



Australian Government

MEM04004 Prepare and mix sand for metal moulding

Release: 1

MEM04004 Prepare and mix sand for metal moulding

Modification History

Release 1. Supersedes and is equivalent to MEM04004B Prepare and mix sand for metal moulding

Application

This unit of competency defines the skills and knowledge required to prepare and mix sand for metal moulding in continuous and batch type mills.

Where the interpretation of technical drawings is required unit MEM09002 Interpret technical drawing should also be selected.

Where the selection and use of engineering measuring equipment is required unit MEM12023 Perform engineering measurements should also be selected.

Where calculations are required unit MEM12024 Perform computations should also be selected.

Where the selection and use of tools is required unit MEM18001 Use hand tools and unit MEM18002 Use power tools/hand held operations, should also be selected as appropriate.

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

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM11011	Undertake manual handling
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Casting and moulding

Elements and Performance Criteria

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
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1	Determine job requirements	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, job sheets or work instructions
2	Load mixer	2.1	Perform all pre start-up checks according to procedures
		2.2	Determine formula for sand mix according to specifications
		2.3	Measure and load materials according to formula specification
3	Mix sand	3.1	Mix sand for correct time to specifications
		3.2	Monitor the performance of mixer and the condition of the sand
		3.3	Maintain material supply
		3.4	Report faults
4	Take and test samples	4.1	Extract sample in an appropriate manner
		4.2	Apply test in accordance with procedures
		4.3	Compare test results against specifications
		4.4	Adjust mix as required to meet specifications
5	Discharge mixture	5.1	Charge load according to SOPs
		5.2	Dispose of unwanted treated sand according to SOPs

Elements describe the essential outcomes.

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

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|---|--------------------|-----|---|
| 6 | Clean mixer | 6.1 | Shut down mixer to standard safety and operating procedures |
| | | 6.2 | Clean mixer |

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.

Materials include one (1) or more of the following:

- sand
- silica
- zircon
- chromite
- mixtures and water

Faults include:

- chemical ratios – acid, binder and water

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM04004B Prepare and mix sand for metal moulding

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 MEM04004 Prepare and mix sand for metal moulding

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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
- identifying and interpreting specifications and applicable reference documents in preparing and mixing sand for metal pouring
- loading moulding sand mixer, conducting pre-start checks, measuring and loading materials according to instructions
- mixing sand for correct time, monitoring performance of mixer and condition of sand, reporting any faults
- extracting sample and applying test and comparing against specifications, and adjusting mix if required
- charging load correcting and disposing of unwanted treated sand according to SOPs
- shutting down and cleaning mixer.

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 work practices and procedures and use of personal protective equipment (PPE)
- characteristics, safe handling procedure and mixture applications of the sand and binding agent
- moulding requirements
- mixers, applications, loading, operating and unloading procedures
- volumes, quantities, ratios and percentages
- sampling, testing and acceptance criteria for mixed sand
- procedures for cleaning and shutting down mixer
- environmental requirements for the disposal of unwanted sand.

Assessment Conditions

- Assessors must:

- have vocational competency in preparing and mixing sand for metal moulding 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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