



Australian Government

PMC553070 Design and construct moulds for fibrous plaster products

Release: 1

PMC553070 Design and construct moulds for fibrous plaster products

Modification History

Release 1. Supersedes and is equivalent to PMC553070B Design and construct moulds for fibrous plaster products

Application

This unit of competency covers the skills and knowledge required to design and construct moulds for fibrous plaster products.

This unit of competency applies to plaster modellers, leading hands, supervisors or those in similar roles who are required to design or determine the product shape, create an image of the design, convert it to the negatively shaped mould cavity, hand carve the mould impression, make adjustments to remedy faults and non-conformity and solve problems within area of responsibility.

This unit of competency applies to a plaster modeller demonstrating theoretical and technical knowledge and well developed skills in situations that require some discretion and judgement. The plaster modeller 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

PMC552024 Hand mould products

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 | Develop mould design | 1.1 | Establish original product concept or design from drawings, originals or consultation with the customer |
| | | 1.2 | Sketch out product prototype design and establish product sizes making appropriate allowance for material shrinkage |
| | | 1.3 | Identify areas where undercuts, cutbacks or other special features are required |
| | | 1.4 | Determine parting line |
| | | 1.5 | Determine material from which mould is to be made |
| 2 | Select mould material and prepare for mould production | 2.1 | Set up material for mould making, ensuring that the mould can be handled or moved without damage |
| | | 2.2 | Establish datum point and mark out design dimensions using geometric and lineal calculations |
| | | 2.3 | Determine correct cavity depths and contours |
| | | 2.4 | Ensure there is adequate ventilation and light to facilitate an appropriate work environment |
| 3 | Produce working mould | 3.1 | Fit appropriate protective equipment to prevent inhalation or irritation of by-products of the mould making process |
| | | 3.2 | Use appropriate tools to carve out mould cavity and detail |
| | | 3.3 | Accurately follow the design detail to produce a mould cavity to specification |
| | | 3.4 | Avoid undercuts which will prevent removal of the plaster product from the mould |
| | | 3.5 | Ensure appropriate degrees of taper are provided to facilitate product removal |

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| | | 3.6 | Carve reliefs according to design and remove debris as the work proceeds |
| 4 | Complete mould | 4.1 | Clean down completed mould and clean up work area |
| | | 4.2 | Inspect mould surface for defects or irregularities |
| | | 4.3 | Compare design details with mould cavity to confirm accuracy of translation |
| | | 4.4 | Coat mould surface to preserve finish and allow to dry |
| 5 | Produce product prototype | 5.1 | Apply slipping agent to mould surface |
| | | 5.2 | Prepare and insert anchors or ties |
| | | 5.3 | Prepare plaster mixture and appropriate amount of glass fibre |
| | | 5.4 | Cast plaster mix and fibre into mould cavity, strike off and allow to set |
| | | 5.5 | Remove prototype from mould or mould from prototype |
| | | 5.6 | Check prototype for dimensional and detail accuracy |
| | | 5.7 | Compare prototype and mould to identify any faults or mould inaccuracies |
| | | 5.8 | Adjust or dress mould to remove imperfections and clean mould surface |
| | | 5.9 | Cast second prototype and recheck product and mould |
| | | 5.10 | Clean up mould and mark in accordance with organisation identification practice |
| 6 | Control hazards | 6.1 | Identify hazards in modelling work area |
| | | 6.2 | Assess the risks arising from those hazards |
| | | 6.3 | Implement measures to control those risks in line with procedures and duty of care |

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| 7 | Respond to problems | 7.1 | Identify possible routine and non-routine problems in the equipment or process |
| | | 7.2 | Determine problems needing action |
| | | 7.3 | Determine possible fault causes |
| | | 7.4 | Rectify problem using appropriate solution within area of responsibility |
| | | 7.5 | 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 and include one or more of:

- personal injuries
- complexities of mould design and shape
- lack of appropriate illumination
- mould problems
- product faults.

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:

- moulds/mould parts
- chisels and hand held cutting tools
- hand and power tools
- jigs and fixtures
- mixing equipment.

Unit Mapping Information

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Links

MSA Training Package Implementation Guides - <http://mskills.org.au/training-packages/info/>