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Australian Standard 1834—1979

TIN-LEAD AND OTHER TIN-BASED SOLDER ALLOYS

STANDARDS ASSOCIATION OF AUSTRALIA
Incorporated by Royal Charter

THE FOLLOWING SCIENTIFIC, INDUSTRIAL AND GOVERNMENTAL ORGANIZATIONS and departments were officially represented on the committee entrusted with the preparation of this standard:

Australian Atomic Energy Commission

Australian Electrical Manufacturers Association

Australian Lead Development Association

Australian Tin Information Centre

Confederation of Australian Industry

Electricity Supply Association of Australia

Federated Master Plumbers of Australia

Housing Industry Association of Australia

Institution of Engineers, Australia

Metal Trades Industry Association of Australia

Metropolitan Water, Sewerage and Drainage Board, N.S.W.

Royal Australian Institute of Architects

Society of Automotive Engineers, Australasia

Telecom Australia

This standard, prepared by Committee MT/5, Lead and Lead Alloys, was approved by the Metals Standards Board on behalf of the Council of the Standards Association of Australia on 15 September 1978, and was published on 1 June 1979.

To keep abreast of progress in industry, Australian standards are regularly reviewed. Suggestions for improvements to published standards, addressed to the head office of the Association, are welcomed.

This standard was issued in draft form for public review as DR 76105.

AUSTRALIAN STANDARD SPECIFICATION

TIN-LEAD AND OTHER TIN-BASED SOLDER ALLOYS

AS 1834—1979

First published (as AS H1 and H2)..... 1931
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PREFACE

This standard was prepared under the direction of the Association's Committee on Lead and Lead Alloys by its subcommittee on solder, as a revision of AS H1 and H2—1931, which it accordingly supersedes. It applies to tin-lead and other tin-based solder alloys in a cast or wrought form. Provision is made for rosin-cored solder wire, having one or more continuous cores of flux, either activated or non-activated.

The earlier standard covered soft solders (grades A, B, C, D, E, F, G, H, J) and cored solders (rosin filled), and in this revision the scope has been extended to cover all significant grades used in Australia. In addition, a new grade designation system has been introduced to facilitate reference. Methods of sampling and chemical analysis have been removed from the standard and requirements in this regard are under consideration by the Association's Chemical Standards Board.

In the preparation of this standard, the committee took cognizance of the following overseas standards and draft standards:

Doc. 73/42353DC	Draft British Standard Specification for Soft Solders (revision of BS 219)
Doc. 75/42310DC	Draft British Standard Specification for Fluxes for Soft Soldering
BS 441	Rosin-cored Solder Wire, 'Activated' and 'Non-activated' (Non-corrosive)
ASTM B32-70	Solder Metal
ASTM B284-71	Rosin Flux-core Solder

For ease of reference the text of the standard has been arranged in two sections, and appendices give information on test methods, properties and typical uses of solder alloys. In order to assist purchasers wishing to specify solder to this standard, an appendix which sets out the information to be agreed upon at the time of enquiry and/or order has been included; this appendix also draws attention to other factors which should be considered in the production of a satisfactorily soldered joint.

This standard requires reference to the following standards:

AS 1153	Preferred Metric Sizes of Ferrous and Non-ferrous Round Wire for General Engineering Purposes
AS 1566	Copper and Copper Alloy Plate, Rolled Bar, Sheet, Strip and Foil for General Engineering Purposes
AS 1671	Methods for the Analysis of Lead Alloys
AS	Methods for the Analysis of Tin in Solder (in course of preparation)
AS K121	Ethanol
BS 805/1	Turpentine
BS 3338	Methods for the Sampling and Analysis of Tin and Tin Alloys
ASTM E46	Chemical Analysis of Lead and Tin-base Solder
ASTM E51	Method for Spectrographic Analysis of Tin Alloys by the Powder Technique
ASTM E87	Photometric Methods for Chemical Analysis of Lead, Tin, Antimony and Their Alloys

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard Specification for TIN-LEAD AND OTHER TIN-BASED SOLDER ALLOYS

SECTION 1. SCOPE AND GENERAL REQUIREMENTS

1.1 SCOPE. This specification sets out requirements for tin-lead and other tin-based solder alloys in a cast, wrought, paste or powder form. Provision is made for rosin-cored solder wire having one or more continuous cores of flux, either activated or non-activated.

NOTES:

1. Aspects of solder powder and solder paste other than chemical composition and purity of the solder alloy are not covered in this standard, and enquiries in this regard should be directed to the manufacturer.
2. For the purpose of this standard, 'wrought' includes ribbon, solid wire, solid rod and preforms.
3. Guidelines to purchasers on requirements that must be specified by the purchaser and those that must or may be agreed upon at the time of enquiry and/or order are given in Appendix A.
4. Typical properties and uses of these solders are given in Appendix B.

1.2 DESIGNATION. The grade designation, as given in Table 1.1, shall include the following (see also Paragraph A4 of Appendix A):

(a) The number of this Australian standard, i.e. AS 1834.

(b) The nominal tin content, followed by the chemical symbol for tin, i.e. Sn.

(c) The nominal content of any tertiary addition followed by the chemical symbol for that element.

NOTE: Lead content is not included explicitly in the designation, and is obtained by difference, as appropriate.

Examples of designation.

AS 1834/70Sn, AS 1834/30[illegible]8[illegible], AS 1834/95Sn/5Sb.

1.3 CHEMICAL COMPOSITION. The tin-lead and tin-based solder alloys shall conform to the chemical composition limits given in Table 1.1, as appropriate to the grade.

NOTES:

1. Additional antimonial grades based on partial replacement of tin by antimony are available, and enquiries regarding these grades should be directed to the supplier.
2. Requirements in respect of sampling are subject to agreement at the time of enquiry and/or order (see Paragraphs A3.2(a) and A7.2 of Appendix A).
3. The method of chemical analysis to be used is subject to agreement at the time of enquiry and/or order (see Paragraphs A3.2 (b) and A7.[illegible] of Appendix A).

1.4 MARKING. Each container, package, spool or manufactured solder alloy shall be clearly marked with the following information:

(i) Solder alloy designation.

(ii) Name of manufacturer.

(iii) Contents of package, nominal size (if applicable), and mass.

(iv) Manufacturer's batch number.

NOTE: Warning is given that the presence of the Australian standard number, AS 1834, on solder alloys, the packaging or literature related thereto could be taken as a claim by the manufacturer that the solder alloys so marked comply in all respects with this standard.