BS EN 60695-10-3:2016



BSI Standards Publication

# Fire hazard testing

Part 10-3: Abnormal heat — Mould stress relief distortion test

## National foreword

This British Standard is the UK implementation of EN 60695-10-3:2016. It is identical to IEC 60695-10-3:2016. It supersedes BS EN 60695-10-3:2002 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee GEL/89, Fire hazard testing.

A list of organizations represented on this committee can be obtained on request to its secretary.

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EUROPEAN STANDARD

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# EN 60695-10-3

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English Version

# Fire hazard testing - Part 10-3: Abnormal heat - Mould stress relief distortion test (IEC 60695-10-3:2016)

Essais relatifs aux risques du feu - Partie 10-3 : Chaleur anormale - Essai de déformation par réduction des contraintes de moulage (IEC 60695-10-3:2016)

Prüfungen zur Beurteilung der Brandgefahr - Teil 10-3: Unübliche Wärme - Prüfung auf Verformung durch Abbau von Formspannungen (IEC 60695-10-3:2016)

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
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## European foreword

The text of document 89/1328/FDIS, future edition 2 of IEC 60695-10-3, prepared by IEC/TC 89 "Fire hazard testing" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60695-10-3:2016.

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) | 2017-07-12 |
| • latest date by which the national standards conflicting with the document have to be withdrawn | (dow) | 2019-10-12 |

This document supersedes EN 60695-10-3:2002.

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 60695-10-3:2016 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 60695-1-10 | NOTE | Harmonized as EN 60695-1-10. |
| IEC 60695-1-11 | NOTE | Harmonized as EN 60695-1-11. |

# 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 1 When 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.

| Publication | Year | Title | EN/HD | Year |
|---|---|---|---|---|
| IEC 60050 | series | International Electrotechnical Vocabulary | - | series |
| IEC 60216-4-1 | - | Electrical insulating materials - Thermal endurance properties -- Part 4-1: Ageing ovens - Single-chamber ovens | EN 60216-4-1 | - |
| IEC 60695-4 | 2012 | Fire hazard testing -- Part 4: Terminology concerning fire tests for electrotechnical products | EN 60695-4 | 2012 |
| IEC Guide 104 | - | The preparation of safety publications and the use of basic safety publications and group safety publications | - | - |
| ISO 13943 | - | Fire safety - Vocabulary | EN ISO 13943 | - |
| ISO/IEC Guide 51 | - | Safety aspects - Guidelines for their inclusion in standards | - | - |

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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# FIRE HAZARD TESTING –

# Part 10-3: Abnormal heat – Mould stress relief distortion test

## 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 60695-10-3 has been prepared by IEC technical committee 89: Fire hazard testing.

The text of this standard is based on the following documents:

| FDIS | Report on voting |
|---|---|
| 89/1328/FDIS | 89/1337/RVD |

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

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

It has the status of a basic safety publication in accordance with IEC Guide 104 and ISO/IEC Guide 51.

This second edition of IEC 60695-10-3 cancels and replaces the first edition issued in 2002. It constitutes a technical revision.

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

a) Updated references;

b) Updated equipment;

c) Added terms and definitions; and

d) Added Bibliography.

A list of all the parts in the IEC 60695 series, under the general title *Fire hazard testing*, can be found on the IEC website.

The IEC 60695-10 series, under the general title *Fire hazard testing*, consists of the following parts:

- *Part 10-2: Abnormal heat – Ball pressure test*
- *Part 10-3: Abnormal heat – Mould stress relief distortion test*

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

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

# INTRODUCTION

In the design of any electrotechnical product, the risk of abnormal heat and the potential hazards associated with abnormal heat need to be considered. In this respect the objective of component, circuit, and product design, as well as the choice of materials, is to reduce to acceptable levels the potential risks during normal operating conditions, reasonable foreseeable abnormal use, malfunction and/or failure. The IEC has developed IEC 60695-1-10, together with its companion, IEC 60695-1-11, to provide guidance on how this is to be accomplished.

The primary aims of IEC 60695-1-10 [1][1] and IEC 60695-1-11 [2] are to provide guidance on how:

a) to prevent ignition caused by an electrically energized component part, and
b) to confine any resulting fire within the bounds of the enclosure of the electrotechnical product in the event of ignition.

Secondary aims of IEC 60695-1-10 and IEC 60695-1-11 include the minimization of any flame spread beyond the product's enclosure and the minimization of the harmful effects of fire effluents such as heat, smoke, toxicity and/or corrosivity.

Fires involving electrotechnical products can also be initiated from external non-electrical sources. Considerations of this nature should be dealt with in the overall fire hazard assessment.

This part of IEC 60695 describes a test method that simulates the effects caused by relief of the residual process-induced stress, frozen in a moulded polymeric assembly of an end product, when the end product or a part of it is exposed to conditioning at the maximum allowable operating temperature. The test method is intended to be used to evaluate whether the product after conditioning continues to meet the requirements of the relevant product specification. It is not be used to solely describe or appraise the fire hazard or fire risk of materials, products, or assemblies under actual abnormal conditions. However, results of this test may be used as elements of a fire hazard assessment which takes into account all of the factors pertinent to a particular end use.

This part of IEC 60695 may involve hazardous materials, operations, and equipment. It does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

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1 Numbers in square brackets refer to the bibliography.

# FIRE HAZARD TESTING –

# Part 10-3: Abnormal heat – Mould stress relief distortion test

## 1 Scope

This part of IEC 60695 specifies a mould stress relief distortion test. It is applicable to electrotechnical equipment including parts made from polymeric materials.

This test method is intended to evaluate the effects caused by relief of the residual process-induced stress, set in a moulded polymeric assembly of an end product. This stress relief occurs when the sample (energized or not), is exposed to conditioning at a defined temperature for a defined period of time. The test specimen is considered to have satisfactorily withstood the test if, after conditioning to room temperature, it meets defined test criteria.

This basic safety publication is primarily intended for use by technical committees in the preparation of standards in accordance with the principles laid down in IEC Guide 104 and ISO/IEC Guide 51. It is not intended for use by manufacturers or certification bodies.

One of the responsibilities of a technical committee is, wherever applicable, to make use of basic safety publications in the preparation of its publications. The requirements, test methods or test conditions of this basic safety publication will not apply unless specifically referred to or included in the relevant publications.

## 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 60050 (all parts), *International Electrotechnical Vocabulary* (available at: http://www.electropedia.org)

IEC 60216-4-1, *Electrical insulating materials – Thermal endurance properties – Part 4-1: Ageing ovens – Single-chamber ovens*

IEC 60695-4:2012, *Fire hazard testing – Part 4: Terminology concerning fire tests for electrotechnical products*

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

ISO/IEC Guide 51, *Safety aspects – Guidelines for inclusion in standards*

ISO 13943:2008, *Fire safety – Vocabulary*