



Australian Government

**Assessment Requirements for MEM48034
Apply efficient materials management
techniques to composite manufacturing
operations**

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Modification History

Release 1. New unit.

Performance Evidence

There must be evidence the candidate has demonstrated the ability to:

- review at least two composite designs and determine if manual or automated layup would be most efficient for each design in terms of material usage
- model material costs on at least two occasions for at least one of the following manufacturing methods:
 - volume production of a composite product using automated processes
 - manufacturing of a fibre composite product requiring at least two acute part angles
 - manufacturing of a large composite product or component using manual lay up
- supervise production of at least two composite components or products and for each product:
 - determine the proportion of waste to total material used
 - determine the proportion of material cost against total production costs
 - classify material waste as either:
 - waste that is unavoidable, but which should be minimised
 - waste which should not occur
- recommend strategies to minimise waste.

Note: Where a volume and/or frequency is not specified, demonstration must be provided at least once.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- composite material characteristics and their links to usage and potential for waste
- methods for modelling material costs in composite production including:
 - qualitative modelling
 - quantitative modelling using:
 - statistical data from similar design manufacturing
 - analytical data from cost examination of prototyping and sub-process steps
- the relationship between composite material costs and:
 - geometry of composite designs including part angles and other cutting and assembly requirements

- product or component size
- resin systems, including dry fibre, pre-preg, bulk moulding compounds (BMC), sheet moulding compounds (SMC), glass-mat thermoplastics (GMT), long fibre-reinforced thermoplastics (LFT), and resin injection
- curing and finishing
- sources of assembly generated material waste including:
 - cutting waste
 - pressure flashes
 - left over raw material
- manufacturing errors that lead to increased material waste including:
 - draping errors
 - assembly errors
 - fabrication errors
 - curing errors
- typical steps to reduce or eliminate material waste including:
 - design modification
 - process modification
 - preventative maintenance
 - waste powder and/or fibre recovery
 - sale or re-use of waste material
- methods available to recycle composite waste including:
 - waste preparation using mechanical grinding or shredding
 - fibre recovery using fluidised bed, pyrolysis or solvolysis.

Assessment Conditions

- Assessors must:
 - have vocational competency in applying efficient materials management techniques to composite manufacturing operations at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015 or its replacement* and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring State as the case requires.
- Where possible, assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions that cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- There must be suitable access to an operating plant or equipment that allows for appropriate and realistic simulation and documentation including relevant workplace procedures, industry codes and standards.

- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
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Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>