

Australian Standard™

Electroplated coatings—Gold and gold alloys

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.

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Australian Chamber of Commerce and Industry
Australian Industry Group
Australian Institute of Metal Finishing
Australian Paint Manufacturer's Federation
Bureau of Steel Manufacturers of Australia
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STANDARDS AUSTRALIA

RECONFIRMATION

OF

AS 1901—2004

Electroplated coatings—Gold and gold alloys

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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 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

- | | |
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| B488 | Electrodeposited coating of gold for engineering uses |
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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 20 HVN 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

- | | |
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| 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 |
| 2331.1.5 | 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 |