



Australian Government

PMB40107 Certificate IV in Polymer Technology

Release 2

PMB40107 Certificate IV in Polymer Technology

Modification History

Release 2 - Addition of five new elective units for rubber/tyre sector. Imported units updated to latest versions. Equivalent.

Release 1 - Initial release.

Description

Job roles/employment outcomes

The Certificate IV in Polymer Technology is intended for senior operators and polymer technicians. These technicians may be process-based and directly involved in production, or they may be based elsewhere, e.g. in a laboratory, although they will typically still have functions on the production floor.

The technician will typically be involved in trialling and solving more complex problems which require greater theoretical knowledge, combined with an understanding of the production process and equipment.

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 technician role on the shop floor, from a base in a laboratory or office. They will be competent to operate production equipment and perform a range of support functions and will also undertake advanced problem solving and will participate in product or process improvement.

Training programs for this qualification are suitable to be undertaken as part of a formal training contract with an employer under an Australian Traineeship or Apprenticeship arrangement.

Pathways into the qualification

This qualification may be accessed by direct entry, or entry may also be gained through PMB30107 Certificate III in Polymer Processing

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.

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 PMB50107 Diploma of Polymer Technology

Additional qualification advice

MSA41108 Certificate IV in 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	<ul style="list-style-type: none"> • complete logs and reports • document and record information • identify and maintain documentation • consult with key personnel • develop system for communicating • maintain document control system • record and report test results
Teamwork	<ul style="list-style-type: none"> • work as part of a team • identify own role and responsibility within a team • contribute to development of team work plans • provide support to others in the work area • undertake appropriate and effective communication with team members
Problem solving	<ul style="list-style-type: none"> • recognise and diagnose problems • implement appropriate corrective action • rectify equipment and quality problems • diagnose production equipment problems • apply knowledge of materials, product purpose and processes • check performance of equipment and make approved adjustments • make adjustments to remedy faults and non-conformity • use material and process knowledge to solve problems
Initiative and enterprise	<ul style="list-style-type: none"> • develop policies • make adjustments to improve equipment performance • anticipate the impact of the process on the product • determine problems needing action • suggest options for improvement • recommend corrective and/or optimisation actions • monitor and adjust schedules in response to operational variations
Planning and organising	<ul style="list-style-type: none"> • plan work • organise materials, consumables and personnel • develop work plans • schedule activities • determine resources required

EMPLOYABILITY SKILLS QUALIFICATION SUMMARY	
	<ul style="list-style-type: none"> • determine urgency and timeliness factors in planning • prepare for trial • organise polymer tests
Self-management	<ul style="list-style-type: none"> • operate within appropriate time constraints and work standards • select and use appropriate equipment, materials, processes and procedures • demonstrate consistent performance • locate, interpret and apply relevant information
Learning	<ul style="list-style-type: none"> • identify sources of information to expand knowledge and understanding • recognise limits of own professional expertise and consult specialists as necessary • participate in improvement procedures • participate in development of continuous improvement strategies • consult with appropriate personnel to refine performance • access manufacturer manuals/specifications to expand knowledge
Technology	<ul style="list-style-type: none"> • interpret data and information on equipment • identify characteristics and capabilities of equipment • trial equipment, process and product • interpret polymer morphology and phase diagrams • interpret polymer tests • perform material and product tests

Packaging Rules

Packaging Rules

To be awarded the Certificate IV in Polymer Technology competency must be achieved in **twenty eight (28)** units of competency.

- **four (4)** core units of competency
- **twenty four (24)** elective units of competency, as specified below.

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

Core units of competency

Unit code	Unit title	Prerequisites
MSS402051A	Apply quality standards	
MSAENV272B	Participate in environmentally sustainable work practices	
MSAPMOHS200A	Work safely	
MSAPMSUP210A	Process and record information	

Elective units of competency

Select **twenty four (24)** units of competency, as specified below:

- a minimum of **three (3)** units from Group A
- a minimum of **two (2)** units from Group B
- the remainder of units may be chosen from Groups A, B and C, to bring the total number of electives to **twenty four (24)**.

Note: Up to **ten (10)** of the elective units may be chosen from other qualifications in this Training Package, other endorsed Training Packages and accredited courses, as specified in Groups B and C.

Group A

Unit code	Unit title	Prerequisites
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	
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	*

Unit code	Unit title	Prerequisites
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	
A maximum of two (2) units may be chosen from the units available in Group A of PMB50107 Diploma of Polymer Technology.		

Group B

Unit code	Unit title	Prerequisites
MEM15001B	Perform basic statistical quality control	
MSS403010A	Facilitate change in an organisation implementing competitive systems and practices	
MSS403002A	Ensure process improvements are sustained	
MSS403021A	Facilitate a Just in Time system	
MSS403040A	Facilitate and improve implementation of 5S	
MSS404050A	Undertake process capability improvements	*
MSS403051A	Mistake proof an operational process	
MSS404052A	Apply statistics to operational processes	
MSAENV472B	Implement and monitor environmentally sustainable work practices	
MSAPMOHS300A	Facilitate the implementation of OHS for a work group	*
MSAPMOHS400A	Contribute to OHS management system	*
MSAPMOHS401A	Assess risk	
MSAPMSUP300A	Identify and implement opportunities to maximise production efficiencies	*

Unit code	Unit title	Prerequisites
MSAPMSUP301A	Apply HACCP to the workplace	
MSAPMSUP303A	Identify equipment faults	
MSAPMSUP309A	Maintain and organise workplace records	
MSAPMSUP310A	Contribute to the development of plant documentation	
MSAPMSUP330A	Develop and adjust a production schedule	
MSAPMSUP382A	Provide coaching/mentoring in the workplace	
MSAPMSUP383A	Facilitate a team	
MSAPMSUP390A	Use structured problem solving tools	
MSAPMSUP400A	Develop and monitor quality systems	
MSL973001A	Perform basic tests	
MSL974003A	Perform chemical tests and procedures	
PMBPROD336A	Inspect heavy off-the-road tyres	
PRBPROD337A	Prepare heavy off-the-road tyres for repair	
PMBPROD338A	Repair heavy off-the-road tyres	
PMBPROD340A	Cure heavy off-the-road tyre repairs	
PMBPROD341A	Finish heavy off-the-road tyre repairs	
TLID3011A	Conduct specialised forklift operation	
Up to two (2) relevant units may be chosen from this Training Package, other endorsed Training Packages and accredited courses, where those units are available at Certificate IV.		

Group C

Unit code	Unit title	Prerequisite
FPICOT2206B	Cross cut materials with a hand-held chainsaw	
LMTGN2008B	Coordinate work of team/section	

Unit code	Unit title	Prerequisite
MEM03001B	Perform manual production assembly	
MEM03006B	Set assembly stations	*
MEM09002B	Interpret technical drawing	
MEM09003B	Prepare basic engineering drawing	*
MEM11005B	Pick and process order	
MEM11006B	Perform production packaging	
MEM11007B	Administer inventory procedures	
MEM12023A	Perform engineering measurements	
MEM13003B	Work safely with industrial chemicals	
MEM15001B	Perform basic statistical quality control	
MEM15003B	Use improvement processes in team activities	*
MEM15004B	Perform inspection	
MEM16006A	Organise and communicate information	
MEM16007A	Work with others in a manufacturing, engineering or related environment	
MEM16008A	Interact with computing technology	
MEM18001C	Use hand tools	
MEM18002B	Use power tools/hand held operations	
MSS402002A	Sustain process improvements	
MSS402020A	Apply quick changeover procedures	
MSS402021A	Apply Just in Time procedures	
MSS402030A	Apply cost factors to work practices	
MSS402040A	Apply 5S procedures	
MSS402050A	Monitor process capability	

Unit code	Unit title	Prerequisite
MSS402060A	Use planning software systems in operations	
MSS402080A	Undertake root cause analysis	
MSAPMOHS100A	Follow OHS procedures	
MSAPMOHS110A	Follow emergency response procedures	
MSAPMOHS205A	Control minor incidents	
MSAPMOHS210B	Undertake first response to non-fire incidents	
MSAPMOHS212A	Undertake first response to fire incidents	
MSAPMOHS216A	Operate breathing apparatus	
MSAPMOHS217A	Gas test atmospheres	
MSAPMOHS220A	Provide initial first aid response	
MSAPMOPS100A	Use equipment	
MSAPMOPS101A	Make measurements	
MSAPMOPS102A	Perform tasks to support production	
MSAPMOPS200A	Operate equipment	
MSAPMOPS212A	Use enterprise computers or data systems	
MSAPMOPS244A	Layout and cut materials	
MSAPMOPS363A	Organise on site work	
MSAPMPER200C	Work in accordance with an issued permit	
MSAPMPER201A	Monitor and control work permits	
MSAPMPER205C	Enter confined space	*
MSAPMPER300C	Issue work permits	*
MSAPMSUP100A	Apply workplace procedures	
MSAPMSUP101A	Clean workplace or equipment	
MSAPMSUP102A	Communicate in the workplace	

Unit code	Unit title	Prerequisite
MSAPMSUP106A	Work in a team	
MSAPMSUP172A	Identify and minimise environmental hazards	
MSAPMSUP200A	Achieve work outcomes	
MSAPMSUP201A	Receive or despatch goods	
MSAPMSUP204A	Pack products or materials	
MSAPMSUP205A	Transfer loads	
MSAPMSUP230A	Monitor process operations	
MSAPMSUP240A	Undertake minor maintenance	
MSAPMSUP273A	Handle goods	
MSAPMSUP280A	Manage conflict at work	
MSAPMSUP291A	Participate in continuous improvement	
MSAPMSUP292A	Sample and test materials and product	
PMBFIN201C	Finish products and components	
PMBFIN202C	Fit attachments to products	
PMBFIN203C	Repair product imperfections	
PMBFIN205C	Hand decorate products	
PMBHAN103C	Shift materials safely by hand	
PMBHAN208C	Store products	
PMBPREP201B	Prepare moulds for composites production	
PMBPREP205C	Assemble materials and equipment for production	
PMBPREP206C	Prepare materials to formulae	
PMBPREP301C	Set up and prepare for production	
PMBPREP303C	Set up equipment for continuous operation	

Unit code	Unit title	Prerequisite
PMBPREP304C	Set a die	
PMBPREP305B	Change extrusion die and setup	
PMBPROD206B	Operate ancillary equipment	
PMBPROD207B	Operate calender	
PMBPROD209C	Operate cable winding equipment	
PMBPROD210B	Operate injection moulding equipment	
PMBPROD211B	Operate blow moulding equipment	
PMBPROD212B	Operate thermoforming equipment	
PMBPROD213B	Operate extruders	
PMBPROD216B	Operate blown film equipment	
PMBPROD217B	Operate printing equipment	
PMBPROD221B	Operate rotational moulding equipment	
PMBPROD229B	Operate polystyrene shape moulding equipment	
PMBPROD233B	Operate film conversion equipment	
PMBPROD235C	Use materials and process knowledge to complete work operations	
PMBPROD236C	Operate hand held air/power equipment for production processes	
PMBPROD237C	Splice cables	
PMBPROD238A	Perform creel rack operations	
PMBPROD239A	Build reinforced conveyor belts	
PMBPROD240C	Cut materials	
PMBPROD241C	Lay up rubber lining or lag pulleys	
PMBPROD242A	Bond polymers to surfaces	
PMBPROD245C	Fabricate materials	

Unit code	Unit title	Prerequisite
PMBPROD246C	Hand mix materials	
PMBPROD247C	Hand lay up composites	
PMBPROD248C	Prepare surfaces for coating	
PMBPROD249B	Apply liquid surface coatings	
PMBPROD251B	Apply gel coat or other polymer surface finish	
PMBPROD252C	Operate compounding equipment	
PMBPROD253C	Operate an internal mill blender	
PMBPROD254C	Operate an open mill blender	
PMBPROD255C	Operate mixing equipment	
PMBPROD259C	Operate granulating equipment	
PMBPROD261B	Operate continuous vulcanising equipment	
PMBPROD262B	Operate tyre curing equipment	
PMBPROD263B	Operate retread curing equipment	
PMBPROD264C	Check recycle wash process	
PMBPROD265C	Operate portable vulcanising equipment	
PMBPROD266B	Prepare tyre casings for retreading	
PMBPROD267B	Operate steel cutting equipment	
PMBPROD268B	Operate bead coiling equipment	
PMBPROD270B	Operate injection blow moulding equipment	
PMBPROD280B	Operate resin-glass depositor equipment	
PMBPROD281B	Finish composite products	
PMBPROD282B	Assemble mould	
PMBPROD283B	Demould product	
PMBPROD284B	Operate open flame moulding equipment	

Unit code	Unit title	Prerequisite
PMBPROD285A	Operate computer controlled equipment	
PMBPROD287B	Weld plastics materials	
PMBPROD290B	Operate filament winding equipment	
PMBPROD291B	Operate resin infusion moulding equipment	
PMBPROD292B	Operate pultrusion equipment	
PMBPROD293B	Operate vacuum bagging equipment	
PMBPROD294B	Operate resin transfer moulding equipment	
PMBPROD295B	Operate composite sheeting equipment	
PMBPROD296B	Operate centrifugal casting equipment	
PMBPROD297B	Operate equipment using moulding compounds	
PMBPROD298B	Operate equipment using pre-preg material	
PMBPROD300B	Produce products	
PMBPROD301C	Draw wire	
PMBPROD302C	Bunch and strand wire	
PMBPROD303C	Lay up and tape cables	
PMBPROD304C	Wind products onto drums	
PMBPROD305C	Colour optical fibre	
PMBPROD306B	Prepare and start equipment for production	
PMBPROD307C	Produce calendered products	*
PMBPROD308B	Take a machine out of production	
PMBPROD309C	Produce electroplated products	
PMBPROD310C	Produce injection moulded products	*
PMBPROD311C	Produce blow moulded products	*
PMBPROD312C	Produce continuous thermoforming products	*

Unit code	Unit title	Prerequisite
PMBPROD313C	Produce extruded products	*
PMBPROD314C	Produce compression moulded products	
PMBPROD315C	Produce polyurethane foam	
PMBPROD316C	Produce blown film	*
PMBPROD317C	Print and decorate rigid products	*
PMBPROD318C	Build first stage tyres	
PMBPROD319C	Build up rollers	
PMBPROD320C	Produce foam injected mouldings	
PMBPROD321B	Produce rotational moulded products	*
PMBPROD323C	Produce powder coated products	
PMBPROD324B	Inspect tyres for retreading	
PMBPROD325B	Lay on tyre retreads	
PMBPROD326B	Inspect tyres	
PMBPROD327B	Produce finished tyres	
PMBPROD328C	Produce sheet feed vacuum forming products	
PMBPROD329C	Produce polystyrene shape moulded products	*
PMBPROD330A	Make moulds for formed products	
PMBPROD331C	Produce printed and decorated film	
PMBPROD332C	Produce thermally bent products	
PMBPROD333B	Convert plastic film	*
PMBPROD334A	Produce products using twin screw extruders	
PMBPROD335C	Build second stage tyres	
PMBPROD339A	Produce reinforced conveyor belts	*
PMBPROD343C	Shut down plant area	

Unit code	Unit title	Prerequisite
PMBPROD347B	Produce composites using hand lamination	*
PMBPROD349B	Produce liquid surface coated products	*
PMBPROD352A	Produce compounded materials	*
PMBPROD353B	Compound materials using an internal mill blender	*
PMBPROD354B	Compound materials using an open mill blender	*
PMBPROD355B	Make pattern/plug for composites moulds	*
PMBPROD356C	Construct moulds for composite products	*
PMBPROD357C	Construct jigs and fixtures	
PMBPROD358C	Develop patterns	*
PMBPROD360B	Produce centrifugally cast polyurethane products	*
PMBPROD362B	Produce gravity cast polyurethane products	*
PMBPROD367B	Remove and replace conveyor belts	
PMBPROD368B	Repair conveyor belt carcass	*
PMBPROD369B	Repair conveyor belt covers	*
PMBPROD370B	Produce injection blow moulded products	*
PMBPROD372B	Produce fibre optic preforms	
PMBPROD373B	Draw optical fibre	
PMBPROD375B	Vulcanise products using an autoclave	
PMBPROD376A	Splice steel cord conveyor belts	*
PMBPROD377A	Splice fabric ply conveyor belts	*
PMBPROD378A	Splice solid woven conveyor belts	*
PMBPROD380B	Produce composites using chopper gun/depositor	*
PMBPROD384A	Operate multi-axis router	

Unit code	Unit title	Prerequisite
PMBPROD385A	Program computer controlled equipment	
PMBPROD387B	Produce welded plastics materials	*
PMBPROD390B	Produce composites using filament winding	*
PMBPROD391B	Produce composites using resin infusion	*
PMBPROD392B	Produce composites using pultrusion	*
PMBPROD393B	Produce composites using vacuum bagging	*
PMBPROD394B	Produce composites using resin transfer moulding	*
PMBPROD395B	Produce composite sheet products	*
PMBPROD396B	Produce composites using centrifugal casting	*
PMBPROD397B	Produce composites using moulding compounds	*
PMBPROD398B	Produce composites using pre-pregs	*
PMBTECH301B	Use material and process knowledge to solve problems	
PMBTECH302A	Modify existing compounds	
PMBTECH303A	Make minor modifications to products	
PMBWASTE101C	Collect waste for recycling or safe disposal	
PMBWASTE302C	Coordinate waste disposal	
PMBWELD301B	Butt weld polyethylene plastic pipelines	
PMBWELD302B	Electrofusion weld polyethylene pipelines	
PMBWELD303B	Install polyethylene (non-pressure) drainage pipelines	
PMBWELD304B	Design polyethylene (non-pressure) drainage pipelines	*
PMBWELD305B	Install polyethylene plastic pressure pipelines	
PMBWELD306B	Design polyethylene plastic pressure pipelines	*

Unit code	Unit title	Prerequisite
PMBWELD307B	Install high temperature plastic pressure pipelines	
PMBWELD308B	Install PVC plastic pressure pipelines	
PMBWELD309B	Weld plastic using extrusion techniques	
PMBWELD310B	Design PVC plastic pressure pipelines	*
PMBWELD311B	Design high temperature plastic pressure pipelines	*
RIIRIS201B	Conduct local risk control	
TAEASS301B	Contribute to assessment	
TAEASS401B	Plan assessment activities and processes	
TAEASS402B	Assess competence	
TAEASS403B	Participate in assessment validation	
TAEDEL301A	Provide work skill instruction	
TLID2010A	Operate a forklift	
<p>Up to eight (8) relevant units may be chosen from this Training Package, other endorsed Training Packages and accredited courses, where those units are available at Certificates II or III. (Note that a maximum of four (4) of these units can be available at Certificate II).</p>		