

# Prøvning af brandrisiko – Del 1-12: Vejledning i fastsættelse af brandfare for elektrotekniske produkter – Brandteknisk dimensionering

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



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English Version

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

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

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

**Essais relatifs aux risques du feu –  
Partie 1-12: Lignes directrices pour l'évaluation des risques du feu des produits  
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# INTERNATIONAL STANDARD

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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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

## 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).

## **FIRE HAZARD TESTING –**

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

#### **1 Scope**

This part of IEC 60695 is intended as a general guideline for IEC Product Committees and provides:

- an explanation of the principles and uses of fire safety engineering;
- guidance on the use of fire safety engineering in the design of electrotechnical products;
- fire safety engineering terminology, and concepts;
- an indication of properties, data and tests needed for input into fire safety engineering assessments;
- informative references.

This international standard is not intended to be a detailed technical design guide, but is intended to provide guidance for product committees on fire safety engineering methods and performance based test information needs for use in performance based designs and fire hazard assessments of electrotechnical materials, assemblies, products and systems. More detailed information on fire safety engineering is contained in the ISO/TR 13387 series of documents (see Clause 2 and [1] to [6]) and in ISO 23932.

NOTE 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.

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 60695-1-10, *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*

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

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ISO 13943:2008, *Fire safety – Vocabulary*

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