

Environmental testing —

Part 2.1: Tests —

Tests A: Cold

This Part should be read in conjunction with Part 1.1 *General and guidance*
The European Standard EN 60068-2-1:1993 has the status of a
British Standard

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the General Electrotechnical Standards Policy Committee (GEL/-) to Technical Committee GEL/15, upon which the following bodies were represented:

- Association of Manufacturers of Domestic Electrical Appliances
- British Telecommunications plc
- Directorate of Telecommunications
- EEA — the Electronics and Business Equipment Association
- Electricity Supply Industry in England and Wales
- Electronic Components Industry Federation
- Ministry of Defence
- National Supervising Inspectorate
- Society of Environmental Engineers
- Society of Motor Manufacturers and Traders Limited
- Telecommunication Engineering and Manufacturing Association

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

- Biodeterioration Society
- Institute of Metals

This British Standard, having been prepared under the direction of the General Electrotechnical Standards Policy Committee, was published under the authority of the Board of BSI and comes into effect on 31 December 1990

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Amendments issued since publication

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National foreword

This Part of BS 2011 has been prepared under the direction of the General Electrotechnical Standards Policy Committee. It is identical with IEC 68-2-1:1990 *Environmental testing — Part 2: Tests — Tests A: Cold* including Amendment 1 to IEC 68-2-1:1990, published by the International Electrotechnical Commission (IEC) and supersedes BS 2011-2.1A:1977 which is withdrawn. IEC 68-2-1:1990 constitutes a reprint of the 1977 edition incorporating Amendments No. 1 (1980) and No. 2 (1984). It was published to keep exact alignment with IEC 68-2-1 and hence facilitate the publication of future amendments to BS 2011-2.1A based on amendments to IEC 68-2-1.

The title of BS 2011 has been changed to *Environmental testing* to correspond with the change in title of IEC Publication 68. This change reflects the fact that IEC Publication 68 and BS 2011 are concerned with the whole subject of testing, and avoids any possible confusion over whether it is the “procedures” or the “testing” that are basic. Amendments are not being issued to the other Parts of BS 2011, but their titles are being changed when these Parts are reviewed.

For the purposes of this Part of BS 2011, clause 1 is to be read as the scope clause.

In 1992 the European Committee for Electrotechnical Standardization (CENELEC) accepted IEC 68-2-1:1990 as European Standard EN 60068-2-1:1993 and Amendment 1 to IEC 68-2-1:1990 as Amendment A1 to EN 60068-2-1:1993. As a consequence of implementing the European Standard this British Standard is renumbered as BS EN 60068-2-1:1993 and any reference to BS 2011-2.1A should be read as a reference to BS EN 60068-2-1. In 1994 CENELEC accepted Amendment No. 2:1994 to IEC 68-2-1:1990 as amendment A2 to EN 60068-2-1:1993.

Cross-references

International Standard ^a	Corresponding British Standard
IEC 68-1:1988	BS 2011 <i>Environmental testing</i> Part 1.1:1989 <i>General and guidance</i> (Identical)
IEC 68-3-1:1974	Part 3A & B:1977 <i>Tests A (cold) and tests B (dry heat)</i> (Identical)

^a Undated in the text.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, the EN title page, pages 2 to 24, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

English version

Environmental testing Part 2: Tests Tests A: Cold

(includes amendments A1:1993 + A2:1994)
(IEC 68-2-1:1990)

Essais d'environnement
Deuxième partie: Essais
Essais A: Froid

(inclut les amendements A1:1993 + A2:1994)
(CEI 68-2-1:1990)

Umweltprüfungen
Teil 2: Prüfungen
Prüfgruppe A: Kälte

(enthält Änderungen A1:1993 + A2:1994)
(IEC 68-2-1:1990)

This European Standard was approved by CENELEC on 1993-03-09. 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.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B-1050 Brussels

Foreword

The International Standard IEC 68-2-1:1990 was submitted to the CENELEC members for formal vote and was approved by CENELEC as EN 60068-2-1 on 15 September 1992.

This European Standard supersedes HD 323.2.1 S2:1987.

The following dates were fixed:

- latest date of publication of an identical national standard (dop) 1994-01-01
- date of withdrawal of conflicting national standards (dow) 1994-01-01

Annexes designated “normative” are part of the body of the standard. In this standard, Annex ZA is normative.

Foreword to Amendment A1

The text of the document 50B(CO)331, as prepared by sub-committee 50B: Climatic tests, of IEC technical committee 50: Environmental testing, was submitted to the IEC-CENELEC parallel vote in February 1992.

The reference document was approved by CENELEC as amendment A1 to EN 60068-2-1 on 9 December 1992.

The following dates were fixed:

- latest date of publication of an identical national standard (dop) 1994-01-01
- date of withdrawal of conflicting national standards (dow) 1994-01-01

Foreword to Amendment A2

The text of document 50B(CO)339, as prepared by Sub-Committee 50B: Climatic tests, of IEC Technical Committee 50: Environmental testing, was submitted to the IEC-CENELEC parallel vote in July 1993.

The reference document was approved by CENELEC as amendment A2 to EN 60068-2-1 on 8 March 1994.

The following dates were fixed:

- latest date of publication of an identical national standard (dop) 1995-05-01
- latest date of withdrawal of conflicting national standards (dow) 1995-05-01

Relationship of suffixes between Tests A: Cold, and Tests B: Dry heat

The relationship of suffixes between Tests A: Cold, and Tests B: Dry heat, is shown in the following table:

Suffix letter	Tests A: Cold			Tests B: Dry heat		
	Specimen type	Temperature change	Specimen temperature at commencement of test duration	Specimen type	Temperature change	Specimen temperature at commencement of test duration
a	non heat	sudden	stabilized ^a	non heat	sudden	stabilized ^a
b	non heat	gradual	stabilized ^a	non heat	gradual	stabilized ^a
c	—	—	—	heat	sudden	stabilized ^a
d	heat	gradual	stabilized ^a	heat	gradual	stabilized ^a
^a The specimens will normally reach temperature stability before commencement of test duration. In exceptional cases, this will not be so, and additional information will be required in the relevant specification. See Clause 1 of the Introduction and IEC Publication 68-3-1. (Amendments to cover these cases are under consideration.)						

Introduction

1 General

This publication deals with cold tests applicable both to non heat-dissipating and heat-dissipating specimens. For non heat-dissipating specimens, Tests Aa and Ab do not deviate essentially from earlier issues.

The object of the cold test is limited to the determination of the ability of components, equipment or other articles to be used or stored at low temperature.

These cold tests do not enable the ability of specimens to withstand or operate during temperature variations to be assessed. In this case, it would be necessary to use Test N: Change of temperature.

The cold tests are subdivided as follows:

Cold tests for non heat-dissipating specimens

- with sudden change of temperature, Aa;
- with gradual change of temperature, Ab.

Cold test for heat-dissipating specimens

- with gradual change of temperature, Ad.

The procedures given in this publication are normally intended for specimens which achieve temperature stability during the performance of the test procedure.

The duration of the test commences at the time when temperature stability of the specimen has been reached.

For the exceptional cases when the specimen does not reach temperature stability during the performance of the test procedure, the duration of the test commences at the time when the test chamber reaches the test temperature.

The relevant specification shall define:

- a) the rate of change of temperature in the test chamber;
- b) the time at which the specimens are introduced into the test chamber;
- c) the time at which the exposure commences;
- d) the time at which the specimens are energized.

For these cases, the specification writer will find guidance on choosing the above four parameters in IEC Publication 68-3-1. (Amendments to cover these cases are under consideration.)