IEC 60695-9-2

Edition 2.0 2021-08

INTERNATIONAL STANDARD

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Fire hazard testing –
Part 9-2: Surface spread of flame – Summary and relevance of test methods

Essais relatifs aux risques du feu –
Partie 9-2: Propagation des flammes en surface – Résumé et pertinence des méthodes d'essai

IEC 60695-9-2:2021-08(en-fr)

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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 60695-9-2 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.

This second edition cancels and replaces the first edition of IEC 60695-9-2 published in 2014. This edition constitutes a technical revision.

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

a) Updated introduction
b) Updated normative references
c) Updated terms and definitions
d) New Subclauses 4.1 and 4.2

e) Reference to *fire* stages as defined in ISO 19706 (Table 1)
f) New sub-division of tests into the following subclauses:
   4.3 *Small-scale fire tests*
   4.4 *Medium* and *intermediate-scale fire tests*
   4.5 *Intermediate* and *large-scale fire tests* for cables
   4.6 *Real-scale fire tests* for cables
g) Updated text in parts of Clause 4
h) Addition of the following test methods:
   IEC TS 60695-11-21
   IEC 60684-2:2011, Clause 26
   ISO 3582
   ISO 9772
   ISO 9773
   ISO 12992
   ISO 21367
i) New Clause 5 and Table 4 giving an overview of test methods
j) Deletion of all the Annexes
k) Updated bibliography

The text of this International Standard is based on the following documents:

Draft	Report on voting
89/1469/CDV	89/1505/RVC

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

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.

This International Standard is to be used in conjunction with IEC 60695-1.

In this standard, the following print types are used:

terms referred to in Clause 3: in italic type.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

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

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

IEC 60695-1-10, IEC 60695-1-11 [1][1], and IEC 60695-1-12 [2] provide guidance on how this is to be accomplished.

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.

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.

Fire hazard increases as the burning area increases, leading in some cases to *flashover* and a *fully developed fire*. This is a typical *fire scenario* in buildings. It is therefore useful to measure the rate and extent of the *surface spread of flame*.

This part of IEC 60695-9 describes *surface spread of flame* test methods in common use to assess electrotechnical products or materials used in electrotechnical products. It forms part of the IEC 60695-9 series which gives guidance to product committees wishing to incorporate test methods for *surface spread of flame* in product standards.

[1] Numbers in square brackets refer to the bibliography.

FIRE HAZARD TESTING –

Part 9-2: Surface spread of flame – Summary and relevance of test methods

1 Scope

This part of IEC 60695-9 presents a summary of published test methods that are used to determine the *surface spread of flame* of electrotechnical products or materials from which they are formed.

It represents the current state of the art of the test methods and, where available, includes special observations on their relevance and use.

The list of test methods is not to be considered exhaustive, and test methods that were not developed by the IEC are not to be considered as endorsed by the IEC unless this is specifically stated.

This summary cannot be used in place of published standards which are the only valid reference documents.

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 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.

IEC 60695-1-10, *Fire hazard testing – Part 1-10: Guidance for assessing the fire hazard of electrotechnical products – General guidelines*

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

IEC 60695-9-1, *Fire hazard testing – Part 9-1: Surface spread of flame – General guidance*

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 13943:2017, *Fire Safety – Vocabulary*