



Australian Government

Department of Education, Employment and Workplace Relations

MEM04011B Produce polymer patterns

Release: 1

MEM04011B Produce polymer patterns

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers designing, manufacturing and finishing polymer patterns.
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Application of the Unit

Application of the unit	<p>This unit applies to the manufacture of investment casting dies and polymer patterns for medium production castings, core boxes, tooling aids, jigs and checking fixtures etc.</p> <p>Construction includes, but is not limited to, solid polymer, filled, laminated fibreglass or metal inserts.</p> <p>Band: A</p> <p>Unit Weight: 8</p>
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Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM07005C	Perform general machining
	MEM09002B	Interpret technical drawing
	MEM12023A	Perform engineering measurements
	MEM13003B	Work safely with industrial

Prerequisite units		
		chemicals and materials
	MEM18001C	Use hand tools

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. Inspect and prepare patterns and cores	<p>1.1. Patterns or cores are inspected for appropriate surface finish and set up on jointline or flat board to specification.</p> <p>1.2. Appropriate parting agent is selected and applied to polymer specifications.</p>
2. Manufacture moulds, patterns, tooling aids etc.	<p>2.1. Appropriate polymer materials are selected to specification.</p> <p>2.2. Polymer and hardener are mixed to correct ratios and specifications using standard safety and operating procedures.</p> <p>2.3. Polymer is applied to specification and using predetermined methods, ensuring that air is not entrapped in application, excessive heat is not generated and delamination does not occur in final use.</p> <p>2.4. Pattern/core box is stripped, inspected, cleaned and repaired as required.</p> <p>2.5. Faces of polymer pattern are machined and finished to specifications.</p> <p>2.6. Appropriate method of location is applied to patterns and core boxes.</p> <p>2.7. Polymer tooling is checked for conformance to specifications as required.</p>

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:

- reading, interpreting and following information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
- undertaking numerical operations, geometry and calculations/formulae within the scope of this unit, including determination of contraction rates
- measuring polymer materials

REQUIRED SKILLS AND KNOWLEDGE

- interpreting written instructions, sketches and drawings
- making master patterns
- machining patterns/core boxes and tooling aids
- sealing the patterns or cores with appropriate surface finish
- alignment of pattern to core box
- setting up with necessary locations
- applying the parting agents
- selecting polymers
- preparing polymer and hardener
- applying polymer coating
- releasing patterns and moulds
- cleaning patterns and moulds

Required knowledge

Look for evidence that confirms knowledge of:

- machining for pattern making
- parting agents
- safe working procedures
- methods of locating patterns and core boxes
- the range of surface finishes
- range of polymers and their applications
- mixing ratios and calculations
- characteristics of polymer under exothermic reaction
- exothermic control procedures
- methods of stripping
- pattern checking techniques
- use and application of personal protective equipment
- safe work practices and procedures
- hazards and control measures associated with producing polymer 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 produce polymer 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

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.

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with producing polymer patterns 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,

EVIDENCE GUIDE	
	product and manufacturing specifications, codes, standards, manuals and reference materials.
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.	
Surface finish	Texture, gel coat, aluminium fill
Parting agent	Wax, PVA
Polymer materials	Epoxy resins, urethane
Method of location	Male and female joint, pin and bush

Unit Sector(s)

Unit sector	
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Co-requisite units

Co-requisite units		

Competency field

Competency field	Casting and moulding
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