TULEOHUKATSETUSED. OSA 11-20: KATSELEEGID. KATSETUSMEETODID LEEGI VÕIMSUSEL 500 W

Fire hazard testing - Part 11-20: Test flames - 500 W flame test methods

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 60695-11-20:2015 sisaldab Euroopa standardi EN 60695-11-20:2015 ingliskeelset teksti.	This Estonian standard EVS-EN 60695-11-20:2015 consists of the English text of the European standard EN 60695-11-20:2015.
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 03.07.2015.	Date of Availability of the European standard is 03.07.2015.
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

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EN 60695-11-20

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English Version

Fire hazard testing - Part 11-20: Test flames - 500 W flame test methods (IEC 60695-11-20:2015)

Essais relatifs aux risques du feu - Partie 11-20: Flammes d'essai - Méthodes d'essai à la flamme de 500 W (IEC 60695-11-20:2015)

Prüfungen zur Beurteilung der Brandgefahr - Teil 11-20: Prüfflammen - Prüfverfahren mit einer 500-W-Prüfflamme (IEC 60695-11-20:2015)

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 60695-11-20:2015 E

European foreword

The text of document 89/1241/FDIS, future edition 2 of IEC 60695-11-20, prepared by IEC/TC 89 "Fire hazard testing" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60695-11-20:2015.

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) 2016-02-27
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2018-05-27

This document supersedes EN 60695-11-20:1999.

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 60695-11-20:2015 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	Harmonized as 60695-1-10:2010 (not modified).
IEC 60695-1-11:2010	NOTE	Harmonized as EN 60695-1-11:2010 (not modified).
IEC 60695-1-30:2008	NOTE	Harmonized as EN 60695-1-30:2008 (not modified).
IEC 60695-11-5:2004	NOTE	Harmonized as EN 60695-11-5:2005 (not modified).
ISO 1043-1:2011	NOTE	Harmonized as EN ISO 1043-1:2011 (not modified).

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 60695-4	2012	Fire hazard testing - Part 4: Terminology concerning fire tests for electrotechnical products	EN 60695-4	2012
IEC 60695-11-3	-	Fire hazard testing - Part 11-3: Test flames - 500 W flames - Apparatus and confirmational test methods	EN 60695-11-3	-
IEC 60695-11-10	-	Fire hazard testing - Part 11-10: Test flames - 50 W horizontal and vertical flame test methods	EN 60695-11-10	-
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 291	-	Plastics - Standard atmospheres for conditioning and testing	EN ISO 291	-
ISO 293	-	Plastics - Compression moulding of test specimens of thermoplastic materials	EN ISO 293	-
ISO 294-1	1996	Plastics - Injection moulding of test specimens of thermoplastic materials Part 1: General principles, and moulding of multipurpose and bar test specimens	EN ISO 294-1	1998
ISO 294-2	1996	Plastics - Injection moulding of test specimens of thermoplastic materials Part 2: Small tensile bars	EN ISO 294-2	1998

Publication	Year	Title	EN/HD	Year
ISO 294-3	1996 [1)]	Plastics - Injection moulding of test specimens of thermoplastic materials Part 3: Small plates	EN ISO 294-3	1998 [2)]
ISO 295	-	Plastics - Compression moulding of test specimens of thermosetting materials	EN ISO 295	-
ISO 845	-	Cellular plastics and rubbers - Determination of apparent density	EN ISO 845	-
ISO 13943	2008	Fire safety - Vocabulary	EN ISO 13943	2010
ISO 16012	-	Plastics - Determination of linear dimensions of test specimens	-	-

1) Superseded by ISO 294-3:2002.

2) Superseded by EN ISO 294-3:2003.

CONTENTS

INTRODUCTION

In the design of an 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 a tolerable level of risk of fire even in the event of reasonably foreseeable (mis)use, malfunction or failure. 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.

The aim of the IEC 60695 series of standards is to save lives and property by reducing the number of fires or reducing the consequences of the fire. This can be accomplished by:

– trying 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.
– trying to minimise flame spread beyond the product's enclosure and to minimise the harmful effects of fire effluents including heat, smoke, and toxic or corrosive combustion products.

This part of IEC 60695 describes a test method which consists of two small-scale fire test procedures carried out on materials used in electrotechnical equipment. A 500 W test flame is used as an ignition source. The test method described provides 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.

This test method should not be used to solely describe or appraise the fire hazard or fire risk of materials, products, or assemblies under actual fire conditions. However, results of this test 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 11-20: Test flames – 500 W flame test method

1 Scope

This part of IEC 60695 describes a test method consisting of two small-scale laboratory test procedures which is intended to compare the burning behaviour of different materials used in electrotechnical products. Vertically oriented bar specimens or horizontally oriented plate test specimens are exposed to a small flame ignition source with a nominal thermal power of 500 W. The test method uses two test specimen configurations to classify material performance. Rectangular bar-shaped test specimens are used to assess ignitability and burning behaviour, and square plate test specimens are used to assess the resistance of the test specimen to burn-through, as defined in 8.3.3. This test method only applies to materials that have been classified as V-0 or V-1 according to IEC 60695-11-10.

This test method is only applicable to solid and cellular materials that have an apparent density of more than 250 kg/m^3, determined in accordance with ISO 845. The method does not apply to materials that shrink away from the applied flame without igniting due to their thinness.

The test method described provides 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. If used for pre-selection, then positive results shall be obtained at a test specimen thickness which equals the smallest thickness used in the product application.

The results obtained provide some information about the behaviour of materials in service, but cannot by themselves assure safe performance in service.

NOTE 1 Guidance on pre-selection is given in IEC 60695-1-30 [3][1].

NOTE 2 Test results are influenced by material additives, e.g. pigments, fillers, and fire retardants, and properties such as the direction of anisotropy and the molecular mass.

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.

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1 Numbers in square brackets refer to the bibliography.

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

IEC 60695-11-3, *Fire hazard testing – Part 11-3: Test flames – 500 W flames – Apparatus and confirmational test methods*

IEC 60695-11-10, *Fire hazard testing – Part 11-10: Test flames – 50 W horizontal and vertical flame test methods*

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, *Plastics – Standard atmospheres for conditioning and testing*

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

ISO 294:1996 (all parts), *Plastics – Injection moulding of test specimens of thermoplastic materials*

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

ISO 845, *Cellular plastics and rubbers – Determination of apparent density*

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 60695-4:2005, 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 this standard by the parameter t_1.

[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]