



Australian Government

PMBPROD360E Produce polyurethane products using centrifugal casting

Release: 1

PMBPROD360E Produce polyurethane products using centrifugal casting

Modification History

Release 1. Unit code and title changed. Application changed. Elements and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMBPROD360 Produce centrifugally cast polyurethane products.

Application

This unit describes the skills and knowledge required to operate, control and optimise centrifugal casting equipment to produce polyurethane products.

This unit applies to an experienced technician working alone or as part of a team.

The unit principally refers to this a specialised moulding process that uses thermoset polyurethane casting technology, typically for non-rigid lining or machine roller coverings.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil.

Competency Field

Production – Urethanes

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Prepare to centrifugally cast polyurethane materials	1.1 Identify materials, including additives and curatives, from job specifications 1.2 Identify equipment, including handling, control and material preparation equipment, from job specifications 1.3 Perform pre-operational checks including checking for and controlling materials and process hazards 1.4 Identify and check availability of safety equipment according to workplace procedures 1.5 Identify checks and testing processes required for equipment,

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
	materials, quality and production management 1.6 Identify waste management strategies to collect excess, discarded or nonconforming materials to be disposed of, recycled or reprocessed according to workplace procedures
2. Perform pre-production tasks for centrifugal casting operations	2.1 Confirm product and process parameters from job specifications 2.2 Check environmental controls are valid and in place 2.3 Calculate quantity of material required to produce product of correct shape and physical dimensions from job specifications 2.4 Determine product colour and obtain appropriate agents from job specifications 2.5 Set production process according to equipment and workplace specifications, and adjust process to optimise output based on selected materials 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 according to workplace procedures 3.2 Ensure that mould is secured or adequately restrained to prevent separation of mould and rotational equipment 3.3 Perform test run of horizontal cylindrical moulds to ensure vibration-free running 3.4 Clean work area and ensure operational sequence and procedures, particularly work health and safety procedures, codes and practices are in place 3.5 Identify and check emergency stops, guards and controls 3.6 Perform test run of rotational equipment to ensure equipment output meets job specifications 3.7 Start up and operate centrifugal casting equipment, and make adjustments to settings to meet job specifications
4. Centrifugally cast polyurethane products	4.1 Ensure process is operating according to equipment specifications including operating temperature, time and rotational speed 4.2 Pour materials at 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 air entrapment and aeration 4.3 Follow checking and testing processes to assess if output,

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
	including thickness, weight and product integrity, meets job specifications and quality standards, and apply strategies for managing nonconforming outputs 4.4 Demould, check and store products according to workplace procedures 4.5 Apply waste management strategies according to workplace procedures 4.6 Clean, adjust and lubricate equipment according to equipment specifications and workplace procedures 4.7 Pause or stop equipment in normal and abnormal circumstances according to workplace procedures
5. Anticipate and solve process control problems	5.1 Recognise existing or potential process control variances and their causes 5.2 Determine, prioritise and implement remedial and preventative actions based on identified issues and controls 5.3 Monitor process control variances and corrective actions taken until resolved 5.4 Accurately maintain records and logbooks

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Reading skills to interpret job and equipment specifications and workplace procedures.
- Writing and oral communication skills to record and report on process control variances.

Other foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Supersedes and is equivalent to PMBPROD360 Produce centrifugally cast polyurethane products.

Links

Companion Volume implementation guides are found in VETNet –

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=932aacef-7947-4c80-acc6-593719fe4090>

Assessment Requirements for PMBPROD360E Produce polyurethane products using centrifugal casting

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Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and demonstrated the ability to:

- produce polyurethane products using centrifugal casting at least once to meet job specifications.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- function and operating principles of centrifugal casting equipment, machine components and ancillary equipment
- centrifugal casting manufacturing process and materials demand
- characteristics of materials and their behaviour in relation to process conditions and stages of production
- environmental controls relevant to centrifugal casting of polyurethane products
- the criteria for overall process/equipment readiness for the process or equipment being used, including the importance of machine set-up and warm-up for effective processing of materials
- typical quality standards required at each stage of production
- key variables that may affect product quality and production output:
 - operating temperatures
 - speed of rotation or cure
 - pour rate, angle and quality
 - colour
 - cycle time
 - use of separating agents
 - product weight
 - product integrity and general conformance to specification
- typical and atypical process and product problems, including early warning signs, possible causes and corrective actions
- the distinguishing characteristics of causes of problems as being either based on the properties of materials or caused by process variables

- organisational procedures relevant to the work environment or job role, including procedures for the emergency shutdown of equipment
- hazards that may arise in the job or work environment, and:
 - their possible causes
 - potential consequences
 - appropriate risk controls.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors

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