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REDLINE VERSION

Miljötålighetsprovning – Del 2-14: Provningsmetoder – N: Temperaturändring

Environmental testing –

Part 2-14: Tests –

Test N: Change of temperature

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IEC 60068-2-14

Edition 7.0 2023-07
REDLINE VERSION

INTERNATIONAL STANDARD



**Environmental testing –
Part 2-14: Tests – Test N: Change of temperature**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 19.040

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ENVIRONMENTAL TESTING –

Part 2-14: Tests – Test N: Change of temperature

FOREWORD

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This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition IEC 60068-2-14:2009. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

IEC 60068-2-14 has been prepared by IEC technical committee 104: Environmental conditions, classification and methods of test. It is an International Standard.

This seventh edition cancels and replaces the sixth edition published in 2009. This edition constitutes a technical revision.

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

- a) updating of the figures for clarification purposes;
- b) updating of specimen temperature(s) and severities as well as tolerances for change of temperature tests;
- c) revision of standardized requirements for test reports for Tests Na and Nb.

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

Draft	Report on voting
104/991/FDIS	104/1016/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under 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.

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INTRODUCTION

A change of temperature test is intended to determine the effect on the specimen of a change of temperature or a succession of changes of temperature.

It is not intended to show effects that are ~~due only to high or low temperatures~~ caused by low or high temperature exposure. For these effects, the cold test or the dry heat test, as specified in IEC 60068-2-1 and IEC 60068-2-2, should be used.

The effect of ~~such~~ change of temperature tests is determined by

- values of high and low conditioning temperature between which the change is to be ~~effected~~ affected,
- the conditioning times for which the test specimen is kept at these temperatures,
- the rate of change between these temperatures,
- the number of cycles of conditioning,
- the amount of heat transfer into or from the specimen,
- the thermal conductivity and the materials of the specimen,
- the rate of change of the specimen's temperature on its surface (respectively in relevant positions) or in its core.

Guidance on the choice of suitable test parameters for inclusion in the detail specification is given throughout this document.

ENVIRONMENTAL TESTING –

Part 2-14: Tests – Test N: Change of temperature

1 Scope

~~This part of IEC 60068 provides a test to determine the ability of components, equipment or other articles to withstand rapid changes of ambient temperature. The exposure times adequate to accomplish this will depend upon the nature of the specimen.~~

This document provides tests with specified ambient temperature changes to analyse their impacts on specimens.

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.

~~IEC 60068 (all parts), *Environmental testing*~~

IEC 60068-2-1, *Environmental testing – Part 2-1: Tests – Test A: Cold*

IEC 60068-2-2, *Environmental testing – Part 2-2: Tests – Test B: Dry heat*

~~IEC 60068-2-17, *Environmental testing – Part 2-17: Tests – Test Q: Sealing*~~

~~IEC Guide 104, *The preparation of safety publications and the use of basic safety publications and group safety publications*~~

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Miljötålighetsprovning – Del 2-14: Provningsmetoder – N: Temperaturändring

*Environmental testing –
Part 2-14: Tests –
Test N: Change of temperature*

Som svensk standard gäller europastandarden EN IEC 60068-2-14:2023. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 60068-2-14:2023.

Nationellt förord

Europastandarden EN IEC 60068-2-14:2023

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 60068-2-14, Seventh edition, 2023 - Environmental testing – Part 2-14: Tests – Test N: Change of temperature**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 60068-2-14, utg 2:2009 med eventuella tillägg, ändringar och rättelser gäller ej fr o m 2026-08-31.

ICS 19.040.00

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SEK samordnar svenska intressenters medverkan i SEKs tekniska kommittéer och stödjer svenska experters medverkan i internationella och europeiska projekt.

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English Version

**Environmental testing - Part 2-14: Tests - Test N: Change of
temperature
(IEC 60068-2-14:2023)**

Essais d'environnement - Partie 2-14: Essais - Essai N:
Variation de température
(IEC 60068-2-14:2023)

Umgebungseinflüsse - Teil 2-14: Prüfverfahren - Prüfung N:
Temperaturwechsel
(IEC 60068-2-14:2023)

This European Standard was approved by CENELEC on 2023-08-31. 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.

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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

European foreword

The text of document 104/991/FDIS, future edition 7 of IEC 60068-2-14, 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 IEC 60068-2-14:2023.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2024-05-31 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2026-08-31 document have to be withdrawn

This document supersedes EN 60068-2-14:2009 and all of its amendments and corrigenda (if any).

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.

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Endorsement notice

The text of the International Standard IEC 60068-2-14:2023 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 standard indicated:

IEC 60068 series	NOTE	Approved as EN 60068 series
IEC 60068-2-6	NOTE	Approved as EN 60068-2-6
IEC 60068-2-17	NOTE	Approved as EN 60068-2-17
IEC 60068-2-30	NOTE	Approved as EN 60068-2-30
IEC 60068-2-67	NOTE	Approved as EN 60068-2-67
IEC 60068-3-1	NOTE	Approved as EN 60068-3-1

Annex ZA (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.cencenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60068-2-1	-	Environmental testing - Part 2-1: Tests - Test A: Cold	EN 60068-2-1	-
IEC 60068-2-2	-	Environmental testing - Part 2-2: Tests - Test B: Dry heat	EN 60068-2-2	-



INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Environmental testing –
Part 2-14: Tests – Test N: Change of temperature**

**Essais d'environnement –
Partie 2-14: Essais – Essai N: Variation de température**

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INTERNATIONALE

ICS 19.040

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ENVIRONMENTAL TESTING –

Part 2-14: Tests – Test N: Change of temperature

FOREWORD

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- a) updating of the figures for clarification purposes;
- b) updating of specimen temperature(s) and severities as well as tolerances for change of temperature tests;
- c) revision of standardized requirements for test reports for Tests Na and Nb.

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

INTRODUCTION

A change of temperature test is intended to determine the effect on the specimen of a change of temperature or a succession of changes of temperature.

It is not intended to show effects that are caused by low or high temperature exposure. For these effects, the cold test or the dry heat test, as specified in IEC 60068-2-1 and IEC 60068-2-2, should be used.

The effect of change of temperature tests is determined by

- values of high and low conditioning temperature between which the change is to be affected,
- the conditioning times for which the test specimen is kept at these temperatures,
- the rate of change between these temperatures,
- the number of cycles of conditioning,
- the amount of heat transfer into or from the specimen,
- the thermal conductivity and the materials of the specimen,
- the rate of change of the specimen's temperature on its surface (respectively in relevant positions) or in its core.

Guidance on the choice of suitable test parameters for inclusion in the detail specification is given throughout this document.

ENVIRONMENTAL TESTING –

Part 2-14: Tests – Test N: Change of temperature

1 Scope

This document provides tests with specified ambient temperature changes to analyse their impacts on specimens.

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.

IEC 60068-2-1, *Environmental testing – Part 2-1: Tests – Test A: Cold*

IEC 60068-2-2, *Environmental testing – Part 2-2: Tests – Test B: Dry heat*