Title	**Explain the causes and prevention of material deterioration in the marine environment**		
Level	**4**	**Credits**	**10**

Purpose	This unit standard is designed to raise awareness of material deterioration so that it can be identified at an early stage, and is applicable to all sectors of the marine industry. It is also applicable to recreational boat users. People credited with this unit standard are able to explain, in the context of the marine environment, the following: effects of environmental factors on materials used; metal deterioration and its prevention; timber deterioration and its prevention; and manufactured materials deterioration and its prevention.

Classification	Boating Industries > Boatbuilding

Available grade	Achieved

Guidance Information

1 Definition
Deterioration refers to material corrosion, corruption, degradation, and damage.

2 Range
Environmental factors may include – salt, water, UV light, wind and waves, oxidation, temperature.
Biological factors may include – fungi, worms, marine borers, insects, weed

Outcomes and performance criteria

Outcome 1

Explain effects of environmental factors on materials used in the marine environment.

Range materials include – metal, manufactured materials, timber.

Performance criteria

1.1 The effects of environmental factors on materials used in the marine environment are explained.

Outcome 2

Explain metal deterioration and its prevention in the marine environment.

Performance criteria

2.1 Metal deterioration is explained in terms of environmental factors.

Range may include – galvanic corrosion, anaerobic corrosion, metal fatigue.

2.2 Metal deterioration prevention methods are explained in relation to environmental factors.

Range evidence of three methods to prevent metal deterioration is required.

Outcome 3

Explain timber deterioration and its prevention in the marine environment.

Performance criteria

3.1 Deterioration of timber and its prevention are explained in relation to environmental or biological factors.

Range evidence of four factors is required;
evidence of five methods to prevent timber deterioration is required.

Outcome 4

Explain manufactured materials deterioration and its prevention in the marine environment.

Range manufactured materials may include – plastics, nylons, acetal, rubbers, polyester resins, high cure temperature composites.

Performance criteria

4.1 Deterioration of manufactured materials and its prevention are explained in relation to environmental factors.

Range evidence of three environmental factors is required;
evidence of two methods to prevent deterioration is required.

Planned review date	31 December 2030

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	27 October 2006	31 December 2018
Review	2	15 October 2015	31 December 2020
Review	3	1 November 2018	31 December 2027
Review	4	29 May 2025	N/A

Consent and Moderation Requirements (CMR) reference	0136

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

Comments on this unit standard

Please contact Hanga-Aro-Rau Engineering, Manufacturing and Logistics Workforce Development Council at qualifications@hangaarorau.nz if you wish to suggest changes to this unit standard.