



Australian Government

MEM26014 Adjust resin chemicals for current conditions

Release: 1

MEM26014 Adjust resin chemicals for current conditions

Modification History

Release 1. Supersedes and is equivalent to MEM26014A Adjust resin chemicals for current conditions

Application

This unit of competency defines the skills and knowledge required to apply knowledge of resin chemistry, particularly catalysis and resin curing, to make adjustments to the chemistry to suit current requirements caused by weather, job specifications or other factors and requires knowing the limits of these adjustments and having discussions with suppliers/manufacturers regarding resin chemistry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Composites

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Select and use appropriate personal protective equipment (PPE) in accordance with SOPs

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

- | | | | |
|---|--|------|---|
| | | 1.4 | Identify variables for the chemistry of resin types |
| | | 1.5 | Identify impacts of environmental changes on resin chemistry |
| | | 1.6 | Observe current environmental conditions |
| | | 1.7 | Predict impact of current conditions on resin chemistry |
| | | 1.8 | Discuss resin chemistry and adjustment limitations with suppliers |
| 2 | Identify adjustments which may be made to meet current conditions | 2.1 | Identify limits of resin chemistry adjustment |
| | | 2.2 | Determine impact on resin chemistry of changing resin composition |
| | | 2.3 | Select resin composition changes to counteract impact of current conditions |
| | | 2.4 | Compare selected composition changes with adjustments allowed by manufacturer of resin system |
| | | 2.5 | Select most appropriate resin composition changes |
| | | 2.6 | Identify alternative process changes to adjust for conditions |
| | | 2.7 | Fabricate a sample using the selected adjustment |
| | | 2.8 | Conduct/organise for relevant tests |
| | | 2.9 | Evaluate test results against product requirements |
| | | 2.10 | Review resin composition changes and take appropriate action |
| 3 | Fabricate product using adjusted composition/ conditions | 3.1 | Identify and control hazards |
| | | 3.2 | Make any appropriate adjustments to the resin system recipe |
| | | 3.3 | Prepare materials, tools and equipment and minimise |

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

waste

- 3.4 Review product compared to requirements
- 3.5 Review chemistry modification process
- 3.6 Identify areas for improvement and take appropriate actions
- 3.7 Complete any required documentation/reporting according to SOPs

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

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.

Resin chemistry includes the following:

- process of curing/cross linking of resins
- rate of cure and change of properties over cure time
- changes in viscosity and other flow properties during progress of cure
- final properties of resin post-cure

Environmental changes include one (1) or more of the following:

- temperature
- humidity
- air flow/wind
- solar/ultraviolet (UV) insolation

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.

Resin composition includes the following:

- resin/catalyst ratio
- resin/promoter ratio
- resin/catalyst/promoter ratios
- changing temperature of resin components (e.g. using chilled catalyst or resin)
- ratios of other resin system components

Most appropriate resin composition changes include one (1) or more of the following:

- comply with product requirements
- adjust for the current conditions
- have greatest ease of use in manufacture
- have best financial return
- have greatest sustainability contribution

Alternative process changes include one (1) or more of the following:

- controlling the environmental conditions
- moving the timing of the job to when conditions are more favourable (e.g. at night)
- moving the location of the job to where conditions are more favourable (e.g. in plant, different site and in shade)

Conditions that can be adjusted to improve outcomes include the following:

- unusually hot/cold workplace/weather
- extreme humidity
- very tight/unusual specification of properties required of product
- high/low air flow/wind

Sustainability includes the following:

- survival of the ecology/physical environment
- economic viability
- social sustainability

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM26014A Adjust resin chemicals for current conditions

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM26014 Adjust resin chemicals for current conditions

Modification History

Release 1. Supersedes and is equivalent to MEM26014A Adjust resin chemicals for current conditions

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications, formulas/recipes and batch sheets for adjusting resin chemicals for current conditions
- identifying variables of resin chemistry
- interpreting environmental changes that have an impact on resin chemistry
- discussing resin chemistry and adjustment limitations with suppliers
- identifying limits of resin chemistry adjustment
- selecting resin composition changes to suit conditions
- selecting the most appropriate resin composition changes that are sound and complying with product requirements
- fabricating a sample and conducting/organising relevant test and evaluating the test results and making any required changes
- fabricating the final product using adjusted composition/conditions and minimising waste in accordance with specifications
- identifying areas for improvement and taking appropriate action
- completing all documentation and reports, including items requiring further action, in accordance with SOPs.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- summer/winter catalyst
- resin chemistry
- resin chemistry adjustment limits
- resin composition
- hazards and the hierarchy of hazard control measures
- current state/territory work health and safety (WHS) legislation, standards and codes of practice relevant to using resin chemicals

- curing/cross linking chemistry
- basic chemistry of resin manufacture
- effects of temperature (workplace and materials), humidity, air flow (wind) and concentration
- effect of adjustments in the workplace (and why)
- adjustments available from supplier
- report requirements and procedures.

Assessment Conditions

- Assessors must:
 - have vocational competency in adjusting resin chemicals for current conditions at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015 or its replacement* and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>