AS/NZS 2312.3:2025

STANDARDS NEW ZEALAND
TE MANA TAUTĪKANGA O AOTEAROA

STANDARDS Australia

Australian/New Zealand Standard™

Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings

Part 3: Thermal metal spray coatings

AS/NZS 2312.3:2025

This Joint Australian/New Zealand Standard™ was prepared by Joint Technical Committee MT-014, Corrosion of Metals. It was approved on behalf of Standards Australia's Standards Development and Accreditation Committee on 17 March 2025 and by the New Zealand Standards Approval Board on 05 March 2025.

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The following are represented on Committee MT-014:

Australasian Corrosion Association, NZ Branch
Australian Chamber of Commerce and Industry
Australian Industry Group
Australian Paint Manufacturers Federation
Australian Pipelines and Gas Association
Australian Steel Institute
Austroads
Building Research Association of New Zealand (BRANZ)
Bureau of Steel Manufacturers of Australia
Galvanizers Association of Australia
Galvanizing Association of New Zealand
Materials Australia
New Zealand Heavy Engineering Research Association
Plumbing Products Industry Group
RMIT University
The Australasian Corrosion Association
Water Services Association of Australia

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Australian/New Zealand Standard™

Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings

Part 3: Thermal metal spray coatings

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How to read this Standard

This page explains the meaning of the language and structure of this Standard.

Refer to Standards Australia's Standardisation Guide 006 for more details about drafting rules.

Australian and Australian/New Zealand Standards are voluntary unless they are referenced in legislation or called up in contracts.

Requirements

To conform to a Standard, all requirements in the Standard need to be met.

A requirement is any statement in the Standard which uses the word "shall".

Recommendations, permissions and possibilities

The following words are commonly used in Standards, but statements using them do not have to be followed to conform to the Standard:

(a) "should" means that something is recommended.

(b) "may" means that something is permitted.

(c) "can" means that something is possible.

Structure of Standards

A Standard always has the following parts:

(i) The Preface states who developed the Standard, what the Standard is aiming to do, and how it relates to other documents.

(ii) The Scope states what the Standard is about, what it covers and what it does not cover.

(iii) The Normative references clause lists other documents that are referenced in the Standard as part of requirements.

(iv) The Terms and definitions clause defines important terms to help with understanding the Standard.

A Standard may also include other parts, such as the following:

(1) A normative appendix sets additional requirements that need to be conformed to.

(2) An informative appendix provides additional information or guidance. They usually do not contain requirements. If an informative appendix does contain requirements, the Standard will explain when those requirements apply.

(3) A Bibliography lists documents referenced in the Standard but not as part of requirements.

Many Standards include notes. Notes provide recommendations and/or guidance only. They never contain requirements.

Preface

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee MT-014, Corrosion of Metals, to supersede, in part, AS/NZS 2312:2002, *Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings*. It completely replaces references to thermal spray coatings in AS/NZS 2312:2002, Section 5, and elsewhere in that document.

The objective of this document is to provide guidelines for the proper specification of thermal spray coating systems, mainly for atmospheric exposure.

A list of all parts in the AS/NZS 2312 series can be found in the Standards Australia and Standards New Zealand online catalogues.

The term "informative" is used in this Standard to define the application of the appendix to which it applies. An "informative" appendix is only for information and guidance.

Contents

Preface ... **iii**

Introduction ... **v**

Section 1 Scope and general ... **1**
1.1 Scope ... 1
1.2 Normative references ... 1
1.3 Terms and definitions ... 1
1.4 Designation ... 2

Section 2 Classification of environments ... **3**
2.1 Atmospheric corrosivity and classifications ... 3

Section 3 Coating materials and corrosion behaviour ... **4**
3.1 Corrosion of zinc ... 4
3.2 Corrosion of aluminium ... 4
3.3 Corrosion of zinc-aluminium alloys ... 4
3.4 Factors affecting thermal spray selection ... 4

Section 4 Design and fabrication for thermal spray coatings ... **6**
4.1 General ... 6
4.2 Design ... 6
4.3 Fabrication ... 6

Section 5 Surface preparation for thermal spray ... **8**

Section 6 Durability of thermal spray coating systems ... **9**

Section 7 Application of thermal spray systems ... **10**
7.1 General ... 10
7.2 Sealing ... 10

Section 8 Thermal spray paint (duplex) finishes ... **11**
8.1 Systems for extended service life ... 11
8.2 Decorative finishes and colour coding ... 11
8.3 Durability considerations for topcoat selection ... 11
8.4 Architectural finishes ... 11
8.5 Sealers in duplex systems ... 12
8.6 Duplex systems for extended service life ... 12

Section 9 Repair of thermal sprayed coatings ... **14**

Section 10 Inspection and testing ... **15**
10.1 General ... 15
10.2 Equipment set-up ... 15
10.3 Inspection of the applied coating ... 15

Section 11 Specifications and documentation ... **16**
11.1 Specifications ... 16
11.2 Documentation ... 16

Appendix A (informative) **Atmospheric and special environments** ... **17**

Appendix B (informative) **Design for thermal spraying** ... **20**

Appendix C (informative) **Mandrel bend test** ... **22**

Bibliography ... **24**

Introduction

Corrosion control of structural steel using thermal sprayed coatings involves the spraying of an anodic metal in a molten or semi-molten form onto a clean, roughened steel surface. Roughness is usually achieved by abrasive blasting. The applied metallic layer adheres to the substrate by mechanical interlocking and protects it from corrosion by barrier or sacrificial galvanic action or both.

Arc spray and flame spray are the most common thermal spray processes for application of zinc, aluminium and their alloys in the form of wire or powder as the feedstock. The arc spray process is often preferred because it yields higher production rates and greater bond strengths. The flame spray process may be used for manual coating of small areas on site.

There is no restriction on the grade of structural steel or the dimension of the steel structure that can be thermal sprayed as long as it can be abrasively blasted to the necessary blast profile. The internal surfaces of some hollow sections and some complex steelwork with re-entrant surfaces or where "shadowing" occurs are typically not accessible by thermal spray coatings.

Thermal spraying is also known as metallizing and metal spraying.

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Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings

Part 3: Thermal metal spray coatings

Section 1 Scope and general

1.1 Scope

This document provides guidelines for the selection and specification of thermal spray coating systems for the protection of structural steel against atmospheric environments. It also provides limited advice on protection of steel that will be subjected to immersed and other non-atmospheric environments.

This document focuses on the thermal spraying of zinc and aluminium and their alloys to structural steel. The thermal sprayed article can be further protected, or provided with a decorative finish, by application of a paint coating.

This document does not cover the following:

(a) Thermal spray coatings applied for reasons other than corrosion protection, such as electromagnetic shielding or wear resistance.

(b) Thermal spraying of coatings such as stainless steels, nickel-based alloys, copper-based alloys or ceramics nor substrates other than steel and related alloys.

(c) Situations where abrasive blast cleaning for surface preparation cannot be carried out.

1.2 Normative references

There are no normative references in this document.

NOTE Documents for informative purposes are listed in the Bibliography.

1.3 Terms and definitions

For the purposes of this document, the following terms and definitions apply:

1.3.1
corrosivity
measure of the ability of the environment to cause corrosion

1.3.2
inspector
person responsible for ensuring conformity with the contract specification

1.3.3
life to first maintenance
LTFM
time interval that can elapse after initial coating, before coating deterioration reaches the point of necessary major maintenance to restore protection of the base metal

Note 1 to entry: Regular minor maintenance is often necessary in order to support life to first major maintenance.

1.3.4
may
indicates the existence of an option