Australian Government

PMB60107 Advanced Diploma of Polymer Technology

Release 2

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

PMB60107 Advanced Diploma of Polymer Technology

Modification History

Release 2 - Imported units updated to current versions.
Release 1 - Initial release.

Description

Job roles/employment outcomes
The Advanced Diploma of Polymer Technology completes the paraprofessional training commenced in the Diploma. The technologist will develop new products and tools and will typically at this level also have some supervisory responsibilities. This qualification, however, is predominantly technical in its application and requires significant depth and breadth of theoretical polymer, product and process knowledge.

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 design/development and also complex problem solving and would be expected to have a deeper understanding that a person with the Diploma.

Pathways into the qualification
This qualification may be accessed by direct entry, or entry may also be gained through PMB50107 Diploma of Polymer Technology

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 PMB50107 Diploma of Polymer Technology, or other qualifications relevant to polymer technology.

Pathways from the qualification
There are currently no further qualifications in polymer technology.

Additional qualification advice
MSA61108 Advanced 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

EMPLOYABILITY SKILLS QUALIFICATION SUMMARY	
Employability Skill	**Industry/enterprise requirements for this qualification include**:
Communication	• verify with appropriate people • determine design requirements • liaise with personnel • complete all reports • communicate with stakeholders • obtain sign off from all relevant persons • communicate with production personnel • ensure project records are complete • confirm die requirements
Teamwork	• work autonomously or as part of a team • liaise and cooperate with other team members • identify own role and responsibility within a team • undertake appropriate and effective communication with team members
Problem solving	• optimise production of new product • apply knowledge of materials, product purpose and processes • check performance of equipment and make approved adjustments • make adjustments to remedy faults and non-conformity • clarify and address potential issues • identify problems and make contributions to their solution
Initiative and enterprise	• make adjustments to improve equipment performance • anticipate the impact of the process on the product • determine problems needing action • recommend required action • recognise problems in systems and documentation • critically analyse information • develop continuous improvement strategies • investigate, rectify and report non-conformance • predict consequences and identify improvements • use analytical and decision making skills • recommend corrective and/or optimisation actions
Planning and organising	• supervise manufacturing trials • ensure process needs for new product have been met • coordinate trials

EMPLOYABILITY SKILLS QUALIFICATION SUMMARY	
	• plan operations • identify requirements for materials, quality, production and equipment checks • identify most efficient and appropriate equipment • analyse equipment performance
Self-management	• operate within appropriate time constraints and work standards • select and use appropriate equipment, materials, processes and procedures • identify, document and monitor resource requirements • demonstrate consistent performance
Learning	• research and evaluate equipment • ask questions to gain information • identify sources of information to expand knowledge and understanding • recognise limits of own professional expertise and consult specialists as necessary • participate in improvement procedures • access manufacturer manuals/specifications to expand knowledge
Technology	• use technology to undertake design • determine material requirements for product • determine process requirements for product • interpret trial results • interpret specifications • monitor initial production and adjust process, conditions and materials • develop a new die or tool

Packaging Rules

Packaging Rules

To be awarded the Advanced Diploma of Polymer Technology competency must be achieved in **twenty five** (**25**) units of competency.

- **four** (**4**) core units of competency
- **twenty one** (**21**) 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	Prerequisite
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 **twenty one** (**21**) units of competency, as specified below:

- a minimum of **two** (**2**) units from Group A
- a minimum of **five** (**5**) units from Group B
- a minimum of **four** (**4**) units from Group C
- the remainder of units may be chosen from Groups A, B, C and D, to bring the total number of units to **twenty one** (**21**).

Note: Up to **five** (**5**) of the elective units may be chosen from other qualifications in this Training Package, other endorsed Training Packages and accredited courses, as specified in Group D.

Group A

Unit code	Unit title	Prerequisites
MSAPMOPS601A	Design equipment and system modifications	
PMBTECH601B	Develop a new product	*
PMBTECH602B	Develop a new die or tool	*
PMBTECH603B	Design structural/mechanical polymer components	*

Group B

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 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	

Group C

Unit code	Unit title	Prerequisite
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	

Unit code	Unit title	Prerequisite
MSL974010A	Perform mechanical tests	
PMBPROD430B	Trial a new die/tool	
PMBPROD431B	Trial a new, advanced or complex mould	
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 D

Unit code	Unit title	Prerequisites
LMTGN5004A	Manage installation and commissioning of equipment and systems	
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	

Unit code	Unit title	Prerequisites
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 of customer requirements	
MSS405050A	Determine and improve process capability	*
MSS405070A	Develop and manage sustainable energy practices	
MSS015002A	Develop and manage strategies for more sustainable use of resources	
MSAENV672B	Develop workplace policy and procedures for environmental sustainability	
MSAPMOHS601A	Establish workplace OHS management system	*
MSAPMSUP383A	Facilitate a team	
MSAPMSUP400A	Develop and monitor quality systems	
PSPPM502B	Manage complex projects	
Up to **five** (**5**) 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 or Advanced Diploma.		