



Australian Government

Department of Education, Employment and Workplace Relations

MEM26017A Prepare composite or other substrate surfaces

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 prepare, by abrasive or chemical means, a composite surface prior to bonding or coating. It includes the preparation of composite surfaces and other surfaces which are used in conjunction with composites (e.g. metal surfaces).

Application of the Unit

This unit includes preparation of composite surfaces either as a finish or in preparation for further work, such as coating or joining.

Surface preparation may be undertaken by an individual or a team. It may be undertaken in a workshop or factory environment or in the field and may be used to manufacture new products, prototypes, samples or to make repairs.

This unit complements MEM26016A Select and use joining techniques.

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

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| 1 | Determine characteristics required of substrate | 1.1 | Identify the chemistry of materials to be applied to the surface |
| | | 1.2 | Identify the surface chemistry of the substrate |
| | | 1.3 | Determine any chemical treatments needed to make the substrate compatible with the materials to be applied |
| | | 1.4 | Interpret material safety data sheets (MSDS) for materials which may be used |
| | | 1.5 | Identify the current physical state of the substrate |
| | | 1.6 | Identify possible required physical states of the substrate |
| 2 | Select most appropriate preparation technique for job | 2.1 | Compile specification for required substrate preparation |
| | | 2.2 | Compare possible substrate preparation methods with specification |
| | | 2.3 | Select most appropriate substrate preparation |
| | | 2.4 | Conduct and evaluate process evaluation test (PET), as appropriate |
| | | 2.5 | Review selection and substrate preparation |
| | | 2.6 | Make any required changes to substrate preparation |
| 3 | Prepare substrate | 3.1 | Identify and control hazards |
| | | 3.2 | Prepare substrate, as required |
| | | 3.3 | Minimise waste |

- 3.4 Review result compared to requirements
- 3.5 Review substrate preparation process
- 3.6 Identify areas for improvement and take appropriate actions
- 3.7 Clean up and perform any routine maintenance required on equipment
- 3.8 Complete any required documentation/reporting

Required Skills and Knowledge

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

Required skills

Required skills includes:

- controlling blasting equipment
- operating abrasive equipment by hand
- using chemical treatment equipment

Required knowledge

Required knowledge includes:

- methods of abrasive cleaning
- purposes for abrasive cleaning
- types of abrasives and their applications (e.g. sand, bead, shot, soda and grit)
- protection of non-blasted surfaces
- waste control, reuse and disposal
- occupational health and safety (OHS) issues
- environmental considerations
- surface preparation standards (e.g. surface measurement and surface finish)
- types of chemical cleaning (e.g. etching and solvents)
- aniline preparation of aluminium

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.

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| <p>Critical aspects for assessment and evidence required to demonstrate competency in this unit</p> | <p>It is essential that the process and equipment be understood and that the importance of critical material 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.</p> |
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| | <p>Consistent performance should be demonstrated. In particular look to see that:</p> <ul style="list-style-type: none"> • all reasonably suitable substrate preparation methods have been considered • an appropriate substrate preparation has been chosen • the reasons for choosing the substrate preparation are sound • the product meets its requirements. <p>Competence must be demonstrated in the operation of all ancillary equipment to the level required for this unit of competency.</p> |
| <p>Context of and specific resources for assessment</p> | <p>Assessment will require the selection of appropriate substrate preparation methods, justification of those choices, and then the application of those methods to prepare given substrates for applications.</p> <p>Assessment will occur over a range of situations which will include disruptions to normal, smooth operation.</p> |
| <p>Method of assessment</p> | <p>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.</p> <p>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.</p> <p>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.</p> |
| <p>Guidance information for assessment</p> | <p>Assessment processes and techniques must be culturally appropriate and appropriate to the language and literacy capacity of the candidate and the work being performed.</p> |

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.

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| Procedures | <p>Procedures may be written, verbal, computer-based or in some other form, and may include:</p> <ul style="list-style-type: none"> • 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 |
| Most appropriate substrate preparation | <p>Appropriate substrate preparation refers to that substrate preparation which has:</p> <ul style="list-style-type: none"> • compliance with product requirements • greatest ease of preparation • best financial return • greatest sustainability contribution |
| Sustainability | <p>Sustainability incorporates the three aspects of:</p> <ul style="list-style-type: none"> • 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 OHS |
| Logs and reports | <p>Logs and reports may include:</p> <ul style="list-style-type: none"> • paper or electronic based • verbal reports • items found which require action |

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| Appropriate action | <p>Appropriate action includes:</p> <ul style="list-style-type: none"> • 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 | <p>Typical problems may include:</p> <ul style="list-style-type: none"> • incompatible surface applications with substrates • non-uniform substrate preparation • the use of hazardous materials |
| Health, safety and environment (HSE) | <p>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</p> |

Unit Sector(s)

Composites

Custom Content Section

Not applicable.