



Australian Government

MEM04040 Develop and manufacture polystyrene patterns

Release: 1

MEM04040 Develop and manufacture polystyrene patterns

Modification History

Release 1. Supersedes and is equivalent to MEM04013 Develop and manufacture polystyrene patterns (Release 2).

Application

This unit of competency defines the skills and knowledge required to develop and manufacture patterns using polystyrene, including patterns for the lost foam process and for those areas on a wood pattern and core box where polystyrene is required.

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: 2

Pre-requisite Unit

MEM04018 Perform general woodworking machine operations

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

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 1.5 Select polystyrene of appropriate bead size and identity to meet specifications
2. Develop and mark out polystyrene pattern	2.1 Determine contraction allowance by performing calculations 2.2 Mark out pattern or pattern components to specifications
3. Manufacture pattern	3.1 Join and secure pattern components in an appropriate manner using adhesives appropriate to the task 3.2 Select appropriate tools and techniques to manufacture polystyrene patterns to specifications 3.3 Check pattern for conformance to specifications and mark for identification
4. Protect pattern from damage	4.1 Handle and store patterns in a safe manner least likely to cause damage using appropriate procedures

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.
Adhesives include one or more of the following:	• PVA • hot glue.
Tools include one or more of the following:	• hot wire • knives • saws.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM04013 Develop and manufacture polystyrene patterns (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 MEM04040 Develop and manufacture polystyrene patterns

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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 for developing and manufacturing polystyrene patterns, including determining the grade and type of bead
- marking out pattern or pattern components to specifications, including determining the contraction allowance, on at least two occasions
- manufacturing pattern by joining and securing pattern components using appropriate adhesives on at least two occasions
- selecting and using tooling appropriate to the task
- checking and marking pattern for identification purposes to specifications
- handling and storing patterns in accordance with SOPs.

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)
- types and applications of polystyrene for patternmaking
- formulae and mathematical techniques required for manufacturing patterns or core boxes including contraction, taper, clearances and machining allowances
- marking out techniques for polystyrene patterns including undercuts and holes
- types and applications of adhesives
- tools and their uses in the manufacture of polystyrene patterns
- pattern checking techniques
- handling and storage techniques.
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Assessment Conditions

- Assessors must:

- have vocational competency in the development and manufacture of polystyrene patterns 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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