



Australian Government

MEM26009 Select and use cores and fillers appropriate for product

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MEM26009A Select and use cores and fillers appropriate for product

Application

This unit of competency defines the skills and knowledge required to select and use appropriate cores and/or fillers.

Where the selection of suitable reinforcing required unit MEM26007 Select and use reinforcing appropriate for product should also be selected.

Where the selection of a suitable resin system is required unit MEM26008 Select and use resin systems appropriate for product should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 2

Pre-requisite Unit

MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Composites

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	Determine product requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
		1.3	Select and use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Determine requirements of core and/or filler from specifications, job sheets or work instructions and customer requests
		1.5	Select appropriate process to be used to fabricate product
2	Select most appropriate core and/or fillers for job	2.1	Compile specification of required composite properties relevant to the core and/or filler
		2.2	Compare required properties with specifications of available cores and/or fillers
		2.3	Select most appropriate core and/or filler
3	Evaluate selected core and/or filler	3.1	Fabricate a sample using the selected core and/or filler and nominated resin and reinforcing system
		3.2	Conduct/organise for relevant tests
		3.3	Evaluate test results against product requirements
		3.4	Review fabrication process and make any required changes to core, filler or process
4	Fabricate product	4.1	Identify and control hazards
		4.2	Prepare selected core and/or filler, as required
		4.3	Lay core in correct direction, including directional properties, as appropriate
		4.4	Prepare nominated reinforcing, including cutting to size/shape, packaging into kits and ant pre-treatment, as required
		4.5	Lay reinforcing in correct direction including fibre orientation and fibre pre-forming, as appropriate

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 4.6 Mix nominated resin system, as required
- 4.7 Prepare and incorporate core and/or filler, as required
- 4.8 Fabricate product using selected process and minimise waste
- 4.9 Review product compared to requirements
- 4.10 Review core and/or filler selection and fabrication process
- 4.11 Identify areas for improvement and take appropriate actions
- 4.12 Complete any required documentation/reporting according to SOPs

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Fillers include the following:

- particulate materials which can be added to the composite matrix to vary the bulk, stiffness, density or other properties of the final composite

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Requirements of core include the following:

- stiffness/flexibility
- directionality
- density
- shear strength
- operating temperature
- provision of thickness
- provision of some rigidity
- thermal and acoustic insulation, where appropriate
- but not the significant structural strength provided by reinforcing

Most appropriate core/filler includes the following:

- compliance with product requirements
- greatest ease of use in manufacture
- best financial return
- greatest sustainability contribution

Areas for improvement include one (1) or more of the following:

- cost/benefit of different core/filler systems
- selecting a core/filler suited to the fabrication process
- air/vapour entrapment
- bonding/delaminating
- contamination

Sustainability includes the following:

- survival of the ecology/physical environment
- economic viability
- social sustainability

Unit Mapping Information

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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>

Assessment Requirements for MEM26009 Select and use cores and fillers appropriate for product

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications, safety data sheets (SDS), formulas/recipes, batch sheets, product drawings and customer requests for selecting and using cores and fillers appropriate for product
- considering all reasonably available core and/or fillers when selecting and choosing the appropriate product
- preparing cores, as required
- preparing fillers, as required
- fabricating a sample and conducting/organising relevant test and evaluating the test results and making any required changes, as appropriate
- fabricating the final product using selected process and minimising waste as per specifications
- identifying areas for improvement and taking appropriate action
- completing all documentation and reports, including items requiring further action, in accordance with SOPs.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- current state/territory work health and safety (WHS) legislation, standards and codes of practice relevant to selecting and using cores and fillers appropriate for product
- types of cores
- chemical makeup of cores, including urethane, polyvinyl chloride (PVC), styrene acrylonitrile (SAN) (e.g. Corefell), polymethacrylimide (PMI) (e.g. Rohacell), wood (e.g. end grain balsa), cellulose (e.g. phenolic coated paper), polypropylene (PP), polyethylene (PE), aluminium honeycomb and aramid honeycomb (e.g. Nomex)
- types of fillers including syntactic foam
- machining techniques

- function of cores and fillers
- bonding of cores and fillers
- wettability of cores and fillers by the resin
- properties of cores and fillers and their contributions to the properties of the composite
- interrelationship between cores, fillers and matrix
- modes of core failure
- sustainability considerations
- SDS appropriate to the chemical makeup of cores selected.

Assessment Conditions

- Assessors must:
 - have vocational competency in selecting and using cores and fillers appropriate for product 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/territory 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. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- 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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