

Australian Standard[®]

**Metal finishing — Glossary of
terms used in electroplating and
related processes**

[ISO title: Electroplating and related processes—Vocabulary]

This Australian Standard was prepared by Committee MT/9, Metal Finishing. It was approved on behalf of the Council of Standards Australia on 30 November 1992 and published on 15 March 1993.

The following interests are represented on Committee MT/9:

Aluminium Development Council
Australasian Institute of Metal Finishing
Australian and Overseas Telecommunications Corporation
Australian Chamber of Commerce and Industry
Department of Defence
Metal Trades Industry Association of Australia
Royal Australian Chemical Institute
University of Queensland

Review of Australian Standards. To keep abreast of progress in industry, Australian Standards are subject to periodic review and are kept up to date by the issue of amendments or new editions as necessary. It is important therefore that Standards users ensure that they are in possession of the latest edition, and any amendments thereto.

Full details of all Australian Standards and related publications will be found in the Standards Australia Catalogue of Publications; this information is supplemented each month by the magazine 'The Australian Standard', which subscribing members receive, and which gives details of new publications, new editions and amendments, and of withdrawn Standards.

Suggestions for improvements to Australian Standards, addressed to the head office of Standards Australia, are welcomed. Notification of any inaccuracy or ambiguity found in an Australian Standard should be made without delay in order that the matter may be investigated and appropriate action taken.

Australian Standard[®]

**Metal finishing — Glossary of
terms used in electroplating and
related processes**

<p>First published as AS K178—1969. Revised and redesignated AS 4108—1993.</p>

PREFACE

This Standard was prepared under the direction of the Multitechnics Standards Policy Board by the Standards Australia Committee on Metal Finishing to supersede AS K178—1969, *Glossary of terms used in electroplating*. It is identical with, and has been reproduced from, ISO 2080: 1981, *Electroplating and related processes — Vocabulary*.

Under arrangements made between Standards Australia and the international Standards bodies, ISO and IEC, as well as certain other Standards organizations, users of this Australian Standard are advised of the following:

- (a) Copyright is vested in Standards Australia.
- (b) The number of this Standard is not reproduced on each page; its identity is shown only on the cover and title pages.

© Copyright — STANDARDS AUSTRALIA

Users of Standards are reminded that copyright subsists in all Standards Australia publications and software. Except where the Copyright Act allows and except where provided for below no publications or software produced by Standards Australia may be reproduced, stored in a retrieval system in any form or transmitted by any means without prior permission in writing from Standards Australia. Permission may be conditional on an appropriate royalty payment. Requests for permission and information on commercial software royalties should be directed to the head office of Standards Australia.

Standards Australia will permit up to 10 percent of the technical content pages of a Standard to be copied for use exclusively in-house by purchasers of the Standard without payment of a royalty or advice to Standards Australia.

Standards Australia will also permit the inclusion of its copyright material in computer software programs for no royalty payment provided such programs are used exclusively in-house by the creators of the programs.

Care should be taken to ensure that material used is from the current edition of the Standard and that it is updated whenever the Standard is amended or revised. The number and date of the Standard should therefore be clearly identified.

The use of material in print form or in computer software programs to be used commercially, with or without payment, or in commercial contracts is subject to the payment of a royalty. This policy may be varied by Standards Australia at any time.

STANDARDS AUSTRALIA

Australian Standard**Metal finishing — Glossary of terms used in electroplating
and related processes**

SCOPE AND FIELD OF APPLICATION This Australian Standard establishes the vocabulary for electroplating and related processes. It includes terms widely used in the science and industry of electrodeposition and metal finishing.

It should be understood that the interpretations given are those corresponding to the practical usage in these fields and that they do not necessarily coincide with those used in other fields. In some extreme cases, attention is drawn to this fact by adding the words ‘..... *in electroplating*’.

Chemical, physical and electrical terms are not included in this vocabulary, even though they may be frequently used in electroplating, if their use in electroplating is identical with that in the original science and their meaning is believed to be generally known. Definitions of such expressions can be found in one of the well-known handbooks or dictionaries of chemistry or physics and in IEC Publication 50 (50), *International electrotechnical vocabulary; Electro-chemistry and electrometallurgy*, or in the publication of the International Union of Pure and Applied Chemistry (UPAC), Division of Physical Chemistry: *Manual of symbols and terminology for physico-chemical quantities and units*, Appendix 3, *Electrochemical nomenclature*.

Terms and definitions

100 activation: Elimination of a passive surface condition.

NOTE — Not to be confused with 231, *conditioning*.

101 addition agent; additive: A material added, usually in small quantities, to a solution to modify its characteristics or the properties of the deposit obtained from the solution.

102 adhesion: The strength of the bond between a coating and its substrate, expressed as the force per unit area required to separate them.

103 alkaline blackening; black finishing: Production of a black oxide or sulphide coating on steel or copper (copper alloys) by immersion in hot alkaline salt solutions.

105 anion: A negatively charged ion.

106 anode:

a) In electrolysis, the electrode at which negative ions are discharged, positive ions are formed or other oxidizing reactions occur.

b) The object which performs these functions.

107 anode corrosion: Dissolution of anode metal by the electrochemical action in the electrolytic cell. (The dissolution of the anode by chemical action of the electrolyte without current is generally not called corrosion, but dissolution.)

NOTE — The usage in French and German is inverse.

108 anode efficiency: Current efficiency of a specified anodic process.

109 anode film:

a) Solid film formed on the anode during electrolysis.

b) See 267, *diffusion layer*, which is the preferred term.

110 anode polarization: See 550, *polarization*.

111 anodic coating:

a) **anodic oxide coating:** A protective, decorative or functional coating formed by conversion of the surface of a metal in an

electrolytic oxidation process (see 112, *anodizing*). This coating is sometimes called anodic film, but should not be confused with 109, *anode film*.

b) **sacrificial coating:** A metallic coating less noble than the basis metal.

112 anodizing (USA: anodising); anodic oxidation: An electrolytic oxidation process in which the surface layer of a metal, such as aluminium, magnesium or zinc, is converted to a coating, usually an oxide, having protective, decorative or functional properties.

113 anolyte:

a) In a divided cell, the portion of electrolyte on the anode side of the diaphragm.

b) The portion of electrolyte in the vicinity of the anode. (*Uncommon usage*.)

114 autocatalytic plating: Deposition of a metallic coating by a controlled chemical reduction that is catalyzed by the metal or alloy being deposited.

NOTE — Autocatalytic plating is frequently referred to as *electroless plating* (see 293) though this usage is discouraged.

115 auxiliary anode: A supplementary anode employed during electrodeposition to achieve a desired thickness distribution of the deposit.

116 auxiliary cathode: See 653, *thief*.

130 baking: Heating to low temperatures before or after electroplating or autocatalytic plating process steps to reduce residual stresses or to remove gases causing embrittlement effects.

NOTE — The terms *baking* (in USA) and *stoving* (in UK) are also used in the paint industry, but the purpose of the treatment is different.

131 barrel electroplating: A barrel process (see 132) by which electrodeposits are applied to articles in bulk; in contrast to *vat plating* (USA: *still plating*), see 702.

132 barrel processing: Mechanical, chemical or electrolytic treatment of articles in bulk in a rotating container. Examples are barrel burnishing, barrel polishing, barrel cleaning, barrel electroplating.