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Fire hazard testing - Part 1-12: Guidance for assessing the fire hazard of electrotechnical products - Fire safety engineering (IEC 60695-1-12:2015)

Prüfungen zur Beurteilung der Brandgefahr - Teil 1-12: Anleitung zur Beurteilung der Brandgefahr von elektrotechnischen Erzeugnissen - Brandschutzingenieurwesen (IEC 60695-1-12:2015)

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Essais relatifs aux risques du feu - Partie 1-12: Lignes directrices pour l'évaluation des risques du feu des produits électrotechniques - Ingénierie de la sécurité incendie (IEC 60695-1-12:2015)

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Europäisches Komitee für Elektrotechnische Normung

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EN IEC 60695-1-12:2020 (E)**European foreword**

This document (EN IEC 60695-1-12:2020) consists of the text of IEC 60695-1-12:2015 prepared by IEC/TC 89 "Fire hazard testing".

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) 2021-05-11
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2023-05-11

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In the official version, for Bibliography, the following note has to be added for the standard indicated:

ISO 9239-1 NOTE Harmonized as EN ISO 9239-1

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 1 Where 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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60695-1-10	-	Fire hazard testing -- Part 1-10: Guidance for assessing the fire hazard of electrotechnical products - General guidelines	-	-
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 60695-4	-	Fire hazard testing - Part 4: Terminology concerning fire tests for electrotechnical products	EN 60695-4	-
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 13943	2008	Fire safety - Vocabulary	-	-
ISO/TR 13387-2	-	Fire safety engineering – Part 2: Design fire scenarios and design fires	-	-
ISO/TR 13387-8	-	Fire safety engineering - Part 8: Life safety - Occupant behaviour, location and condition	-	-
ISO/TS 16733	-	Fire safety engineering - Selection of design fire scenarios and design fires	-	-
ISO/TR 16738	-	Fire-safety engineering - Technical information on methods for evaluating behaviour and movement of people	-	-
ISO/TR 17252	2008	Fire tests - Applicability of reaction to fire tests to fire modelling and fire safety engineering	-	-
ISO 23932	2009	Fire safety engineering - General principles	-	-

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Partie 1-12: Lignes directrices pour l'évaluation des risques du feu des produits
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CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative References	7
3 Terms and Definitions	8
4 The fire safety engineering process.....	14
4.1 General.....	14
4.2 Fire safety engineering calculations.....	15
4.3 Validity of methods.....	15
5 Benefits of fire safety engineering	16
6 Objectives, requirements and performance.....	17
6.1 Fire safety engineering objectives.....	17
6.1.1 General	17
6.1.2 Safety of life	17
6.1.3 Conservation of property	17
6.1.4 Continuity of operations	17
6.1.5 Protection of the natural environment	18
6.1.6 Preservation of heritage	18
6.2 Functional requirements.....	18
6.3 Performance criteria.....	18
6.3.1 General	18
6.3.2 Explicit performance criteria.....	18
6.3.3 Implicit performance criteria.....	19
7 Design fire scenarios and design fires.....	19
7.1 Design fire scenarios.....	19
7.2 Design fires.....	20
8 Data for fire safety engineering	20
9 Tests on electrotechnical products	21
9.1 General.....	21
9.2 Conditions for evaluation in fire tests.....	21
9.3 Electrotechnical product evaluations.....	21
9.3.1 As the source of ignition of a fire	21
9.3.2 As the victim of a fire	22
9.4 Test selection and/or development	22
Annex A (informative) A probabilistic fire risk assessment.....	24
A.1 The assessment of a fire risk in accordance with the Russian national standard GOST 12.1.004-91 [38]	24
A.1.1 Introduction.....	24
A.1.2 Probability Q_{fc}	24
A.1.3 Probability Q_{fv}	25
A.1.4 Probability Q_{pf}	25
A.1.5 Probability Q_{ign}	25
A.2 Example.....	26
A.2.1 General	26
A.2.2 Test data	27

A.2.3 Calculation.....	27
Bibliography	29
Figure 1 – Flowchart illustrating an example of the fire safety engineering process as applied to a major project in the built environment	16
Table 1 – Examples of design fire scenarios	19
Table 2 – Common ignition phenomena encountered in electrotechnical products	23
Table A.1 – Long start-up mode: enclosure (shell) temperatures in the most heated up-point.....	27
Table A.2 – The enclosure temperature at the most heated point when working under abnormal conditions.....	28
Table A.3 – Failure data for abnormal operation	28

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

FIRE HAZARD TESTING –

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

FOREWORD

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International Standard IEC 60695-1-12 Ed 1.0 has been prepared by IEC technical committee 89: Fire hazard testing.

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

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

FDIS	Report on voting
89/1237A/FDIS	89/1242/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.

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

IEC 60695-1 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 1-30: Guidance for assessing the fire hazard of electrotechnical products – Preselection testing process – General guidelines
- Part 1-40: Guidance for assessing the fire hazard of electrotechnical products – Insulating liquids.

This standard is to be used in conjunction with IEC 60695-1-10 and IEC 60695-1-11.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

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INTRODUCTION

Fire safety engineering

Fire safety engineering concerns the 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. This is in order to achieve fire safety engineering objectives, which typically are:

- a) to protect life safety,
- b) to protect property,
- c) to maintain the continuity of operations,
- d) to protect the natural environment, and
- e) to preserve heritage.

The analysis is based on calculations that use input data obtained principally from quantitative fire tests.

Fire safety engineering (FSE) is a discipline increasingly being used in support of performance-based national fire safety regulations in many countries and regional jurisdictions throughout the world. The eight parts of ISO/TR 13387 (see Clause 2 and [1] to [6]) and ISO 23932 outline the fundamental methodologies and uses of FSE. Further detailed aspects of FSE are covered in ISO 16730 [7], ISO/TS 16732 [8], ISO/TS 16733, ISO 16734 [9], ISO 16735 [10], ISO 16736 [11], ISO 16737 [12] and ISO/TR 16738.

In addition to purely performance-based regulations, many countries are also using FSE to supplement prescriptive regulations by applying FSE principles to specific design aspects, where reduced costs, alternative practices, improved performance and improved safety are the objectives.

The International Maritime Organization (IMO) is using FSE and the ISO standards mentioned above to develop fire safety designs for ships. These are considered to be an improvement on designs based on prescriptive fire safety requirements.

Qualitative and quantitative fire tests

Many standardised fire test methods give information on the performance of a material or end product as measured in the test, which may or may not be related to a real fire scenario or real installation practices. These qualitative fire test methods result in a “pass” or “fail” and/or a product or material ranking. They play an important role in prescriptive regulations, and the results of a qualitative test can be used indirectly in fire hazard assessment of electrotechnical products, but they are not suitable for directly supporting performance-based design.

Most standardized test methods developed by the IEC for electrotechnical products are of the qualitative type. It is agreed within ISO and the IEC that this type of fire test will continue to be maintained and, where necessary, developed. It is recognised that, even if the use of these standards is in prescriptive codes, product data from many of these standards may be potentially adaptable for fire safety engineering purposes.

In contrast, quantitative fire tests are increasingly being used and developed, and these do provide data that can be input to fire safety engineering calculations.

Various quantitative fire tests have been developed by ISO, some of which can be used to assess the performance of electrotechnical products (see 9.4).