PMB40116 Certificate IV in Polymer Technology

# Modification History

Release 1. Supersedes and is equivalent to PMB40107 Certificate IV in Polymer Technology.

# Qualification Description

The PMB40116 Certificate IV in Polymer Technology is intended for senior operators and polymer technicians

The senior operator/technician may be process-based and directly involved in production or they may be based elsewhere, for example, in a laboratory, although they will typically still have functions on the production floor.

The senior operator/technician will be able to apply specialised theoretical and technical knowledge and well developed operations skills in situations that require autonomy, discretion and judgement, such as product and process improvements and trialling.

The senior operator/technician will be able to solve complex problems which require in depth theoretical knowledge combined with an understanding of the production process and equipment.

This qualification applies to the production of a wide range of polymer products and components ranging from consumer products to components to be included in other commercial, industrial or consumer products. Products may be made from a wide range of natural and synthetic polymers covering thermoplastics as well as thermosetting polymers. Production may be long runs of standard products, short runs or ‘one offs’ of specialised products.

For people who require a more generalist qualification covering the application of good manufacturing practice and lean principles see MSS40316 Certificate IV in Competitive Systems and Practices.

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 licences in some jurisdictions. Local regulations should be checked for details.

^ From 1 July 2022 the elective unit HLTAID003 must no longer be delivered and will be replaced in the Packaging Rules by the unit HLTAID011 - for more information see: <https://asqa.gov.au/news-events/news/reminder-about-superseded-hlt-first-aid-units>

# Entry Requirements

There are no entry requirements for this qualification.

# Packaging Rules

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| To be awarded the PMB40116 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: * 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).   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.  Note: Units with prerequisites are marked with an asterisk\*. Prerequisite units must be counted in the total number of units required for achievement of the qualification. Refer to individual units for details. | | |
| Core units of competency | | |
| Unit code | Unit title | |
| MSS402051 | Apply quality standards | |
| MSMENV272 | Participate in environmentally sustainable work practices | |
| MSMWHS200 | Work safely | |
| MSMSUP210 | Process and record information | |
| Elective units of competency  Group A | | |
| Unit code | Unit title | Prerequisites |
| MSMOPS400 | Optimise process/plant area | \* |
| MSMOPS401 | Trial new process or product |  |
| MSMSUP404 | Coordinate maintenance |  |
| MSMSUP405 | Identify problems in fluid power system |  |
| MSMSUP406 | Identify problems in electronic control systems |  |
| PMBPROD430 | Trial a new die/tool |  |
| PMBPROD431 | Trial a new, advanced or complex mould |  |
| PMBTECH401 | Predict polymer properties and characteristics | \* |
| PMBTECH402 | Set advanced or complex dies | \* |
| PMBTECH403 | Test fibre-composites materials and laminates |  |
| PMBTECH404 | Mould chemical resistant and/or fire retardant fibre-composites |  |
| PMBTECH405 | Repair damaged fibre-composites structures | \* |
| PMBTECH406 | Diagnose production equipment problems |  |
| A maximum of two (2) units may be chosen from the units available in Group A of PMB50116 Diploma of Polymer Technology. | | |
| Group B | | |
| Unit code | Unit title | Prerequisites |
| MEM15001B | Perform basic statistical quality control |  |
| MSS403010 | Facilitate change in an organisation implementing competitive systems and practices |  |
| MSS403002 | Ensure process improvements are sustained |  |
| MSS403021 | Facilitate a Just in Time system |  |
| MSS403040 | Facilitate and improve implementation of 5S |  |
| MSS404050 | Undertake process capability improvements | \* |
| MSS403051 | Mistake proof an operational process |  |
| MSS404052 | Apply statistics to operational processes |  |
| MSMENV472 | Implement and monitor environmentally sustainable work practices |  |
| MSMWHS300 | Facilitate the implementation of WHS for a work group | \* |
| MSMWHS400 | Contribute to WHS management system | \* |
| MSMWHS401 | Assess risk |  |
| MSMSUP300 | Identify and apply process improvements | \* |
| MSMSUP301 | Apply HACCP to the workplace |  |
| MSMSUP303 | Identify equipment faults |  |
| MSMSUP309 | Maintain and organise workplace records |  |
| MSMSUP310 | Contribute to the development of workplace documentation |  |
| MSMSUP330 | Develop and adjust a production schedule |  |
| MSMSUP382 | Provide coaching/mentoring in the workplace |  |
| MSMSUP383 | Facilitate a team |  |
| MSMSUP390 | Use structured problem solving tools |  |
| MSMSUP400 | Develop and monitor quality systems |  |
| MSL973001 | Perform basic tests |  |
| MSL974003 | Perform chemical tests and procedures |  |
| PMBPROD336 | Inspect heavy off-the-road tyres |  |
| PMBPROD337 | Prepare heavy off-the-road tyres for repair |  |
| PMBPROD338 | Repair heavy off-the-road tyres |  |
| PMBPROD340 | Cure heavy off-the-road tyre repairs |  |
| PMBPROD341 | Finish heavy off-the-road tyre repairs |  |
| TLID3011 | 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 | Prerequisites |
| FWPCOT2238 | Cut materials with a hand-held chainsaw |  |
| HLTAID003  ^ HLTAID011 | Provide first aid  Provide First Aid (must be delivered from 1 July 2022) |  |
| LMTGN2008B | Coordinate work of team/section |  |
| 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 |  |
| MSS402020 | Apply quick changeover procedures |  |
| MSS402021 | Apply Just in Time procedures |  |
| MSS402030 | Apply cost factors to work practices |  |
| MSS402040 | Apply 5S procedures |  |
| MSS402050 | Monitor process capability |  |
| MSS402060 | Use planning software systems in operations |  |
| MSS402080 | Undertake root cause analysis |  |
| MSMWHS100 | Follow WHS procedures |  |
| MSMWHS110 | Follow emergency response procedures |  |
| MSMWHS205 | Control minor incidents |  |
| MSMWHS210 | Undertake first response to non-fire incidents |  |
| MSMWHS212 | Undertake first response to fire incidents |  |
| MSMWHS216 | Operate breathing apparatus |  |
| MSMWHS217 | Gas test atmospheres |  |
| MSMOPS100 | Use equipment |  |
| MSMOPS101 | Make measurements |  |
| MSMOPS102 | Perform tasks to support production |  |
| MSMOPS200 | Operate equipment |  |
| MSMOPS212 | Use organisation computers or data systems |  |
| MSMOPS244 | Lay out and cut materials |  |
| MSMOPS363 | Organise on site work |  |
| MSMPER200 | Work in accordance with an issued permit |  |
| MSMPER201 | Monitor and control work permits |  |
| MSMPER205 | Enter confined space | \* |
| MSMPER300 | Issue work permits | \* |
| MSMSUP100 | Apply workplace context to own job |  |
| MSMSUP101 | Clean workplace or equipment |  |
| MSMSUP102 | Communicate in the workplace |  |
| MSMSUP106 | Work in a team |  |
| MSMENV172 | Identify and minimise environmental hazards |  |
| MSMSUP200 | Achieve work outcomes |  |
| MSMSUP204 | Pack products or materials |  |
| MSMSUP205 | Transfer loads |  |
| MSMSUP230 | Monitor process operations |  |
| MSMSUP240 | Undertake minor maintenance |  |
| MSMSUP273 | Handle goods |  |
| MSMSUP280 | Manage conflict at work |  |
| MSMSUP291 | Participate in continuous improvement |  |
| MSMSUP292 | Sample and test materials and product |  |
| PMBFIN201 | Finish products and components |  |
| PMBFIN202 | Fit attachments to products |  |
| PMBFIN203 | Repair product imperfections |  |
| PMBFIN205 | Hand decorate products |  |
| PMBHAN103 | Shift materials safely by hand |  |
| PMBHAN208 | Store products |  |
| PMBPREP201 | Prepare moulds for composites production |  |
| PMBPREP205 | Assemble materials and equipment for production |  |
| PMBPREP206 | Prepare materials to formulae |  |
| PMBPREP301 | Set up and prepare for production |  |
| PMBPREP303 | Set up equipment for continuous operation |  |
| PMBPREP304 | Set a die |  |
| PMBPREP305 | Change extrusion die and setup |  |
| PMBPROD206 | Operate ancillary equipment |  |
| PMBPROD207 | Operate calender |  |
| PMBPROD209 | Operate cable winding equipment |  |
| PMBPROD210 | Operate injection moulding equipment |  |
| PMBPROD211 | Operate blow moulding equipment |  |
| PMBPROD212 | Operate thermoforming equipment |  |
| PMBPROD213 | Operate extruders |  |
| PMBPROD216 | Operate blown film equipment |  |
| PMBPROD217 | Operate printing equipment |  |
| PMBPROD221 | Operate rotational moulding equipment |  |
| PMBPROD229 | Operate polystyrene shape moulding equipment |  |
| PMBPROD233 | Operate film conversion equipment |  |
| PMBPROD235 | Use materials and process knowledge to complete work operations |  |
| PMBPROD236 | Operate hand held air/power equipment for production processes |  |
| PMBPROD237 | Splice cables |  |
| PMBPROD238 | Perform creel rack operations |  |
| PMBPROD239 | Build reinforced conveyor belts |  |
| PMBPROD240 | Cut materials |  |
| PMBPROD241 | Lay up rubber lining or lag pulleys |  |
| PMBPROD242 | Bond polymers to surfaces |  |
| PMBPROD245 | Fabricate materials |  |
| PMBPROD246 | Hand mix materials |  |
| PMBPROD247 | Hand lay up composites |  |
| PMBPROD248 | Prepare surfaces for coating |  |
| PMBPROD249 | Apply liquid surface coatings |  |
| PMBPROD251 | Apply gel coat or other polymer surface finish |  |
| PMBPROD252 | Operate compounding equipment |  |
| PMBPROD253 | Operate an internal mill blender |  |
| PMBPROD254 | Operate an open mill blender |  |
| PMBPROD255 | Operate mixing equipment |  |
| PMBPROD259 | Operate granulating equipment |  |
| PMBPROD261 | Operate continuous vulcanising equipment |  |
| PMBPROD262 | Operate tyre curing equipment |  |
| PMBPROD263 | Operate retread curing equipment |  |
| PMBPROD264 | Check recycle wash process |  |
| PMBPROD265 | Operate portable vulcanising equipment |  |
| PMBPROD266 | Prepare tyre casings for retreading |  |
| PMBPROD267 | Operate steel cutting equipment |  |
| PMBPROD268 | Operate bead coiling equipment |  |
| PMBPROD270 | Operate injection blow moulding equipment |  |
| PMBPROD280 | Operate resin-glass depositor equipment |  |
| PMBPROD281 | Finish composite products |  |
| PMBPROD282 | Assemble mould |  |
| PMBPROD283 | Demould product |  |
| PMBPROD284 | Operate open flame moulding equipment |  |
| PMBPROD285 | Operate computer controlled equipment |  |
| PMBPROD287 | Weld plastics materials |  |
| PMBPROD290 | Operate filament winding equipment |  |
| PMBPROD291 | Operate resin infusion moulding equipment |  |
| PMBPROD292 | Operate pultrusion equipment |  |
| PMBPROD293 | Operate vacuum bagging equipment |  |
| PMBPROD294 | Operate resin transfer moulding equipment |  |
| PMBPROD295 | Operate composite sheeting equipment |  |
| PMBPROD296 | Operate centrifugal casting equipment |  |
| PMBPROD297 | Operate equipment using moulding compounds |  |
| PMBPROD298 | Operate equipment using pre-preg material |  |
| PMBPROD300 | Produce products |  |
| PMBPROD301 | Draw wire |  |
| PMBPROD302 | Bunch and strand wire |  |
| PMBPROD303 | Lay up and tape cables |  |
| PMBPROD304 | Wind products onto drums |  |
| PMBPROD305 | Colour optical fibre |  |
| PMBPROD306 | Prepare and start equipment for production |  |
| PMBPROD307 | Produce calendered products | \* |
| PMBPROD308 | Take a machine out of production |  |
| PMBPROD309 | Produce electroplated products |  |
| PMBPROD310 | Produce injection moulded products | \* |
| PMBPROD311 | Produce blow moulded products | \* |
| PMBPROD312 | Produce continuous thermoforming products | \* |
| PMBPROD313 | Produce extruded products | \* |
| PMBPROD314 | Produce compression moulded products |  |
| PMBPROD315 | Produce polyurethane foam |  |
| PMBPROD316 | Produce blown film | \* |
| PMBPROD317 | Print and decorate rigid products | \* |
| PMBPROD319 | Build up rollers |  |
| PMBPROD320 | Produce foam injected mouldings |  |
| PMBPROD321 | Produce rotational moulded products | \* |
| PMBPROD323 | Produce powder coated products |  |
| PMBPROD324 | Inspect tyres for retreading |  |
| PMBPROD325 | Lay on tyre retreads |  |
| PMBPROD326 | Inspect tyres |  |
| PMBPROD328 | Produce sheet feed vacuum forming products |  |
| PMBPROD329 | Produce polystyrene shape moulded products | \* |
| PMBPROD330 | Make moulds for formed products |  |
| PMBPROD331 | Produce printed and decorated film |  |
| PMBPROD332 | Produce thermally bent products |  |
| PMBPROD333 | Convert plastic film | \* |
| PMBPROD334 | Produce products using twin screw extruders |  |
| PMBPROD339 | Produce reinforced conveyor belts | \* |
| PMBPROD343 | Shut down plant area |  |
| PMBPROD347 | Produce composites using hand lamination | \* |
| PMBPROD349 | Produce liquid surface coated products | \* |
| PMBPROD352 | Produce compounded materials | \* |
| PMBPROD353 | Compound materials using an internal mill blender | \* |
| PMBPROD354 | Compound materials using an open mill blender | \* |
| PMBPROD355 | Make pattern/plug for composites moulds | \* |
| PMBPROD356 | Construct moulds for composite products | \* |
| PMBPROD357 | Construct jigs and fixtures |  |
| PMBPROD358 | Develop patterns | \* |
| PMBPROD360 | Produce centrifugally cast polyurethane products | \* |
| PMBPROD362 | Produce gravity cast polyurethane products | \* |
| PMBPROD367 | Remove and replace conveyor belts |  |
| PMBPROD368 | Repair conveyor belt carcass | \* |
| PMBPROD369 | Repair conveyor belt covers | \* |
| PMBPROD370 | Produce injection blow moulded products | \* |
| PMBPROD372 | Produce fibre optic preforms |  |
| PMBPROD373 | Draw optical fibre |  |
| PMBPROD375 | Vulcanise products using an autoclave |  |
| PMBPROD376 | Splice steel cord conveyor belts | \* |
| PMBPROD377 | Splice fabric ply conveyor belts | \* |
| PMBPROD378 | Splice solid woven conveyor belts | \* |
| PMBPROD380 | Produce composites using chopper gun/depositor | \* |
| PMBPROD384 | Operate multi-axis router |  |
| PMBPROD385 | Program computer controlled equipment |  |
| PMBPROD387 | Produce welded plastics materials | \* |
| PMBPROD390 | Produce composites using filament winding | \* |
| PMBPROD391 | Produce composites using resin infusion | \* |
| PMBPROD392 | Produce composites using pultrusion | \* |
| PMBPROD393 | Produce composites using vacuum bagging | \* |
| PMBPROD394 | Produce composites using resin transfer moulding | \* |
| PMBPROD395 | Produce composite sheet products | \* |
| PMBPROD396 | Produce composites using centrifugal casting | \* |
| PMBPROD397 | Produce composites using moulding compounds | \* |
| PMBPROD398 | Produce composites using pre-pregs | \* |
| PMBTECH301 | Use material and process knowledge to solve problems |  |
| PMBTECH302 | Modify existing compounds |  |
| PMBTECH303 | Make minor modifications to products |  |
| PMBWASTE101 | Collect waste for recycling or safe disposal |  |
| PMBWASTE302 | Coordinate waste disposal |  |
| PMBWELD301 | Butt weld polyethylene plastic pipelines |  |
| PMBWELD302 | Electrofusion weld polyethylene pipelines |  |
| PMBWELD303 | Install polyethylene (non-pressure) drainage pipelines |  |
| PMBWELD304 | Design polyethylene (non-pressure) drainage pipelines | \* |
| PMBWELD305 | Install polyethylene plastic pressure pipelines |  |
| PMBWELD306 | Design polyethylene plastic pressure pipelines | \* |
| PMBWELD307 | Install high temperature plastic pressure pipelines |  |
| PMBWELD308 | Install PVC plastic pressure pipelines |  |
| PMBWELD309 | Weld plastic using extrusion techniques |  |
| PMBWELD310 | Design PVC plastic pressure pipelines | \* |
| PMBWELD311 | Design high temperature plastic pressure pipelines | \* |
| RIIRIS201D | Conduct local risk control |  |
| TAEASS301 | Contribute to assessment |  |
| TAEASS401 | Plan assessment activities and processes |  |
| TAEASS402 | Assess competence |  |
| TAEASS403 | Participate in assessment validation |  |
| TAEDEL301 | Provide work skill instruction |  |
| TLID2010 | Operate a forklift |  |
| 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). | | |

# Qualification Mapping Information

Release 1. Supersedes and is equivalent to PMB40107 Certificate IV in Polymer Technology.

# Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=932aacef-7947-4c80-acc6-593719fe4090>