Title	**Apply chromium hard deposit to aircraft components**		
Level	**4**	**Credits**	**20**

Purpose	People credited with this unit standard are able to: prepare to repair aircraft components; carry out chromium deposition of hard deposit chromium; complete post-plate component inspection; and complete the hard deposit task. They are also able to operate, be in full control, and take responsibility for the deposition process.

Classification	Aeronautical Engineering > Aeronautical Electroplating

Available grade	Achieved

Guidance Information

1 All tasks must be carried out in accordance with enterprise procedures.

2 Definition
Enterprise procedures – procedures used by the organisation carrying out the work and applicable to the tasks being carried out. Examples are – standard operating procedures, safety procedures, equipment operating procedures, codes of practice, quality management practices and standards, procedures to comply with legislative and local body requirements.

3 Acts, regulations, and bylaws regarding the handling of toxic material and waste must be complied with during assessment against this standard.

4 Special handling of chromium-based products:
Hexavalent Chromium is a human carcinogen.
Chromic acid is a very strong oxidising agent which may explode if it comes in contact with a reducing agent such as sulphuric acid (H_2SO_4).
Chromic acid may ignite if it comes in contact with organic material.
In all cases personal protective equipment must be worn and safety precautions complied with when working with or around chromic acid based electroplating solutions. It is the sole responsibility of the user to ensure familiarity with the safe and proper use of hazardous materials.

5 Operating parameters may include treatment times and currents, pH, temperature, anode condition.

Outcomes and performance criteria

Outcome 1

Prepare to repair aircraft components.

Performance criteria

1.1 Task is determined by reviewing maintenance documentation and enterprise procedures.

1.2 Component identity is confirmed with documentation.

1.3 Work area is prepared and checked.

Range may include but is not limited to – materials, equipment, safety equipment, environmental conditions established.

1.4 Solution parameters are analysed to ensure process tolerances are met.

1.5 Pre-plate treatment is carried out.

Range may include but is not limited to – non-destructive testing, heat treatment, shot peen, hardness testing, stress relief of part having hardness of Rockwell C55 or higher for not less than five hours at 135°C, stress relief of part having hardness of Rockwell C40-C55 for not less than four hours at 191°C.

Outcome 2

Carry out chromium deposition of hard deposit chromium.

Performance criteria

2.1 Component is masked.

Range may include but is not limited to – tape, metallic foil, wax, plastic sheeting, fixtures.

2.2 Chromium coating is applied to component.

Range may include but is not limited to – plating applied to a surface free of water breaks, preliminary nickel plate no greater than 0.0002 inches, zincate treatment of aluminium alloys.

2.3 Equipment is monitored and adjusted.

Range may include but is not limited to – solution agitation, solution temperature, current density, pH, voltage range.

Outcome 3

Complete post-plate component inspection.

Performance criteria

3.1 Hydrogen embrittlement is treated.

3.2 Quality control is carried out.

Range may include but is not limited to – plate thickness, adhesion testing, post-plate NDT (Non Destructive Testing).

3.3 Coating thickness is tested.

Range may include but is not limited to – direct measurement, ultrasonic thickness gauge, coating thickness gauge; for ferrous and non-ferrous substrates.

Outcome 4

Complete the hard deposit task.

Performance criteria

4.1 Component is prepared for use, storage, or transit.

4.2 Resources are checked for serviceability and returned to service or storage.

Range may include but is not limited to – tools, equipment, safety equipment.

4.3 Leftover parts and materials are disposed of.

Range may include but is not limited to – serviceable, unserviceable, surplus, waste, scrap, hazardous.

4.4 Documentation is completed.

Range may include but is not limited to – labels, work cards, release notes, certification.

4.5 Work area is left in a state that enables the next task to begin.

Planned review date	31 December 2027

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	23 January 2009	31 December 2016
Review	2	24 October 2014	31 December 2021
Review	3	26 March 2020	N/A
Rollover and Revision	4	26 April 2024	N/A

Consent and Moderation Requirements (CMR) reference	0028

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Comments on this unit standard

Please contact Ringa Hora Services Workforce Development Council qualifications@ringahora.nz if you wish to suggest changes to the content of this unit standard.