Tuleohukatsetused. Osa 11-10: Katseleegid. 50 W horisontaal- ja vertikaalleegiga katsetamise meetodid

Fire hazard testing - Part 11-10: Test flames - 50 W horizontal and vertical flame test methods

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 60695-11-10:2013 sisaldab Euroopa standardi EN 60695-11-10:2013 ingliskeelset teksti.	This Estonian standard EVS-EN 60695-11-10:2013 consists of the English text of the European standard EN 60695-11-10:2013.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 30.08.2013.	Date of Availability of the European standard is 30.08.2013.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 13.220.40, 29.020

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60695-11-10

August 2013

ICS 13.220.40; 29.020

Supersedes EN 60695-11-10:1999 + A1:2003

English version

Fire hazard testing - Part 11-10: Test flames - 50 W horizontal and vertical flame test methods

(IEC 60695-11-10:2013)

Essais relatifs aux risques du feu - Partie 11-10: Flammes d'essai - Méthodes d'essai horizontal et vertical à la flamme de 50 W (CEI 60695-11-10:2013)

Prüfungen zur Beurteilung der Brandgefahr - Teil 11-10: Prüfflammen - Prüfverfahren mit einer 50-W-Prüfflamme horizontal und vertikal (IEC 60695-11-10:2013)

CENELEC

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B - 1000 Brussels

Ref. No. EN 60695-11-10:2013 E

Foreword

The text of document 89/1161/FDIS, future edition 2 of IEC 60695-11-10, prepared by IEC/TC 89 "Fire hazard testing" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60695-11-10:2013.

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)	2014-03-25
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2016-06-25

This document supersedes EN 60695-11-10:1999 + A1:2003.

EN 60695-11-10:2013 includes the following significant technical changes with respect to EN 60695-11-10:1999 + A1:2003:

- editorial changes have been made throughout the document for the purpose of aligning EN 60695-11-10 with EN 60695-11-20.
- details on test specimen dimensions have been added to Clause 7;
- new Subclause 9.1.4 Conditioning of the cotton pad has been added;
- new Subclause 9.2.4 Evaluation of “burned to the holding clamp” has been added;
- the Bibliography has been updated and references added.

This standard shall be used in conjunction with EN 60695-11-4.

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.

This standard covers the Principle Elements of the Safety Objectives for Electrical Equipment Designed for Use within Certain Voltage Limits (LVD - 2006/95/EC).

Endorsement notice

The text of the International Standard IEC 60695-11-10:2013 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 60695-1-10:2009	NOTE	Harmonised as EN 60695-1-10:2010 (not modified).
IEC 60695-1-11:2010	NOTE	Harmonised as EN 60695-1-11:2010 (not modified).
IEC 60695-11-5:2004	NOTE	Harmonised as EN 60695-11-5:2005 (not modified).
IEC 60695-1-30:2008	NOTE	Harmonised as EN 60695-1-30:2008 (not modified).
IEC 60695-11-20	NOTE	Harmonised as EN 60695-11-20.
ISO 1043-1	NOTE	Harmonised as EN ISO 1043-1.
ISO 845	NOTE	Harmonised as EN ISO 845.

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 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 60695-4	-	Fire hazard testing - Part 4: Terminology concerning fire tests for electrotechnical products	EN 60695-4	-
IEC 60695-11-4	-	Fire hazard testing - Part 11-4: Test flames - 50 W flame - Apparatus and confirmational test method	EN 60695-11-4	-
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 their inclusion in standards	-	-
ISO/IEC 13943	2008	Fire safety - Vocabulary	-	-
ISO 291	2008	Plastics - Standard atmospheres for conditioning and testing	EN ISO 291	2008
ISO 293	-	Plastics - Compression moulding of test specimens of thermoplastic materials	EN ISO 293	-
ISO 294	Series	Plastics - Injection moulding of test specimens of thermoplastic materials	EN ISO 294	Series
ISO 295	-	Plastics - Compression moulding of test specimens of thermosetting materials	EN ISO 295	-
ISO 307	-	Plastics - Polyamides - Determination of viscosity number	EN ISO 307	-
ISO 9773	-	Plastics - Determination of burning behaviour of thin flexible vertical specimens in contact with a small-flame ignition source	EN ISO 9773	-
ISO 16012	-	Plastics - Determination of linear dimensions of test specimens	-	-

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 product design, as well as the choice of materials, is to reduce to acceptable levels the potential risks of fire during normal operating conditions, reasonable foreseeable abnormal use, malfunction, and/or failure. IEC Technical Committee 89 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 and IEC 60695-1-11 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 these documents include the minimization of any flame spread beyond the product's enclosure and the minimization of 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 the test procedures for small scale tests to be carried out on materials used in electrotechnical equipment. A 50 W test flame is used as an ignition source. The test methods described provide classifications which may be used for quality assurance, the pre-selection of component materials of products, or to verify the required minimum flammability classification of materials used in end products.

These test methods should not be used solely to describe or appraise the fire hazard or fire risk of materials, products, or assemblies under actual fire conditions. However, results of these test methods may be used as elements of a fire hazard assessment which takes into account all of the factors which are pertinent to a particular end use.

This international standard 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 international standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

FIRE HAZARD TESTING –

Part 11-10: Test flames – 50 W horizontal and vertical flame test methods

1 Scope

This part of IEC 60695 specifies small-scale laboratory test procedures intended to compare the burning behaviour of different materials used in electrotechnical products when vertically or horizontally oriented test bar specimens are exposed to a small flame ignition source with a nominal thermal power of 50 W. These test methods determine either the linear burning rate or the self-extinguishing properties of materials.

These test methods are applicable to solid and cellular materials that have an apparent density of more than 250 kg/m^3, determined in accordance with ISO 845.

Two test methods are described. Method A is a horizontal burning test and is intended to determine the linear burning rate of materials under specific test conditions. Method B is a vertical burning test and is intended to determine whether materials self-extinguish under specific test conditions.

NOTE 1 ISO 9772 [8][1] describes a test method for the determination of the burning characteristics to be used for materials with an apparent density of 250 kg/m^3 or less. ISO 9773 describes a test method for the determination of the burning behaviour to be used for materials that due to their thinness, either distort and/or are burned up to the holding clamp using Method B of this standard.

The test methods described provide classifications (see 8.4 and 9.4), which may be used for quality assurance, the pre-selection of component materials of products, or to verify the required minimum flammability classification of materials used in end products.

NOTE 2 Guidance on pre-selection is given in IEC 60695-1-30.

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 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.

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

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1 Figures in square brackets refer to the bibliography.

IEC 60695-11-4, *Fire hazard testing – Part 11-4: Test flames – 50 W flames – Apparatus and confirmational test method*

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 their inclusion in standards*

ISO/IEC 13943:2008, *Fire Safety – Vocabulary*

ISO 291:2008, *Plastics – Standard atmospheres for conditioning and testing*

ISO 293, *Plastics – Compression moulding of test specimens of thermoplastic materials*

ISO 294, (all parts), *Plastics – Injection moulding of test specimens of thermoplastic materials*

ISO 295, *Plastics – Compression moulding of test specimens of thermosetting materials*

ISO 307, *Plastics – Polyamides – Determination of viscosity number*

ISO 9773, *Plastics – Determination of burning behaviour of thin flexible vertical specimens in contact with a small-flame ignition source*

ISO 16012, *Plastics – Determination of linear dimensions of test specimens*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 13943:2008 and IEC 60695-4, some of which are reproduced below for the user's convenience, as well as the following apply.

3.1
afterflame
flame that persists after the ignition source has been removed

[SOURCE: ISO/IEC 13943:2008, definition 4.6]

3.2
afterflame time
length of time for which an afterflame persists under specified test conditions

Note 1 to entry: Designated in Method B of this standard by the parameters t_1 and t_2.

[SOURCE: ISO/IEC 13943:2008, definition 4.7]

3.3
afterglow
persistence of glowing combustion after both removal of the ignition source and the cessation of any flaming combustion

[SOURCE: ISO/IEC 13943:2008, definition 4.8]

3.4
afterglow time
length of time which an afterglow persists under specified test conditions