



BSI Standards Publication

## Environmental testing

---

Part 3-6: Supporting documentation and guidance - Confirmation of the performance of temperature/ humidity chambers

## National foreword

This British Standard is the UK implementation of EN IEC 60068-3-6:2018. It is identical to IEC 60068-3-6:2018. It supersedes BS EN 60068-3-6:2002, which will be withdrawn on 27 February 2021.

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 2018  
Published by BSI Standards Limited 2018

ISBN 978 0 580 93808 5

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 30 April 2018.

### Amendments/corrigenda issued since publication

Date	Text affected
------	---------------

---

EUROPEAN STANDARD

**EN IEC 60068-3-6**

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2018

ICS 19.040

Supersedes EN 60068-3-6:2002

English Version

**Environmental testing - Part 3-6: Supporting documentation and  
guidance - Confirmation of the performance of  
temperature/humidity chambers  
(IEC 60068-3-6:2018)**

Essais d'environnement - Partie 3-6: Documentation  
d'accompagnement et guide - Confirmation des  
performances des chambres d'essais en température et  
humidité  
(IEC 60068-3-6:2018)

Umweltprüfungen - Teil 3-6: Unterstützende Dokumentation  
und Leitfaden - Bestätigung des Leistungsvermögens von  
Temperatur-/Klimaprüfkammern  
(IEC 60068-3-6:2018)

This European Standard was approved by CENELEC on 2018-02-27. 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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, 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**

## European foreword

The text of document 104/760/FDIS, future edition 2 of IEC 60068-3-6, 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 60068-3-6:2018.

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) 2018-11-17
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2021-02-27

This document supersedes EN 60068-3-6:2002.

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 60068-3-6:2018 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 60068-1	NOTE	Harmonized as EN 60068-1.
IEC 60068-3-4	NOTE	Harmonized as EN 60068-3-4.
IEC 60584-1	NOTE	Harmonized as EN 60584-1.
IEC 60751	NOTE	Harmonized as EN 60751.
ISO 10012	NOTE	Harmonized as EN ISO 10012.

**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.cenelec.eu](http://www.cenelec.eu).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60068-3-5	2001	Environmental testing -- Part 3-5: Supporting documentation and guidance - Confirmation of the performance of temperature chambers	EN 60068-3-5	2002
IEC 60068-3-7	2001	Environmental testing -- Part 3-7: Supporting documentation and guidance - Measurements in temperature chambers for tests A and B (with load)	EN 60068-3-7	2002
IEC 60068-3-11	2007	Environmental testing -- Part 3-11: Supporting documentation and guidance - Calculation of the uncertainty of conditions in climatic test chambers	EN 60068-3-11	2007



## CONTENTS

FOREWORD .....	3
INTRODUCTION .....	5
1 Scope .....	6
2 Normative references .....	6
3 Terms and definitions .....	6
4 Measuring of performances .....	9
4.1 Test area environment .....	9
4.2 Measurement system .....	9
4.3 Temperature measurement system .....	9
4.4 Humidity measurement system .....	9
4.5 Temperature/humidity chamber test specimens .....	10
4.6 Specified location of temperature sensors and humidity sensor in working space .....	10
4.6.1 General .....	10
4.6.2 Temperature sensors .....	11
4.6.3 Humidity sensor .....	11
4.7 Measurement method .....	11
4.7.1 General .....	11
4.7.2 Achieved humidity .....	11
4.7.3 Temperature/humidity stabilization .....	12
4.7.4 Humidity fluctuation .....	12
4.7.5 Humidity gradient .....	13
4.7.6 Humidity variation in space .....	14
4.8 Standard humidity sequence .....	15
5 Information to be given in the performance test report .....	16
Bibliography .....	17
Figure 1 – Example of humidity differences .....	8
Figure 2 – Working space .....	8
Figure 3 – Location sensors for temperature/humidity chambers up to 2 000 l .....	10
Figure 4 – Location of minimal additional sensors for temperature/humidity chambers over 2 000 l .....	11
Figure 5 – Example of achieved humidity .....	12
Figure 6 – Example of temperature/humidity stabilization .....	12
Figure 7 – Example of humidity fluctuation .....	13
Figure 8 – Example of humidity gradient for chambers up to 2 000 l .....	14
Figure 9 – Example of humidity variation in space for chambers up to 2000 l .....	15
Figure 10 – Example of climatogram .....	16
Table 1 – Practical dimensions .....	9
Table 2 – Example of test sequence .....	15

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

---

**ENVIRONMENTAL TESTING –****Part 3-6: Supporting documentation and guidance –  
Confirmation of the performance of temperature/humidity chambers****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.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60068-3-6 has been prepared by IEC technical committee 104: Environmental conditions, classification and methods of test.

This second edition cancels and replaces the first edition published in 2001. This edition constitutes a technical revision.

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

- a) Confirmation procedures are clarified.



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

FDIS	Report on voting
104/760/FDIS	104/779/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.

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

IEC 60068-3-6 is to be read in conjunction with IEC 60068-3-5:2001 and IEC 60068-3-7:2001.

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 "<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.

A bilingual version of this publication may be issued at a later date.

## INTRODUCTION

IEC 60068 (all parts) contains fundamental information on environmental testing procedures and severities.

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

Temperature and humidity chambers used for "environmental conditioning" or "environmental testing" are not described in any publication, although the method of maintaining and measuring temperature and/or humidity has a great influence on test results. The physical characteristics of temperature and humidity chambers can also influence test results.

## ENVIRONMENTAL TESTING –

### Part 3-6: Supporting documentation and guidance – Confirmation of the performance of temperature/humidity chambers

#### 1 Scope

This part of IEC 60068 provides a uniform and reproducible method of confirming that temperature and humidity test chambers, without specimens, conform to the requirements specified in climatic test procedures of IEC 60068-2 (all parts). This document is intended for users when conducting regular chamber performance monitoring.

#### 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 60068-3-5:2001, *Environmental testing – Part 3-5: Supporting documentation and guidance – Confirmation of the performance of temperature chambers*

IEC 60068-3-7:2001, *Environmental testing – Part 3-7: Supporting documentation and guidance – Measurements in temperature chambers for tests A and B (with load)*

IEC 60068-3-11, *Environmental testing – Part 3-11: Supporting documentation and guidance – Calculation of uncertainty of conditions in climatic test chambers*

#### 3 Terms and definitions

For the purpose of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

NOTE 1 For terms and definitions regarding temperature testing, refer to IEC 60068-3-5.

NOTE 2 Unless otherwise specified, "humidity" is relative humidity (RH).

##### 3.1

##### **temperature/humidity chamber**

enclosure or space in some parts of which the temperature/humidity conditions specified in IEC 60068-2 (all parts) can be achieved

Note 1 to entry: See IEC 60068-3-4.

##### 3.2

##### **absolute humidity**

mass of water vapour present in a unit volume of moist air

Note 1 to entry: Typical units of measure are g/m<sup>3</sup>.