



Australian Government

Department of Education, Employment and Workplace Relations

PMBPROD358C Develop patterns

Revision Number: 1

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Modification History

Not applicable.

Unit Descriptor

Unit descriptor

This competency cover the stage to develop patterns for the production processes from workplace drawings. This unit applies particularly to the fabrication, thermoforming, composites and rubber lining sectors. It applies primarily to patterns which are essentially two dimensional (although the final product may be three dimensional) and may also be applied where a pattern is used to develop a mould or die or other applications of patterns. It does NOT include patterns such as are used for casting metals, nor plugs for making composite moulds.

Application of the Unit

Application of this unit

This competency is typically performed by advanced operators who develop patterns from drawings and/or specifications. The key factors are the interpretation of dimensions into a physical pattern and ensuring the pattern is suitable for its intended use. It requires the use of a range of well developed skills requiring some discretion and judgement to recognise and resolve a range of problems.

The operator will:

- interpreting drawings and specifications
- 'develop' solid objects into a two dimensional patterns
- dimensioning patterns
- make allowances for working - joins, bends etc.
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisites

This unit has the prerequisite of *MEM9.2B Interpret technical drawing*.

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. Determine dimensions of finished patterns.	1.1 Establish required size(s) of finished products from customer orders. 1.2 Check size requirements in relation to the production process and finishing capacity of the workplace.
2. Plan process.	2.1 Identify material for pattern from approximate size and characteristics. 2.2 Identify, locate and assemble required instruments and equipment. 2.3 Interpret drawings and related specifications. 2.4 Check procedures for using pattern development instruments and tools, and prepare equipment for use.
3. Plot dimensions.	3.1 Use equipment and tools following workplace procedures. 3.2 Measure, explode and plot each dimension, maintaining appropriate angles, arcs and curves. 3.3 Compare pattern dimensions and shapes with drawings and specifications, both visually and using measurements.
4. Complete pattern.	4.1 Ensure complete pattern indicates completion date and original drawing details. 4.2 Obtain required approvals of pattern. 4.3 Mark plans with notations for workplace requirements, including authorship, process or customer requirements, authorisation and any review dates. 4.4 Complete relevant documentation, ie copy and file plans.
5. Anticipate and solve problems.	5.1 Recognise actual and/or potential problem(s). 5.2 Refer problems outside area of responsibility to appropriate person, with possible causes. 5.3 Seek information and assistance as required to solve problems. 5.4 Solve problems within area of responsibility.

ELEMENT	PERFORMANCE CRITERIA
ELEMENT	Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
	5.5 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 apply them to the patternmaking process.

A knowledge of the enterprise's procedures, quality requirements, relevant regulatory requirements and the ability to implement them within appropriate time constraints and work standards.

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

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

- interpreting drawings and extrapolating to physical dimensions
- selecting appropriate mediums and materials
- hand development of patterns
- CAD/CAM assisted pattern development
- using other pattern developing tools
- using powered hand and bench tools as required
- influence of polymer type on pattern requirements
- influence of fabrication/manufacture process on pattern requirements.

Competence includes the ability for the practical completion of the job to:

- plan own work, including predicting consequences and identifying improvements
- identify and describe own role and role of others involved directly in the development of patterns process.
- identify factors which may affect product quality or production output and appropriate remedies
- identify when assistance is required to solve problems
- identify product, materials and work processes appropriate for the individual work role
- locate, interpret and apply relevant information and maintain workplace records according to procedures.

Language, literacy and numeracy requirements

This unit requires the ability to read and interpret customer requirements, technical specifications and technical drawings/sketches.

Writing is required to the level of completing workplace forms, quality records and production and reports.

Numeracy is also required, eg to interpret specifications and drawings, and conceptually manipulate two and three dimensional shapes and determine pattern size/shape to give the correct final size/shape.

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.

Where the assessee does not currently possess evidence of competency in *MEM9.2B Interpret technical drawing*, it may be co-assessed with this unit.

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 characteristics in relation to the process requirements and the end product
- develop patterns which are easy to use in the workplace and which produce in-specification products with minimal modification to pattern or product.
- identify and take appropriate action on problems and potential problems.

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

- the process runs consistently and smoothly.
- all safety procedures are always followed.

Assessment method and context

Assessment will be undertaken in a work-like environment using appropriate equipment to demonstrate evidence of how to develop patterns for the production processes from workplace drawings.

Competence in this unit may be assessed:

- using industrial patterns and situations
- 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. Assessors need to be aware of any cultural issues that may affect responses to questions.

Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.

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.

Access must be provided to appropriate learning and/or assessment support when required. Where applicable, physical resources should include equipment modified for people with disabilities.

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 applies to all work environments and sectors within the plastics, rubber and cabling industry. It includes the operation of all relevant ancillary equipment relevant to the patterns development process.

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 unit of competency includes use of equipment and tools such as:

- manual lathe and mills
- bench drills/drill presses
- grinders
- liquid solidification using lasers
- manual drawing sketching.

Hazards

Typical hazards include:

- eye strain
- repetitive strain injury
- posture hazards.

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 i) a known solution, ii) a solution recorded in the procedures.

Typical process and product problems may include:

- making adequate allowances for manufacture
- balancing cost of pattern with required pattern life
- stability of pattern in use
- damage to pattern in use.

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 person/sources.

Variables

Key variables to be monitored include:

- pattern integrity and conformance to specifications.

- pattern stability and lifecycle.
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Unit Sector(s)

Not applicable.