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BSI Standards Publication

Environmental testing

Part 2-82: Tests - Test Xw1: Whisker test methods for components and parts used in electronic assemblies

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National foreword

This British Standard is the UK implementation of EN IEC 60068-2-82:2019. It is identical to IEC 60068-2-82:2019. It supersedes BS EN 60068-2-82:2007, which is withdrawn.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 this committee 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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Compliance with a British Standard cannot confer immunity from legal obligations.

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Amendments/corrigenda issued since publication

Date	Text affected
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EUROPÄISCHE NORM

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Supersedes EN 60068-2-82:2007

English Version

Environmental testing - Part 2-82: Tests - Test Xw1: Whisker test
methods for components and parts used in electronic
assemblies
(IEC 60068-2-82:2019)

Essais d'environnement - Partie 2-82: Essais - Essai Xw1:
Méthodes de vérification des trichites pour les composants
et les pièces utilisés dans les ensembles électroniques
(IEC 60068-2-82:2019)

Umgebungseinflüsse - Teil 2-82: Prüfungen - Prüfung XW1:
Whisker-Prüfverfahren für Bauelemente und Teile in
elektronischen Baugruppen
(IEC 60068-2-82:2019)

This European Standard was approved by CENELEC on 2019-06-18. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

The text of document 91/1562/FDIS, future edition 2 of IEC 60068-2-82, prepared by IEC/TC 91 "Electronics assembly technology" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60068-2-82:2019.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2020-03-18
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2022-06-18

This document supersedes EN 60068-2-82:2007.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 60068-2-82:2019 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 61191-1	NOTE	Harmonized as EN IEC 61191-1
IEC 61249-2-7	NOTE	Harmonized as EN 61249-2-7
IEC 61249-2-22	NOTE	Harmonized as EN 61249-2-22
IEC 61249-2-35	NOTE	Harmonized as EN 61249-2-35

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(normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60068-1	2013	Environmental testing - Part 1: General and guidance	EN 60068-1	2014
IEC 60068-2-14	2009	Environmental testing - Part 2-14: Tests - Test N: Change of temperature	EN 60068-2-14	2009
IEC 60068-2-20	-	Environmental testing - Part 2-20: Tests - Test T: Test methods for solderability and resistance to soldering heat of devices with leads	EN 60068-2-20	-
IEC 60068-2-58	-	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)	EN 60068-2-58	-
IEC 60068-2-67	-	Environmental testing - Part 2-67: Tests - Test Cy: Damp heat, steady state, accelerated test primarily intended for components	EN 60068-2-67	-
IEC 60068-2-78	-	Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state	EN 60068-2-78	-
IEC 60512-16-21	2012	Connectors for electronic equipment - Tests and measurements - Part 16-21: Mechanical tests on contacts and terminations - Test 16u: Whisker test via the application of external mechanical stresses	EN 60512-16-21	2012
IEC 61192-3	2002	Workmanship requirements for soldered electronic assemblies - Part 3: Through-hole mount assemblies	EN 61192-3	2003

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CONTENTS

FOREWORD	4
1 Scope	6
2 Normative references	6
3 Terms and definitions	7
4 Test equipment.....	9
4.1 General.....	9
4.2 Desiccator	9
4.3 Humidity chamber	9
4.4 Thermal cycling chamber	9
4.5 Equipment for visual inspection.....	9
4.5.1 Scanning electron microscope	9
4.5.2 Optical microscope/Confocal laser microscope	9
4.6 Fixing jig	9
5 Preparation for test.....	10
5.1 Selection of relevant tests.....	10
5.1.1 General	10
5.1.2 Storage conditions prior to testing	11
5.1.3 Pre-aging (storage in the supply chain) before testing	12
5.2 Handling of the specimens	12
5.3 Sample size	12
5.4 Surface and base materials for test selection	12
5.5 Preconditioning of test specimen not intended for soldering/welding	13
5.5.1 Preconditioning of test specimen intended for press-fit applications.....	13
5.5.2 Preconditioning of test specimen intended for mechanical loads other than press fit	14
5.6 Preconditioning of test specimen intended for soldering/welding	14
5.6.1 General	14
5.6.2 Mechanical pretreatment	14
5.6.3 Heat pre-treatment	15
6 Test conditions	15
6.1 General.....	15
6.2 Ambient test.....	15
6.3 Damp heat test	15
6.4 Temperature cycling test.....	16
6.5 Ambient test for press-fit applications	16
7 Monitoring and technological similarity	17
7.1 Monitoring.....	17
7.2 Technological similarity.....	17
8 Test and assessment.....	18
8.1 Whisker investigation	18
8.2 Initial measurement	18
8.3 Test.....	18
8.4 Recovery	18
8.5 Intermediate or final assessment for each test condition	18
8.5.1 Fixed threshold length for pass/fail classification	18
8.5.2 Statistical assessment of whisker lengths	19

This is a preview of "BS EN IEC 60068-2-82...". [Click here to purchase the full version from the ANSI store.](#)

9	Technology or manufacturing process changes	19
10	Content of final report.....	20
	Annex A (normative) Measurement of whisker length	22
	Annex B (informative) Examples of whiskers.....	23
	Annex C (informative) Guidance on acceptance criteria	25
	C.1 Risks attributed to whiskers	25
	C.2 Acceptance criteria for whisker length.....	25
	C.3 Acceptance criteria for whisker density	26
	C.4 Statistical evaluation of number and length of whiskers.....	26
	C.5 Example of statistic evaluation.....	26
	Annex D (informative) Technical background of whisker growth	29
	Annex E (normative) Transition scenarios for the changeover of the damp-heat test conditions	30
	Bibliography.....	32
	Figure 1 – Cross-sectional views of component termination surface finishes.....	8
	Figure 2 – Selection of test methods	11
	Figure 3 – Flow for treatment and/or bending and heat treatment.....	14
	Figure A.1 – Estimation of whisker length	22
	Figure A.2 – Example for whisker length measurement.....	22
	Figure B.1 – Nodule	23
	Figure B.2 – Column whisker	23
	Figure B.3 – Filament whisker.....	24
	Figure B.4 – Kinked whisker	24
	Figure B.5 – Spiral whisker	24
	Figure C.1 – Smallest distance of components and circuit boards	25
	Figure C.2 – Histogram of whisker lengths and fitted log-normal distribution	27
	Figure C.3 – Histogram of whisker lengths and fitted log-normal distribution	28
	Figure C.4 – Histogram of whisker lengths and fitted log-normal distribution	28
	Figure E.1 –Transition paths for damp-heat testing of components	30
	Table 1 – Material systems recognized for effective whisker mitigation	13
	Table 2 – Preconditioning conditions and test legs for components for different assembly processes	15
	Table 3 – Conditions for the ambient test.....	15
	Table 4 – Conditions for the damp heat test.....	16
	Table 5 – Conditions for the ambient test.....	16
	Table 6 – Conditions for the ambient test applicable to press-fit terminations.....	17
	Table 7 – Classification for measured whisker length.....	19
	Table 8 – Surface finish technology and manufacturing process change acceptance parameters	19
	Table 9 – Final report.....	21
	Table C.1 – Classification for measured whisker length	27
	Table E.1 – Conclusion matrix for parallel damp heat testing	31

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ENVIRONMENTAL TESTING –

Part 2-82: Tests – Test Xw₁: Whisker test methods for components and parts used in electronic assemblies

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 60068-2-82 has been prepared by IEC technical committee 91: Electronics assembly technology.

This second edition cancels and replaces the first edition published in 2007. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- extension of the scope of the test standard from electronic to electromechanic components and press-fit pins, which are used for assembly and interconnect technology;
- significant reduction of the testing effort by a knowledge-based selection of test conditions i.e. tests not relevant for a given materials system can be omitted (see Annex D);
- harmonization with JESD 201A by omission of severities M, N for temperature cycling tests;

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- highly reduced test duration (1 000 h instead of 4 000 h) for damp-heat test by introducing test condition at elevated humidity of 85 % R.H. and a temperature of 85 °C providing increased severity.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
91/1562/FDIS	91/1573/RVD

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

A list of all parts in the IEC 60068 series, published under the general title *Environmental testing*, can be found on the IEC website.

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

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

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

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.

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ENVIRONMENTAL TESTING –

Part 2-82: Tests – Test Xw₁: Whisker test methods for components and parts used in electronic assemblies

1 Scope

This part of IEC 60068 specifies tests for the whiskering propensity of surface finishes of electric or electronic components and mechanical parts such as punched/stamped parts (for example, jumpers, electrostatic discharge protection shields, mechanical fixations, press-fit pins and other mechanical parts used in electronic assemblies) representing the finished stage, with tin or tin-alloy finish. Changes of the physical dimensions of mould compounds, plastics and the like during the required test flow are not considered or assessed. The test methods have been developed by using a knowledge-based approach.

This document can also be used at sub-suppliers, like plating shops, stamping shops or other service providers to ensure a consistent surface quality within the supply chain.

These test methods are employed with defined acceptance criteria by a relevant component or application specification.

The tests described in this document are applicable for initial qualification, for periodic monitoring in accordance with Clause 7, and for changes of technology or manufacturing processes of existing surfaces in accordance with Clause 9.

The mating area of connectors is not covered by this test method. IEC 60512-16-21 applies for the mating areas of connectors.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

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IEC 60068-2-14:2009, *Environmental testing – Part 2-14: Tests – Test N: Change of temperature*

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IEC 60068-2-58, *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 60068-2-67, *Environmental testing – Part 2-67: Tests – Test Cy: Damp heat, steady state, accelerated test primarily intended for components*

IEC 60068-2-78, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state*