



Australian Government

MEM08019 Electroplate protective finishes

Release: 1

MEM08019 Electroplate protective finishes

Modification History

Release 1. Supersedes and is equivalent to MEM08019B Electroplate protective finishes

Application

This unit of competency defines the skills and knowledge required to apply protective finishes using electroplating to household fittings, hardware, artefacts and accessories made from a range of ferrous and non-ferrous materials.

It includes pre-treatment, use of plating techniques, solutions and compositions for protective finishes, recognition and assessment of impurities and imperfections and associated corrective actions.

Processing may be manual, semi or fully automatic still or barrel plating environments and may include volume production and 'one-off' components.

Where pre-treatment operations only are required unit MEM08002 Pre-treat work for subsequent surface coating should be selected.

Where straightforward operation/monitoring of electroplating processes are required unit MEM08003 Perform electroplating operations should be selected.

Where surface preparation operations are required unit MEM08011 Prepare surfaces using solvents and/or mechanical means and unit MEM08012 Prepare surfaces by abrasive blasting (basic), should also be selected as appropriate.

Where the interpretation of technical drawings is required unit MEM09002 Interpret technical drawing should also be selected.

Where the selection and use of engineering measurement is required unit MEM12023 Perform engineering measurements should also be selected.

Where basic inspection of completed or partly completed products produced by others is required unit MEM15004 Perform inspection should also be selected.

Where the selection and use of power tools/hand held operations is required unit MEM18002 Use power tools/hand held operations should also be selected.

Where construction of anodes, shields/robbars is required appropriate fabrication units should also be selected.

Where dogging/lifting is required appropriate materials handling units to suit regulatory requirements should also be selected.

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

Band: A

Unit Weight: 6

Pre-requisite Unit

MEM07001	Perform operational maintenance of machines/equipment
MEM08001	Perform wire, jig and barrel load/unload work
MEM08003	Perform electroplating operations
MEM11011	Undertake manual handling
MEM13003	Work safely with industrial chemicals and materials
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information
MEM18001	Use hand tools

Competency Field

Surface finishing

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	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, job sheets or work instructions
2	Select treatments and processes/ equipment for producing protective finishes	2.1	Select treatment processes appropriate to the work requirements
		2.2	Select process parameters to achieve required finish
		2.3	Select appropriate equipment to achieve specified finish, as required

Elements describe the essential outcomes.

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

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|---|---|-----|---|
| 3 | Monitor and control protective finish processes and operating conditions | 3.1 | Set operating/process parameters necessary to produce required protective finish/specifications |
| | | 3.2 | Monitor and confirm surface condition of finished components and identify abnormalities |
| | | 3.3 | Take corrective actions to rectify non-conforming conditions |
| | | 3.4 | Carry out pre-treatment processes, where applicable |
| | | | |
| 4 | Maintain solutions for protective finishes | 4.1 | Check solution compositions and confirm to specification/operating range |
| | | 4.2 | Identify adjustment requirements/additions |
| | | 4.3 | Make additions to adjust solution composition to correct operating range |
| | | 4.4 | Carry out purification procedures, as necessary |
| | | 4.5 | Maintain anodes to ensure correct operation |
| | | | |
| 5 | Maintain equipment for protective finishes | 5.1 | Check performance of ancillary equipment and take remedial action, as necessary |
| | | 5.2 | Maintain electrical contacts, anode condition and process transfer equipment |

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, accessibility of the item, and local industry and regional contexts) are included.

Treatment processes include one (1) or more of the following:

- zinc
- zinc alloys
- tin

Process parameters include one (1) or more of the following:

- dwell time
- current density
- current temperature

Equipment includes one (1) or more of the following:

- wire racks
- handling equipment
- barrels
- jigs
- shields
- robbers

Operating process parameters include one (1) or more of the following:

- calculation and setting of treatment times and currents
- bath pH
- temperatures and densities
- solution levels and compositions
- purification procedures

Maintain solutions includes the following:

- typical tests for pH and concentration and calculation of adjustments to relevant solutions

Adjustment includes one (1) or more of the following:

- strength of solutions
- temperature range

Anodes include the following:

- soluble and insoluble auxiliary anodes

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM08019B Electroplate protective finishes

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 MEM08019 Electroplate protective finishes

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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 (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- determining the correct electroplating treatment, method and process for a range of ferrous and non-ferrous components to have a protective coating applied
- selecting, setting up and using electroplating equipment and masking up components to be plated, as necessary
- carrying out the electroplating process, monitoring solutions and other parameters, adjusting as necessary to meet the specified surface finish
- cleaning and maintaining electroplating equipment, reporting any faults.

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)
- effects of plating process on different materials
- basic principles of chemistry, electro chemistry and metallurgy related to the process, including:
 - importance of maintaining satisfactory electrical contact
 - methods for detecting unsatisfactory contact
 - effects of build-up on cathode contacts
 - properties of different base materials
 - different pre-treatment processes and their application
 - process parameters and their relation to each other
 - differences between chromate conversion coatings
- types of defects, their causes and related corrective actions
- mechanical/chemical pre-treatment processes
- purpose and application of simple tests including ph and concentration
- operating parameters of solutions, including temperature, agitation rate and similar parameters

- acceptable appearances for each stage of the electroplating operation and common abnormalities
- application of different equipment to the type of work processed and correct operation and cleaning requirements, including cleaning filters
- solutions, solution compositions and operating ranges for processes relative to protective finishes, including cleaning/pre-treatment, electroplating and post-treatment
- procedures for testing plate thickness
- safe working procedures for handling chemicals relative to protective finishes and for safely adding to baths
- procedures for measuring out materials, including use of scales and volumetric measurement devices
- level of impurities and permissible limits, effects of impurities and purification procedures for protective finish solutions
- different anode arrangements, including use of baskets and bags, and conforming anodes
- correct operation of anodes and appropriate remedial action
- effect of maintenance schedules on plant performance and performance requirements and basic maintenance checks for rectifier, bus bars, agitation, heating/cooling, extraction and tank linings.

Assessment Conditions

- Assessors must:
 - have vocational competency in electroplating protective finishes 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.

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