Australian Government

PMBWELD309 Weld plastic using extrusion techniques

Release: 1

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

PMBWELD309 Weld plastic using extrusion techniques

Modification History

Release 1. Supersedes and is equivalent to PMBWELD309B Weld plastic using extrusion techniques

Application

This unit of competency covers the skills and knowledge required to weld polyethylene (PE) and other plastic components using extrusion or injection welding techniques. It applies to welding undertaken in the field and in factory conditions.

This unit of competency applies to experienced operators who are required to confirm that materials and components are compatible for the weld, set up equipment, perform the welding, maintain and calibrate the equipment, assess joints against specifications and solve problems within area of responsibility.

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

Nil

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	**Identify materials as being compatible for welding**	1.1	Identify materials as PE, polypropylene (PP), acrylonitrile butadiene styrene (ABS), high-impact polystyrene (HIPS) and polyvinylchloride (PVC) from specifications and work site instructions
		1.2	Identify plastic materials and components supplied as being compatible for welding from specifications and tests
2	**Identify appropriate plastics welding conditions**	2.1	Identify welding machine type and operating requirements
		2.2	Identify plastic component materials and dimensions
		2.3	Identify and select appropriate welding rods or granules
		2.4	Select welding conditions for individual welding machines and plastic components
		2.5	Prepare field operational sheets according to enterprise specification
3	**Maintain, and calibrate welding equipment**	3.1	Set up welding equipment and work area according to enterprise specification
		3.2	Ensure safety equipment available and operational according to enterprise procedures
		3.3	Identify non-conformance, report and rectify according to enterprise procedures
		3.4	Check operation, and calibrate where required, heating, material feed rate and pressure systems
		3.5	Use personal protective equipment (PPE)

4	**Perform welding to required standard**	4.1	Clean machine, align and trim abutting plastic component ends according to job specification
		4.2	Assemble components in holding jigs
		4.3	Perform heating, welding and cooling phases using selected welding conditions and specifications
		4.4	Monitor and record achieved weld conditions for each assembly according to enterprise requirements
		4.5	Clean up equipment when completed according to enterprise requirements
		4.6	Clean up work site, dispose of scrap materials according to job specification
5	**Assess quality of completed joints**	5.1	Identify quality requirements for joints according to specifications
		5.2	Assess joints against specification requirements and report results according to enterprise requirements
		5.3	Identify and report non-conformances according to job specification

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
- 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.

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.

Tools and equipment

Tools and equipment include:

- welding system/equipment, including one or more of:
  - electrical activated extrusion welding machine

  - electrical/pneumatic activated injection welding machine
- measurement devices, including, timers, temperature probes and callipers
- cleaning equipment
- spray equipment
- plastics machining equipment
- assembly jigs and clamps.

Additional tools and equipment will be selected as required from:

- hand tools used in this process
- hoists/lifting equipment not requiring any special permits or licences
- manual handling, aids such as hand carts and trolleys
- relevant PPE.

Hazards Hazards must be identified and controlled. Identifying hazards requires consideration of:

- hazardous products and materials
- cutting equipment
- sharp edges, swarf and scrap
- protrusions or obstructions
- slippery surfaces, spills or leaks
- rotational equipment or vibration
- smoke, dust, vapours or other atmospheric hazards
- high temperatures
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- equipment failures
- machinery, equipment and product mass
- other hazards that might arise.

Problems Routine and non-routine problems must be resolved.

Non-routine problems must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts, to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution

- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person.

Non-routine problems are unexpected problems or variations of previous problems and include one or more of:

- variations in quality
- emergency situations
- intermittent faults.

Operational knowledge includes one or more of:

- procedures
- training
- technical information, such as journals and engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people.

Routine problems are predictable and have known solutions and include one or more of:

- incompatible materials (pipes/rods)
- variable plastics sheet material grades and supplied welding rods/granules
- equipment malfunction or wear and tear
- variable factory and field site conditions.

Unit Mapping Information

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Links

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