



Australian Government

MEM04015 Develop and manufacture vacuum forming moulds and associated equipment

Release: 2

MEM04015 Develop and manufacture vacuum forming moulds and associated equipment

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM04015 Develop and manufacture vacuum forming moulds and associated equipment (Release 1).

Release 1. Supersedes and is equivalent to MEM04015B Develop and manufacture vacuum forming moulds and associated equipment.

Application

This unit of competency defines the skills and knowledge required to develop and manufacture all types of vacuum forming moulds and associated equipment.

Where the assembly of plated patterns is required unit MEM04012 Assemble plated patterns should also be selected.

Where the manufacture of production patterns is required unit MEM04014 Develop and manufacture production patterns should also be selected.

Where the selection and use of precision measurement is required unit MEM12003 Perform precision mechanical measurement should also be selected.

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

Band: A

Unit Weight: 6

Pre-requisite Unit

MEM04010	Develop and manufacture wood patterns
MEM04011	Produce polymer patterns
MEM04018	Perform general woodworking machine operations
MEM07005	Perform general machining
MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12006	Mark off/out (general engineering)
MEM12023	Perform engineering measurements

MEM12024	Perform computations
MEM12026	Perform advanced trade calculations in a manufacturing, engineering or related environment
MEM13003	Work safely with industrial chemicals and materials
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

Casting and moulding

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	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, drawings, job sheets or work instructions
2	Develop and mark out pattern for vacuum forming	2.1	Apply vacuum forming processes to determine the design of vacuum forming moulds and construct associated equipment
		2.2	Select appropriate material to meet specifications
		2.3	Calculate pattern parameters, taking into account plastic

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

sheet thickness and shrinkage

2.4 Mark out vacuum forming pattern, showing size and position of air evacuation and of the moulded form

3 **Manufacture pattern for vacuum forming**

3.1 Select and use appropriate machines and machining process to shape and produce vacuum forming pattern to specification

3.2 Select and use a range of hand and hand held power tools to fashion and manufacture vacuum forming patterns to specification

3.3 Check constructed vacuum forming pattern to specification

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.

Vacuum forming processes include one (1) or more of the following:

- positive pressure
- negative pressure

Material includes one (1) or more of the following:

- timber
- epoxy resins
- composites
- polymer
- metal

Unit Mapping Information

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Links

The MEM Metal and Engineering Training Package Companion Volume Implementation Guide is available from VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM04015 Develop and manufacture vacuum forming moulds and associated equipment

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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, charts, lists, drawings and other applicable reference documents to develop and manufacture vacuum forming moulds
- applying vacuum forming processes in determining design of moulds and selecting appropriate materials to meet specifications
- undertaking calculations for pattern parameters taking into account plastic sheet thickness and contraction rates
- developing and marking out pattern showing size, position of air evacuation and of the moulded form
- selecting and using appropriate machines, machining process and hand and power tools as needed to shape, produce, fashion and manufacture vacuum forming patterns to specification
- checking vacuum forming pattern to specification.

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)
- timber and epoxy resin product knowledge, including features, characteristics and applications
- vacuum forming techniques
- tooling required for manufacture of vacuum forming patterns and moulds
- formulae and calculations/formulae required to manufacture patterns and moulds i.e. contraction, taper
- techniques, tools and equipment to measure, mark out and produce vacuum forming patterns and moulds

- pattern checking techniques.

Assessment Conditions

Assessors must:

- have vocational competency in the development and manufacture of vacuum forming moulds and associated equipment 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.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including 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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