

Title	Apply knowledge of aircraft materials to the certification of aeronautical maintenance		
Level	6	Credits	25

Purpose	<p>This knowledge-based unit standard is one of a series intended for people certifying the release to service of aircraft or aeronautical components following maintenance or repair.</p> <p>People credited with this unit standard are able to apply knowledge of: metallurgy principles, defect analysis, principles of corrosion, non-destructive testing, welding, soldering, brazing, metal bonding, and non-metallic aeronautical components and structure to the certification of aeronautical maintenance.</p>
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Classification	Aeronautical Engineering > Aeronautical Maintenance Certification
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Available grade	Achieved
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Guidance Information

- 1 The Civil Aviation Authority of New Zealand (CAA) Aircraft Maintenance Engineer Licence – Examination Subject 003, Aircraft Materials is the national standard, and is linked to international standards.
- 2 This unit standard is aligned with the Civil Aviation Authority of New Zealand Advisory Circular AC66-2.3, Examination Syllabus for Subject 3, Aircraft Materials and will be evidenced by meeting these requirements. This is available on the CAA website at <http://www.caa.govt.nz>.
- 3 *Applied knowledge* – will be in the context of aeronautical maintenance as defined by Civil Aviation Rules Part 1 as follows: ‘in relation to an aircraft or aircraft component, means all work and inspections performed to ensure the continued airworthiness of the aircraft or component, and all modifications’; will include making judgements regarding the scope, processes, and quality of maintenance for release to service certification; and will be in accordance with industry texts as defined by the candidate’s workplace or enterprise.
- 4 *Industry texts* include but are not limited to –
published aeronautical training manuals or text books;
enterprise exposition;
manufacturer publications;
Government and local body legislation;
airworthiness or regulatory authority requirements.

Outcomes and performance criteria

Outcome 1

Apply knowledge of metallurgy principles to the certification of aeronautical maintenance.

Performance criteria

- 1.1 Knowledge of aeronautical metals and alloys is applied.
Range steel, aluminium, magnesium, titanium, nickel, copper, tin and zinc.
- 1.2 Knowledge of heat treatment of aeronautical ferrous and non-ferrous metals is applied.
- 1.3 Knowledge of aeronautical ferrous and non-ferrous metal testing is applied.
- 1.4 Knowledge of aeronautical metal identification is applied.
Range identification classifications and codes; heat treatment codes; physical and chemical tests.

Outcome 2

Apply knowledge of defect analysis to the certification of aeronautical maintenance.

Performance criteria

- 2.1 Knowledge of defects in aeronautical components is applied.
- 2.2 Knowledge of typical defect prevention methods is applied.
- 2.3 Knowledge of failure debris analysis is applied.

Outcome 3

Apply knowledge of the principles of corrosion to the certification of aeronautical maintenance.

Performance criteria

- 3.1 Knowledge of corrosion and its causes is applied.
- 3.2 Knowledge of corrosion removal and prevention techniques is applied.
- 3.3 Knowledge of corrosion damage assessment is applied.
- 3.4 Knowledge of corrosion repair scheme design is applied.

Outcome 4

Apply knowledge of non-destructive testing to the certification of aeronautical maintenance.

Performance criteria

4.1 Knowledge of non-destructive testing techniques is applied.

Range visual, liquid penetrant, magnetic particle, eddy current, ultra-sonic, radiographic.

4.2 Knowledge of the requirements for non-destructive testing is applied.

Outcome 5

Apply knowledge of welding, soldering, brazing, and metal bonding to the certification of aeronautical maintenance.

Performance criteria

5.1 Knowledge of aeronautical component welding is applied.

5.2 Knowledge of aeronautical component soldering and brazing is applied.

5.3 Knowledge of aeronautical component metal bonding is applied.

5.4 Knowledge of non-destructive testing requirements for welded, soldered and brazed components is applied.

Outcome 6

Apply knowledge of non-metallic aeronautical components and structure to the certification of aeronautical maintenance.

Range bonded honeycomb structure, transparent plastics, composites.

Performance criteria

6.1 Knowledge of defect identification in non-metallic aeronautical components and structure is applied.

6.2 Knowledge of the selection and identification of non-metallic repair materials is applied.

6.3 Knowledge of the maintenance and repair of non-metallic aeronautical components and structure is applied.

6.4 Knowledge of the inspection and certification requirements for non-metallic aeronautical components and structure is applied.

Planned review date	31 December 2027
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	19 August 2004	31 December 2020
Review	2	9 December 2010	31 December 2020
Review	3	28 September 2017	31 December 2024
Review	4	27 October 2022	N/A

Consent and Moderation Requirements (CMR) reference	0028
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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.