



Australian Government

Department of Education, Employment and Workplace Relations

PMBPROD330A Make moulds for formed products

Revision Number: 1

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Modification History

Not applicable.

Unit Descriptor

Unit descriptor

This competency covers the skills needed to undertake the planning, preparation and operations for making a mould or pattern, suitable for a range of formed products, producing test product from the finished mould, reacting to problems in the finished product and maintaining personal safety during the production process. The competency includes making moulds and patterns used for the manufacture of thermoformed and similar products including, but not limited to, sign faces, industrial components, decorative consumer products such as light shades and diffusers etc.

Application of the Unit

Application of this unit

This competency is typically performed by technicians applying knowledge of materials, product purpose and processes to make moulds for formed products to meet requirements. It also requires using a range of well developed skills requiring some discretion and judgement to recognise and resolve a range of problems.

The technician will:

- convert specification or design into a plan for the mould
- plan the process required to make the mould
- assemble and prepare materials for the moulds
- apply materials as required
- check that finished mould meets specifications.
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisites

This unit has no prerequisites.

Employability Skills Information

Employability Skills

The required outcomes described in this unit contain applicable Employability Skills. The Employability Skills Summary of the qualification(s) in which this unit is packaged will assist in identifying Employability Skill requirements.

Elements and Performance Criteria Pre-Content

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency	Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT ELEMENT	PERFORMANCE CRITERIA Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
1. Plan own work requirements.	1.1 Interpret plans, designs or product specifications. 1.2 Identify work requirements from job specifications. 1.3 Identify quantity and quality of materials required. 1.4 Identify tools, equipment and workspace required to complete project.
2. Plan mould construction.	2.1 Plan sequence of operations. 2.2 Have design approved as necessary according to enterprise specifications. 2.3 Organise workspace. 2.4 Plan for disposal of waste material. 2.5 Assemble required PPE.
3. Construct moulds or patterns.	3.1 Construct initial rough assembly. 3.2 Establish shape to project dimensions. 3.3 Apply filler/surfacer materials. 3.4 Finish to required standard. 3.5 Provide vacuum/vent passages.
4. Produce sample product from moulds.	4.1 Produce test sample products. 4.2 Check dimensions and finish against specifications. 4.3 Check and correct any faults.
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 Solve problems within area of responsibility. 5.5 Seek information and assistance as required to solve problems. 5.6 Follow through items initiated until final resolution has occurred.

Required Skills and Knowledge

This describes the essential skills and knowledge and their level required for this unit.

Application of knowledge of the materials, equipment and process sufficient to recognise material and equipment conditions which may lead to out of specification production.

Knowledge of organization procedures, quality requirements at each stage, relevant regulatory requirements and the ability to implement them within appropriate time constraints and work standards.

Skill to identify the range of possible product faults.

Application of the knowledge of managing risks using the hierarchy of controls applied to construction of moulds. Application of approved hazard control and safety procedures and the use of PPE in relation to handling materials, equipment operation and cleanup.

Knowledge about appropriate resins includes:

- relevant polymer materials knowledge
- mould requirements including radii, relief etc.
- making allowances for thermal shrinkage or expansion of the finished product
- converting the specification or design into a plan for the tooling and mould
- identifying most suitable mould materials
- vacuum/venting requirements.

Knowledge about appropriate mould and product materials includes:

- basic characteristics and property differences of available materials
- manufacturing terminology
- types of finish/surfaces and how to achieve them
- common weights/grades available.

Knowledge as a basis for solving processing and material problems including:

- characteristics of materials and behaviour in relation to heat, pressure, flow rates, and outside air temperatures and conditions
- impact of variations in raw materials and equipment operation in relation to final product
- waste management and importance of non-conforming materials
- key requirements of the product which impact on the mould construction
- hazards of the materials and process and appropriate hazard control procedures.

Competence also includes the ability to:

- plan own work, including predicting consequences and identifying improvements
- maintain output and product quality using appropriate tools, controls and test information
- identify and describe own role and role of others involved directly in the process or constructing moulds
- identify factors which may affect product quality or production output and appropriate remedies
- identify when assistance is required to solve problems.

Language, literacy and numeracy requirements

This unit requires the ability to read customer's written requirements, interpret drawings or sketches and understand technical specifications and measurements.

Writing is required to the level of completing workplace forms and compiling short reports.

Numeracy is required to understand and apply linear, area and weight units of measurement and the ability to conceptualise 3D objects from 2D drawings plus the skills to compare final results against job specifications.

Evidence Guide

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the assessment guidelines for this training package.

Overview of assessment

A holistic approach should be taken to the assessment.

Assessors must be satisfied that the person can consistently perform the unit as a whole, as defined by the Elements, Performance Criteria and skills and knowledge.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is demonstrated in the knowledge and skills defined in this unit. These may include the ability to:

- identify critical materials properties and process variables in relation of the process requirements and the end product
- make adjustments to the process as required
- identify and take appropriate action on problems and potential problems.

Consistent performance should be demonstrated. For example, look to see that:

- production standards are met consistently
- all safety procedures are always followed.

Assessment method and context

Assessment will occur using appropriate equipment to construct moulds and will be undertaken in a work-like environment.

Competence in this unit may be assessed:

- in an appropriate industrial mould making situation, in a work like environment
- in a situation allowing for the generation of evidence of the ability to recognise, anticipate and respond to problems
- by using a suitable simulation and/or a range of case studies/scenarios
- through a combination of these techniques.

In all cases it is expected that practical assessment will be combined with targeted questioning to assess the underpinning knowledge and theoretical assessment will be combined with appropriate practical/simulation or similar assessment.

Specific resources for Assessment

This section should be read in conjunction with the Range Statement for this unit of competency. Resources required include suitable access to an operating plant or equipment that allows for appropriate and realistic simulation. A bank of case studies/scenarios and questions will also be required to the extent that they form part of the assessment method. Questioning may take place either in the workplace, or in an adjacent, quiet facility such as an office or lunchroom. No other special resources are required.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Add any 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. Where reference is made to industry codes of practice and/or Australian/international standards, the latest version must be used.

Context

This competency unit includes the use of equipment and materials to make moulds for formed products.

Procedures

All operations are performed in accordance with procedures.

Procedures include all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.

Tools and equipment

This competency includes use of equipment and tools such as:

- patterns
- hand tools and power tools for use with mould materials such as metal and timber
- relevant personal protective equipment.

Hazards

Typical hazards include:

- hand and power tools
- temperature
- hazardous materials and vapours
- fire hazards due to flammable nature of resins used
- manual handling hazards
- knife hazards
- equipment operations.

Problems

'Anticipate and solve problems' means resolve a wide range of routine and non-routine problems using product and process knowledge to develop solutions to problems which do not have a known solution/a solution recorded in the procedures.

Typical process and product problems may include:

- structural strength, rigidity and durability of the mould
- dimensional accuracy of the mould
- placement of flanges, closures and fitments
- attachment of substructures
- wrong materials for the mould construction.

Appropriate action for problems outside of area of responsibility may be reporting to an appropriate person.

Appropriate action for solving problems within area of responsibility includes asking questions and seeking assistance from appropriate persons/sources.

Unit Sector(s)

Not applicable.