

Fire hazard testing - Part 1-10: Guidance for assessing the fire hazard of electrotechnical products - General guidelines

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NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 60695-1-10:2010 sisaldab Euroopa standardi EN 60695-1-10:2010 ingliskeelset teksti.</p> <p>Standard on kinnitatud Eesti Standardikeskuse 30.04.2010 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 05.03.2010.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 60695-1-10:2010 consists of the English text of the European standard EN 60695-1-10:2010.</p> <p>This standard is ratified with the order of Estonian Centre for Standardisation dated 30.04.2010 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.</p> <p>Date of Availability of the European standard text 05.03.2010.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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English version

**Fire hazard testing -
Part 1-10: Guidance for assessing the fire hazard
of electrotechnical products -
General guidelines
(IEC 60695-1-10:2009)**

Essais relatifs aux risques du feu -
Partie 1-10: Guide pour l'évaluation
des risques du feu des produits
électrotechniques -
Lignes directrices générales
(CEI 60695-1-10:2009)

Prüfungen zur Beurteilung
der Brandgefahr -
Teil 1-10: Anleitung zur Beurteilung
der Brandgefahr von elektrotechnischen
Erzeugnissen -
Allgemeiner Leitfadens
(IEC 60695-1-10:2009)

This European Standard was approved by CENELEC on 2010-03-01. 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.

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CENELEC

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

Central Secretariat: Avenue Marnix 17, B - 1000 Brussels

Foreword

The text of document 89/950/FDIS, future edition 1 of IEC 60695-1-10, prepared by IEC TC 89, Fire hazard testing, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60695-1-10 on 2010-03-01.

This EN 60695-1-10 together with EN 60695-1-11¹⁾ supersedes EN 60695-1-1:2000.

This standard is to be used in conjunction with EN 60695-1-11.

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

The following dates were fixed:

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|--|-------|------------|
| – latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement | (dop) | 2010-12-01 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn | (dow) | 2013-03-01 |

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60695-1-10:2009 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:

- | | | |
|------|--------------|---|
| [6] | IEC 60695-1 | NOTE Harmonized in EN 60695-1 series (not modified). |
| [7] | IEC 60695-2 | NOTE Harmonized in EN 60695-2 series (not modified). |
| [8] | IEC 60695-4 | NOTE Harmonized as EN 60695-4. |
| [9] | IEC 60695-5 | NOTE Harmonized in EN 60695-5 series (not modified). |
| [10] | IEC 60695-6 | NOTE Harmonized in EN 60695-6 series (not modified). |
| [11] | IEC 60695-7 | NOTE Harmonized in EN 60695-7 series (not modified). |
| [12] | IEC 60695-8 | NOTE Harmonized in EN 60695-8 series (not modified). |
| [13] | IEC 60695-9 | NOTE Harmonized in EN 60695-9 series (not modified). |
| [14] | IEC 60695-10 | NOTE Harmonized in EN 60695-10 series (not modified). |
| [15] | IEC 60695-11 | NOTE Harmonized in EN 60695-11 series (not modified). |

¹⁾ To be published

Annex ZA
(normative)

**Normative references to international publications
with their corresponding European publications**

The following referenced documents are indispensable for the application 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 When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60695	Series	Fire hazard testing	EN 60695	Series
IEC 60695-1-11	200X ²⁾	Fire hazard testing - Part 1-11: Guidance for assessing the fire hazard of electrotechnical products - Fire hazard assessment	EN 60695-1-11	200X ²⁾
IEC 60695-1-30	2008	Fire hazard testing - Part 1-30: Guidance for assessing the fire hazard of electrotechnical products - Preselection testing process - General guidelines	EN 60695-1-30	2008
IEC/TS 62441	2006	Accidentally caused candle flame ignition for audio/video, communication and information technology equipment	CLC/TS 62441	2007
IEC Guide 104	1997	The preparation of safety publications and the use of basic safety publications and group safety publications	-	-
ISO/IEC Guide 51	1999	Safety aspects - Guidelines for their inclusion in standards	-	-
ISO 19706	2007	Guidelines for assessing the fire threat to people	-	-

²⁾ To be published.

INTRODUCTION

In the design of any electrotechnical product the risk of fire and the potential hazards associated with fire 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 of fire even in the event of foreseeable abnormal use, malfunction or failure. This standard, together with its companion, IEC 60695-1-11, provides guidance on how this is to be accomplished.

The primary aims are to prevent ignition caused by an electrically energised component part and, in the event of ignition, to confine any resulting fire within the bounds of the enclosure of the electrotechnical product.

Secondary aims include the minimisation of any flame spread beyond the product's enclosure and the minimisation of harmful effects of fire effluents including heat, smoke, and toxic or corrosive combustion products.

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

Assessing the fire hazard of electrotechnical products is accomplished by performing fire hazard tests. These tests are divided into two fundamental groups: qualitative fire tests and quantitative fire tests.

Fire testing of electrotechnical products should, whenever possible, be carried out using *quantitative* fire tests having the following characteristics:

- a) The test should take into account the circumstances of product use, i.e. contemplated end-use conditions as well as foreseeable abnormal use. This is because fire conditions that may be hazardous under one set of circumstances will not necessarily pose the same threat under a different set.
- b) It should be possible to correlate the test results with the harmful effects of fire effluents referred to above, i.e. the thermal and airborne threats to people and/or property in the relevant end-use situation. This avoids the creation of artificial, and sometimes distorted, performance scales with no clear relationship to fire safety.
- c) Recognizing that there are usually multiple contributions to the effects of real fires, the test results should be expressed in well defined terms and using rational scientific units, so that the product's contribution to the overall fire effects can be quantitatively assessed and compared with that of other products' contributions.

Although *quantitative* tests are preferred, the characteristics of *qualitative* fire tests are that they provide pass/fail and classification results. Under certain circumstances it will be appropriate to maintain such *qualitative* test methods or to develop new ones. This part of IEC 60695-1 establishes the circumstances under which such maintenance or development is appropriate.

FIRE HAZARD TESTING –

Part 1-10: Guidance for assessing the fire hazard of electrotechnical products – General guidelines

1 Scope

This part of IEC 60695-1 provides general guidance on how to reduce to acceptable levels the risk of fire and the potential effects of fires involving electrotechnical products. It also serves as a signpost standard to the other guidance publications in the IEC 60695 series.

It describes the relationship between fire risk and the potential effects of fire, and provides guidance to IEC product committees on the applicability of qualitative and quantitative fire tests to the fire hazard assessment of electrotechnical products.

It emphasises the importance of the scenario approach to fire hazard and risk assessment and discusses criteria intended to ensure the development of technically sound hazard-based fire test methods.

It discusses the different types of fire tests, in particular, the nature of qualitative and quantitative fire tests. It also describes the circumstances under which it is appropriate for IEC product committees to maintain or develop qualitative fire tests.

This standard is intended as guidance to IEC committees, and should be used with respect to their individual applications.

This basic safety publication is 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.

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 referenced documents are indispensable for the application 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 60695 (all parts), *Fire hazard testing*

IEC 60695-1-11: *Fire hazard testing – Part 1-11: Guidance for assessing the fire hazard of electrotechnical products – Fire hazard assessment*²

IEC 60695-1-30:2008, *Fire hazard testing – Part 1-30: Guidance for assessing the fire hazard of electrotechnical products – Preselection testing process – General guidelines*

² To be published.

IEC/TS 62441:2006, *Accidentally caused candle flame ignition for audio/video, communication and information technology equipment*

IEC Guide 104:1997, *The preparation of safety publications and the use of basic safety publications and group safety publications*

ISO/IEC Guide 51:1999, *Safety aspects – Guidelines for their inclusion in standards*

ISO 19706³:2007, *Guidelines for assessing the fire threat to people*

3 Terms and definitions

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

3.1 fire

(uncontrolled) self-supporting combustion that has not been deliberately arranged to provide useful effects and is not limited in its extent in time and space

[ISO/IEC 13943, definition 4.98]

3.2 fire hazard

physical object or condition with a potential for an undesirable consequence from fire

[ISO/IEC 13943, definition 4.112]

3.3 fire risk

probability of a fire combined with a quantified measure of its consequence

NOTE It is often calculated as the product of probability and consequence.

[ISO/IEC 13943, definition 4.124]

3.4 fire-safety engineering

application of engineering methods based on scientific principles to the development or assessment of designs in the built environment through the analysis of specific fire scenarios or through the quantification of risk for a group of fire scenarios

[ISO/IEC 13943, definition 4.126]

3.5 fire scenario

qualitative description of the course of a fire with respect to time, identifying key events that characterise the studied fire and differentiate it from other possible fires

NOTE It typically defines the ignition and fire growth processes, the fully developed fire stage, the fire decay stage, and the environment and systems that impact on the course of the fire.

[ISO/IEC 13943, definition 4.129]

3.6 intermediate-scale fire test

fire test performed on a test specimen of medium dimensions

³ ISO 9122-1, *Toxicity testing of fire effluents – Part 1: General*, has been withdrawn and replaced by ISO 19706.