 Materials are marked out and clamped prior to cutting.
  - 3.6 Flame is set and cuts are performed according to the specified cutting procedures to effect a clean cut.
  - 3.7 Completed cuts are visually inspected for compliance with job specifications, and defects are repaired using appropriate techniques.
- 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
  - mark out and accurately cut mild steel up to 8mm thick and mild steel pipe up to 100mm diameter without manual force
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - plans and specifications
    - documentation from a variety of sources
- 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
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

### Required knowledge

- dangers of high pressure settings with oxy-LPG-acetylene equipment
- job safety analysis (JSA) and safe work method statements (SWMS)
- operating principles of oxy-LPG-acetylene equipment
- organisational quality procedures and processes within the context of oxy cutting

- potential fumes and health and safety risks from high temperatures on materials
- properties of materials and the effect of heat on the properties of metal
- relevant WHS regulations and PPE requirements
- SI system of measurement

## Evidence Guide

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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 to cutting with oxy-LPG-acetylene
- applying safety requirements throughout the work sequence, including the use of PPE
- given the plans and specifications, marking out and cutting the following items of plumbing material:
  - using hand-held oxy-LPG-acetylene cutting equipment, cut 150mm x 150mm sheet of mild steel sheet (up to 8mm thick) into three equal pieces
  - using hand-held oxy-LPG-acetylene cutting equipment cut up to 8mm mild steel disc to fit a DN40 to DN100 diameter mild steel pipe
  - using hand-held oxy-LPG-acetylene cutting equipment, cut three holes to suit up to DN50 branch pipes into a length of up to DN100 diameter mild steel pipe
- marking out and cutting should ensure:
  - application of sustainability principles and concepts
  - a clean cut and fit of the materials
  - correct identification of requirements and details of proposed cuts
  - 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

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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
- hazardous materials and substances
- PPE 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 environmental requirements and safety.

***Environmental requirements*** cover:

- clean-up protection
- waste management.

***Quality assurance requirements*** may include:

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

***Tools and equipment*** may include:

- grinders and clamps
- hand and power tools
- measuring equipment
- oxy cutting equipment.

***Materials*** may include:

- LPG
- acetylene gases
- oxygen
- mild steel pipe (up to DN100)
- mild steel sheet (up to 8mm thick).

***Sustainability principles and concepts:***

- cover the current and future social, economic and environmental use of resources
- may include:
  - selecting appropriate material to ensure minimal environmental impact

- efficient use and selection of materials
- recycling materials.

## **Unit Sector(s)**

### **Functional area**

**Unit sector** Plumbing and services

## **Custom Content Section**

Not applicable.