



**Australian Government**

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

# **PMBTECH405B Repair damaged fibre-composites structures**

**Revision Number: 1**

## **PMBTECH405B Repair damaged fibre-composites structures**

### **Modification History**

Not applicable.

### **Unit Descriptor**

#### **Unit descriptor**

This competency covers the repair of damaged fibre-composites products.

This competency is typically performed by technicians working either independently or as part of a work team.

### **Application of the Unit**

#### **Application of this unit**

This competency applies to operators who identify, diagnose, and make repairs to products with in-service damage which may be cosmetic or structural damage.

### **Licensing/Regulatory Information**

Not applicable.

## Pre-Requisites

### Prerequisites

This unit has the prerequisite of *PMBPROD247B Hand lay up composites*.

Achievement of competency in *PMAAPER200A Work in accordance with an issued permit* may also be required in some workplaces for safety or other reasons before competency is achieved in this unit

## Employability Skills Information

### Employability Skills

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency	Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

## Elements and Performance Criteria

<b>ELEMENT</b> ELEMENT	<b>PERFORMANCE CRITERIA</b> Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
1. Assess the product and damage.	1.1 Determine scope of repair required, such as either to original manufacturer specifications or other needs. 1.2 Select appropriate repair technique. 1.3 Consult testing reports giving recommended areas to be repaired and extent of damage if available.
2. Make repairs.	2.1 Examine the accessibility of the damaged section(s). 2.2 Identify cosmetic repair areas and structural repair areas. 2.3 Consult original manufacturer's manual or structural repairs manual where available. 2.4 Consult product release documentation, and insurance company requirements if available. 2.5 Prepare and clean up the product prior to commencing the actual repair. 2.6 Make partial mould or prepare insert moulding as required for the type of repair. 2.7 Expose bonding surfaces, and/or structural anchor points, using tapered sanding techniques as determined. 2.8 Rebuild the damaged area and finish surfaces to required standard. 2.9 Take samples for testing and inclusion with documentation as required.
3. Document the repair.	3.1 Raise repair documentation for costing, legal and insurance requirements as required. 3.2 Complete other documentation and records required.

## Required Skills and Knowledge

This describes the essential skills and knowledge and their level required for this unit. Knowledge of organization procedures and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and work standards. Competence includes the ability for the practical completion of the job and to apply and explain:

- damage assessment: both sides accessible; one side only accessible; cosmetic damage; structural damage; planning, costing and organizing job repair
- repair techniques: surface and part preparation; laminating, reinforcing and strengthening techniques; filling and joining techniques; surface preparation for paint, gelcoat, flowcoat and detailing for customer delivery
- rectification procedures for repair of marine, automotive, aerospace, industrial, architectural and other FRP mouldings
- use of manufacturer supplied, structural repair manuals, where available
- release documentation, legal and insurance procedures for FRP
- product repairs.

### Language, literacy and numeracy requirements

This unit requires the ability to read and interpret typical manufacturer manuals, insurance documentation, technical specifications, product specifications, job sheets, procedures, material labels and safety information as provided to technicians.

Writing is required to the level of completing workplace forms.

Numeracy is required, eg to determine quantities required, interpret technical specifications and undertake costings.

## Evidence Guide

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the assessment guidelines for this training package.

### Overview of assessment

A holistic approach should be taken to the assessment.

Assessors must be satisfied that the person can consistently perform the unit as a whole, as defined by the Elements, Performance Criteria and skills and knowledge.

Where the assessee does not currently possess evidence of competency in *PMBPROD247B Hand lay up composites*, it may be co-assessed with this unit.

### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is demonstrated in the ability to assess the damage and apply the appropriate repair method for the job.

### Assessment method and context

Assessment will occur using industrial scenarios and composites and equipment and will be undertaken in a work-like environment.

Competence in this unit may be assessed:

- using appropriate, industrial composites
- in a situation allowing for the generation of evidence of the ability to recognise, anticipate and solve problems
- by using a suitable simulation and/or a range of case studies/scenarios
- through a combination of these techniques.

In all cases it is expected that practical assessment will be combined with targeted questioning to assess the underpinning knowledge and theoretical assessment will be combined with appropriate practical/simulation or similar assessment. Assessors need to be aware of any cultural issues that may affect responses to questions.

Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.

### **Specific resources for assessment**

This section should be read in conjunction with the Range Statement for this unit of competency. Resources required include suitable access to an operating plant or equipment that allows for appropriate and realistic simulation. A bank of case studies/scenarios and questions will also be required to the extent that they form part of the assessment method. Questioning may take place either in the workplace, or in an adjacent, quiet facility such as an office or lunchroom. No other special resources are required.

Access must be provided to appropriate learning and/or assessment support when required. Where applicable, physical resources should include equipment modified for people with disabilities.

## **Range Statement**

### **RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts. Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version must be used.

### **Context**

This competency applies to technicians who need to assess and make structural and cosmetic repairs to composite products.

### **Procedures**

All operations are performed in accordance with procedures.

Procedures include all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.

### **Tools and equipment**

This competency includes use of equipment and tools such as:

- hoists/lifting equipment not requiring any special permits or licenses
- plastic or other filling compounds
- basic hand tools required for repair of products
- relevant personal protective equipment.

### **Hazards**

Typical hazards include:

- spills
- dusts/vapours
- hazardous materials
- manual handling hazards.

### **Problems**

'Anticipate and solve problems' means resolve a wide range of routine and non-routine problems, using product and process knowledge to develop solutions to problems which do not have a known solution/a solution recorded in the procedures

Typical process and product problems may include:

- inappropriate materials being selected and used
- equipment failures
- effect of weather on curing time and surface finish deterioration.

Types of repair and associated repair techniques may include:

- marine
- automotive
- aerospace
- industrial
- architectural
- civil construction.

Standards of repair may include:

- AS/NZ standards
- industry codes of practice
- original manufacturers standards.
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### **Unit Sector(s)**

Not applicable.