



Australian Government

MEM26006 Mark and cut out sheets for composite use

Release: 1

MEM26006 Mark and cut out sheets for composite use

Modification History

Release 1. Supersedes and is equivalent to MEM26006A Mark and cut sheets for composite use

Application

This unit of competency defines the skills and knowledge required to mark and cut out sheets for composite use.

The marking out/cutting out of sheets used for composites can be significantly different to the marking out/cutting out of other materials, including metals. Sheets used in composite fabrication often have significant directionality which must be considered and as a result of this composite design often includes different physical properties in one direction to another and so sheets must be marked and cut to align the required directional properties of the product with those of the sheets used in the fabrication.

Where the selection and use of hand tools is required unit MEM18001 Use hand tools should also be selected.

Where the selection and use of power tools is required unit MEM18002 Use power tools/hand held operations should also be selected.

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

Band: A

Unit Weight: 4

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.
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1	Determine product requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Determine requirements of sheet material to be used from specifications, job sheets or work instructions and customer requests
		1.5	Identify process to be used to fabricate product
2	Develop geometric shape	2.1	Develop lay flats for regular solid rectilinear shapes
		2.2	Develop lay flats for regular curved/circular shapes
		2.3	Develop lay flats for transition pieces
		2.4	Develop lay flats for complex 3-D shapes
3	Orient required shape to suit directional differences of sheet	3.1	Identify directional properties in sheet
		3.2	Identify sheet-related directional requirements of product
		3.3	Identify orientations and alignments of lay flats with sheet
4	Mark out and cut sheet	4.1	Identify and control hazards
		4.2	Place lay flat on sheet and arrange lay flats to minimise waste
		4.3	Prevent lay flat moving and mark sheet, as required, using lay flat
		4.4	Cut sheet to meet requirements
		4.5	Identify typical problems and take appropriate remedial action

Elements describe the essential outcomes.

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

4.6 Perform final verification to meet product requirements

5 **Store
templates/lay flats**

5.1 Clean lay flats after use

5.2 Label lay flat using identification protocol

5.3 Record required directionality information with lay flat

5.4 Store lay flats according to procedures

5.5 Complete logs and reports 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.

Sheets include one (1) or more of the following:

- reinforcing:
 - woven
 - non-woven
- pre-impregnated (pre-preg)
- cores
- timber, including medium density fibreboard (MDF) and plywood
- filler material

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Requirements of sheet material includes the following:

- strength
- flexibility/rigidity
- thickness
- density
- directionality
- drape
- operating temperature

Regular rectilinear shapes include one (1) or more of the following:

- rectangular prisms
- cubes
- portions of prisms and cubes
- similar shapes

Regular curved shapes include one (1) or more of the following:

- cylinders
- spheres
- segments of cylinders and spheres
- similar shapes

Transition pieces include one (1) or more of the following:

- cones
- pyramids
- portions of cones and pyramids
- square to round
- tee piece
- lobster back
- similar shapes

Complex 3-D shapes include the following:

- other 3-D shapes which may need to be fabricated and which may be composed of a number of components of the above shapes

Alignment includes the following:

- warp
- weft
- selvedge
- other features of the sheet
- the nesting of lay flats to optimise the use of materials and minimise waste

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.

Typical problems include one (1) or more of the following:

- identifying directionality in sheet
- identify a feature to provide alignment
- products requiring multidirectional properties

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM26006A Mark and cut sheets for composite use

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 MEM26006 Mark and cut out sheets for composite use

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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, formulas/recipes, batch sheets, product drawings, customer requests for marking and cutting sheets for composite use
- developing lay flats for geometric shapes
- marking out and cutting sheets taking into account the directional properties and alignments of lay flats and minimising waste
- identifying typical problems and taking appropriate remedial action
- cleaning, labelling, recording directionality information and storing lay flats in accordance with procedures
- 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 marking and cutting sheets for composite use
- orientation of plies/reinforcing
- direction of fibres (e.g. unidirectional, quad directional and on bias)
- weaves (e.g. plain, twill and satin)
- use for curves and compound curves
- creating patterns for a lay flat
- 3-D development of shapes.

Assessment Conditions

- Assessors must:

- have vocational competency in marking and cutting sheets for composite use 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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