



Australian Government

MEA367 Repair/modify aircraft composite structure using cold bonding

Release: 1

MEA367 Repair/modify aircraft composite structure using cold bonding

Modification History

Release 1 - New unit of competency

Application

This unit of competency 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 either on-aircraft or in the workshop during scheduled or unscheduled maintenance.

The unit is part of the Aeroskills Structures Maintenance Certificate IV training pathway, and of the Mechanical Certificate IV (Aircraft Maintenance Stream) training pathways.

The unit is used in workplaces that operate under the airworthiness regulatory systems of the Australian Defence Force (ADF) and the Civil Aviation Safety Authority (CASA).

Pre-requisite Unit

MEA401 Inspect aircraft structures

OR

MEA339 Inspect, repair and maintain aircraft structures

OR

MEA369 Inspect and maintain structures and related components of non-pressurised small aircraft

Competency Field

Aviation maintenance

Unit Sector

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. | Plan repair/modification | 1.1 | Extent of damage is correctly assessed to assist in determining repair procedure |
| | | 1.2 | Structure is supported and prepared in accordance with the applicable maintenance manual to ensure personnel safety and freedom from damage |
| | | 1.3 | Appropriate modification or repair scheme is identified in accordance with structural repair manual and/or approved data |
| | | 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 |
| | | 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 |

Foundation Skills

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.

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| Applicable materials and methods include: | <ul style="list-style-type: none">• Cold cure or wet lay-up (using either fibreglass or carbon graphite)• Core materials (using one of aluminium, nomex or foam) |
| Procedures and requirements include: | <ul style="list-style-type: none">• Industry standard procedures specified by manufacturers, regulatory authorities or the enterprise |

Unit Mapping Information

Release 1 – equivalent to MEA367A Repair/modify aircraft composite structure using cold bonding

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ce216c9c-04d5-4b3b-9bcf-4e81d0950371>

Assessment Requirements for MEA367 Repair/modify aircraft composite structure using cold bonding

Modification History

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Performance Evidence

Evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria under the specified conditions of assessment, and must include:

- applying relevant WHS 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 fasteners.

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.

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.

Knowledge Evidence

Evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include 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
- WHS precautions associated with repair of aircraft structure
- MSDS
- PPE.

Assessment Conditions

- 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.
- The following conditions of assessment represent the requirements of the Regulators (ADF and CASA) and maintenance stakeholders and must be rigorously observed.
- 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 and the performance criteria are being achieved under routine supervision using materials from each of:
 - cold cure or wet lay-up (using either fibreglass or carbon graphite)
 - core materials (using one of aluminium, nomex or foam)
- This shall be established via the records in the Log of Industrial Experience and Achievement or, where appropriate, an equivalent Industry Evidence Guide (for details refer to the Companion Volume Assessment Guidelines).
- Assessors must satisfy the requirements of the National Vocational Education and Training Regulator (Australian Skills Quality Authority, or its successors).
- Where the unit is to be used for CASA licensing purposes the Assessor must also meet the criteria specified in the CASR Part 147 Manual of Standards.

Links

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