



Australian Government

**MEM04042 Develop and manufacture
vacuum forming moulds and associated
equipment**

Release: 1

MEM04042 Develop and manufacture vacuum forming moulds and associated equipment

Modification History

Release 1. Supersedes and is equivalent to MEM04015 Develop and manufacture vacuum forming moulds and associated equipment (Release 2).

Application

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

Where the assembly of plated patterns is required, unit MEM04039 Assemble plated patterns should also be selected.

Where the manufacture of production patterns is required, unit MEM04041 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

MEM04038 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	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
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
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 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 specifications 3.2 Select and use hand and hand-held power tools to fashion and manufacture vacuum forming patterns to specifications 3.3 Check constructed vacuum forming pattern meets specifications

Foundation Skills

This section describes those language, literacy, numeracy and employment skills 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.	
<i>Specifications include one or more of the following:</i>	• drawings • job sheets • work instructions.
Vacuum forming processes include one or more of the following:	• positive pressure • negative pressure.
Material includes one or more of the following:	• timber • epoxy resins • composites • polymer • metal.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM04015 Develop and manufacture vacuum forming moulds and associated equipment (Release 2).

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 MEM04042 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 and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications 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 on at least two occasions
- undertaking calculations for pattern parameters, taking into account plastic sheet thickness and contraction rates
- developing and marking out pattern showing size and position of air evacuation and of the moulded form on at least two occasions
- selecting and using appropriate machines, machining process and hand and power tools to shape, produce, fashion and manufacture vacuum forming patterns to specifications on at least two occasions
- checking vacuum forming pattern meets specifications.

Note: Where a volume and/or frequency is not specified, demonstration must be provided at least once.

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)
- features, characteristics and applications of timber and epoxy resin products
- vacuum forming techniques
- tooling required for manufacture of vacuum forming patterns and moulds
- formulae and calculations required to manufacture patterns and moulds including contraction and taper
- techniques, tools and equipment to measure, mark out and produce vacuum forming patterns and moulds
- pattern checking techniques.
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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.
- 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 that 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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