

**Fire hazard testing -- Part 8-1: Heat release -  
General guidance**

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guidance

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 60695-8-1:2008 sisaldab Euroopa standardi EN 60695-8-1:2008 ingliskeelset teksti.</p> <p>Standard on kinnitatud Eesti Standardikeskuse 24.07.2008 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 06.06.2008.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 60695-8-1:2008 consists of the English text of the European standard EN 60695-8-1:2008.</p> <p>This standard is ratified with the order of Estonian Centre for Standardisation dated 24.07.2008 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.</p> <p>Date of Availability of the European standard text 06.06.2008.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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**Võtmesõnad:** electrotechnical products, fire, fire hazard test, fire propagation, fire risks, fire tests, flame propagation, gas temperature, guide books, hazards, heat of combustion, heat release rate, materials, oxygen consumption, testing, testing conditions, thermal output

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Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonilisse süsteemi või edastamine ükskõik millises vormis või millisel teel on keelatud ilma Eesti Standardikeskuse poolt antud kirjaliku loata.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:  
Aru 10 Tallinn 10317 Eesti; [www.evs.ee](http://www.evs.ee); Telefon: 605 5050; E-post: [info@evs.ee](mailto:info@evs.ee)

English version

**Fire hazard testing -  
Part 8-1: Heat release -  
General guidance  
(IEC 60695-8-1:2008)**

Essais relatifs aux risques du feu -  
Partie 8-1: Dégagement de chaleur -  
Guide général  
(CEI 60695-8-1:2008)

Prüfungen zur Beurteilung der  
Brandgefahr -  
Teil 8-1: Wärmefreisetzung -  
Allgemeiner Leitfadens  
(IEC 60695-8-1:2008)

This European Standard was approved by CENELEC on 2008-05-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

**CENELEC**

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

**Central Secretariat: rue de Stassart 35, B - 1050 Brussels**

## Foreword

The text of document 89/856/FDIS, future edition 2 of IEC 60695-8-1, prepared by IEC TC 89, Fire hazard testing, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60695-8-1 on 2008-05-01.

This European Standard supersedes EN 60695-8-1:2001.

The main changes with respect to EN 60695-8-1:2001 are listed below:

- editorial changes throughout;
- revised terms and definitions;
- new text concerning bomb calorimetry;
- revised Table 1a;
- new Clause 5 – Parameters used to report heat release data;
- introduction of intermediate scale fire test.

This standard is to be used in conjunction with IEC/TR 60695-8-2.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2009-02-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2011-05-01

Annex ZA has been added by CENELEC.

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## Endorsement notice

The text of the International Standard IEC 60695-8-1:2008 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 60695-4	NOTE Harmonized as EN 60695-4:2006 (not modified).
IEC 60836	NOTE Harmonized as EN 60836:2005 (not modified).
IEC 61099	NOTE Harmonized as EN 61099:1992 (not modified).
IEC 60867	NOTE Harmonized as EN 60867:1994 (not modified).
IEC 60296	NOTE Harmonized as EN 60296:2004 (not modified).

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## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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 When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
-	-	Reaction to fire tests for building products - Building products excluding floorings exposed to the thermal attack by a single burning item	EN 13823	- <sup>1)</sup>
IEC 60695	Series	Fire hazard testing	EN 60695	Series
IEC/TR 60695-8-2	- <sup>1)</sup>	Fire hazard testing - Part 8-2: Heat release - Summary and relevance of test methods	-	-
IEC Guide 104	1997	The preparation of safety publications and the use of basic safety publications and group safety publications	-	-
ISO/IEC Guide 51	1999	Safety aspects - Guidelines for their inclusion in standards	-	-
ISO 1716	- <sup>1)</sup>	Reaction to fire tests for building products - Determination of the heat of combustion	EN ISO 1716	2002 <sup>2)</sup>
ISO 13943	2000	Fire safety - Vocabulary	EN ISO 13943	2000

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<sup>1)</sup> Undated reference.

<sup>2)</sup> Valid edition at date of issue.

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## INTRODUCTION

In the design of any 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 to acceptable levels the potential risks of fire even in the event of foreseeable abnormal use, malfunction or failure. The future IEC 60695-1-10 [1]<sup>1)</sup>, together with its companion the future IEC 60695-1-11 [2] provide guidance on how this is to be accomplished.

The primary aims are as follows:

- 1) to prevent ignition caused by an electrically energized component part, and
- 2) in the event of ignition, to confine any resulting fire within the bounds of the enclosure of the electrotechnical product.

Secondary aims include the minimization of any flame spread beyond the product's enclosure and the minimization of harmful effects of fire effluents including heat, smoke and toxic or corrosive combustion products.

Fires involving electrotechnical products can also be initiated from external non-electrical sources. Considerations of this nature are dealt with in the overall risk assessment.

Fires are responsible for creating hazards to life and property as a result of the generation of heat (thermal hazard), toxic and/or corrosive compounds and obscuration of vision due to smoke. Fire risk increases as the heat released increases, possibly leading to a flash-over fire.

One of the most important measurements in fire testing is the measurement of heat release, and it is used as an important factor in the determination of fire hazard; it is also used as one of the parameters in fire safety engineering calculations.

The measurement and use of heat release data, together with other fire test data, can be used to reduce the likelihood of (or the effects of) fire, even in the event of foreseeable abnormal use, malfunction or failure of electrotechnical products.

When a material is heated by some external source, fire effluent can be generated and can form a mixture with air, which can ignite and initiate a fire. The heat released in the process is carried away by the fire effluent-air mixture, radiatively lost or transferred back to the solid material, to generate further pyrolysis products, thus continuing the process.

Heat may also be transferred to other nearby products, which may burn, and then release additional heat and fire effluent.

The rate at which thermal energy is released in a fire is defined as the heat release rate. Heat release rate is important because of its influence on flame spread and on the initiation of secondary fires. Other characteristics are also important, such as ignitability, flame spread and the side-effects of the fire (see the IEC 60695 series of standards).

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1) Figures in square brackets refer to the bibliography.

## FIRE HAZARD TESTING –

### Part 8-1: Heat release – General guidance

#### 1 Scope

This part of IEC 60695 provides guidance on the measurement and interpretation of heat release from electrotechnical products and materials from which they are constructed.

Heat release data can be used as part of fire hazard assessment and in fire safety engineering, as described in the future IEC 60695-1-10 [1] and the future IEC 60695-1-11[2].

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 referenced documents are indispensable for the application 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 (all parts), *Fire hazard testing*

IEC/TS 60695-8-2, *Fire hazard testing – Part 8-2: Heat release – Summary and relevance of test methods.*

IEC Guide 104:1997, *The preparation of safety publications and the use of basic safety publications and group safety publications.*

ISO 1716, *Reaction to fire tests for building products – Determination of the heat of combustion.*

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

ISO/IEC 13943:2000, *Fire safety – Vocabulary*

EN 13823, *Reaction to fire tests for building products – Building products, excluding floorings, exposed to thermal attack by a single burning item.*

#### 3 Terms and definitions

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