



Australian Government

Department of Education, Employment and Workplace Relations

PMC554020D Design and prepare models, moulds and dies

Revision Number: 1

PMC554020D Design and prepare models, moulds and dies

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers the design and preparation of models, moulds, and dies, and includes the preparation of cases and frames.
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Application of the Unit

Application of the unit	<p>This unit of competency applies to technicians or tradespeople who are responsible for determining the requirements for devices to be made from plans, specifications and schedules. Technicians are able to make the device from materials selected and adjust and check its dimensional accuracy. Often the devices are made from timber, but other materials, including sheet metal and fibreglass, for instance are possible.</p> <p>This unit of competency covers the making of moulds, models and dies for use in a variety of manufacturing operations, such as:</p> <ul style="list-style-type: none"> • concrete products • clay products • ceramic products <p>This unit was developed for larger production contexts but it may also be relevant to craft practitioners producing ceramic work.</p> <p>This competency is typically performed by an experienced technician, leading hand or supervisor.</p>
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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. Design and make models	1.1. Establish model design from drawings, originals or in consultation with the customer 1.2. Select and prepare appropriate materials for model construction 1.3. Make models ensuring the final product is to specification, and shrinkage is allowed for
2. Set up and produce block moulds	2.1. Select appropriate model to meet specification 2.2. Determine required sections and parting lines 2.3. Check mould meets occupational health and safety (OHS) needs 2.4. Mix materials as required 2.5. Fill mould with mould material as required 2.6. Remove mould from model when required strength has been achieved 2.7. Finish mould to specifications and register correctly
3. Prepare cases and frames	3.1. Consult manufacturing schedule to determine type of mould to be made 3.2. Select appropriate frame or frames 3.3. Mix materials as required 3.4. Fill block mould 3.5. Remove block mould from the case and frame when required strength has been obtained 3.6. Register and date cases according to procedures 3.7. Prepare block mould for use
4. Prepare and make working moulds	4.1. Select the appropriate case/frame 4.2. Mix and pour mould material as required 4.3. Remove mould from model when required strength has been obtained 4.4. Finish and register moulds to procedures 4.5. Stack and dry moulds to procedures 4.6. Store moulds to procedures
5. Prepare dies	5.1. Consult manufacturing schedule to determine type of die to be made 5.2. Select and prepare required master die 5.3. Mix and pour die material as required 5.4. Remove die from master die when required strength has been obtained

ELEMENT	PERFORMANCE CRITERIA
	5.5. Mark and finish dies to enterprise specifications 5.6. Cure and store dies to procedures
6. Respond to problems	6.1. Identify possible routine and non-routine problems in the equipment or process 6.2. Determine problems needing action 6.3. Determine possible fault causes 6.4. Rectify problem using appropriate solution within area of responsibility 6.5. Report problems outside area of responsibility to designated person

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

Required skills include:

- using and maintaining all required materials, tools and parts
- recognising situations which could cause production problems and taking appropriate action
- implementing enterprise's procedures and relevant regulatory requirements within appropriate time constraints and in a manner relevant to the operation of moulds and dies
- diagnosing and solving problems involved in the work
- predicting hazards that may arise from mould or die design or preparation
- communicating effectively with team members, management and other departments
- reading and numeracy to interpret workplace documents and technical information

Required knowledge

Required knowledge includes:

- specified quality standards
- characteristics of different materials
- requirements from drawings, specifications or job sheets
- distinguish between causes of faults such as:
 - materials
 - dimensions
 - allowance for shrinkage
 - damage to components

Evidence Guide

EVIDENCE GUIDE	
<p>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.</p>	
Overview of assessment	<p>The unit will be assessed in as holistic a manner as is practical and may be integrated with the assessment of other relevant units of competency.</p>
Critical aspects for assessment and evidence required to demonstrate competency in this unit	<p>Competence must be demonstrated in the ability to recognise situations requiring action and then in implementing appropriate corrective action. Consistent performance should be demonstrated. In particular look to see that:</p> <ul style="list-style-type: none"> • OHS requirements are met • quality improvement techniques are applied • emergency procedures are understood and applied • waste is minimised.
Context of and specific resources for assessment	<p>Assessment will require access to an operating plant over an extended period of time, or a suitable method of gathering evidence of operating ability over a range of situations.</p> <p>Assessment will occur over a range of situations which will include disruptions to normal, smooth operation.</p> <p>Simulation or case studies/scenarios may be required to allow for timely assessment of parts of this unit of competency. Simulation should be based on the actual plant and will include 'walk-throughs' of the relevant competency components. A bank of scenarios/case studies/what ifs and questions will be required to probe the reasoning behind observable actions.</p>
Method of assessment	<p>This unit has no prerequisite competencies.</p> <p>Individual enterprises may choose to add prerequisites and co-requisites relevant to their processes.</p>
Guidance information for assessment	<p>Assessment processes and techniques must be culturally appropriate and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

Range Statement

RANGE STATEMENT	
<p>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.</p>	
Procedures	All operations are performed in accordance with standard procedures and work instructions
Materials	<p>Materials may include:</p> <ul style="list-style-type: none"> • additives • body materials • epoxy resins • metal strapping • plaster • plastic • release agents • rubber • slip • timber • water
Equipment	<p>Equipment may include:</p> <ul style="list-style-type: none"> • block moulds and working moulds • cases and frames • hand and power tools • jigs and fixtures • master dies • mixing equipment • models • weighing equipment
OHS	<p>The identification and control of hazards and the application of OHS are to be in accordance with current, applicable legislation and regulations, and company procedures. All operations are subject to stringent OHS requirements and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and OHS requirements, the OHS requirements</p>

RANGE STATEMENT	
	take precedence

Unit Sector(s)

Unit sector	Operational/technical
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Competency field

Competency field	
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Co-requisite units

Co-requisite units		