BS EN 60068-1:2014



BSI Standards Publication

Environmental testing

Part 1: General and guidance

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National foreword

This British Standard is the UK implementation of EN 60068-1:2014. It is identical to IEC 60068-1:2013. It supersedes BS EN 60068-1:1995, which will be withdrawn on 11 November 2016.

The UK participation in its preparation was entrusted to Technical Committee GEL/104, Environmental conditions, classification and testing.

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.

© The British Standards Institution 2014.
Published by BSI Standards Limited 2014

ISBN 978 0 580 61040 0
ICS 19.040

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 March 2014.

Amendments/corrigenda issued since publication

Date	Text affected

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60068-1

March 2014

ICS 19.040

Supersedes EN 60068-1:1994

English version

Environmental testing - Part 1: General and guidance

(IEC 60068-1:2013)

Essais d'environnement - Partie 1: Généralités et lignes directrices (CEI 60068-1:2013)

Umgebungseinflüsse - Teil 1: Allgemeines und Leitfaden (IEC 60068-1:2013)

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CENELEC

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B - 1000 Brussels

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Ref. No. EN 60068-1:2014 E

Foreword

The text of document 104/618/FDIS, future edition 7 of IEC 60068-1, prepared by IEC/TC 104 "Environmental conditions, classification and methods of test" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60068-1:2014.

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) 2014-09-21

– latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2016-11-11

This document supersedes EN 60068-1:1994.

EN 60068-1:2014 includes the following significant technical changes with respect to EN 60068-1:1994:

– updated normative reference list;

– indication of normative and informative annexes;

– new informative Annex C, *Environmental test tailoring*.

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

Endorsement notice

The text of the International Standard IEC 60068-1:2013 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 60068-2-14	NOTE	Harmonized as EN 60068-2-14.
IEC 60068-2-20	NOTE	Harmonized as EN 60068-2-20.
IEC 60068-2-27	NOTE	Harmonized as EN 60068-2-27.
IEC 60068-2-38	NOTE	Harmonized as EN 60068-2-38.
IEC 60068-3-1	NOTE	Harmonized as EN 60068-3-1.
IEC 60529	NOTE	Harmonized as EN 60529.
IEC 60721	NOTE	Harmonized in EN 60721 series (not modified).

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60068-2	series	Environmental testing Part 2: Tests	EN 60068-2	series

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INTRODUCTION

The IEC 60068 series contains fundamental information on environmental testing procedures and severities of tests. In addition, this Part 1 contains information on atmospheric conditions for measurement and testing.

It is intended to be used in those cases where a relevant specification for a certain type of product (electrical, electromechanical or electronic equipment and devices, their subassemblies and constituent parts and components), hereinafter referred to as the "specimen", is to be prepared, so as to achieve uniformity and reproducibility in the environmental testing of this product.

NOTE 1 Although primarily intended for electrotechnical products, many of the environmental testing procedures in Part 2 of this series are equally applicable to other industrial products.

The expression "environmental conditioning" or "environmental testing" covers the natural and artificial environments to which specimens may be subjected and exposed to in practice so that an assessment can be made of their performance under conditions of storage, transportation, installation and use.

The requirements for the performance of specimens subjected to environmental conditioning are not covered by this standard. The relevant specification for the specimen under test defines the allowed performance limits during and after environmental testing.

When drafting a relevant specification or purchasing contract, only those tests should be specified that are necessary for the relevant specimen, taking into account the technical and economic aspects.

The IEC 60068 series consists of:

a) this first part, IEC 60068-1 – *General and guidance*, which deals with generalities;
b) the second part, IEC 60068-2 – *Tests* – which publishes particular tests separately for different applications;
c) the third part, IEC 60068-3 – *Supporting documentation and guidance*, which deals with background information on a family of tests.

The families of tests comprising Part 2 of the IEC 60068 series are designated by the following upper-case letters:

A: Cold
B: Dry heat
C: Damp heat (steady-state)
D: Damp heat (cyclic)
E: Impact (for example shock and rough handling shocks)
F: Vibration
G: Acceleration (steady state)
H: (Awaiting allocation)

NOTE 2 Originally allotted to storage tests.

J: Mould growth
K: Corrosive atmospheres (for example salt mist)
L: Dust and sand
M: Air pressure (high or low)
N: Change of temperature

P: (Awaiting allocation)

NOTE 3 Originally allotted to “flammability”.

Q: Sealing (including panel sealing, container sealing and protection against ingress and leakage of fluid)

R: Water (for example rain, dripping water)

S: Radiation (for example solar, but excluding electromagnetic)

T: Soldering (including resistance to heat from soldering)

U: Robustness of terminations (of components)

V: (Awaiting allocation)

NOTE 4 Originally allocated to “acoustic noise” but “vibration, acoustically induced” will now be Test Fg, one of the “vibration” family of tests.

W: (Awaiting allocation)

Y: (Awaiting allocation)

The letter X is used as a prefix together with a second lower-case letter providing for extension of the list of families of tests, e.g. Test Xa: Immersion in cleaning solvents. The letter Z is used to denote combined tests and composite tests as follows: Z is followed by a solidus (slash) and a group of lower-case letters relating to the combined or composite stresses, for example Test Z/am: Combined cold and low air pressure tests.

If appropriate, a test may be designated as “primarily intended for components” or “primarily intended for equipment”.

To provide for future expansion within a family of tests and to maintain consistency of presentation, each family of tests may be subdivided. The subdivisions are identified by the addition of a (lower-case) second letter, for example:

U: Robustness of terminations and integral mounting devices

Test Ua: Subdivided as Test Ua_1: Tensile; and Test Ua_2: Thrust

Test Ub: Bending

Test Uc: Torsion

Test Ud: Torque

This subdivision is made even though only one test is published and no further tests are immediately contemplated in the relevant family.

In order to avoid confusion with numbers, the letters i, I, o and O are not used.

ENVIRONMENTAL TESTING –

Part 1: General and guidance

1 Scope

The IEC 60068 series includes a series of methods for environmental testing along with their appropriate severities, and prescribes various atmospheric conditions for measurements and tests designed to assess the ability of specimens to perform under expected conditions of transportation, storage and all aspects of operational use.

Although primarily intended for electrotechnical products, this standard is not restricted to them and may be used in other fields where desired.

Other methods of environmental testing, specific to the individual types of specimen, may be included in the relevant specifications.

The framework of environmental test tailoring process is given in order to assist the production of test specifications with appropriate tests and test severities.

The IEC 60068 series provides a series of uniform and reproducible environmental, climatic, dynamic and combined tests, performed and measured under standard atmospheric conditions, for those preparing specifications and those engaged in the testing of products.

These test methods are based upon available international engineering experience and judgement and are primarily designed to provide information on the following properties of specimens:

a) the ability to operate within specified limits of temperature, pressure, humidity, mechanical stress or other environmental conditions and combinations of these conditions;

b) the ability to withstand conditions of transportation, storage and installation.

NOTE 1 The IEC 60721 series provides a system for classification of environmental conditions and gives relevant definitions.

The tests in this standard permit the comparison of the performance of sample products. To assess the quality or useful life of a given production lot, the test methods should be applied in accordance with a suitable sampling plan and may be supplemented by appropriate additional tests, if necessary.

NOTE 2 ISO defines “quality” as the degree to which a set of inherent characteristics fulfils requirements..

NOTE 3 "Useful life": under given conditions, the time interval beginning, at a given instant of time, and ending when the failure intensity becomes unacceptable or when the item is considered unrepairable as a result of a fault.

To provide tests appropriate to the different intensities of an environmental condition, some of the test procedures have a number of degrees of severity. These different degrees of severity are obtained by varying the time, temperature, air pressure or some other determining factor, separately or in combination.

As the tests and their degrees of severity should be based on real environmental conditions that a particular specimen might encounter, the framework and the necessary phases for the environmental test tailoring process are provided. The test tailoring process may be used to produce the required relevant test specification for the particular specimen.