



Australian Government

MEM05041 Weld using flame powder spraying

Release: 1

MEM05041 Weld using flame powder spraying

Modification History

Release 1. Supersedes and is equivalent to MEM05041B Weld using powder flame spraying

Application

This unit of competency defines the skills and knowledge required to perform flame powder spraying, on a range of heavy or light materials and applies to welding of materials using powder spraying equipment where powders are fed through the flame and are deposited onto the surface to be built up or joined.

Weld quality could include welding that conforms to Australian Standard 1554 General Purpose and American Bureau of Shipping (ABS) or equivalent.

For remedial action using machining processes other than grinding with grinding wheels (ceramic or other) appropriate machining units should also be selected.

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
MEM05055	Weld using oxy fuel gas welding process
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 Determine job requirements	<table><tr><td>1.1</td><td>Follow standard operating procedures (SOPs)</td></tr><tr><td>1.2</td><td>Comply with work health and safety (WHS) requirements at all times</td></tr><tr><td>1.3</td><td>Use appropriate personal protective equipment (PPE) in accordance with SOPs</td></tr><tr><td>1.4</td><td>Identify job requirements from specifications, sketches, job sheets or work instructions</td></tr></table>	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, sketches, job sheets or work instructions
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2 Prepare work for spray welding	<table><tr><td>2.1</td><td>Prepare materials to achieve the required weld requirements</td></tr><tr><td>2.2</td><td>Assemble/align work to specifications, as required</td></tr></table>	2.1	Prepare materials to achieve the required weld requirements	2.2	Assemble/align work to specifications, as required				
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3 Select, assemble and set up spray welding equipment and powders	<table><tr><td>3.1</td><td>Select appropriate spray welding equipment and consumables for materials and work requirements</td></tr><tr><td>3.2</td><td>Ensure powder flame spray welding equipment is in safe working condition</td></tr><tr><td>3.3</td><td>Assemble welding equipment and set up in accordance with SOPs</td></tr><tr><td>3.4</td><td>Adjust gas setting on spray welding equipment to task requirements</td></tr></table>	3.1	Select appropriate spray welding equipment and consumables for materials and work requirements	3.2	Ensure powder flame spray welding equipment is in safe working condition	3.3	Assemble welding equipment and set up in accordance with SOPs	3.4	Adjust gas setting on spray welding equipment to task requirements
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3.4	Adjust gas setting on spray welding equipment to task requirements								

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
4	Minimise and rectify distortion	4.1	Identify distortion prevention/control measures
		4.2	Apply appropriate distortion prevention/control measures to minimise and rectify distortion
		4.3	Deposit spray weld to specification
5	Inspect spray weld	5.1	Inspect weld area/joints visually against specification
		5.2	Rectify any weld defects with minimum loss of sound metal using correct techniques and tools

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:

- steels
- carbon steels
- cast iron
- non-metallic materials (plastic/nylon)

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- Equipment includes the following:**
- gas cylinders
 - hoses
 - blowpipes
 - tips and nozzles
 - regulators
 - flashback arrestors

- Preparation and distortion prevention include one (1) or more of the following:**
- pre-heating
 - setting up:
 - jigs
 - fixtures
 - clamps
 - joint preparation

- Rectify includes the use of one (1) or more of the following:**
- oxy acetylene
 - air arc equipment
 - grinding devices

- Defects include one (1) or more of the following:**
- porosity
 - slag inclusions
 - discontinuities
 - lack of penetration
 - undercut

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM05041B Weld using powder flame spraying

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 MEM05041 Weld using flame powder spraying

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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 (SOPs) and safe work practices
- checking condition of equipment
- setting up:
 - gas cylinders
 - hoses
 - blowpipes
 - tips and nozzles
 - regulators
 - flashback arrestors
- identifying and interpreting specifications from sketches and verbal or written job instructions for powder spraying using hot and/or cold processes
- selecting appropriate weld and joint preparation methods
- welding materials to job requirements while preventing distortion
- rectifying any defects.

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)
- potential equipment faults
- correct welding equipment, hoses, tips, hand pieces and filler powder
- purpose of, and setting up requirements, of:
 - gas cylinders
 - hoses
 - blowpipes
 - tips and nozzles
 - regulators
 - flashback arrestors

- procedures and processes for material preparation
- procedures and processes for joint preparations
- causes of distortion for materials
- causes of defects and methods of rectification.

Assessment Conditions

- Assessors must:
 - have vocational competency in welding using powder flame spraying 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
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, 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.

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