

# INTERNATIONAL STANDARD

**IEC**  
**60068-2-54**

Second edition  
2006-04

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## Environmental testing –

### Part 2-54:

### Tests – Test Ta: Solderability testing of electronic components by the wetting balance method



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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## ENVIRONMENTAL TESTING –

**Part 2-54: Tests – Test Ta: Solderability testing  
of electronic components by the wetting balance method**

## FOREWORD

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International Standard IEC 60068-2-54 has been prepared by IEC technical committee 91: Electronics assembly technology.

This second edition cancels and replaces the first edition, published in 1985 and constitutes a technical revision.

The major technical changes with regard to the previous edition concern:

- the addition of lead free solder alloy (see Clause 7, Materials);
- reversal of force-time curves to align with IEC 60068-2-69 (see Figure 2 and Figure B.1);
- modification to the test requirement for progress of wetting (see Clause 9).

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

FDIS	Report on voting
91/576/FDIS	91/587/RVD

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

IEC 60068 consists of the following parts, under the general title *Environmental testing*:

Part 1: General and guidance

Part 2: Tests

Part 3: Supporting documentation and guidance

Part 4: Information for specification writers - Test summaries

Part 5: Guide to drafting of test methods

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site 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- withdrawn,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.

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

## ENVIRONMENTAL TESTING –

### Part 2-54: Tests – Test Ta: Solderability testing of electronic components by the wetting balance method

#### 1 Scope

This part of IEC 60068 outlines Test Ta, solder bath wetting balance method applicable for any shape of component terminations to determine the solderability. It is especially suitable for reference testing and for components that cannot be quantitatively tested by other methods. For surface mounting devices (SMD), IEC 60068-2-69 should be applied if it is suitable.

This standard provides the standard procedures for solder alloys containing lead (Pb) and for lead-free solder alloys.

#### 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60068-1:1988, *Environmental testing – Part 1: General and guidance*

IEC 60068-2-20:1979, *Environmental testing – Part 2: Tests – Test T: Soldering*

IEC 61190-1-3, *Attachment materials for electronic assembly – Part 1-3: Requirements for electronic grade solder alloys and fluxed and non-fluxed solid solders for electronic soldering applications*

#### 3 Terms and definitions

For the purposes of this document, the terms and definitions, as defined in IEC 60068-1 and IEC 60068-2-20, apply.

#### 4 General description of the test

The specimen is suspended from a sensitive balance (typically a spring system) and immersed edgewise to a set depth in a bath of molten solder at a controlled temperature. The resultant of the vertical forces of buoyancy and surface tension acting upon the immersed specimen is detected by a transducer and converted into a signal which is continuously recorded as a function of time on a high-speed chart recorder. The trace may be compared with that derived from a perfectly wetted specimen of the same nature and dimensions.

Two modes of testing exist:

- The stationary mode, intended to study the solderability of a particular place on the specimen. It is this mode which is standardized in this standard.
- The scanning mode, intended to study the homogeneity of the solderability of an extended region of the surface of the specimen. The standardization of this mode is still under consideration.