



Australian Government

PMBPROD360 Produce centrifugally cast polyurethane products

Release: 1

PMBPROD360 Produce centrifugally cast polyurethane products

Modification History

Release 1. Supersedes and is equivalent to PMBPROD360B Produce centrifugally cast polyurethane products

Application

This unit of competency covers the skills and knowledge required to operate and adjust centrifugal casting equipment to produce polyurethane product.

This unit of competency applies to experienced operators who are required to plan the casting operations, test and confirm settings, monitor equipment operation, make adjustments to remedy faults and non-conformity and solve problems within area of responsibility.

This unit of competency applies to an experienced operator demonstrating theoretical and technical knowledge and well developed skills in situations that require some discretion and judgement. The advanced operator 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

PMBPROD246 Hand mix materials

Competency Field

Production

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 | Prepare to centrifugally cast polyurethane materials | 1.1 Interpret materials specifications
1.2 Identify required materials, including additives and curatives
1.3 Identify required equipment, including handling, control and material preparation equipment
1.4 Identify materials and process hazards and plan for their elimination
1.5 Locate and make ready appropriate safety equipment |
| 2 | Plan centrifugal casting operations | 2.1 Confirm product and process parameters
2.2 Ensure environmental controls are valid and in place according to operational procedures
2.3 Identify product to be made and calculate quantity of material required to produce product of correct shape and physical dimensions
2.4 Determine product colour and obtain appropriate agents
2.5 Plan the sequence of events from availability of the material to stripping of the final product
2.6 Obtain appropriate mould coating and releasing agents |
| 3 | Set up and check centrifugal casting equipment | 3.1 Inspect and set up centrifugal casting equipment
3.2 Ensure that mould is secured or adequately restrained to prevent separation of mould and rotational equipment
3.3 Test run horizontal cylindrical moulds to ensure vibration free running
3.4 Ensure work area is clean and free from hazards, and check operational sequence and procedures, particularly work health and safety (WHS) procedures, codes and practices |

- 3.5 Test and confirm that equipment control settings, stop and emergency stop functions are operational
 - 3.6 Test run rotational equipment to assess equipment conformance to specification
- 4 **Centrifugally cast polyurethane products**
 - 4.1 Follow the planned sequence and workplace procedures
 - 4.2 Ensure equipment operating temperature, time and rotational speed are within specification
 - 4.3 Pour materials at the appropriate rate per minute, angle and quantity using necessary aids and assistance to ensure pour is completed within required times and distribution requirements and using techniques to prevent excessive aeration
 - 4.4 Check product quality, including thickness, weight and product integrity, against specifications
 - 4.5 Demould and check products and place in holding areas
 - 4.6 Deal with material waste and scrap in accordance with workplace procedures
 - 4.7 Store unused materials, clean up equipment, apply lubricants, make adjustments and manage waste in accordance with workplace procedures
- 5 **Anticipate and solve problems**
 - 5.1 Recognise a problem or a potential problem
 - 5.2 Determine problems needing priority action
 - 5.3 Refer problems outside area of responsibility to appropriate person, with possible causes
 - 5.4 Seek information and assistance as required to solve problems
 - 5.5 Solve problems within area of responsibility
 - 5.6 Follow through items initiated until final resolution has occurred

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, manual handling 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:

- 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.

Tools and equipment Tools and equipment include:

- vertical or horizontal axis centrifugal rotational equipment
- cylindrical and other moulds

- ancillary equipment that is integral to the process.

Additional tools and equipment will be selected as required from:

- spanners, hammers, wrenches and other hand tools used in this process
- knives and other bag opening equipment
- hoists/lifting equipment not requiring any special permits or licences
- manual handling aids, such as hand carts and trolleys
- relevant personal protective equipment (PPE).

Hazards

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

- fumes/vapours
- weight, shape, volume of materials to be handled
- hazardous products and materials
- rotational equipment or vibration
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- smoke, dust or other atmospheric hazards
- high temperatures
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- equipment failures
- machinery, equipment and product mass
- other hazards that might arise.

Problems

Routine and non-routine problems must be resolved.

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.

Non-routine problems are unexpected problems or variations of previous problems and include one or more of:

- unstable process variables
- sub-optimal operation
- variations in quality
- emergency situations
- intermittent faults.

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.

Routine problems are predictable and have known solutions and include one or more of:

- variations in materials
- contamination of materials
- mechanical failures or disruptions
- incorrect casting temperatures
- physical anomalies such as variations to wall thickness
- inappropriate setting up of the mould for spinning
- machine malfunction
- mould/tooling problems
- processing problems.

Unit Mapping Information

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Links

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