Australian Government

Department of Education, Employment and Workplace Relations

MEM26015A Select and apply repair techniques

Release: 1

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Modification History

Release 1 New unit

Unit Descriptor

This unit of competency covers the skills and knowledge required to select and apply appropriate repair techniques.

Application of the Unit

This unit cover the diagnosis of an area needing repair and selecting the appropriate repair techniques and then making the repair. It includes any incidental design which may be relevant to the repair. It may not be appropriate in situations where repair techniques are highly specified and controlled.
This unit does not include the selection of a suitable resin system, refer to MEM26008A Select and use resin systems appropriate for product.
Repair technique selection may typically be undertaken by an individual in liaison with relevant stakeholders or it may undertaken by a team. Selection may be undertaken partially in an office environment or at the worksite.
Use of the repair technique and may be undertaken by an individual or a team. It may be undertaken in a workshop or factory environment or in the field.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	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.

Elements and Performance Criteria

1	Diagnose the item needing repair	1.1	Clean out damaged area
		1.2	Determine accessibility of area to be repaired
		1.3	Inspect damaged area
		1.4	Identify original materials of construction
		1.5	Determine cause of failure to the extent possible
2	Determine requirements of the repair	2.1	Check insurance status
		2.2	Confirm intended usage of composite
		2.3	Determine extent of repair required (e.g. structural or cosmetic)
		2.4	Undertake appropriate incidental design
		2.5	Agree on scope of repair
3	Select most appropriate repair technique for job	3.1	Check the availability of standard repair kits/components and techniques
		3.2	Short list suitable repair techniques and materials
		3.3	Evaluate suitability of possible repair techniques and materials
		3.4	Select appropriate repair process
		3.5	Select appropriate materials for repair
		3.6	Conduct process evaluation tests (PET), as appropriate

4	Undertake repair	4.1	Identify and control hazards
		4.2	Create necessary access to damaged area
		4.3	Prepare area requiring repair
		4.4	Prepare tools and equipment required for repair
		4.5	Prepare materials required for repair
		4.6	Undertake required repair
		4.7	Minimise waste
		4.8	Review repaired product compared to requirements
		4.9	Review material selection and fabrication process
		4.10	Identify areas for improvement and take appropriate actions
		4.11	Complete any required documentation/reporting

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- hand moulding
- hand lay-up skills
- applying resin infusion techniques
- applying taper sanding techniques
- applying syringe techniques
- using ultraviolet (UV) curable resin systems
- using other open and closed mould techniques

Required knowledge

Required knowledge includes:

- different repair techniques (e.g. patch repair, honeycomb repair and resin surface repair), uses and limitations
- dedicated repair materials
- blocking techniques
- hot bonders
- temporary moulds
- repairing internal or external surfaces
- repairing against a mould
- mixing and using gel coat and gel coat additives (e.g. filler, wax, catalyst and pigment)
- laminate defects, such as air entrapment, moisture entrapment, osmosis and delamination

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.

Critical aspects for assessment and evidence required to demonstrate	It is essential that the process and equipment be understood and that the importance of critical material

competency in this unit	properties, settings and readings is known. Competence must be demonstrated in the ability to recognise and analyse potential situations requiring action and then in implementing appropriate corrective action. Consistent performance should be demonstrated. In particular look to see that: • all reasonably available repair techniques and materials were considered • appropriate techniques and materials have been selected • the reasons for choosing the technique and materials are sound • the product meets its required performance. Competence must be demonstrated in the operation of all ancillary equipment to the level required for this unit of competency.
Context of and specific resources for assessment	Assessment will require diagnosing items requiring repair, selecting suitable methods, justifying methods chosen, and then repairing items using those methods. Assessment will occur over a range of situations which will include disruptions to normal, smooth operation.
Method of assessment	A single assessment event is not appropriate. On-the-job assessment should be included as part of the assessment process wherever possible. Where assessment occurs off the job, judgement must consider evidence of the candidate's performance in a productive work environment that includes a sufficient range of appropriate tasks and materials to cover the scope of application for this unit. Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways, including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.
Guidance information for	Assessment processes and techniques must be culturally

assessment	appropriate and appropriate to the language and literacy capacity of the candidate and the work being performed.

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. 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.

Procedures	Procedures may be written, verbal, computer-based or in some other form, and may include: • all work instructions • standard operating procedures • formulas/recipes • batch sheets • temporary instructions • any similar instructions provided for the smooth running of the plant • good operating practice as may be defined by industry codes of practice (e.g. Responsible Care) and government regulations
Appropriate repair process	Appropriate repair process refers to that combination of materials and fabrication techniques which has: • compliance with product requirements • greatest ease of execution • best financial return • greatest sustainability contribution
Sustainability	Sustainability incorporates the three aspects of: • survival of the ecology/physical environment – which means that an enterprise needs to manage the impact of the business to ensure the survival of the physical environment • economic viability – efficiency, cost and waste reduction and competitiveness to support survival of the business • social sustainability – an enterprise needs to manage the impact of the business to ensure its continued survival within the community and the survival of the community, including occupational health and safety

	(OHS)
Incidental design	Incidental design includes minor design which is incidental to conducting a repair and which: • improves on an original design weakness (e.g. such as might be shown up by the failure being repaired) • changes the original design to incorporate current techniques, materials or practices • better meets customer needs
Preparing materials	Preparing materials includes: • cutting to size and shape, as required • any pre-treatment required • calculating amount of resin and resin components required • mixing resin systems
Logs and reports	Logs and reports may include: • paper or electronic based • verbal reports • items found which require action
Appropriate action	Appropriate action includes: • determining problems needing action • determining possible fault causes • rectifying problem using appropriate solution within area of responsibility • following through items initiated until final resolution has occurred • reporting problems outside area of responsibility to designated person
Typical problems	Typical problems may include: • cost/benefit of different repair techniques and materials • customer wants more improvement than is technically feasible • customer wants more improvements than insurance will pay for
Health, safety and environment (HSE)	All operations to which this unit applies are subject to stringent HSE requirements, which may be imposed through state/territory or federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between Performance Criteria and HSE requirements, the HSE requirements take precedence

Unit Sector(s)

Composites

Custom Content Section

Not applicable.