

Australian Standard™

**Metallic coatings—Powder metal (and
composites) applied by mechanical
means at ambient temperature**



This Australian Standard was prepared by Committee MT-009, Metal Finishing. It was approved on behalf of the Council of Standards Australia on 10 March 2006. This Standard was published on 3 April 2006.

The following are represented on Committee MT-009:

Australian Institute of Metal Finishing
Australian Aluminium Council
Australian Industry Group
Australian Paint Manufacturers' Federation
Department of Defence
Galvanizers Association of Australia
Institute of Materials Engineering of Australasia
Powder Coaters Association
The Royal Australian Chemical Institute
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STANDARDS AUSTRALIA

RECONFIRMATION

OF

AS 5056—2006

Metallic coatings—Powder metal (and composites) applied by mechanical means at ambient temperature

RECONFIRMATION NOTICE

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NOTES

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PREFACE

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee MT-009, Metal Finishing. After consultation with stakeholders in both countries, Standard Australia and Standards New Zealand decided to develop this Standard as an Australian, rather than an Australian/New Zealand Standard.

The objective of the Standard is to specify the general technical delivery requirements for metal powder or composite coatings, mechanically applied to iron and steel components, such as self-drilling screws. Specifications for the preparation of samples and test pieces are also included.

During the preparation of this Standard, cognisance was taken of the following Standards:

AS

1789 Electroplated zinc (electrogalvanized) coatings on ferrous articles (batch process)

3566 Self-drilling screws for the building and construction industries

3566.2 Part 2: Corrosion resistance requirements

AS/NZS

2312 Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings

ASTM

B695 Standard specification for coating of zinc mechanically deposited on iron and steel

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

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STANDARDS AUSTRALIA

Australian Standard

Metallic coatings—Powder metal (and composites) applied by mechanical means at ambient temperature**1 SCOPE**

This Standard specifies the requirements for powder metal coatings or composites coatings mechanically deposited on iron or steel substrates.

The coating service condition number (see Table 1) correlates to the corrosion category environments, which are specified in AS/NZS 2312 and ISO 9223.

Mechanical deposition greatly reduces the risk of hydrogen embrittlement, (though this Standard does specify hydrogen embrittlement treatments in Appendix C) and is suitable for coating bores and recesses in many parts that cannot be conveniently electroplated.

NOTES:

- 1 For means of demonstrating compliance to this Standard, see Appendix B.
- 2 Guidance on the maintenance of mechanically coated articles is shown in Appendix D.
- 3 This Standard does not purport to address all of the safety concerns, if any, associated with mechanical plating. It is the responsibility of the user of this Standard to establish appropriate safety and health practices and determine the applicability of regulation limitations.

This Standard does not specify requirements for the surface condition of the basis iron or steel before mechanical coating with powdered metal and composites. However, Appendix A requires that the mechanical plater be informed of surface condition requirements. This may be achieved by reference to AS 1627.0, which provides specifications for surface conditions on metals. Other requirements may be illustrated by provision of acceptable type samples.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

1199	Sampling procedures for inspection by attributes
1199.0	Part 0: Introduction to the ISO 2859 attribute sampling system
1199.1	Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection
1580	Paints and related materials—Methods of test
1580.408.2	Part 408.2: Adhesion coatings—Knife test
1580.408.5	Part 408.5: Adhesion—Pull-off test
1627	Metal finishing—Preparation and pretreatment of surfaces
1627.0	Part 0: Method selection guide
2331	Methods of test for metallic and related coatings
2331.1.1	Method 1.1: Local thickness test—Micrographic examination of cross-sections
2331.1.3	Method 1.3: Local thickness test—Magnetic method
2331.1.4	Method 1.4: Local thickness test—Magnetic induction and eddy current methods
2331.1.5	Method 1.5: Local thickness test—Beta-backscatter method
2331.1.6	Method 1.6: Local thickness test—Taper section method

2331.2.1	Method 2.1: Tests for average coating mass per unit area or for thickness—Dissolution method—Strip and weigh and analytical
2483	Metal finishing—Recommended sampling plans for the inspection and testing of coatings (ISO 4519:1980, MOD)
AS/NZS 2312	Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings
AS/NZS ISO 9001	Quality management systems—Requirements
9004	Quality management systems—Guidelines for performance improvements
HB 18.28	Conformity assessment—Guidance on a third party certification system for products
ISO 9223	Corrosion of metals and alloys—Corrosivity of atmospheres—Classification
12686	Metallic and other inorganic coatings—Automated controlled shot-peening of metallic articles prior to nickel, autocatalytic nickel or chromium plating, or as a final finish

3 DEFINITIONS

For the purpose of this Standard, the definitions below apply.

3.1 Composite

Powdered metals to make a predetermined mixture.

3.2 Inspection lot

A collection of coated articles that are the same kind; have been produced to the same specification; have been coated by a single supplier at one time or approximately the same time, under essentially identical conditions; and that are submitted for acceptance or rejection as a group, see AS 2483.

3.3 Local thickness

The mean of a specified number of thickness measurements made within a reference area.

3.4 Mechanical metallic coating

A coating of metallic powder or composite applied at ambient temperature to iron or steel articles by mechanically impressing metal powder or composite onto the ferrous substrate, using the impacting effect of glass spheroids or other suitable medium in a rotating container, or tumbler.

NOTE: To avoid confusion, it is important that mechanically zinc plated coatings not be referred to, labelled or promoted as ‘galvanized’ without any descriptive qualifier, since the usage of the simple term ‘galvanized’ is conventionally restricted to the hot-dip method of zinc coating.

3.5 Minimum local thickness

The lowest value of the local thickness found on the significant surface of a single article.

3.6 Reference area

The area within which a specified number of single coating thickness measurements is required to be made.

3.7 Significant surface

The part of the article covered or to be covered by the coating and for which the coating is essential for serviceability or appearance, or both, and where the coating is required to meet all the specified requirements.

4 DESIGNATION

Coatings are designated according to the coating system and are designated by an appropriate service condition number, refer to Table 1.

Coating designation comprises:

- (a) Symbol for basis material.
- (b) Passivation type.
- (c) Chemical symbol(s) for coating metal or composites.
- (d) Thickness of coating, in micrometres.
- (e) Service condition number.

TABLE 1
SERVICE CONDITION NUMBERS

Corrosion category			Service condition number	Description of category
AS 2312	ISO 9223	Title		
A	C1	Very low	1	Inside heated or air conditioned building with clean atmosphere.
B	C2	Low	2	Dry, rural areas and regions remote from the coast or pollution.
C & F	C3	Medium	3	Coastal areas with low salinity.
D	C4	High	4	On the coast around sheltered bays it extends 50 metres inland. See Paragraph E2.5.
E	C5 I & M	Very High	5	Common offshore and on the beachfront in regions of rough seas and surface beaches.

NOTE: See Appendix E and refer to AS/NZS 2312 and ISO 9223.

An example of the designation code is as follows:

The letters 'Fe', indicates the basis material is a ferrous material Fe

Passivation type..... C

Coating chemical symbol for Zinc..... Zn

Thickness of zinc, in micrometres 30

Service condition numbers (see Table 1) 4

Designation: FeCZn304

NOTE: To specify a coating, use the chemical symbols for its constituents, e.g. ZnSn.