

Environmental testing —

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

The European Standard EN 60068-2-54:2006 has the status of a British Standard

ICS 19.040; 31.020

National foreword

This British Standard was published by BSI. It is the UK implementation of EN 60068-2-54:2006. It is identical with IEC 60068-2-54:2006. It supersedes BS 2011-2.1TA:1989 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee EPL/501, Electronic assembly technology.

A list of organizations represented on EPL/501 can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Environmental testing
Part 2-54: Tests -
Test Ta: Solderability testing of electronic components
by the wetting balance method
(IEC 60068-2-54:2006)

Essais d'environnement
Partie 2-54 : Essais -
Essai Ta : Essai de brasabilité des
composants électroniques par
la méthode de la balance de mouillage
(CEI 60068-2-54:2006)

Umweltprüfungen
Teil 2-54: Prüfungen -
Prüfung Ta: Prüfung der Lötbarkeit
elektronischer Bauelemente
mit der Benetzungswaage
(IEC 60068-2-54:2006)

This European Standard was approved by CENELEC on 2006-07-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

The text of document 91/576/FDIS, future edition 2 of IEC 60068-2-54, prepared by IEC TC 91, Electronics assembly technology, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60068-2-54 on 2006-07-01.

This European Standard supersedes HD 323.2.54 S1:1987.

The major technical changes with regard to HD 323.2.54 S1:1987 concern:

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

The following dates were fixed:

- | | | |
|--|-------|------------|
| – latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement | (dop) | 2007-04-01 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn | (dow) | 2009-07-01 |

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60068-2-54:2006 was approved by CENELEC as a European Standard without any modification.

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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.

5 Description of the test apparatus

5.1 Test system

A diagram of an arrangement suitable for the test is shown in Figure 1.

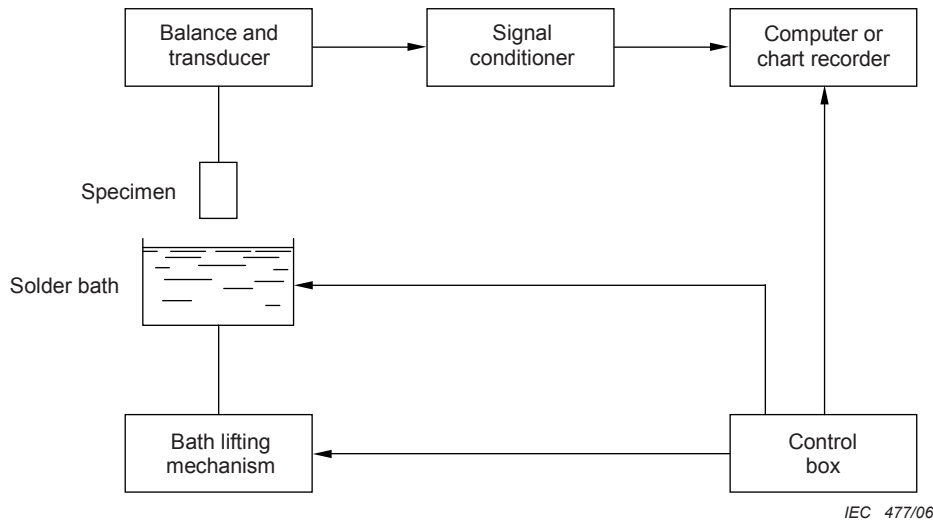


Figure 1 – Test arrangement

Any other system capable of measuring the vertical forces acting on the specimen is admissible, provided that the system has the characteristics given in Annex A.

5.2 Solder bath

The solder bath dimensions shall comply with the requirements of Clause A.7. The material of the solder bath container shall be resistant to the relevant liquid solder alloy.

6 Preconditioning

6.1 Preparation of specimens

The specimen shall be tested in the “as-received” condition unless otherwise specified by the relevant specification. Care should be taken that no contamination, by contact with the fingers or by other means, occurs.

The specimen may be cleaned by immersion in a neutral organic solvent at room temperature, but only if required by the relevant specification; no other cleaning is permitted.

6.2 Ageing

When accelerated ageing is prescribed by the relevant specification, one of the methods of 4.5 of IEC 60068-2-20 shall be used.