AS 1856—2004
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AS 1856—2004

Australian Standard™

Electroplated coatings—Silver

STANDARDS AUSTRALIA

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The following are represented on Committee MT-009:

Australian Aluminium Council
Australian Chamber of Commerce and Industry
Australian Industry Group
Australian Institute of Metal Finishing
Australian Paint Manufacturers Federation
Department of Defence
Galvanizers Association of Australia
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STANDARDS AUSTRALIA

RECONFIRMATION

OF
AS 1856—2004
Electroplated coatings—Silver

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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Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 20 March 2017.

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Australian Chamber of Commerce and Industry
Australian Industry Group
Australian Steel Institute
Bureau of Steel Manufacturers of Australia
Galvanizers Association of Australia
Galvanizing Association of New Zealand
New Zealand Metal Roofing Manufacturers

NOTES

Australian Standard™

Electroplated coatings—Silver

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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 at the request of industry to supersede AS 1856—1991, *Electroplated coatings—Silver*. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

The objective of this Standard is to specify the requirements for silver electroplated coatings.

The objective of this revision is to include new plating classifications, applications and hydrogen embrittlement treatments.

In the preparation of this Standard cognizance was taken of ISO 4521:1987, *Metallic coatings—Electrodeposited silver and silver alloy coatings for engineering purposes*, and ASTM B700-97:2002, *Electrodeposited coatings of silver for engineering use*.

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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FOREWORD

Silver electroplated coatings for engineering purposes are required primarily to fulfil non-decorative functional tasks, while those for decorative purposes are required when the appearance of the finished article is of prime importance. However, protection against corrosion may be a requirement in both cases.

Electrodeposited silver and silver alloy coatings for engineering applications are chosen because of their extremely good electrical conductivity. However, in many conditions of service, the presence of sulfide films on coatings may increase the electrical contact resistance of the silver electroplated mating surfaces, making them unsuitable for use in low voltage electronic circuits. Because silver sulfide films offer only limited electrical resistance, they may not be detrimental to other electrical contacts where higher voltages or higher contact pressures are used.

Packaging materials such as paper and cardboard should be free from significant contamination by sulfur compounds to prevent the tarnishing of silver and silver alloy electrodeposited coatings. Anti-tarnish treatments may be applied to prevent or delay tarnishing, but these treatments may increase contact resistance and may only prove useful in certain cases.

Attention is drawn to the following possible resulting effects of silver coatings:

(a) Ionic migration of silver in electronic circuits, particularly if the insulating material is damp.

(b) Galling (cold welding) when two similar silver surfaces (for example two ‘bright’ or two ‘dull’ coatings) are used in sliding contact.

STANDARDS AUSTRALIA

Australian Standard
Electroplated coatings—Silver

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies requirements for the electrodeposited coatings of silver used for engineering purposes that may be matt, bright, or semi-bright and are not less than 98 percent silver purity.

The requirements also specify thickness, quality and testing of electroplated coatings of silver on metallic and non-metallic materials for decorative, protective, electrical contact characteristics, high electrical and thermal conductivity, thermocompression bonding, wear resistance of load-bearing surfaces, spectral reflectivity, solderable surfaces and other general engineering applications.

NOTES:

1 The guidelines for the purchasing requirements are shown in Appendix A.

2 The means of demonstrating compliance with this Standard are shown in Appendix B.

3 Applications for the electrodeposition of silver coatings are shown in Appendix C.

1.2 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
1627	Metal finishing—Preparation and pretreatment of surfaces	
1627.1	Part 1:	Removal of oil, grease and related contamination
1627.2	Part 2:	Power tool cleaning
1627.4	Part 4:	Abrasive blast cleaning
1627.5	Part 5:	Pickling
1627.6	Part 6:	Chemical conversion treatment of metals
1817	Metallic materials—Vickers hardness test	
1817.1	Method 1:	Test methods (ISO 6507-1:1997, MOD)
2331	Methods of test for metallic and related coatings	
2331.1.1	Method 1.1:	Local thickness tests—Micrographic examination of cross-sections
2331.1.5	Method 1.5	Local thickness tests—Beta-backscatter method
2331.1.6	Method 1.6	Local thickness tests—Taper section 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
2331.3.4	Method 3.4	Corrosion and related property tests—Thioacetamide anti-tarnish and porosity tests