SLOVENSKI STANDARD
SIST EN 60695-1-20:2016

01-julij-2016

Preskušanje požarne ogroženosti - 1-20. del: Navodilo za ocenjevanje požarne ogroženosti elektrotehničnih izdelkov - Vnetljivost - Splošno navodilo (IEC 60695-1-20:2016)

Fire hazard testing - Part 1-20: Guidance for assessing the fire hazard of electrotechnical products - Ignitability - General guidance (IEC 60695-1-20:2016)

Essais relatifs aux risques du feu - Partie 1-20: Lignes directrices pour l'évaluation des risques du feu des produits électrotechniques - Allumabilité - Lignes directrices générales

Ta slovenski standard je istoveten z: **EN 60695-1-20:2016**

ICS:

13.220.40	Sposobnost vžiga in obnašanje materialov in proizvodov pri gorenju	Ignitability and burning behaviour of materials and products
29.020	Elektrotehnika na splošno	Electrical engineering in general

SIST EN 60695-1-20:2016 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60695-1-20

May 2016

ICS 13.220.40; 29.020

English Version

Fire hazard testing - Part 1-20: Guidance for assessing the fire hazard of electrotechnical products - Ignitability - General guidance (IEC 60695-1-20:2016)

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Prüfungen zur Beurteilung der Brandgefahr - Teil 1-20: Anleitung zur Beurteilung der Brandgefahr von elektrotechnischen Erzeugnissen - Entzündbarkeit - Allgemeiner Leitfaden (IEC 60695-1-20:2016)

This European Standard was approved by CENELEC on 2016-03-02. 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 CEN-CENELEC Management Centre or to any CENELEC member.

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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

European foreword

The text of document 89/1296/FDIS, future edition 1 of IEC 60695-1-20:2016, prepared by IEC/TC 89 "Fire hazard testing" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60695-1-20:2016.

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)	2016-12-02
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2019-03-02

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Endorsement notice

The text of the International Standard IEC 60695-1-20:2016 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/TS 62441	NOTE	Harmonized as CLC/TS 62441.
IEC 60112	NOTE	Harmonized as EN 60112.
IEC 60587	NOTE	Harmonized as EN 60587.
IEC 60099-4	NOTE	Harmonized as EN 60099-4.

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 60695-1-10	-	Fire hazard testing - Part 1-10: Guidance for assessing the fire hazard of electrotechnical products - General guidelines	EN 60695-1-10	-
IEC 60695-1-11	-	Fire hazard testing - Part 1-11: Guidance for assessing the fire hazard of electrotechnical products - Fire hazard assessment	EN 60695-1-11	-
IEC 60695-1-12	-	Fire hazard testing - Part 1-12: Guidance for assessing the fire hazard of electrotechnical products - Fire safety engineering	EN 60695-1-12	-
IEC/TR 60695-1-21	-	Fire hazard testing - Part 1-21: Guidance for assessing the fire hazard of electrotechnical products - Ignitability - Summary and relevance of test methods	-	-
IEC 60695-2-11	-	Fire hazard testing - Part 2-11: Glowing/hot-wire based test methods - Glow-wire flammability test method for end-products (GWEPT)	EN 60695-2-11	-
IEC 60695-2-12	-	Fire hazard testing - Part 2-12: Glowing/hot-wire based test methods - Glow-wire flammability index (GWFI) test method for materials	EN 60695-2-12	-
IEC 60695-2-13	-	Fire hazard testing - Part 2-13: Glowing/hot-wire based test methods - Glow-wire ignition temperature (GWIT) test method for materials	EN 60695-2-13	-
IEC 60695-4	2012	Fire hazard testing - Part 4: Terminology concerning fire tests for electrotechnical products	EN 60695-4	2012
IEC 60695-11-5	-	Fire hazard testing - Part 11-5: Test flames - Needle-flame test method - Apparatus, confirmatory test arrangement and guidance	EN 60695-11-5	-

Publication	Year	Title	EN/HD	Year
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/TS 60695-11-11	-	Fire hazard testing - Part 11-11: Test flames - Determination of the characteristic heat flux for ignition from a non-contacting flame source	-	-
IEC 60695-11-20	-	Fire hazard testing - Part 11-20: Test flames - 500 W flame test methods	EN 60695-11-20	-
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 13943	-	Fire safety - Vocabulary	EN ISO 13943	-
ISO 871	2006	Plastics - Determination of ignition temperature using a hot-air furnace	-	-
ISO 2592	-	Determination of flash and fire points - Cleveland open cup method	EN ISO 2592	-
ISO 2719	-	Determination of flash point - Pensky-Martens closed cup method	EN ISO 2719	-
ISO 5657	-	Reaction to fire tests - Ignitability of building products using a radiant heat source	-	-
ISO 5660-1	-	Reaction-to-fire tests - Heat release, smoke production and mass loss rate - Part-1: Heat release rate (cone calorimeter method) and smoke production rate (dynamic measurement)	-	-
ISO 10840	-	Plastics - Guidance for the use of standard fire tests	-	-

IEC 60695-1-20

Edition 1.0 2016-01

INTERNATIONAL STANDARD

NORME INTERNATIONALE

BASIC SAFETY PUBLICATION

PUBLICATION FONDAMENTALE DE SÉCURITÉ

Fire hazard testing –
Part 1-20: Guidance for assessing the fire hazard of electrotechnical products – Ignitability – General guidance

Essais relatifs aux risques du feu –
Partie 1-20: Lignes directrices pour l'évaluation des risques du feu des produits électrotechniques – Allumabilité – Lignes directrices générales

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 13.220.40, 29.020

ISBN 978-2-8322-3146-3

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FIRE HAZARD TESTING –

Part 1-20: Guidance for assessing the fire hazard of electrotechnical products – Ignitability – General guidance

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 60695-1-20 has been prepared by IEC technical committee 89: Fire hazard testing.

This first edition of IEC 60695-1-20 cancels and replaces the first edition of IEC TS 60695-1-20 published in 2008. This edition constitutes a technical revision.

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

a) ISO 5660-1 has been added to the normative references;
b) definitions of "pyrolysis" and "short-circuit" have been added to Clause 3;
c) some text from the introduction has been moved to Clause 5 and is now part of the normative text;

d) Clause 5 now contains several mandatory statements.

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

FDIS	Report on voting
89/1296/FDIS	89/1302/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.

In this standard, the terms defined in Clause 3 are printed in bold type.

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

The IEC 60695-1 series, under the general title *Fire hazard testing*, consists of the following parts:

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

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

Part 1-12: Guidance for assessing the fire hazard of electrotechnical products – Fire safety engineering

Part 1-20: Guidance for assessing the fire hazard of electrotechnical products – Ignitability – General guidance

Part 1-21: Guidance for assessing the fire hazard of electrotechnical products – Ignitability – Summary and relevance of test methods

Part 1-30: Guidance for assessing the fire hazard of electrotechnical products – Preselection testing procedures – General guidelines

Part 1-40: Guidance for assessing the fire hazard of electrotechnical products – Insulating liquids

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

Fires are responsible for creating hazards to life and property as a result of the generation of heat (thermal hazard), and also as a result of the production of toxic effluent, corrosive effluent and smoke (non-thermal hazard). Fires start with ignition and then can grow, leading in some cases to flash-over and a fully developed fire. Ignition resistance is therefore one of the most important parameters of a material to be considered in the assessment of fire hazard. If there is no ignition, there is no fire.

For most materials (other than metals and some other elements), ignition occurs in the gas phase. Ignition occurs when combustible vapour, mixed with air, reaches a high enough temperature for exothermic oxidation reactions to rapidly propagate. The ease of ignition is a function of the chemical nature of the vapour, the fuel/air ratio and the temperature.

In the case of liquids, the combustible vapour is produced by vaporization of the liquid, and the vaporization process is dependent on the temperature and chemical composition of the liquid.

In the case of solids, the combustible vapour is produced by pyrolysis when the temperature of the solid is sufficiently high. The vaporization process is dependent on the temperature and chemical composition of the solid, and also on the thickness, density, specific heat, and thermal conductivity of the solid.

The ease of ignition of a test specimen depends on many variables. Factors to be considered for the assessment of ignitability are:

a) the geometry of the test specimen, including thickness and the presence of edges, corners or joints;
b) the surface orientation;
c) the rate and direction of air flow;
d) the nature and position of the ignition source;
e) the magnitude and position of any external heat flux; and
f) whether the combustible material is a solid or a liquid.

The primary aims are to prevent ignition caused by an electrically energized 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 minimization of any flame spread beyond the product's enclosure and the minimization 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 an overall fire hazard assessment.

This international standard gives an overview of ignitability and its relevance to the fire hazard of electrotechnical products.