AS 1901—2004
Reconfirmed 2017

AS 1901—2004

Australian Standard™

Electroplated coatings—Gold and gold alloys

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 October 2004. This Standard was published on 29 October 2004.

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 Manufacturer's Federation
Bureau of Steel Manufacturers of Ausralia
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Galvanizers Association of Australia
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STANDARDS AUSTRALIA

RECONFIRMATION
OF
AS 1901—2004
Electroplated coatings—Gold and gold alloys

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.

The following are represented on Technical Committee MT-009:

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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—Gold and gold alloys

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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 1901—1993, *Electroplated coatings—Gold and gold alloys*. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian rather than an Australian/New Zealand Standard.

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

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

In the preparation of this Standard cognisance was taken of the following Standards:

ISO

2064 Metallic and other inorganic coatings—Definitions and conventions concerning the measurement of thickness

3868 Metallic and other non-organic coatings—Measurement of coating thicknesses—Fizeau multiple-beam interferometry method

4523 Metallic coatings—Electrodeposited gold and gold alloy coatings for engineering purposes

4524 Metallic coatings—Test methods for electrodeposited gold and gold alloy coatings

4524-3 Part 3: Electrographic tests for porosity

4524-5 Part 5: Adhesion tests

4524-6 Part 6: Determination of the presence of residual salts

ASTM

B488 Electrodeposited coating of gold for engineering uses

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 a range of electrodeposited gold and gold alloy coatings for electrical, electronic and other engineering applications, as well as for decorative purposes. In this Standard engineering purposes are defined as those for which the coating has to fulfil primary non-decorative functional tasks, while decorative purposes are defined as those for which the appearance of the finished article is of prime importance. However protection against corrosion may be a requirement in both cases.

No distinction is made between gold and gold alloy coatings in this Standard; however gold coatings are required to be at least 99% pure, whereas gold alloy coatings are specified to have a minimum gold content of 58.5%. In the case of multi-layered gold alloy coatings, at least 58.5% of gold in each layer is required.

Gold coatings complying with the requirements of this Standard are used for their corrosion and tarnish resistance, solderability, wear resistance, bondability, low and stable electrical contact resistance, and infra-red reflectivity.

Attention is drawn to the fact that coatings, produced from cyanide-free electrolytes based on complex sulfide ions, and coatings with hardnesses lower than 90 HKN 25, produced from cyanide electrolytes, show a pronounced tendency to cold weld or gall. The use of such deposits on both surfaces forming mating connections or sliding contacts should therefore be avoided. Gold coatings containing lower than 99.0% by mass of gold can cause electrical resistance problems in high-reliability, low-electrical-impedance and voltage-static contacts.

STANDARDS AUSTRALIA

Australian Standard
Electroplated coatings—Gold and gold alloys

1 SCOPE

This Standard specifies requirements for electrodeposited coatings including composition (single-layer or multi-layer) for gold and its alloys for electrical, electronic and other engineering applications, as well as for decorative purposes, on metallic and non-metallic materials.

In the case of double-layer and multi-layer coatings, the thickness requirements apply to the total gold or gold alloy coating, but the requirements for gold content apply to each layer.

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

NOTES:

1 Appendix B shows a means of demonstrating compliance to this Standard.

2 Appendix C lists a number of applications for electrodeposited gold coatings.

3 Appendix F discusses electrolytes and associated factors which affect electrodeposited gold and gold alloy coatings.

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
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
2331.1.5	Method 1.5: Local thickness tests—Beta-backscatter method
2331.1.6	Method 1.6: Local thickness tests—Taper section method
2331.4.5	Method 4.5: Physical tests—Electroplated plastics—Thermal cycling tests
2400	Packaging
2400.6	Part 6: Paper and paperboard
2400.21	Part 21: Packaging of dangerous goods
2483	Metal finishing—Recommended sampling plans for the inspection and testing of coatings (ISO 4519:1980, MOD)
4108	Metal finishing—Glossary of terms used in electroplating and related processes
4291	Mechanical properties of fasteners made of carbon steel and alloy steel
4291.1	Part 1: Bolts, screws and studs