AS 2429—2004
Reconfirmed 2017

Australian Standard™

Electroplated coatings of rhodium for general engineering applications

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 3 February 2004 and published on 22 March 2004.

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Australian Industry Group
Australian Institute of Metal Finishing
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RECONFIRMATION

OF
AS 2429—2004
Electroplated coatings of rhodium for general engineering applications

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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 coatings of rhodium for general engineering applications

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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 2429—1981, *Electroplated coatings of rhodium for general engineering applications*.

After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than Australian/New Zealand Standard.

The objective of this Standard is to specify the requirements for electroplating rhodium on metallic substrates.

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 ASTM B634-88:1999, *Electrodeposited coatings of rhodium 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

Electroplated coatings of rhodium are hard (approximately HV 800) and do not tarnish readily which makes such coatings important in the general engineering field but more particularly in the fields of electronics and electrical engineering.

High reflectivity of rhodium in the infrared and visible sections of the spectrum, in association with its resistance to tarnishing, make it suitable for use as a reflector coating.

Rhodium is chemically inert and very resistant to acids and other corrosive materials at ordinary temperatures but is subject to oxidation at temperatures above 400°C.

Since electroplated coatings of rhodium are usually thin, arcing or sparking may lead to the coating being penetrated, and hence rhodium-plated contacts should only be used in radio frequency and audio-frequency circuits where current and voltage are low. Arcing and sparking problems do not arise with sliding contacts, hence it is in this field that rhodium electrodeposits are particularly useful. Sliding contacts of rhodium working against each other tend to wear rapidly, and it is usual for one of the contact members to be an alternative noble metal (e.g. gold), or for contact member that is subject to the greater wear to have a thicker rhodium coating and for the contact pressure to be reduced to the minimum. Typical thickness of coatings for applications are given in this Standard.

Rhodium may be deposited directly onto silver, copper, brass, phosphor-bronze (copper-tin-phosphorous), nickel, nickel-brass, and beryllium-copper alloys. Phosphor-bronze and beryllium-copper alloys require special treatment to ensure adequate adhesion of rhodium coatings.

Owing to the acidic nature of rhodium plating baths and the position of rhodium in the electrochemical series, rhodium cannot be plated directly onto iron, steel, zinc, aluminum, lead or tin. Accordingly the use of an underplate or a strike on these metals is necessary.

STANDARDS AUSTRALIA

Australian Standard
Electroplated coatings of rhodium for general engineering applications

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies requirements for electroplated coatings of rhodium on metallic substrates for general engineering applications.

Purchasing guidelines on requirements to be specified and/or agreed at the time of enquiry or order are shown in Appendix A.

In addition, the Standard provides for the optional application of pretreatment of iron or steel to reduce the risk of hydrogen embrittlement as shown in Appendix D and post-coating treatment of iron or steel as shown in Appendix E.

NOTES:

1 The means of complying to the Standard are shown in Appendix B.

2 Guidance on the use of strikes and undercoats are shown in Appendix C.

3 Typical applications for electroplated rhodium are shown in Appendix F.

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

1391 Methods for tensile testing of metals (ISO 6892)

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 (ISO 8504-3)

1627.4 Part 4: Abrasive blast cleaning (ISO 8504-2)

1627.5 Part 5: Pickling

1627.6 Part 6: Chemical conversion treatment of metals

2331 Methods of tests 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 test—Beta-backscatter 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

2331.4.1 Physical tests—Qualitative adhesion tests

2483 Metal finishing—Recommended sampling plans for the inspection and testing of coatings (ISO 4519:1980, MOD)

4291 Mechanical properties of fasteners made of carbon steel and alloy steel

4291.1 Part 1: Bolts, screws and studs