

Fire hazard testing —

Part 9-1: Surface spread of flame — General guidance

The European Standard EN 60695-9-1:2005 has the status of a British Standard

ICS 13.220.40; 29.020

National foreword

This British Standard is the official English language version of EN 60695-9-1:2005. It is identical with IEC 60695-9-1:2005. It supersedes BS EN 60695-9-1:1999 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee GEL/89, Fire hazard testing, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 15 and a back cover.

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Amendments issued since publication

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English version

Fire hazard testing
Part 9-1: Surface spread of flame –
General guidance
(IEC 60695-9-1:2005)

Essais relatifs aux risques du feu
Partie 9-1: Propagation des flammes
en surface –
Lignes directrices générales
(CEI 60695-9-1:2005)

Prüfungen zur Beurteilung der
Brandgefahr
Teil 9-1: Oberflächige
Flammenausbreitung –
Allgemeiner Leitfadens
(IEC 60695-9-1:2005)

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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.

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CENELEC

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

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Foreword

The text of document 89/716/FDIS, future edition 2 of IEC 60695-9-1, prepared by IEC TC 89, Fire hazard testing, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60695-9-1 on 2005-10-01.

This European Standard supersedes EN 60695-9-1:1999.

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

- a revised introduction;
- the addition of a list of pertinent definitions;
- comprehensive editorial revision throughout document;
- new Clause 5 dealing with fire scenarios.

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) | 2006-07-01 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn | (dow) | 2008-10-01 |

EN 60695-9-1 is to be used in conjunction with IEC/TS 60695-9-2.

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60695-9-1:2005 was approved by CENELEC as a European Standard without any modification.

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INTRODUCTION

Fires are responsible for creating hazards to life and property as a result of the generation of heat (thermal hazard), and also toxic effluent, corrosive effluent and smoke (non-thermal hazard). Fire hazard increases with the burning area leading in some cases to flash-over and a fully developed fire. This is a typical fire scenario in buildings.

The surface spread of flame beyond the area of ignition occurs as a result of the creation of a pyrolysis front on the surface of the material, ahead of the flame front, arising from the heating by the flame and external heat sources. The pyrolysis front is the boundary between pyrolysed material and unpyrolysed material on the surface of the material. Combustible vapours are generated within the region of pyrolysed material which mix with air and ignite, creating the flame front.

The surface spread of flame rate is the distance travelled by the flame front divided by the time required to travel that distance. The surface spread of flame rate depends on the heat supplied externally and/or by the flame of the burning material ahead of the burning zone and on the ease of ignition. The ease of ignition is a function of the minimum ignition temperature, thickness, density, specific heat, and thermal conductivity of the material. The heat supplied by the flame depends on the heat release rate, specimen orientation, air flow rate and air flow direction relative to the surface spread of flame direction. In general, materials show one of the following types of surface spread of flame behaviour:

- a) non-propagation: there is no flame propagation beyond the area of ignition;
- b) decelerating propagation: flame propagation stops before reaching the end of the surface of the material; and
- c) propagation: flame propagates beyond the area of ignition and eventually affects the entire surface of the material.

Properties of the materials that are used to describe the surface spread of flame behaviour are associated with surface preheating and pyrolysis, generation of vapours, mixing of the vapours with air, ignition, combustion of the mixture and generation of heat and combustion products. Flame retardants and surface treatments are used to modify the surface spread of flame behaviour. Factors that need to be considered for the assessment of the surface spread of flame behaviour of materials are

- a) the fire scenario (surface orientation, ventilation, ignition source, etc.);
- b) measurement techniques (see 5.5); and
- c) the use and interpretation of results obtained.