

**Provning av brandmotstånd – Icke bärande  
byggnadsdelar –  
Del 4: Curtain walling (t.ex. glasfasader) –  
Utförande i delar**

**Fire resistance tests for non-loadbearing  
elements –  
Part 4: Curtain walling – Part configuration**

Europastandarden EN 1364-4:2007 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN 1364-4:2007.

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## Fire resistance tests for non-loadbearing elements - Part 4: Curtain walling - Part configuration

Essais de résistance au feu des éléments non-porteurs -  
Partie 4: Façades rideaux - Configuration partielle

Feuerwiderstandsprüfungen für nichttragende Bauteile -  
Teil 4: Vorhangfassaden - Teilausführung

This European Standard was approved by CEN on 9 December 2006.

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## EN 1364-4:2007 (E)

### Foreword

This document (EN 1364-4:2007) 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of an identical text or by endorsement, at the latest by September 2007, and conflicting national standards shall be withdrawn at the latest by September 2007.

EN 1364 "*Fire resistance tests for non-loadbearing elements*" consists of the following:

- *Part 1: Walls,*
- *Part 2: Ceilings,*
- *Part 3: Curtain walling – Full configuration (complete assembly),*
- *Part 4: Curtain walling – Part configuration.*

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

## **Introduction**

### **WARNING**

The attention of all persons concerned with managing and carrying out this fire resistance test is drawn to the fact that fire testing can be hazardous and that there is a possibility that toxic and/or harmful smoke and gases can be developed during the test. Mechanical and operational hazards can 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 should be made and safety precautions should be identified and provided. Written safety instructions should be issued. Appropriate training should be given to relevant personnel. Laboratory personnel should ensure that they follow written safety instructions at all times.

## EN 1364-4:2007 (E)

### 1 Scope

This European Standard specifies a method for determining the fire resistance of parts of curtain walling incorporating non-fire-resistant infilling product, e.g. glazing. It examines the fire resistance to internal and external fire exposure of:

- spandrels, including downstand, upstand or the combinations thereof,
- the horizontal linear gap seal and
- the fixings used to attach the curtain walling to the floor element.

The test method includes an assessment regarding falling parts that are liable to cause personal injury.

This European Standard does not cover over-cladding systems and ventilated façade systems on external walls. It does not deal with the reaction to fire behaviour of curtain walling.

This standard can also be used to determine fire resistance of parts of curtain walling to increase the field of application when previously tested to EN 1364-3.

This standard is intended to be read in conjunction with EN 1363-1 and EN 1363-2.

NOTE Annex A gives informative guidance on the principles of testing parts of curtain walling and the test method.

### 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.

EN 1363-1:1999, *Fire resistance tests — Part 1: General requirements*

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

EN 1364-3:2006, *Fire resistance tests for non-loadbearing elements — Part 3: Curtain walling — Full configuration (complete assembly)*

EN 13501-2:2006, *Fire classification of construction products and building elements - Part 2: Classification using data from fire resistance tests, excluding ventilation services*

EN 13830:2003, *Curtain walling — Product standard*

EN ISO 13943:2000, *Fire safety - Vocabulary (ISO 13943:2000)*



### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1363-1:1999, EN 1364-3:2006, EN ISO 13943:2000 and the following apply.

#### 3.1

##### **curtain walling**

usually consists of vertical and horizontal structural members, connected together and anchored to the supporting structure of the building and infilled, to form lightweight, space enclosing continuous skin, which provides, by itself or in conjunction with the building construction, all the normal functions of an external wall, but does not take on any of the load-bearing characteristics of the building [EN 13830:2003]

#### 3.2

##### **non-loadbearing wall**

wall designed not to be subject to any load other than its self-weight

#### 3.3

##### **non-loadbearing external wall**

wall designed to form the external envelope of a building; a curtain wall is a special case of a non-load-bearing external wall

#### 3.4

##### **fire-resistant glazing**

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

#### 3.5

##### **fire-resistant insulated glazing**

fire-resistant glazing which satisfies both the integrity and the insulation criteria for the anticipated fire resistance period

#### 3.6

##### **fire-resistant non-insulated 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

#### 3.7

##### **pane**

single piece of glass

#### 3.8

##### **mullion**

vertical structural framing member of a curtain wall

#### 3.9

##### **transom**

horizontal structural framing member of a curtain wall

#### 3.10

##### **spandrel area**

area of a curtain wall between two horizontal zones, normally between glazing and concealing the edge of the floor slab

#### 3.11

##### **spandrel panel**

panel within the spandrel area

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### 3.12 downstand

special type of spandrel panel, hanging down from or located in front of the floor

NOTE see Figure A.2

### 3.13 upstand

special type of spandrel panel, standing up from or located in front of the floor

NOTE see Figure A.2

### 3.14 over-cladding system

weather protection system applied to an external wall, sometimes referred to as *rain screen*

### 3.15 external fire exposure curve

alternative heating regime used to simulate the exposure of a wall to a fire from the outside

### 3.16 standard configuration

arrangement of curtain wall components in a test specimen with standard features to enable the use of extended application rules of test data

NOTE see Annex A

### 3.17 supporting floor

representation of a floor, forming part of the test equipment, to allow the fixing of the test specimen of the curtain wall and the installation of the horizontal linear gap seal

NOTE see Annex B

### 3.18 mechanical stability

ability to resist a part of a curtain walling dropping from the specimen as a result of a fixing failure

NOTE This corresponds to the wording of Mandate 117 "falling parts".

## 4 Test equipment

### 4.1 General testing principles

Table 1 defines which specific test configuration shall be used for each part of the curtain walling depending on the type of fire exposure.

The test equipment specified in EN 1363-1 and EN 1363-2 shall be used where applicable.

Table 1 — Test configurations and exposure conditions

Product / component of curtain wall	Type of curtain wall	Fire exposure – internal, external	Test configuration (see Annex B)
Combination upstand-downstand	Non-fire-resistant glazing	EN 1363-1	1
		EN 1363-2	2
	Fire-resistant glazing	EN 1363-1	3
		EN 1363-2	4
Downstand	Non-fire-resistant glazing	EN 1363-1	5
		EN 1363-2	6
	Fire-resistant glazing	EN 1363-1	7
		EN 1363-2	8
Upstand	Non-fire-resistant glazing	EN 1363-1	9
		EN 1363-2	10
	Fire-resistant glazing	EN 1363-1	11
		EN 1363-2	12
Horizontal linear gap seal	Non-fire-resistant glazing	EN 1363-1	1, 5, 9, 13
	Fire-resistant glazing	EN 1363-1	3, 7, 11, 14
Fixing	Non-fire-resistant glazing	EN 1363-1	15
	Fire-resistant glazing	EN 1363-1	16
NOTE For more information on the test configuration depending on the heating exposure and explanation, see Table A.1.			

## 4.2 Furnace configuration

For the installation of the specimen, wall or floor furnaces shall be modified, if necessary, to accommodate the three-dimensional construction. The three dimensional construction includes the horizontal linear gap seal.

The test according to EN 1364-4 is performed on a three-dimensional specimen to allow an exposure of a number of surfaces of the upstand/downstand (spandrel area) and incorporates a standard floor, which provides the support for the curtain wall.

The lining of the furnace closure shall comply with EN 1363-1 or may consist of aerated autoclaved concrete with a density of 400 to 550 kg/m<sup>3</sup>.

## 4.3 Supporting floor

A supporting floor is provided as a base for the attachment of the fixings and as a location for the horizontal linear gap seal under examination. If information on the fire resistance of the curtain walling in conjunction with a particular type of floor construction is required, such a construction shall be used, see 7.2.