



**Australian Government**

# **PMB50107 Diploma of Polymer Technology**

**Release 2**

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## **Modification History**

release 2 - Imported units updated to current versions

release 1 - Initial release

## Description

### Job roles/employment outcomes

The Diploma of Polymer Technology is intended for technologists/paraprofessionals who may have worked their way up through plastics, rubber and cabling qualifications or who have entered the industry at this level, either from another industry, trade occupation or other relevant background.

The technologist will analyse performance and failure in equipment and products and will assist in the development on new/modified products.

### Application

This industry manufactures a wide range of polymer products and components ranging from consumer products to components to be included in other commercial, industrial or consumer products. Much of it is long runs of standard products, but equally it may be short runs/one offs of specialised products. It uses a wide range of natural and synthetic polymers covering thermoplastics as well as thermosetting polymers.

The products from this industry may be components in automobiles, aeroplanes and marine craft as well as domestic appliances and industrial and commercial plant and equipment. It may also be electrical or data cabling. They may equally be consumer products such as paint brushes, tooth brushes, lunch boxes or carry bags.

People with this qualification may be expected to undertake a technologist role typically based in a laboratory or office with possibly some work being conducted on or through the shop floor. They may not be competent to operate production equipment but would be expected to understand the principles behind the relevant production and support processes. They will undertake product or process improvement/development and also complex problem solving.

### Pathways into the qualification

This qualification may be accessed by direct entry. Credit for relevant units of competency achieved should be granted towards this qualification for those who have completed PMB40107 Certificate IV in Polymer Processing, or other qualifications relevant to polymer technology.

Units of competency contained within this qualification may be common with other manufacturing qualifications and credit should be granted towards this qualification where competency has already been achieved. Credit should also be granted towards this qualification where competency has been achieved in units of competency contained within relevant skill sets and statements of attainment.

The units of competency in this qualification reflect competencies which are practiced within the industry and recognition of prior learning (RPL) should be granted where there is sufficient evidence of competency from work-based experience.

### Pathways from the qualification

Further qualification pathways from this qualification include PMB60107 Advanced Diploma of Polymer Technology

**Additional qualification advice**

MSA51108 Diploma of Competitive Manufacturing is available for those who need a more generalist qualification covering the application of good manufacturing practice and lean principles.

**Licensing considerations**

There are no specific licences that relate to this qualification. However, units of competency in this qualification may provide the underpinning knowledge and skills required for various licences. Local regulations should be checked for details.

**Pathways Information**

Not applicable.

**Licensing/Regulatory Information**

Not applicable.

**Entry Requirements**

Not applicable.

## Employability Skills Summary

<b>EMPLOYABILITY SKILLS QUALIFICATION SUMMARY</b>	
<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
Communication	<ul style="list-style-type: none"> <li>• communicate with stakeholders</li> <li>• complete all required reports and records</li> <li>• advise stakeholders of the outcome</li> <li>• interpret workplace procedures and work instructions</li> <li>• communicate information about tasks/processes/events</li> <li>• identify and communicate with all relevant personnel</li> <li>• communicate with all relevant personnel, management and administration</li> <li>• undertake interactive workplace communication</li> <li>• undertake verbal and/or written reports where required</li> </ul>
Teamwork	<ul style="list-style-type: none"> <li>• work with technicians as part of a larger project</li> <li>• work autonomously or as part of a team</li> <li>• identify own role and responsibility within a team</li> <li>• undertake appropriate and effective communication with team members</li> </ul>
Problem solving	<ul style="list-style-type: none"> <li>• evaluate and modify as required</li> <li>• apply knowledge of materials, product purpose and processes</li> <li>• check performance of equipment and make approved adjustments</li> <li>• make adjustments to remedy faults and non-conformity</li> <li>• clarify and address potential issues</li> <li>• use material and process knowledge to solve problems</li> </ul>
Initiative and enterprise	<ul style="list-style-type: none"> <li>• make adjustments to improve equipment performance</li> <li>• anticipate the impact of the process on the product</li> <li>• determine problems needing action</li> <li>• recommend required action</li> <li>• recognise problems in systems and documentation</li> <li>• critically analyse information</li> <li>• develop continuous improvement strategies</li> <li>• investigate, rectify and report non-conformances</li> <li>• use analytical and decision making skills</li> <li>• recommend corrective and/or optimisation actions</li> <li>• monitor and adjust schedules in response to operational variations</li> </ul>
Planning and organising	<ul style="list-style-type: none"> <li>• implement procedures within appropriate time constraints and</li> </ul>

**EMPLOYABILITY SKILLS QUALIFICATION SUMMARY**

	<ul style="list-style-type: none"> <li>relevant to the job</li> <li>• organise trial</li> <li>• develop and monitor quality systems</li> <li>• monitor and maintain product quality</li> <li>• recognise hazards and follow appropriate hazard control methods</li> <li>• identify requirements for materials, quality, production and equipment checks</li> <li>• identify most efficient and appropriate equipment</li> <li>• analyse equipment performance</li> </ul>
Self-management	<ul style="list-style-type: none"> <li>• operate within appropriate time constraints and work standards</li> <li>• select and use appropriate equipment, materials, processes and procedures</li> <li>• identify, document and monitor resource requirements</li> <li>• demonstrate consistent performance</li> </ul>
Learning	<ul style="list-style-type: none"> <li>• research and evaluate equipment</li> <li>• ask questions to gain information</li> <li>• identify sources of information to expand knowledge and understanding</li> <li>• recognise limits of own professional expertise and consult specialists as necessary</li> <li>• participate in improvement procedures</li> <li>• access manufacturer manuals/specifications to expand knowledge</li> </ul>
Technology	<ul style="list-style-type: none"> <li>• differentiate between products and compounds based on their response to applied stress/strain</li> <li>• analyse response to loads</li> <li>• apply the results of the analyses to typical applications</li> <li>• analyse equipment performance</li> <li>• determine theoretical performance</li> <li>• determine variation between theoretical and actual performance</li> <li>• apply principles to the design and use of equipment</li> </ul>

**Packaging Rules****Packaging Rules**

To be awarded the Diploma of Polymer Technology, competency must be achieved in **seventeen (17)** units of competency.

- **four (4)** core units of competency
- **thirteen (13)** elective units of competency, as specified below.

**Note:** Where prerequisite units apply, these must be considered in the total number of units chosen. Please check individual units for details.

### Core units of competency

Unit code	Unit title	Prerequisites
MSAENV472B	Implement and monitor environmentally sustainable work practices	
MSAPMOHS200A	Work safely	
MSAPMSUP300A	Identify and implement opportunities to maximise production efficiencies	*
MSAPMSUP390A	Use structured problem solving tools	

### Elective units of competency

Select **thirteen (13)** units of competency, as specified below:

- a minimum of **eight (8)** units from Group A and B, with a minimum of **four (4)** units from Group A
- the remainder of units may be chosen from Groups A, B and C, to bring the total number of electives to **thirteen (13)**.

**Note:** Up to **three (3)** of the elective units can be chosen from other qualifications in this Training Package, other endorsed Training Packages and accredited courses, as specified in Group C.

### Group A

Unit code	Unit title	Prerequisites
PMBTECH501B	Analyse equipment performance	*
PMBTECH502B	Review and analyse production trials and specify retrials	*
PMBTECH503B	Determine rheology and output of plastics materials from processing equipment	*
PMBTECH504B	Determine heat transfer loads for processing	

Unit code	Unit title	Prerequisites
	equipment	
PMBTECH505B	Choose polymer materials for an application	*
PMBTECH506B	Analyse the design of products and tools	*
PMBTECH507B	Develop fibre composite products using cored-laminate techniques	*
PMBTECH508A	Develop a new compound	
PMBTECH509A	Modify an existing product	
PMBTECH510A	Analyse failure in polymeric materials	
A maximum of <b>two (2)</b> units may be chosen from the units in Group A of the PMB60107 Advanced Diploma of Polymer Technology.		

### Group B

Unit code	Unit title	Prerequisites
MSAPMOHS400A	Contribute to OHS management system	*
MSAPMOHS401A	Assess risk	
MSAPMOPS400A	Optimise process/plant area	*
MSAPMOPS401A	Trial new process or product	
MSAPMOPS404A	Coordinate maintenance	
MSAPMOPS405A	Identify problems in fluid power system	
MSAPMOPS406A	Identify problems in electronic control systems	
MSL974003A	Perform chemical tests and procedures	
MSL974005A	Perform physical tests	
MSL974010A	Perform mechanical tests	
PMBPROD430B	Trial a new die/tool	
PMBPROD431B	Trial a new, advanced or complex mould	



Unit code	Unit title	Prerequisites
PMBTECH401B	Predict polymer properties and characteristics	*
PMBTECH402B	Set advanced or complex dies	*
PMBTECH403B	Test fibre-composites materials and laminates	
PMBTECH404B	Mould chemical resistant and/or fire retardant fibre-composites	*
PMBTECH405B	Repair damaged fibre-composites structures	*
PMBTECH406A	Diagnose production equipment problems	

### Group C

Unit code	Unit title	Prerequisites
MEM09003B	Prepare basic engineering drawing	
MEM15001B	Perform basic statistical quality control	
MEM16006A	Organise and communicate information	
MEM16007A	Work with others in a manufacturing, engineering or related environment	
MEM16008A	Interact with computing technology	
MEM30031A	Operate computer-aided design (CAD) systems to produce basic drawing elements	
MEM30033A	Use computer-aided design (CAD) to create and display 3-D models	*
MSS403002A	Ensure process improvements are sustained	
MSS404052A	Apply statistics to operational processes	
MSS405020A	Develop quick changeover procedures	
MSS405021A	Develop a Just in Time system	
MSS405030A	Optimise cost of product or service	
MSS405031A	Undertake value analysis of product costs in terms	

Unit code	Unit title	Prerequisites
	of customer requirements	
MSS405050A	Determine and improve process capability	*
MSS405070A	Develop and manage sustainable energy practices	
MSS015002A	Develop strategies for more sustainable use of resources	
MSAPMSUP383A	Facilitate a team	
MSAPMSUP400A	Develop and monitor quality systems	
PSPPM502B	Manage complex projects	
<p>Up to <b>three (3)</b> relevant units may be chosen from this Training Package, other endorsed Training Packages and accredited courses, where those units are available for inclusion in a Diploma.</p>		