AS 1789—2003
Reconfirmed 2017

Australian Standard™

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

Standards Australia

This Australian Standard was prepared by Committee MT-009, Metal Finishing. It was approved on behalf of the Council of Standards Australia on 8 August 2003 and published on 11 September 2003.

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Australian Industry Group
Australian Institute of Metal Finishing
Australian Paint Manufacturers Association
Bureau of Steel Manufacturers of Australia
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STANDARDS AUSTRALIA

RECONFIRMATION

OF
AS 1789—2003
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RECONFIRMATION NOTICE

Technical Committee MT-009 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

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NOTES

Australian Standard™

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

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PREFACE

This Standard was prepared by the Australian members of the Joint Standards Australia/New Zealand Committee MT-009, Metal Finishing to supersede AS 1789—1984, *Electroplated coatings—Zinc on iron or steel* and AS 1791—1986, *Chromate conversion coatings—Zinc and cadmium.* After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than as an Australian/New Zealand Standard.

The objective of this Standard is to specify requirements for the electroplating of zinc (electrogalvanizing) and for the application of supplementary chromate conversion coatings, on iron and steel articles by batch processing, as opposed to continuous processing. For this purpose the technical content of AS 1791, *Chromate conversion coatings—Zinc and cadmium,* has been incorporated into this revision of AS 1789. Notwithstanding, passivation systems other than chromate are permissible.

Some manufacturers which zinc-electroplate dedicated articles on a large scale, using specialized, purpose-built facilities, prefer to describe their products as having been electrogalvanized. Since the latter term is technically acceptable and is favoured by a significant section of the marketplace, it has been incorporated into this revision of the Standard as a valid alternative term to electroplated zinc.

The content of this Standard relates to electrodeposition of zinc by the batch process. For the continuous process, reference should be made to AS 4750, *Electrogalvanized (zinc) coatings on ferrous hollow and open sections.* Hollow and open sections are, in general, semi-finished products, rather than commodities for use without significant further working or fabrication, which this Standard (i.e. AS 1789) covers.

This Standard specifies a range of electroplated zinc coatings for the protection of iron and steel against corrosion under various service conditions. It is a modification of ISO 2081:1986, *Metallic coatings—Electroplated coatings of zinc on iron or steel* and incorporates parts of ISO 4520, *Chromate conversion coatings on electroplated zinc and cadmium coatings.*

It is essential that purchasers state the coating classification code when placing their zinc coating orders with electroplaters. Likewise, manufacturers are required to state the coating classification code, when offering zinc plated (electrogalvanized) commodities for sale on the open market.

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.

Statements expressed in mandatory terms in footnotes to tables are deemed to be requirements of this Standard.

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FOREWORD

This Standard specifies requirements for a range of thicknesses of zinc coatings to be applied to ferrous articles as protection against corrosion, but does not specify the surface condition, nor other aspects, of the basis metal.

The thickness of the zinc coating to be applied to the ferrous articles should be chosen by the purchaser, or by the manufacturer if the articles are for sale as a general commodity, to provide sufficient corrosion protection for the expected or design life of the articles under the environmental conditions to which they are to be exposed.

Electroplated zinc coatings are normally chromate treated to retard the formation of corrosion products on surfaces exposed to corrosive atmospheres. The type of chromate coating to be applied should be appropriate for the expected exposure environment.

Since chromate conversion coatings give additional protection against corrosion, they may only be omitted at the specific request of the purchaser. Zinc-plated articles intended to be painted may require a specific treatment, such as phosphating, to provide good paint adhesion. Other passivation systems may be substituted by agreement between interested parties.

Zinc-plated items are subject to attack by certain organic materials that release reactive vapours, such as cardboard, wood and certain electrical insulating materials. Cognizance should be taken of this when items are packed, stored or transported.

STANDARDS AUSTRALIA

Australian Standard

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1 SCOPE

This Standard specifies requirements for electroplated zinc coatings (or electrogalvanized coatings, see Note 1) on iron and steel articles by the batch process, except for coating applied to—

(a) sheet, strip or wire in the unfabricated form (see Note 2);

(b) threaded fasteners (see Note 3); and

(c) close-coiled springs.

The Standard also specifies supplementary coatings, specifically chromate and other passivation systems, and makes provision for optional organic/inorganic coatings. It includes requirements for heat treatment, both before and after electroplating.

Appendix A sets out information to be supplied by the purchaser to the electroplater, or electrogalvanizer.

NOTES:

1 The term 'electrogalvanize', as well as its derivatives, is a technically acceptable alternative to 'zinc electroplate', provided that it is not abbreviated to 'galvanize', since the latter is the traditional contraction for 'hot-dip galvanize'.

2 Electrogalvanized coatings for strip are covered by AS 4750, while those for wire are incorporated in AS/NZS 4534.

3 The coating thickness that can be applied to threaded components may be limited by dimensional requirements, including class or fit. For guidance, attention is drawn to AS 1897, which specifies the maximum thickness that can be applied to standard threads

4 Specifications for electroplated zinc alloys are beyond the scope of this Standard.

5 Appendix B provides general information on factors that affect the corrosion of zinc-coated articles with further information being provided in AS/NZS 2312.

6 Recommendations on maintenance and repair procedures for zinc-coated articles are given in Appendix C

2 REFERENCE DOCUMENTS

The following documents are referred to in this Standard:

AS

1627	Metal finishing—Preparation and pretreatment of surfaces
1627.0	Method 0: Method selection guide
1897	Electroplated coatings on threaded components (metric coarse series)
2331	Methods of test for metallic and related coatings
2331.1.1	Method 1.1: Local thickness tests—Micrographic examination of cross-sections
2331.1.2	Method 1.2: Local thickness tests —Coulometric method
2331.1.3	Method 1.3: Local thickness tests —Magnetic method
2331.2.1	Method 2.1: Tests for average coating mass per unit area or for thickness—Dissolution methods—Strip and weigh and analytical
2331.3.1	Method 3.1: Corrosion and related property tests—Neutral salt spray (NSS) test