

Fire resistance tests for loadbearing elements —

Part 2: Floors and roofs

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British Standard

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National foreword

This British Standard is the official English language version of EN 1365-2:1999.

The UK participation in its preparation was entrusted by Technical Committee FSH/22, Fire resistance tests, to Subcommittee FSH/22/10, Fire resistance tests for loadbearing elements, which has the responsibility to:

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

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

The date of withdrawal of conflicting national standards has been extended to June 2001.

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 24 an inside back cover and a back cover.

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Essais de résistance au feu des éléments porteurs –
Partie 2: Planchers et toitures

Feuerwiderstandsprüfungen für tragende Bauteile - Teil 2:
Decken und Dächer

This European Standard was approved by CEN on 18 February 1999.

CEN 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 CEN 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 CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 127 "Fire safety in buildings", the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2000, and conflicting national standards shall be withdrawn at the latest by June 2000.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

EN 1365 'Fire resistance tests for loadbearing elements' consists of the following

Part 1: Walls

Part 2: Floors and roofs

Part 3: Beams

Part 4: Columns

Part 5: Balconies (in course of preparation)

Part 6: Stairs and walkways (in course of preparation)

Introduction

Caution

The attention of all persons concerned with managing and carrying out this fire resistance test is drawn to the fact that fire testing may be hazardous and that there is a possibility that toxic and/or harmful smoke and gases may be evolved during the test. Mechanical and operation hazards may also arise during the construction of the test elements or structures, their testing and disposal of test residues.

An assessment of all potential hazards and risks to health shall be made and safety precautions shall be identified and provided. Written safety instructions shall be issued. Appropriate training shall be given to relevant personnel. Laboratory personnel shall ensure that they follow written safety instructions at all times.

1 Scope

This Part of EN 1365 specifies a method for determining the fire resistance of:

- floor constructions, without cavities or with unventilated cavities;
- roof constructions, with or without cavities (ventilated or unventilated);
- floor and roof constructions incorporating a glazed element;

with fire exposure from the underside.

This Standard is used in conjunction with EN 1363-1.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 1363-1 Fire resistance tests Part 1: General requirements

EN 1363-2 Fire resistance tests Part 2: Alternative and additional procedures

prEN ISO 13943 Fire safety - Vocabulary (ISO/DIS 13943:1998)

3 Definitions, symbols and designations

3.1 Definitions

For the purpose of this Part of EN 1365 the definitions given in EN 1363-1 and prEN ISO 13943, together with the following, apply:

3.1.1 floor: A horizontal separating element of building construction which is loadbearing.

3.1.2 roof: A horizontal or sloped separating element of building construction which is loadbearing.

3.1.3 ceiling: A lining plus any supporting framework, including hangers, fixings and any insulation material.

The ceiling may be attached directly to the structural building member or be suspended from it or be self-supporting. (See figure 1).

3.1.4 ceiling system: The full ceiling assembly submitted for test, including hangers and fixings, e.g. lighting and ventilation ductings and access points.

3.1.5 cavity: The space between the upper surface of the ceiling and the underside of any floor, roof or its supporting construction.

3.1.6 associated construction: Walls applied at the periphery of the test specimen for the support of the test specimen representative of those in practice.

3.1.7 roof construction with a glazed element: A roof construction as defined in 3.1.2 with one opening in which a glazed element is built in, with or without shared transoms or mullions.

3.1.8 fire resistant glazing: A glazing system consisting of one or more transparent or translucent panes with a suitable method of mounting, with e.g. frames, seals, fixing materials etc., capable of satisfying the appropriate fire resistance criteria.

3.1.9 insulated glazing: Fire resistant glazing which satisfies both the integrity and insulation criteria for the anticipated fire resistance period.

3.1.10 uninsulated glazing: Fire resistant glazing which satisfies the integrity and, where required, the radiation criteria for the anticipated fire resistance period but which is not intended to provide insulation.

3.1.11 glazed elements: Building elements with one or more (light transmissive) panes, that are built in a frame with fixings and seals.

3.1.12 pane: A single piece of glass.

3.1.13 aspect ratio: The ratio of the height of a pane to its width.

3.1.14 mullion: A vertical framing member separating and supporting two adjacent panes of glass or panels.

3.1.15 transom: A horizontal framing member separating and supporting two adjacent panes of glass or panels.

3.2 Symbols and designations

Symbol	Unit	Description
L_{exp}	mm	Length of the test specimen exposed to heating.
L_{sup}	mm	Length of test specimen between centres of supports (this is equivalent to 'L' in EN 1363-1).
L_{spec}	mm	Length of the test specimen.
W_{exp}	mm	Width of the test specimen exposed to heating.
W_{sup}	mm	The transverse span of a two way spanning test specimen.
W_{spec}	mm	The width of the test specimen.
A_m/V	m^{-1}	Section factor of steel beams.

4 Test equipment

The test equipment shall be as specified in EN 1363-1, and if applicable EN 1363-2.

5 Test conditions

5.1 Furnace

- a) The heating and pressure conditions and the furnace atmosphere shall conform to those given in EN 1363-1 or, if applicable, EN 1363-2.
- b) In addition to a) for sloped roof constructions, tested with an inclination, the following applies:
 - For test specimen without a horizontal suspended ceiling, the furnace pressure at pressure sensor (ps_i), see figure 2, shall not be greater than 20 Pa.
 - For test specimen with a horizontal suspended ceiling, the furnace pressure of 20 Pa shall be established 100 mm below the underside of the ceiling lining. However, the nominal pressure at sensor (ps_i), see figure 2, shall not be greater than 20 Pa, and the height of neutral pressure plane shall be adjusted accordingly.

5.2 Loading conditions

The test specimen shall be subjected to loads determined in accordance with EN 1363-1. The determination of the load shall be clearly indicated in the test report.

The magnitude and the distribution of the load shall be such that the maximum moments and shear forces produced in the test specimen are representative of, or higher than, those expected in practice.

The load shall be applied uniformly or by a point loading system.

Point loads shall be transferred to the test specimen through distribution plates; the total contact area between these and the floor surface shall be not more than 0,09 m² individually, or 16% of the total surface area collectively.

If the plates are made of steel or of materials with a similar high conductivity, they shall be insulated from the surface of the test specimen.

The loading equipment shall not inhibit the free movement of air at the top of the test specimen and, other than at the loading points, no part of the loading equipment shall be closer than 60 mm to the unexposed surface of the test specimen.

6 Test specimen

6.1 Size

- a) The test specimen shall be full size unless the actual size is larger than can be accommodated in the furnace.