



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **MEM31112 Certificate III in Engineering - Composites Trade**

**Release: 1**

## **MEM31112 Certificate III in Engineering - Composites Trade**

### **Modification History**

Release 1 - new qualification

## Description

This qualification covers the skills and knowledge required by a tradesperson working with composites within the metal, engineering, manufacturing and associated industries, or other industries where composites tradespersons work. The qualification has been specifically developed to meet the needs of apprentices in the above trade. The qualification packaging has been developed on the assumption that competency will be developed through an integrated combination of on and off-the-job learning strategies such as those delivered through a formal apprenticeship. The qualification may also be achieved through formal skills recognition assessment processes.

### *Job roles/employment outcomes*

The MEM31112 Certificate III in Engineering - Composites Trade specifies the competencies required for employment as a composites tradesperson, including:

- laying up composites
- selecting and using materials and components for composite products
- handling, using and storing materials and components used in composites
- undertaking repairs and modifications to composite components
- undertaking repairs and modifications using composites
- adjusting resin chemicals for composite products and conditions
- selecting and using joining techniques.

People with this qualification may work in a large manufacturing organisation, a smaller workshop, a repair facility, a defence or a government facility. The composites tradesperson may work in a composites manufacturing or repair organisation, or they may work in an aerospace, civil construction, general manufacturing, marine, vehicle or other organisation as a composites specialist. They may be part of a large organisation or they may be an independent contractor performing composites trade work for other organisations.

'Composites' in this application refers to reinforced resin components and does not include geo-textile or other industrial textiles.

### *Application*

This qualification is designed to provide an industry recognised skills profile related to working as a composites tradesperson. Skills development would usually be undertaken through an Australian Apprenticeship arrangement where the mix of on and off-the-job training would be specified in the Training Plan associated with the Contract of Training between the employer and apprentice.

This work will generally be undertaken in a factory or workshop environment but may also be undertaken onsite.

Assessment of some units of competency must, where indicated, include evidence of the candidate's performance in a productive work environment where there is a sufficient range of appropriate tasks and materials to cover the scope of application of those units. All outcomes must reflect the standard of performance inherent in the job.

## Pathways Information

### *Pathways into the qualification*

There is no qualification entry requirement. It is assumed that the learner is engaged as an apprentice under a Training Contract and that the learner is involved in appropriate structured on-the-job learning while undertaking this 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 other relevant qualifications. Credit towards this qualification may also include units of competency contained within relevant pre-vocational and pre-apprenticeship programs and Statements of Attainment.

***Pathways from the qualification***

Further training pathways from this qualification include MEM40105 Certificate IV in Engineering and MEM50105 Diploma of Engineering – Advanced Trade or other relevant qualifications.

Competitive Manufacturing qualifications are available for employees at this level who already possess trade and other technical skills and who require additional manufacturing practice skills above those available in this qualification.

## **Licensing/Regulatory Information**

There are no specific licences that relate to this qualification.

## **Entry Requirements**

Not applicable.

## Employability Skills Summary

<b>Employability Skill</b>	<b>Industry/enterprise requirements for this qualification include:</b>
<b>Communication</b>	<ul style="list-style-type: none"> <li>• Read, interpret, follow and communicate information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents</li> <li>• Convey and share technical information</li> <li>• Produce sketches, diagrams, charts or graphs</li> <li>• Check and clarify task-related information</li> <li>• Recognise and use common fabrication terminology</li> <li>• Liaise with appropriate authorities</li> </ul>
<b>Teamwork</b>	<ul style="list-style-type: none"> <li>• Work alone or as part of a team</li> <li>• Contribute to a group effort in order to plan and carry out work</li> <li>• Identify work roles, communicate and cooperate with others</li> </ul>
<b>Problem solving</b>	<ul style="list-style-type: none"> <li>• Undertake numerical operations, geometry and calculations/ formulae (including addition, subtraction, multiplication, division, fractions and decimals, percentages and proportions, simple ratios and averages)</li> <li>• Use appropriate measuring techniques</li> <li>• Inspect quality of own or other employee's work</li> <li>• Analyse information according to enterprise and work requirements</li> <li>• Assess operation and condition of components against specifications or manufacturer's requirements</li> <li>• Use diagnostic skills to identify and determine causes of faults, including interpretation of in-built fault indicators and error codes</li> <li>• Translate designs into practical outcomes</li> </ul>
<b>Initiative and enterprise</b>	<ul style="list-style-type: none"> <li>• Be capable of applying the competency in new and different situations and contexts</li> <li>• Identify actual and foreseeable workplace hazards during course of work</li> <li>• Implement OHS risk management procedures</li> <li>• Modify work plan to overcome unforeseen difficulties or developments that occur as work progresses</li> <li>• Participate in improvement procedures, including process, quality and internal/external customer/supplier relationships</li> <li>• Economise material use and minimise waste</li> </ul>
<b>Planning and organising</b>	<ul style="list-style-type: none"> <li>• Plan, prioritise and sequence work operations/complete activities/scheduled production</li> <li>• Select and use planning techniques and tools</li> </ul>

	<ul style="list-style-type: none"> <li>Organise and analyse information relevant to work</li> <li>Set up jobs prior to commencement of work, including selection of appropriate tools, equipment and materials and adjustment of equipment</li> </ul>
<b>Self-management</b>	<ul style="list-style-type: none"> <li>Carry out work safely and in accordance with company policy and procedures, manufacturer's recommendations, environmental guidelines and legislative requirements</li> <li>Monitor performance of operation or quality of product or service to ensure customer satisfaction</li> <li>Take responsibility for own work outcomes</li> <li>Apply techniques, procedures, tools and equipment for compliance with site or manufacturer specifications</li> </ul>
<b>Learning</b>	<ul style="list-style-type: none"> <li>Check and clarify task related information with appropriate personnel or technical adviser</li> <li>Identify customers' requirements with respect to the operation or quality of the product or service</li> <li>Assess and modify own work practices</li> <li>Use manuals, online help and other reference materials, such as catalogues/lists, as required</li> <li>Maintain current knowledge of applicable standards, legislation, codes of practice and product/process developments</li> <li>Assist with on-the-job training and assessment</li> </ul>
<b>Technology</b>	<ul style="list-style-type: none"> <li>Select and use appropriate tools, equipment, materials and machines</li> <li>Select and use appropriate measuring/testing devices</li> <li>Navigate technology to access/input /store/retrieve/save and produce information/data using appropriate software applications</li> <li>Apply knowledge of appropriate engineering principles, techniques, procedures, tools and equipment to achieve the required outcome</li> </ul>

## Packaging Rules

The minimum requirements for achievement of the MEM31112 Certificate III in Engineering - Composites Trade are:

- completion of all core units of competency listed below
- completion of elective units to a total value of at least 73 points, chosen as described below:
  - basic composite fabrication units from Group A to the value of at least 12 points
  - composite trade specialisation units from Group B to the value of at least 28 points
  - units not already chosen from Group B and trade specialisation units from Group C to bring the total value to at least 73 points.

Units with prerequisites are marked with an asterisk. Points associated with prerequisites count towards the total (refer to units and prerequisites listing in Appendix 2).

Appropriate Group C elective units to the value of 16 points may be chosen from other endorsed Training Packages and accredited courses where those units are available for inclusion at Certificate III.

Registered Training Organisations must seek a determination from Manufacturing Skills Australia in respect of the allocation of points values for units of competency drawn from other Training Packages or accredited courses.

Note that the elective units listed below include all of the units that are approved for selection from the MEM05 Training Package for use in this qualification. This meets the flexibility requirement that one sixth of the total units must be able to be selected from other qualifications in the same Training Package.

### Core units of competency

- Select all units from this list.

Unit code	Unit title
MEM12023A	Perform engineering measurements
MEM12024A	Perform computations
MEM13014A	Apply principles of occupational health and safety in the work environment
MEM14004A	Plan to undertake a routine task
MEM14005A	Plan a complete activity
MEM15002A	Apply quality systems
MEM15024A	Apply quality procedures
MEM16006A	Organise and communicate information
MEM16007A	Work with others in a manufacturing, engineering or related environment
MEM16008A	Interact with computing technology
MEM17003A	Assist in the provision of on the job training
MSAENV272B	Participate in environmentally sustainable work practices

### Elective units of competency

#### Group A – Composite fabrication units

- Select units from this list to the value of at least 12 points.

Unit code	Unit title	Points
MEM26001A	Lay up composites using open moulding techniques	6
MEM26002A	Lay up composites using vacuum closed moulding techniques	6
MEM26003A	Lay up composites using pressure closed moulding techniques	6

#### Group B - Composites trade specialisation units

- Select units from this list to the value of at least 28 points.

Unit code	Unit title	Points
MEM26004A	Make basic plugs for composites fabrication	3
MEM26005A	Make basic moulds for composites fabrication	3
MEM26006A	Mark and cut out sheets for composite use	4
MEM26007A	Select and use reinforcing appropriate for product	4
MEM26008A	Select and use resin systems appropriate for product	4
MEM26009A	Select and use cores and fillers appropriate for product	2
MEM26010A	Store and handle composite materials	2
MEM26011A	Determine materials and techniques for a composite component or product*	6
MEM26012A	Record and trial work processes for one-off composite products	4
MEM26013A	Select and use composite processes or systems appropriate for product	4
MEM26014A	Adjust resin chemicals for current conditions	4
MEM26015A	Select and apply repair techniques	6
MEM26016A	Select and use joining techniques	6
MEM26017A	Prepare composite or other substrate surfaces	4



<b>Unit code</b>	<b>Unit title</b>	<b>Points</b>
MEM26018A	Organise composite trials	4
MEM26019A	Finish a composite product	4
MEM26020A	Identify and interpret required standards for composites	2

#### Group C - specialisation units

- Select additional units from Group B or from the Certificate III Trade Specialisation units listed in Appendix I of this Training Package to bring the total value of units to at least 73 points, including any prerequisites.
- Appropriate specialisation units to the value of 16 points may be chosen from other endorsed Training Packages and accredited courses where those units are available for inclusion at Certificate III.

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### **Custom Content Section**

Not applicable.