

INTERNATIONAL STANDARD



AMENDMENT 1

**Environmental testing –
Part 2-58: Tests – Test Td: Test methods for solderability, resistance to
dissolution of metallization and to soldering heat of surface mounting devices
(SMD)**

[IEC 60068-2-58:2015/AMD1:2017](https://standards.iteh.ai/catalog/standards/sist/54a234cf-9ac6-4e22-aebf-a6ed3ad7b9e5/iec-60068-2-58-2015-amd1-2017)

<https://standards.iteh.ai/catalog/standards/sist/54a234cf-9ac6-4e22-aebf-a6ed3ad7b9e5/iec-60068-2-58-2015-amd1-2017>



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2017 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

IEC Catalogue - webstore.iec.ch/catalogue

The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

IEC publications search - www.iec.ch/searchpub

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing 20 000 terms and definitions in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary

65 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch

IEC'S STANDARD PREVIEW
(standards.iec.ch)

IEC 60068-2-58:2015 AM(1) 2017
<https://standards.iec.ch/catalog/standards/sls/41444/iec-60068-2-58-2015-am1-2017>
a6ed3ad7b9e5/iec-60068-2-58-2015-am1-2017

INTERNATIONAL STANDARD



AMENDMENT 1

Environmental testing –
**Part 2-58: Tests – Test Td: Test methods for solderability, resistance to
dissolution of metallization and to soldering heat of surface mounting devices
(SMD)**

[IEC 60068-2-58:2015/AMD1:2017](https://standards.iteh.ai/catalog/standards/sist/54a234cf-9ac6-4e22-aebf-a6ed3ad7b9e5/iec-60068-2-58-2015-amd1-2017)

<https://standards.iteh.ai/catalog/standards/sist/54a234cf-9ac6-4e22-aebf-a6ed3ad7b9e5/iec-60068-2-58-2015-amd1-2017>

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 19.040; 31.190

ISBN 978-2-8322-4575-0

Warning! Make sure that you obtained this publication from an authorized distributor.

FOREWORD

This amendment has been prepared by IEC technical committee 91: Electronics assembly technology.

The text of this amendment is based on the following documents:

FDIS	Report on voting
91/1445/FDIS	91/1451/RVD

Full information on the voting for the approval of this amendment can be found in the report on voting indicated in the above table.

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

iTeh STANDARD PREVIEW
(standards.itih.ai)

A bilingual version of this publication may be issued at a later date.

[IEC 60068-2-58:2015/AMD1:2017](https://standards.itih.ai/catalog/standards/sist/54a234cf-9ac6-4e22-acbf-999999999999/iec-60068-2-58-2015-2017)

<https://standards.itih.ai/catalog/standards/sist/54a234cf-9ac6-4e22-acbf-999999999999/iec-60068-2-58-2015-2017>

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

1 Scope

Replace the existing second paragraph of the Scope with the following new paragraph:

This document provides procedures for determining the solderability, resistance to dissolution of metallization and resistance to soldering heat of devices in applications using solder alloys, which are eutectic or near eutectic tin lead (Pb), or lead-free alloys.

3.2 resistance to soldering heat

Replace the existing definition with the following new definition:

ability of the component to withstand the highest temperature stress in terms of temperature gradient, peak temperature and duration of the soldering process, within the applicable temperature range of the solder alloy

6.5.3.4 Solder immersion

Replace the existing first paragraph of Subclause 6.5.3.4 with the following new paragraph:

If the preheating is prescribed by the relevant specification, the specified duration and temperature shall be applied immediately prior to the immersion of the specimen in the solder bath.

8.5.8 Evaluation

Replace “Clause A.4.” by “Clause A.2”.

Add the following new text at the end of Subclause 8.5.8:

Note that this test does not directly assess the dewetting but assesses the possibility of the dewetting.

[IEC 60068-2-58:2015/AMD1:2017
https://standards.iteh.ai/catalog/standards/sist/54a234cf-9ac6-4e22-aebf-a6ed3ad7b9e5/iec-60068-2-58-2015-amd1-2017](https://standards.iteh.ai/catalog/standards/sist/54a234cf-9ac6-4e22-aebf-a6ed3ad7b9e5/iec-60068-2-58-2015-amd1-2017)

9.3.1.3 Metallic terminations shorter than 6 mm (dimension “d” in Figure 6)

Replace existing item b) with the following new text:

b) The upper side of the termination (area “b” in Figure 6):

After the dipping test, the dipped surface shall show visible evidence of being wettable, as indicated by the presence of fresh solder. A homogeneous coating is not necessary here.

Replace existing item c) with the following new text:

c) Non-coated cut edges at the end of the termination and the termination above the lower bend (area “c” in Figure 6):

For these areas (“b”, “c” and “d”), no quality criterion of solder coating is given.

Delete item d).

10.2 Solderability

Replace the existing text of Subclause 10.2 with the following new text:

The following details shall be applied for solderability.

- a) Property to be tested *
- b) Applicable test method *

- c) Condition of preconditioning (if required) *
- d) For solder bath method
 - 1) Selected solder alloy *
 - 2) Flux type*
 - 3) Clamping, fluxing and solder immersion *
 - 4) Preheating *
 - 5) Attitude to be used
 - 6) Solder temperature and duration *
- e) For reflow method
 - 1) Solder paste *
 - 2) Dimensional details of test substrate *
 - 3) Thickness of solder paste *
 - 4) Amount of solder paste
 - 5) Placement procedure
 - 6) Temperature profile *
 - 7) Temperature measurement point *
- f) Removal procedure
- g) Cleaning method
- h) Recovery conditions
- i) Areas of the terminations to be examined *
- j) Final inspection requirements and acceptance criteria *

iTech STANDARD PREVIEW
(standards.iteh.ai)

[IEC 60068-2-58:2015/AMD1:2017](https://standards.iteh.ai/catalog/standards/sist/54a234cf-9ac6-4e22-aebf-a6ed3ad7b9e5/iec-60068-2-58-2015-amd1-2017)

<https://standards.iteh.ai/catalog/standards/sist/54a234cf-9ac6-4e22-aebf-a6ed3ad7b9e5/iec-60068-2-58-2015-amd1-2017>

10.3 Resistance to soldering heat, dewetting and resistance to dissolution of metallization

Replace the existing text of Subclause 10.3 with the following new text:

The following details shall be applied for resistance to soldering heat, dewetting and resistance to dissolution of metallization.

- a) Property to be tested *
- b) Applicable test method *
- c) Condition of preconditioning (if required) *
- d) For solder bath method
 - 1) Selected solder alloy *
 - 2) Flux type *
 - 3) Clamping, fluxing and solder immersion *
 - 4) Preheating *
 - 5) Attitude to be used
 - 6) Solder temperature and duration *
 - 7) Number of test cycles if other than 1 cycle (for resistance to soldering heat) *
- e) For reflow method
 - 1) Solder paste (if required)*
 - 2) Dimensional details of test substrate (for resistance to soldering heat and if required) *
 - 3) Thickness of solder paste (if required) *

- 4) Amount of solder paste (if required) *
 - 5) Placement procedure (if required) *
 - 6) Temperature profile *
 - 7) Temperature measurement point *
 - 8) Number of test cycles for resistance to soldering heat *
- f) Removal procedure
 - g) Cleaning method
 - h) Recovery conditions
 - i) Areas of the terminations to be examined *
 - j) Final inspection requirements and acceptance criteria *

Annex A Criteria for visual inspection

Replace the existing text of Annex A with the following new text:

A.1 Evaluation of wetting

A.1.1 General

In various specifications, a complete or nearly complete coating with solder is often defined by the so-called 95 % requirement. The application of this requirement is often difficult when assessing specimens with metallized terminations or with short metallic terminations, especially when different parts of the termination are distinguished. Nevertheless, the same approach is followed here.

A.1.2 Criteria for wetting

Acceptable when 95 % or more area to be evaluated covered by an ideal solder coating with a dewetting area is scattered and not concentrated in one area.

Figure A.1 comprises six examples illustrating the criteria for visual examination.

NOTE To help in the evaluation of wetting, the photographs in Figure A.1 have been reproduced on such a scale that the dimensions are reasonably comparable with the view obtained under a microscope, while ensuring that smaller details are still sufficiently clear.

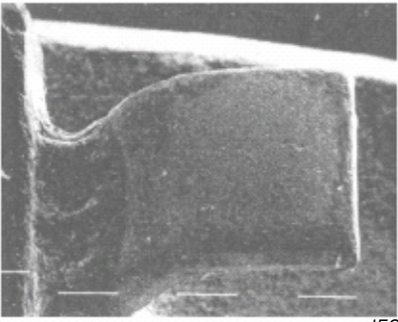
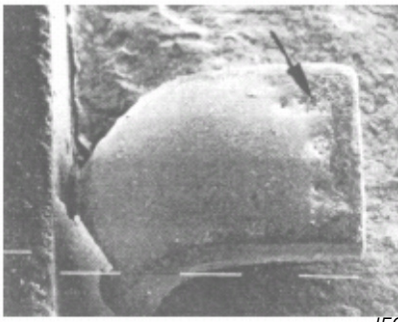
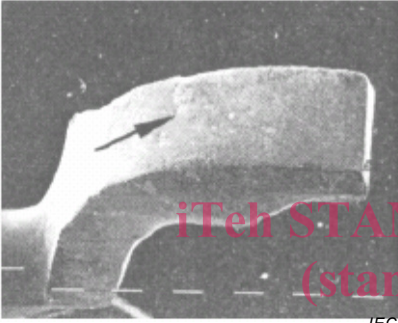

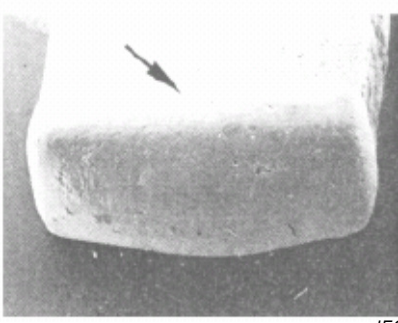
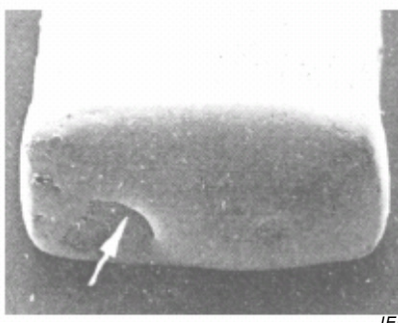
Acceptable	Unacceptable
 <p data-bbox="662 607 692 627">IEC</p> <p data-bbox="199 667 767 763">Acceptable: ideal coating both on the foot and on the sides; the visible rim is not dewetted because there is no contact angle; the flux residues between body and termination have not been removed.</p>	 <p data-bbox="1267 607 1297 627">IEC</p> <p data-bbox="807 667 1375 712">Unacceptable: more than 5 % dewetting on the toe; the bend is well coated</p>
 <p data-bbox="662 1106 692 1126">IEC</p> <p data-bbox="199 1167 767 1211">Acceptable: some spots of non-ideal coating on the surface are visible.</p>	 <p data-bbox="1267 1106 1297 1126">IEC</p> <p data-bbox="807 1167 1375 1189">Unacceptable: more than 5 % dewetting of the foot.</p>
 <p data-bbox="662 1554 692 1574">IEC</p> <p data-bbox="199 1615 767 1637">Acceptable: a few very small irregularities are visible.</p>	 <p data-bbox="1267 1554 1297 1574">IEC</p> <p data-bbox="807 1615 1375 1637">Unacceptable: more than 5 % of the area not wetted.</p>
<p data-bbox="199 1659 879 1682">The arrows indicate imperfections (acceptable or unacceptable).</p>	

Figure A.1 – Evaluation of wetting

A.1.3 Additional criteria for wetting, method 2

For method 2 (reflow), in addition to A.1.2, the following criteria shall be applied:

- solder balls at the pins or irregular solder accumulations are not allowed;
- the surface shall be homogenous without irregularities or damage.

A.2 Evaluation of dewetting, method 2

Figure A.2 comprises four examples illustrating the criteria for visual examination.

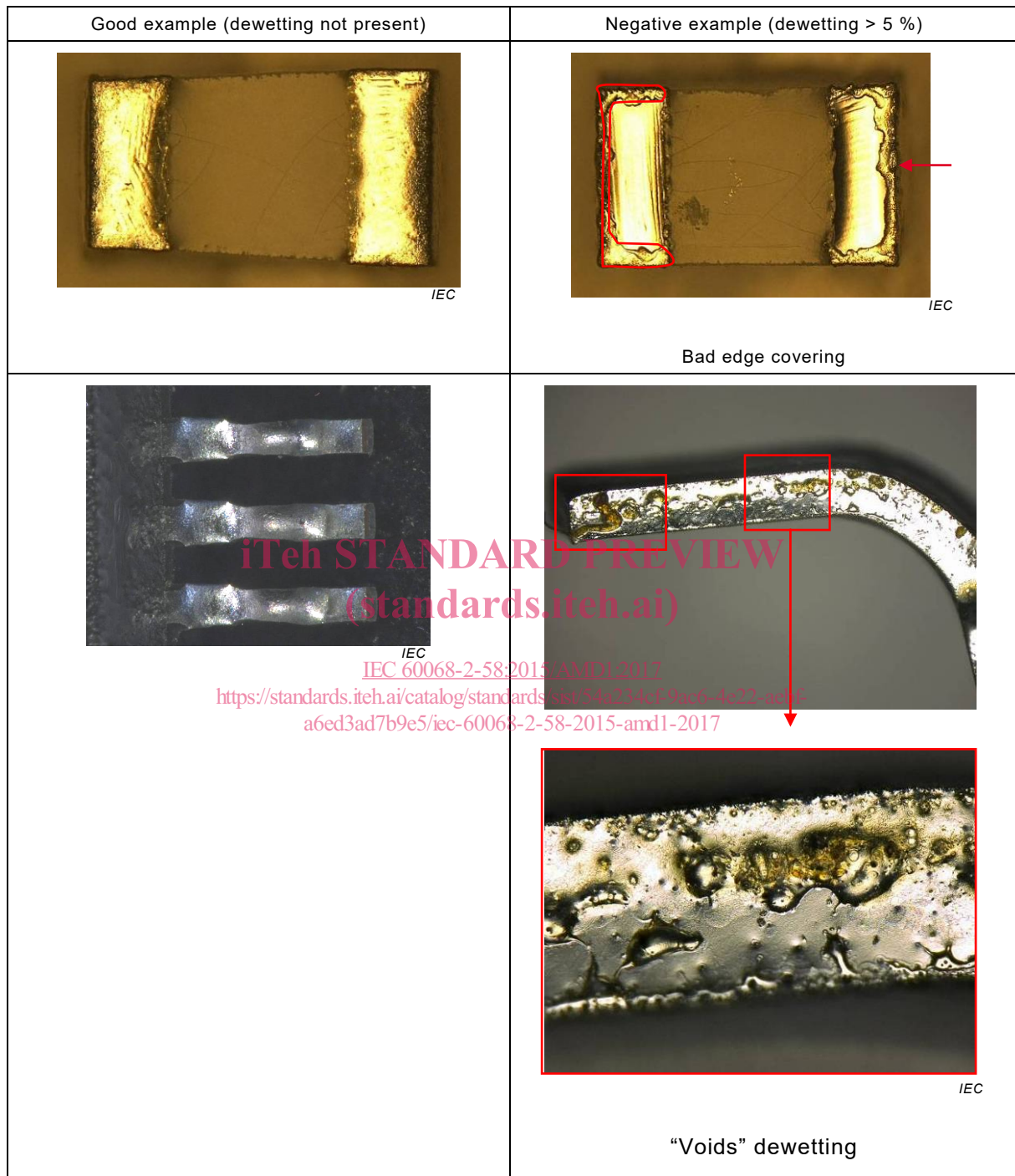


Figure A.2 – Evaluation of dewetting