



**Australian Government**

# **PMBWELD311 Design high temperature plastic pressure pipelines**

**Release: 1**

# **PMBWELD311 Design high temperature plastic pressure pipelines**

## **Modification History**

Release 1. Supersedes and is equivalent to PMBWELD311B Design high temperature plastic pressure pipelines

## **Application**

This unit of competency covers skills and knowledge required to design relevant elements of plastics pressure pipes and pipeline components operating under high temperature industrial conditions in the field.

This unit of competency applies to experienced operators who are required to select suitable materials, components and designs for specific high temperature pressure applications of plastic pipes and pipelines to quality assurance requirements, including specifying appropriate testing and commissioning procedures. The end application includes pipelines for transmitting high pressure water-based fluids at elevated temperatures.

This unit of competency applies to an experienced operator demonstrating theoretical and technical knowledge and well developed skills in situations that require some discretion and judgement. The operator may work alone or as a member of a team or group and will work in liaison with other shift team members, team leader and supervisor, as appropriate.

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

## **Pre-requisite Unit**

PMBWELD307 Install high temperature plastic pressure pipelines

## **Competency Field**

Welding

## **Unit Sector**

Not applicable

## Elements and Performance Criteria

Elements describe the essential outcomes.

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

- |   |  |     |   |
|---|--|-----|---|
| 1 | <b>Identify plastic pipe materials as being suitable for specific high temperature pressure applications</b> | 1.1 | Identify suitable plastic materials from national standards, job specifications and work site instructions              |
|   |  | 1.2 | Determine plastics material properties from national standards and material data sheets                                 |
|   |  | 1.3 | Identify job needs from work site instructions and specifications   |
| 2 | <b>Determine appropriate products from national standards</b>  | 2.1 | Identify material options from national standards, supplier data sheets, and government codes and regulations           |
|   |  | 2.2 | Identify performance limitations of material options  |
|   |  | 2.3 | Identify pipe and component options from national standards, supplier data sheets, and government codes and regulations |
|   |  | 2.4 | Identify performance limitations pipe and component options   |
|   |  | 2.5 | Identify suitable jointing methods for pipes and fittings   |
|   |  | 2.6 | Identify operational conditions   |
| 3 | <b>Determine pipeline requirements</b>   | 3.1 | Identify length of pipe required  |
|   |  | 3.2 | Identify fittings and number of fittings required   |
|   |  | 3.3 | Select pipe and components considering specific job needs and product properties  |
|   |  | 3.4 | Identify required jointing equipment or materials   |
|   |  | 3.5 | Prepare field operational sheets  |

- |   |   |     |   |
|---|---|-----|---|
| 4 | <b>Determine appropriate testing and commissioning procedures</b> | 4.1 | Determine specific installation test requirements         |
|   |   | 4.2 | Identify alternative test procedures to meet requirements |
|   |   | 4.3 | Maintain quality records                                  |

## Foundation Skills

This section describes those required skills (language, literacy and numeracy) that are essential to performance.

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.

**Regulatory framework** The latest version of all legislation, regulations, industry codes of practice and Australian/international standards, or the version specified by the local regulatory authority, must be used.

Applicable legislation, regulations, standards and codes of practice include:

- health, safety and environmental (HSE) legislation, regulations and codes of practice relevant to the workplace, manual handling and hazardous materials
- Australian/international standards relevant to the materials being used and products being made, including one or more of:
  - AS/NZS 2642.2:2008 Polybutylene (PB) plumbing pipe systems - Polybutylene (PB) pipe for hot and cold water applications or its replacement
  - AS/NZS 2642.3:2008 Polybutylene (PB) plumbing pipe systems - Mechanical jointing fittings for use with polybutylene (PB) pipes for hot and cold water applications or its replacement
  - AS/NZS 2492:2007 Cross-linked polyethylene (PE-X) pipes for pressure applications or its replacement
  - AS 4176.1-2010 Multilayer pipes for pressure applications - Multilayer piping systems for hot and cold water plumbing applications – General other relevant parts of AS 4176 and their replacements
- any relevant licence and certification requirements.

All operations to which this unit applies are subject to stringent HSE requirements, which may be imposed through state/territory or federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and such requirements the legislative requirements take precedence.

**Joining methods** Joining methods include one or more of:

- mechanical
- chemical bond
- thermal fusion.

**Installation** Installation can be one or more of:

- above ground
- below ground.

**Procedures** All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, and include one or any combination of:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.

**Problems** Problems include one or more of:

- limitations on the available PE materials, pipes and components
- variable field site conditions
- limitations in available data on specific job requirements
- emergency situations.

## Unit Mapping Information

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## Links

MSA Training Package Implementation Guides - <http://mskills.org.au/training-packages/info/>