



Australian Government

MEA367A Repair/modify aircraft composite structure using cold bonding

Release: 1

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Modification History

New unit.

Unit Descriptor

This unit of competency is part of the Aeroskills Structures Maintenance Certificate IV training pathway, and of the Mechanical Certificate IV (Aircraft Maintenance Stream) training pathways. It covers the competencies required for the repair or modification using cold bonding methods of fixed and rotary wing aircraft structural components that are made from composite materials. The unit is used in workplaces that operate under the airworthiness regulatory systems of the ADF and CASA.

Application of the Unit

This unit requires application of hand skills and the use of maintenance publications, applicable materials, tools and methods to repair aircraft composite material structure and components using cold cure repair techniques.

Applications include composite material structure and components from fixed and rotary wing aircraft either on-aircraft or in the workshop.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

ME A401C Inspect aircraft structures

OR

ME A339C Inspect, repair and maintain aircraft structures

OR

ME A363B Inspect, repair and maintain structures and related components of non-pressurised small aircraft

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

<p>Elements describe the essential outcomes of a unit of competency.</p>	<p>Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.</p>
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Elements and Performance Criteria

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|----------------------------|--|
| 1 Plan repair/modification | <p>1.1 Extent of damage is correctly assessed to assist in determining repair procedure</p> <p>1.2 Structure is supported and prepared in accordance with the applicable maintenance manual to ensure personnel safety and freedom from damage</p> <p>1.3 Appropriate modification or repair scheme is identified in accordance with structural repair manual and/or approved data</p> <p>1.4 Specialist advice is obtained in establishing an approved repair scheme where a standard repair scheme cannot be identified or damage criteria are out of limits</p> |
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- 1.5 All materials and equipment required are organised
- 2 Repair/modify components using cold cure
 - 2.1 Lay-up of materials is checked to confirm that components meet required specifications and bagging equipment is correctly installed and operated
 - 2.2 Curing cycle is regularly monitored to ensure required specifications are met
 - 2.3 Components are checked for blemishes or delamination in accordance with quality procedures
 - 2.4 Component assemblies requiring further or special treatment are made ready for the appropriate processes
 - 2.5 Required maintenance documentation is completed and processed in accordance with standard enterprise procedures
 - 2.6 Completed assemblies are tagged, sealed or packaged as required

Required Skills and Knowledge

Look for evidence that confirms knowledge of:

- aircraft construction principles and the causes of structural damage, including metal fatigue and corrosion
- structural fatigue preventative measures
- composite terminology and materials used in both hot and cold bonding
- composite component construction and repair methods including structural assembly fastener types, specifications and identification
- procedures for the design and approval of repair schemes and modifications
- composite material storage requirements
- sealants used in aircraft structure and their application and handling
- paints and finishes for composite structure
- OHS precautions associated with repair of aircraft structure
- MSDS
- PPE

Look for evidence that confirms skills in:

- applying relevant OHS procedures, including the use of MSDS and applicable items of PPE
- using approved maintenance documentation and aircraft publications relating to aircraft structure
- identifying composite component applications in aircraft structures
- identifying various aircraft composite materials/resins and their basic properties by interpretation of markings and visual means
- handling and storing of composite materials to industry standards
- assessing composite component damage using visual and tap test methods
- relative advantages and disadvantages of hot and cold cure
- performing composite component repairs using cold cure adhesives:
 - external patch repair
 - scarf repair
 - stepped repair
 - wet lay up repair
 - composite fastener hole repair
 - metal to metal and metal to composite bonding
- correctly interpreting and/or producing repair scheme/modification drawings/sketches
- using appropriate hand tools and machines to disassemble and assemble aircraft composite components, parts, sections and skin, including extraction/installation equipment, drilling/cutting equipment, and material fastener

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

<p>Overview of assessment</p>	<p>A person who demonstrates competency in this unit must be able to apply hand skills and use maintenance publications, applicable materials, tools and methods to repair aircraft composite material structure and components using cold cure adhesives while applying all relevant safety procedures.</p>
<p>Critical aspects for assessment and evidence required to demonstrate competency in this unit</p>	<p>The underlying skills inherent in this unit should be transferable across the range of different material applications applicable to cold curing. It is essential that specific aspects of the laying up and curing process for aircraft composite materials are checked to ensure quality and safety standards are achieved in this area. Correct checking and wearing of PPE is critical.</p> <p>Evidence of knowledge about repair techniques and the use of the standard repair manual in a range of different repair situations will be necessary to supplement evidence of ability to plan and undertake component repair. Ability to apply different materials and curing cycles, including composite to composite and composite to metal components, will be necessary to indicate competency in preparing and curing composite materials.</p> <p>A person cannot be assessed as competent until it can be demonstrated to the satisfaction of the workplace assessor that the relevant elements of the unit of competency are being achieved under routine supervision using materials from each of Groups 1 and 2 in the Range Statement. This shall be established via the records in the Log of Industrial Experience and Achievement or, where appropriate, an equivalent Industry Evidence Guide.</p>
<p>Context of and specific resources for assessment</p>	<p>Competency should be assessed in the workplace or simulated workplace. It is also expected that general purpose tools and test equipment found in most routine situations would be used where appropriate.</p>
<p>Method of assessment</p>	
<p>Guidance information for assessment</p>	

Range Statement

<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. 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) may also be included.</p>	
Note	Range statements listed below are numbered to facilitate specification of the assessment requirements included in the Evidence Guide
Applicable materials and methods	<p>Applicable materials and methods include:</p> <ol style="list-style-type: none"> 1. Cold cure or wet lay-up (using either fibreglass or carbon graphite) 2. Core materials (using one of aluminium, nomex, or foam)
Application	<p>Application of this unit may relate to:</p> <ul style="list-style-type: none"> • scheduled or unscheduled maintenance activities • individual or team-related activities
Procedures and requirements	Refer to industry standard procedures specified by manufacturers, regulatory authorities or the enterprise

Unit Sector(s)

Aviation maintenance

Custom Content Section

Not applicable.