

INTERNATIONAL STANDARD

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BASIC SAFETY PUBLICATION

PUBLICATION FONDAMENTALE DE SÉCURITÉ

Fire hazard testing – **STANDARD PREVIEW**
Part 4: Terminology concerning fire tests for electrotechnical products
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Essais relatifs aux risques du feu –
Partie 4: Terminologie relative aux essais au feu pour les produits
électrotechniques
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

FIRE HAZARD TESTING –

Part 4: Terminology concerning fire tests
for electrotechnical products

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 60695-4 has been prepared by IEC technical committee 89: Fire hazard testing.

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

FDIS	Report on voting
89/1098/FDIS	89/1112/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.

This fourth edition of IEC 60695-4 cancels and replaces the third edition issued in 2005. It constitutes a technical revision.

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

The main changes with respect to the previous edition are listed below:

- The terms and definitions that are not specifically electrotechnical and that are either identical or equivalent to those in ISO 13943:2008 have been deleted.
- The terms and definitions that are specifically electrotechnical and that are in ISO 13943:2008 have been included for the convenience of the user.
- Some new terms have been included.

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

The following introductory elements represent a series of publications:

- Part 1: Guidance for assessing the fire hazard of electrotechnical products
- Part 2: Glowing/hot-wire based test methods
- Part 4: Terminology concerning fire tests for electrotechnical products
- Part 5: Corrosion damage effects of fire effluent
- Part 6: Smoke obscuration
- Part 7: Toxicity of fire effluent
- Part 8: Heat release
- Part 9: Surface spread of flame
- Part 10: Abnormal heat
- Part 11: Test flames

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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.

FIRE HAZARD TESTING –

Part 4: Terminology concerning fire tests for electrotechnical products

1 Scope

The terms and definitions in this standard are applicable to fire tests for electrotechnical products.

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 Guide 104:2010, *The preparation of safety publications and the use of basic safety publications and group safety publications*

IEC 60050, *International Electrotechnical vocabulary*

ISO 13943:2008, *Fire safety – Vocabulary*

ISO/IEC Guide 51:1999, *Safety aspects – Guidelines for their inclusion in standards*

3 Terms and definitions

3.1 Use of the term “item”

For the purposes of this document, the English term “item” is used in a general meaning to represent any single object or assembly of objects, and may cover, for example, material, product, assembly, structure or building, as required in the context of any individual definition. If the “item” under consideration is a test specimen then the term “test specimen” is used.

3.2 Other terms and definitions

For the purposes of this document, the following terms and definitions apply.

NOTE Terms and definitions that are specifically electrotechnical and that are in ISO 13943:2008 have been included below for the convenience of the user.

3.2.1

abnormal heat

(electrotechnical) heat that is additional to that resulting from use under normal conditions, up to and including that which causes a fire

[SOURCE: ISO 13943:2008, definition 4.1]

3.2.2

arc resistance

(electrotechnical) ability of an electrically insulating material to resist the influence of an electric arc, under specified conditions

Note 1 to entry: The arc resistance is identified by the length of the arc, the absence or presence of a conducting path and the burning or damage of the test specimen.

[SOURCE: ISO 13943:2008, definition 4.13]

3.2.3

arc tracking tracking

(electrotechnical) progressive formation of conducting paths that are produced on the surface and/or within a solid insulating material, due to the combined effects of electric stress and electrolytic contamination

SEE: **tracking resistance** (3.2.27)

[SOURCE: ISO 13943:2008, definition 4.342]

3.2.4

confirmatory test

procedure intended as a diagnostic indicator to reveal anomalous behaviour or conditions in a test flame, burner or associated hardware

3.2.5

enclosure

housing affording the type and degree of protection suitable for the intended application

[SOURCE: IEC 60050-195:1998, 195-02-35]

3.2.6

enclosure

(electrotechnical) external casing protecting the electrical and mechanical parts of apparatus

Note 1 to entry: The term excludes cables.

[SOURCE: ISO 13943:2008, definition 4.78]

3.2.7

end product

product that is ready for use without modification

NOTE 1 to entry: An end product can be a component of another end product.

3.2.8

end product fire test

fire test that is carried out on an end product and is described in a relevant specification.

Note 1 to entry: End product fire tests may be small-scale, intermediate-scale, large-scale or real-scale.

3.2.9**extent of combustion**

⟨electrotechnical⟩ maximum length of a test specimen that has been destroyed by combustion or pyrolysis, under specified test conditions, excluding any region damaged only by deformation

[SOURCE: ISO 13943:2008, definition 4.91]

3.2.10**fire hazard assessment**

evaluation of the possible causes of fire, the possibility and nature of subsequent fire growth, and the possible consequences of fire

3.2.11**flame stabilizer**

assembly normally fitted to the top of a standard laboratory Bunsen or Tirrill burner intended to mitigate the destabilizing effect of the turbulent mixing of flame gases with the ambient air, by providing an intervening layer of gas having an intermediate velocity between the ambient still air and the faster flame gases

3.2.12**flameproof**

⟨electrotechnical⟩ class of methods used to prevent the ignition, caused by electrical equipment, of explosive atmospheres

SEE: **flameproof enclosure** (3.2.13)

Note 1 to entry: The term is deprecated in other applications.

[SOURCE: ISO 13943:2008, definition 4.145]

3.2.13**flameproof enclosure**

⟨electrotechnical⟩ enclosure that can withstand the pressure developed during an explosion of the atmosphere within the enclosure and can prevent the transmission of the explosion to the atmosphere surrounding the enclosure

[SOURCE: ISO 13943:2008, definition 4.146]

3.2.14**flashover**

⟨electrotechnical⟩ electrical discharge that occurs over the surface of a solid dielectric in a gaseous or liquid medium

[SOURCE: ISO 13943:2008, definition 4.157]

3.2.15**incident heat flux**

heat flux received by the surface of a test specimen

3.2.16**insignificant mass**

insufficient combustible material to constitute a fire hazard

Note 1 to entry: A default value is 2 g, but product TCs may assign a different value appropriate to the product type and scale.

3.2.17**intrinsically safe circuit**

(electrotechnical) circuit in which any spark or thermal effect is incapable of causing ignition of a mixture of flammable or combustible material in air under specified test conditions

Note 1 to entry: The specified test conditions include normal operation and specified fault conditions.

[SOURCE: ISO 13943:2008, definition 4.201]

3.2.18**intrinsically safe system**

(electrotechnical) assembly in which all electrical circuits that can be used in hazardous (classified) locations are intrinsically safe circuits

[SOURCE: ISO 13943:2008, definition 4.202]

3.2.19**lethal toxic potency**

toxic potency where the specific toxic effect is death

SEE: **lethal concentration 50, LC_{50}** (ISO 13943:2008, 4.207)
lethal exposure dose 50, LCt_{50} (ISO 13943:2008, 4.208)

3.2.20**minimum critical relative humidity**

(electrotechnical) relative humidity that causes leakage current to exceed a defined level under specified test conditions

[SOURCE: ISO 13943:2008, definition 4.229]

3.2.21**preselection**

process of assessing and choosing candidate materials, components or subassemblies for making an end product

3.2.22**qualitative fire test**

fire test which is either:

- a) a pass/fail test; or
- b) a test which categorizes the behaviour of the test specimen by determining its position in a rank order of performance

3.2.23**quantitative fire test**

fire test which takes into account the circumstances of product use in which the test conditions are based on, or are relatable to, the circumstances of use of the test specimen, and which measures a parameter or parameters, expressed in well defined terms and using rational scientific units, which can be used in the quantitative assessment of fire risk

3.2.24**self-heating**

(electrotechnical) heat generated by a powered electrotechnical product resulting in a rise in temperature in the product

[SOURCE: ISO 13943:2008, definition 4.288]

3.2.25**small part**

part with a dimension less than the minimum specified for the relevant test method

3.2.26

spark, noun

⟨electrotechnical⟩ luminous discharge resulting from the dielectric breakdown of a gas between two electrodes

[SOURCE: ISO 13943:2008, definition 4.300]

3.2.27

tracking resistance

⟨electrotechnical⟩ ability of a material to withstand a test voltage, under specified conditions, without tracking and without the occurrence of flame

[SOURCE: ISO 13943:2008, definition 4.343]

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