



Australian Government

Department of Education, Employment and Workplace Relations

MEM04013B Develop and manufacture polystyrene patterns

Release: 1

MEM04013B Develop and manufacture polystyrene patterns

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	
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Application of the Unit

Application of the unit	This unit covers all 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 precision measurement is required, Unit MEM12003B (Perform precision mechanical measurement) should also be considered. Band: A Unit Weight: 2
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Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM04010B	Develop and manufacture wood patterns
	MEM04018B	Perform general woodworking machine operations
	MEM09002B	Interpret technical drawing

Prerequisite units		
	MEM12006C	Mark off/out (general engineering)
	MEM12023A	Perform engineering measurements
	MEM12024A	Perform computations
	MEM18001C	Use hand tools
	MEM18002B	Use power tools/hand held operations
	MEM30012A	Apply mathematical techniques in a manufacturing engineering or related environment

Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine job requirements	1.1. Drawings, instructions and specifications are interpreted and understood. 1.2. The appropriate grade/type of polystyrene is selected to meet specifications.
2. Mark out pattern	2.1. Calculations are performed to determine contraction allowance etc. 2.2. Pattern/pattern components are marked out to specifications.
3. Manufacture pattern	3.1. Pattern components are correctly jointed and secured using adhesives appropriate to the task. 3.2. Appropriate tools are selected and techniques are used to manufacture polystyrene patterns to specification. 3.3. Pattern is checked for conformance to specifications and correctly marked for identification.
4. Protect pattern from damage	4.1. Patterns are handled and stored in a safe manner least likely to cause damage using standard operating procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Look for evidence that confirms skills in:

- determining job requirements from written instructions, sketches and drawings
- planning and sequencing tasks/operations
- checking and clarifying task-related information
- selecting polystyrene appropriate for pattern or foundry process
- marking out in relation to polystyrene patterns
- selecting and applying adhesives
- manufacturing polystyrene patterns
- checking patterns for compliance
- handling finished polystyrene products

REQUIRED SKILLS AND KNOWLEDGE

- using calculations to determine contraction allowances

Required knowledge

Look for evidence that confirms knowledge of:

- types and applications of polystyrene for pattern making
- the formulae and mathematical techniques required for manufacturing patterns/core boxes i.e. contraction, taper, clearances, machining allowances etc.
- marking out techniques for polystyrene patterns
- 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
- use and application of personal protective equipment
- safe work practices and procedures
- hazards and control measures associated with developing and manufacturing polystyrene patterns

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

A person who demonstrates competency in this unit must be able to develop and manufacture polystyrene patterns. Competency in this unit cannot be claimed until all prerequisites have been satisfied.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.

Context of and specific resources for assessment

This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with pattern making in polystyrene or other units requiring the exercise of the skills and knowledge covered by this unit.

Method of assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

EVIDENCE GUIDE**Guidance information for assessment****Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Grade/type

Size and density of bead

Adhesives

PVA, 'hot glue'

Tools

Hot wire, knives, saws

Unit Sector(s)**Unit sector****Co-requisite units****Co-requisite units**

Competency field

Competency field	Casting and moulding
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