



Australian Government

PMBTECH403E Test thermoset composite laminates and materials

Release: 1

PMBTECH403E Test thermoset composite laminates and materials

Modification History

Release 1. Unit code and title changed. Application changed. Elements and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMBTECH403 Test fibre-composites materials and laminates.

Application

This unit describes the skills and knowledge required to test thermoset composite raw materials and products for conformance with design specifications and characteristics.

This unit applies to an experienced technician working alone or as part of a team.

The unit principally refers to testing procedure guidance from industry standards, laminating production experience and personal judgement.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil.

Competency Field

Technical – Composites

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Determine test requirements	1.1 Identify properties to be measured from test brief 1.2 Identify appropriate test method that will return valid property measures 1.3 Select testing equipment that matches identified test methods
2. Perform raw material tests	2.1 Prepare raw materials samples for testing according to selected test method 2.2 Perform tests on raw materials according to selected test method 2.3 Record and interpret test results, and compare with manufacturer

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
	material data sheets
3. Perform moulded product tests	3.1 Prepare moulded product samples for testing according to selected test method 3.2 Perform tests on moulded products according to selected test method 3.3 Record and interpret test results and compare against quality specifications
4. Record and report test results	4.1 Document tests undertaken, including method, sampling techniques and results 4.2 Compare results with expected quality standards 4.3 Recommend raw materials and processes, including process controls, to achieve product requirements based on test results

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Numeracy skills to record, interpret and analyse test result data.
- Reading skills to identify test requirements from product design specifications and characteristics.
- Writing and oral communication skills to record and report on test procedures and results, and make recommendations.

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

Unit Mapping Information

Supersedes and is equivalent to PMBTECH403 Test fibre-composites materials and laminates.

Links

Companion Volume implementation guides are found in VETNet –

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=932aacef-7947-4c80-acc6-593719fe4090>

Assessment Requirements for PMBTECH403E Test thermoset composite laminates and materials

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Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and demonstrated the ability to:

- test thermoset composites laminates and materials at least once to meet design specifications and characteristics.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- types of tests, and their purposes and functions, including:
 - raw material applications (for example, resin viscosity, specific gravity of resins and gelcoats, gel time, resin exotherm, monomer content, heat deflection temperature, styrene emission, resin colour, and gelcoat water resistance)
 - laminate applications (for example, Barcol hardness, tensile strength and elongation, compressive strength, flexural strength and flexural modulus, impact strength, glass content, water absorption, product weathering capabilities, dielectric strength, flammability, acid and alkali resistance, and thickness testing)
 - test applications (for example, comparing use of common resins and reinforcements in laminates, comparing the tensile strength of given laminates with metals, and comparing test failure modes of laminate samples with metals)
- role of testing in quality control and quality assurance procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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