Fire hazard testing - Part 1-11: Guidance for assessing the fire hazard of electrotechnical products - Fire hazard assessment

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 60695-1-11:2010 sisaldab Euroopa standardi EN 60695-1-11:2010 ingliskeelset teksti.	This Estonian standard EVS-EN 60695-1-11:2010 consists of the English text of the European standard EN 60695-1-11:2010.
Standard on kinnitatud Eesti Standardikeskuse 31.10.2010 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	This standard is ratified with the order of Estonian Centre for Standardisation dated 31.10.2010 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 08.10.2010.	Date of Availability of the European standard text 08.10.2010.
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ICS 13.220.40, 29.020

EUROPEAN STANDARD

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EN 60695-1-11

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English version

Fire hazard testing - Part 1-11: Guidance for assessing the fire hazard of electrotechnical products - Fire hazard assessment

(IEC 60695-1-11:2010)

Essais relatifs aux risques du feu - Partie 1-11: Lignes directrices pour l'évaluation des risques du feu des produits électrotechniques - Evaluation des risques du feu (CEI 60695-1-11:2010)

Prüfungen zur Beurteilung der Brandgefahr - Teil 1-11: Anleitung zur Beurteilung der Brandgefahr von elektrotechnischen Erzeugnissen - Beurteilung der Brandgefahr (IEC 60695-1-11:2010)

CENELEC

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

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Foreword

The text of document 89/991A/FDIS, future edition 1 of IEC 60695-1-11, prepared by IEC TC 89, Fire hazard testing, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60695-1-11 on 2010-10-01.

This European Standard partially supersedes EN 60695-1-1:2000.

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

This standard is to be used in conjunction with EN 60695-1-10.

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:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2011-07-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2013-10-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60695-1-11:2010 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 61386-21:2002	NOTE	Harmonized as EN 61386-21:2004 (not modified).
IEC/TS 60695-7-3	NOTE	Harmonized as EN 60695-7-3.
IEC 60695-4:2005	NOTE	Harmonized as EN 60695-4:2006 (not modified).

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.

Publication	Year	Title	EN/HD	Year
IEC 60695-1-10	2009	Fire hazard testing - Part 1-10: Guidance for assessing the fire hazard of electrotechnical products - General guidelines	EN 60695-1-10	2010
IEC 60695-1-21	2008	Fire hazard testing - Part 1-21: Guidance for assessing the fire hazard of electrotechnical products - Ignitability - Summary and relevance of test methods	-	-
IEC/TS 60695-5-2	2002	Fire hazard testing - Part 5-2: Corrosion damage effects of fire effluent - Summary and relevance of test methods	-	-
IEC/TS 60695-6-2	2005	Fire hazard testing - Part 6-2: Smoke obscuration - Summary and relevance of teest methods	-	-
IEC/TR 60695-7-2	2002	Fire hazard testing - Part 7-2: Toxicity of fire effluent - Summary and relevance of test methods	-	-
IEC/TR 60695-8-2	2008	Fire hazard testing - Part 8-2: Heat release - Summary and relevance of test methods	-	-
IEC/TS 60695-9-2	2005	Fire hazard testing - Part 9-2: Surface spread of flame - Summary and relevance of test methods	-	-
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 13943	2008	Fire safety - Vocabulary	-	-
ISO/TR 13387	Series	Fire safety engineering	-	-

CONTENTS

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 equipment 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 60695-1-10, 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 fire hazard assessment.

Fire hazard assessment is used to identify the kinds of fire events (fire scenarios) which will be associated with the product, to establish how the measurable fire properties of the product are related to the outcome of those events, and to establish test methods and performance requirements for those properties which will either result in a tolerable fire outcome or eliminate the event altogether.

Annex A demonstrates a relatively simple fire hazard assessment process as applied to the toxic hazard from a burning material.

Annex B demonstrates a more complex fire hazard assessment process as applied to an electrotechnical product: rigid plastic conduit.

Attention is drawn to the principles in IEC Guide 104, and to the role of committees with horizontal safety functions and group safety functions.

FIRE HAZARD TESTING –

Part 1-11: Guidance for assessing the fire hazard of electrotechnical products – Fire hazard assessment

1 Scope

This part of IEC 60695-1 provides guidance for assessing the fire hazard of electrotechnical products and for the resulting development of fire hazard testing as related directly to harm to people, animals or property. For the purposes of this standard, product means complete electrotechnical equipments, their parts (including components) and electrical insulating materials.

It outlines a hazard-based process to identify appropriate fire test methods and performance criteria for products. The principles of the methodology are to identify fire events (fire scenarios) which will be associated with the product, to establish how the measurable fire properties of the product are related to the possible occurrence and outcome of those events, and to establish test methods and performance requirements for those properties which will either result in a tolerable fire outcome or eliminate the event altogether.

This standard is intended as guidance to IEC committees, and should be used with respect to their individual applications. The actual implementation of this standard remains the responsibility of each product committee, according to the minimum acceptable fire safety in its application field and taking into account the feedback from experience.

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

IEC 60695-1-21:2008, *Fire hazard testing – Part 1-21: Guidance for assessing the fire hazard of electrotechnical products – Ignitability – Summary and relevance of test methods*

IEC/TS 60695-5-2:2002, *Fire hazard testing – Part 5-2: Corrosion damage effects of fire effluents – Summary and relevance of test methods*

IEC/TS 60695-6-2:2005, *Fire hazard testing – Part 6-2: Smoke obscuration – Summary and relevance of test methods*

IEC/TR 60695-7-2:2002, *Fire hazard testing – Part 7-2: Toxicity of fire effluent – Summary and relevance of test methods*

IEC/TR 60695-8-2:2008, *Fire hazard testing – Part 8-2: Heat release – Summary and relevance of test methods*

IEC/TS 60695-9-2:2005, *Fire hazard testing – Part 9-2: Surface spread of flame – Summary and relevance of test methods*

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/IEC 13943:2008, *Fire safety – Vocabulary*

ISO/TR 13387:1999 (all parts), *Fire safety engineering*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 13943, some of which are reproduced below for the use' convenience, as well as the followings apply.

3.1
asphyxiant
toxicant that causes hypoxia, which can result in central nervous system depression or cardiovascular effects

NOTE Loss of consciousness and ultimately death may occur.

[ISO/IEC 13943, definition 4.17]

3.2
available safe escape time
ASET
time available for escape for an individual occupant, the calculated time interval between the time of ignition (3.27) and the time at which conditions become such that the occupant is estimated to be incapacitated, i.e. unable to take effective action to escape (3.8) to a safe refuge or place of safety

NOTE 1 The time of ignition can be known, e.g. in the case of a fire model or a fire test, or it may be assumed, e.g. it may be based upon an estimate working back from the time of detection. The basis on which the time of ignition is determined is always stated.

NOTE 2 This definition equates incapacitation with failure to escape. Other criteria for ASET are possible. If an alternate criterion is selected, it is necessary that it be stated.

NOTE 3 Each occupant can have a different value of ASET, depending on that occupant's personal characteristics.

[ISO/IEC 13943, definition 4.20]

3.3
built environment
building or other structure

EXAMPLES off-shore platforms, civil engineering works such as tunnels, bridges and mines; and means of transportation such as motor vehicles and marine vessels.

NOTE ISO 6707-1 contains a number of terms and definitions for concepts related to the built environment.

[ISO/IEC 13943, definition 4.26]