

Fire hazard testing - Part 5-1: Corrosion damage effects  
of fire effluent - General guidance

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN IEC 60695-5-1:2021 sisaldab Euroopa standardi EN IEC 60695-5-1:2021 ingliskeelset teksti.	This Estonian standard EVS-EN IEC 60695-5-1:2021 consists of the English text of the European standard EN IEC 60695-5-1:2021.
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 and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 03.12.2021.	Date of Availability of the European standard is 03.12.2021.
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ICS 29.020

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English Version

**Fire hazard testing - Part 5-1: Corrosion damage effects of fire  
effluent - General guidance  
(IEC 60695-5-1:2021)**

Essais relatifs aux risques du feu - Partie 5-1: Effets des  
dommages de corrosion des effluents du feu -  
Recommandations générales  
(IEC 60695-5-1:2021)

Prüfungen zur Beurteilung der Brandgefahr - Teil 5-1:  
Korrosionsschädigung durch Rauch und/oder Brandgase -  
Allgemeiner Leitfaden  
(IEC 60695-5-1:2021)

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European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

## European foreword

The text of document 89/1539/FDIS, future edition 3 of IEC 60695-5-1, prepared by IEC/TC 89 “Fire hazard testing” was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60695-5-1:2021.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2022-09-02 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2024-12-02 document have to be withdrawn

This document supersedes EN 60695-5-1:2003 and all of its amendments and corrigenda (if any).

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The text of the International Standard IEC 60695-5-1:2021 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 60695-1-12 NOTE Harmonized as EN IEC 60695-1-12

IEC 60754-1 NOTE Harmonized as EN 60754-1

IEC 60754-2 NOTE Harmonized as EN 60754-2

IEC 60754-3 NOTE Harmonized as EN IEC 60754-3

ISO 7384 NOTE Harmonized as EN ISO 7384

## 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](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	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/TS 60695-5-2		Fire hazard testing - Part 5–2: Corrosion damage effects of fire effluent - Summary and relevance of 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 11907-1	2019	Plastics - Smoke generation - Determination of the corrosivity of fire effluents - Part 1: General concepts and applicability	-	-
ISO 13943	2017	Fire safety - Vocabulary	EN ISO 13943	2017
ISO 19706	2011	Guidelines for assessing the fire threat to people	-	-

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

HORIZONTAL PUBLICATION  
PUBLICATION HORIZONTALE

**Fire hazard testing –  
Part 5-1: Corrosion damage effects of fire effluent – General guidance**

**Essais relatifs aux risques du feu –  
Partie 5-1: Effets des dommages de corrosion des effluents du feu –  
Recommandations générales**



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# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

HORIZONTAL PUBLICATION  
PUBLICATION HORIZONTALE

**Fire hazard testing –  
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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FIRE HAZARD TESTING –**Part 5-1: Corrosion damage effects of fire effluent –  
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 60695-5-1 has been prepared by IEC technical committee 89: Fire hazard testing.

This third edition cancels and replaces the second edition, published in 2002, and constitutes a technical revision.

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

- a) References to IEC TS 60695-5-3 (withdrawn in 2014) have been removed.
- b) References to IEC 60695-1-1 are now to its replacements: IEC 60695-1-10 and IEC 60695-1-11.
- c) ISO/TR 9122-1 has been revised by ISO 19706.
- d) Table 1 has been updated.

- e) References to ISO 11907-2 and ISO 11907-3 have been removed.
- f) Terms and definitions have been updated.
- g) Text in 6.4 has been updated.
- h) Bibliographic references have been updated.

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

FDIS	Report on voting
89/1539/FDIS	89/1543/RVD

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](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/standardsdev/publications](http://www.iec.ch/standardsdev/publications).

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

In this standard, the following print types are used:

Arial **bold**: terms referred to in Clause 2

This standard is to be read in conjunction with IEC TS 60695-5-2.

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 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](http://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, and IEC 60695-1-12 [1]<sup>1</sup> 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 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.

All **fire effluent** is corrosive to some degree and the level of potential to corrode depends on the nature of the fire, the combination of combustible materials involved in the fire, the nature of the substrate under attack, and the temperature and relative humidity of the environment in which the **corrosion damage** is taking place. There is no evidence that **fire effluent** from electrotechnical products offers greater risk of **corrosion damage** than the **fire effluent** from other products such as furnishings or building materials.

The performance of electrical and electronic components can be adversely affected by **corrosion damage** when subjected to **fire effluent**. A wide variety of combinations of small quantities of effluent gases, **smoke** particles, moisture and temperature may provide conditions for electrical component or system failures from breakage, overheating or shorting.

Evaluation of potential **corrosion damage** is particularly important for high value and safety-related electrotechnical products and installations.

Technical committees responsible for products will choose the test(s) and specify the level of severity.

The study of **corrosion damage** requires an interdisciplinary approach involving chemistry, electricity, physics, mechanical engineering, metallurgy and electrochemistry. In the preparation of this part of IEC 60695-5, all of the above have been considered.

IEC 60695-5-1 defines the scope of the guidance and indicates the field of application.

IEC TS 60695-5-2 provides a summary of test methods including relevance and usefulness.

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<sup>1</sup> Numbers in square brackets refer to the bibliography.