



Australian Government

PMC554020 Design and prepare models, moulds and dies

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to PMC554020D Design and prepare models, moulds and dies.

Application

This unit of competency covers the skills and knowledge required to design and prepare models, moulds, dies, frames and cases to make products from materials such as concrete, clay and ceramics. It applies to large production contexts and smaller craft contexts.

This unit of competency applies to experienced technicians, leading hands, supervisors or those in similar roles who are required to determine the specifications for devices to be made, make the devices, make adjustments to remedy faults and non-conformity and solve problems within area of responsibility.

This unit of competency applies to technician applying specialised theoretical and technical knowledge and well developed skills in situations that require autonomy, discretion and judgement. The person may work alone or as a member of a team or group and will work in liaison with other shift team members, team leader and supervisor, as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Not applicable

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

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|---|--|-----|--|
| 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 work health and safety (WHS) 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 |

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|---|--|-----|--|
| 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 |
| | | 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 |

Foundation Skills

This section describes those required skills (language, literacy and numeracy) 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.

Regulatory framework The latest version of all legislation, regulations, industry codes of practice and Australian/international standards, or the version specified by the local regulatory authority, must be used.

Applicable legislation, regulations, standards and codes of practice include:

- health, safety and environmental (HSE) legislation, regulations and codes of practice relevant to the workplace, equipment and production processes and hazardous materials
- Australian/international standards relevant to the materials being used and products being made
- any relevant licence and certification requirements.

All operations to which this unit applies are subject to stringent HSE requirements, which may be imposed through state/territory or federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and such requirements the legislative requirements take precedence.

Procedures All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, and include one or any combination of:

- manufacturer's technical information
- job cards
- drawings
- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.

Hazards Hazards must be identified and controlled. Identifying hazards requires consideration of:

- heat, smoke, dust, vapours or other atmospheric hazards
- weight, shape, volume of materials to be handled
- hazardous products and materials
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- electricity
- gas
- gases and liquids under pressure
- noise
- rotational equipment or vibration
- plant services (steam, condensate, cooling water, etc)
- structural hazards
- equipment failures
- machinery, equipment and product mass
- limited head spaces or overhangs
- working at heights
- working in restricted or confined spaces
- other hazards that might arise.

Problems Routine and non-routine problems must be resolved.

Routine problems are predictable and have known solutions.

Non-routine problems are unexpected problems or variations of previous problems.

Non-routine problems must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts, to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person.

Operational knowledge includes one or more of:

- procedures
- training
- technical information, such as journals and engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people.

Tools and equipment

Tools and equipment include:

- block moulds and working moulds
- cases and frames
- hand and power tools
- jigs and fixtures
- master dies
- mixing equipment
- models.

Unit Mapping Information

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Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.education.gov.au/Pages/TrainingDocs.aspx?q=45a7f1d5-61a5-447a-9688-7abbd7e1a5c7>