

Specification for

Electroplated coatings of tin/lead alloys

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- British Jewellers' Association
- British Jewellery and Giftware Federation Ltd.
- British Metal Finishing Suppliers' Association*
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- Chemical Industries Association
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- Engineering Equipment Users' Association
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- Society of Motor Manufacturers and Traders Limited
- Vitreous Enamel Development Council
- Zinc Development Association

The organizations marked with an asterisk in the above list, together with the following, were directly represented on the Technical Committee entrusted with the preparation of this British Standard:

- Electronic Components Industry Federation
- Electronic Engineering Association
- International Tin Research Institute
- Telecommunication Engineering and Manufacturing Association (TEMA)
- Post Office
- Individual expert
- Individual manufacturer

This British Standard, having been prepared under the direction of the Surface Coatings (other than Paints) Standards Committee, was published under the authority of the Board of BSI and comes into effect on 26 February 1982

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The following BSI references relate to the work on this standard:
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Foreword

This British Standard has been prepared under the direction of the Surface Coatings (other than Paints) Standards Committee in order to extend the range of standardized electroplated coatings of tin and its alloys.

Electroplated coatings of tin/lead alloys are already being used extensively in the telecommunications industry and standardization at this time is accordingly desirable in order to avoid variety proliferation. The use of such finishes has resulted in high integrity and high reliability of soldered electrical circuits. Tin/lead alloy coatings are also known to be resistant to whisker growth.

It is essential that the purchaser should state the coating classification code together with the other information listed in 4.1 (and, if appropriate, 4.2). Merely to ask for the electroplating to be carried out in accordance with BS 6137 without this information is insufficient.

NOTE Although this standard applies specifically to the composition range 55 % to 70 % by mass of tin, it may be used as a basis for standardizing electroplated coatings of tin/lead alloys of other compositions, but it should be borne in mind that the properties of such coatings may not necessarily be those of the alloy range covered by this standard.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 10, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This British Standard specifies requirements for electroplated coatings of tin/lead alloys with a nominal composition of 60 % of tin and actual tin content in the range 55 % to 70 % by mass of tin.

These coatings are intended for use on ferrous and non-ferrous basis metals and also on printed circuit boards.

A classification scheme is included by which the nature of the basis metal and the coating composition can be defined and which also contains provision for flow-melting and bright deposited coatings.

This standard specifies no requirements for the condition, finish or surface roughness of the basis material before electroplating (see **A.3.1**).

NOTE Attention is drawn to BS 9760, which specifies capability approval procedure and rules for printed circuits of assessed quality.

This standard does not apply to:

- a) threaded components (see BS 3382-5);
- b) tin/lead coated copper wire (see BS 4393);
- c) bearing overlays;
- d)terne plate;
- e) electroplating of steels with tensile strengths greater than 1 000 MPa (see note to clause 7).

2 References

The titles of the standards publications referred to in this standard are listed on the inside back cover.

3 Definitions

For the purposes of this standard, the following definitions, together with those given for other terms in BS 5411-1, apply.

3.1

significant surface

the part of the article covered or to be covered by the coating and for which the coating is essential for serviceability and/or appearance

3.2

flow-melting

a process by which a coating is melted in order to impart desirable properties such as brightness or improved solderability

NOTE 1 Less-preferred terms applicable to this definition are “fusing”, “flow-brightening”, and “reflowing”.

NOTE 2 See **A.6**.

4 Information to be supplied by the purchaser to the electroplater

4.1 Compulsory information. The following information shall be supplied by the purchaser to the electroplater:

- a) the number of this standard, i.e. BS 6137;
- b) the nature of the basis material;
- c) the classification code of the coating (see clause 5) and the tolerance on the required tin content, in %, together with any special requirements for the composition of the alloy;
- d) the significant surface of the article to be electroplated, indicated, for example, by drawings or by the provision of suitably marked samples;
- e) which method of adhesion testing from Appendix E is to be used (see 9.4);
- f) the sampling procedure to be adopted (see clause 6);
- g) the positions where unavoidable contact marks and other defects are acceptable (see 9.1).

4.2 Additional information. The following additional information may be required, and if so, shall be specified by the purchaser, if necessary in consultation with the electroplater:

- a) whether any heat treatment, with the exception of that specified in clause 7 for certain steels, is required before electroplating;
- b) whether, for coatings whose minimum thickness is 10 µm or greater, the porosity test of Appendix D is to be applied (see 9.5), and if so:
 - 1) the type, number, shape and dimensions of the test pieces to be used and whether cut edges of test specimens are to be protected;
 - 2) the total exposed surface area of the specimen or specimens to be tested at one time, and the angle of inclination of flat test specimens, if other than that specified in D.4;
 - 3) the criteria for the evaluation of the result of the test, including any cleaning procedure involved;
- c) whether solderability testing is required, and if so, the test methods and conditions to be applied (see 9.6);