SLOVENSKI STANDARD
SIST EN 1364-1:2015

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Preskusi požarne odpornosti nenosilnih elementov - 1. del: Stene

Fire resistance tests for non-loadbearing elements - Part 1: Walls

Feuerwiderstandsprüfungen für nichttragende Bauteile - Teil 1: Wände

Essais de résistance au feu des éléments non porteurs - Partie 1 : Murs

Ta slovenski standard je istoveten z: EN 1364-1:2015

ICS:

13.220.50	Požarna odpornost gradbenih materialov in elementov	Fire-resistance of building materials and elements
91.060.10	Stene. Predelne stene. Fasade	Walls. Partitions. Facades

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EUROPEAN STANDARD

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English Version

Fire resistance tests for non-loadbearing elements - Part 1: Walls

Essais de résistance au feu des éléments non porteurs - Partie 1 : Murs

Feuerwiderstandsprüfungen für nichttragende Bauteile - Teil 1: Wände

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European foreword

This document (EN 1364-1:2015) 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of an identical text or by endorsement, at the latest by January 2016, and conflicting national standards shall be withdrawn at the latest by January 2016.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 1364-1:1999.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

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

a) locations of thermocouples are modified in line with the definitions in EN 1363-1;

b) additional deflections measurements for larger constructions;

c) additional thermocouples on glazed constructions;

d) additional rules in the field of direct application for glazed constructions (Annex A);

e) rules for testing non-loadbearing external and internal walls designed to span horizontally (Annex B).

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;

Part 5: Air transfer grilles.

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

Introduction

The purpose of this test is to measure the ability of a representative specimen of a non-loadbearing wall to resist the spread of fire from one side to another.

It is applicable to non-loadbearing walls, with and without glazing, non-loadbearing walls consisting almost wholly of glazing and other non-loadbearing internal and external non-loadbearing walls.

It is not applicable to curtain walls (external non-loadbearing walls suspended in front of the floor slab), unless explicitly permitted under EN 1364-3 or EN 1364-4 which should contain details of the methodology to be used.

For external fire exposure to a non-loadbearing external wall, the external fire exposure curve given in EN 1363-2 is used.

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 operational 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 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.

1 Scope

This European standard specifies a method for determining the fire resistance of non-loadbearing walls.

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

It is applicable to internal non-loadbearing walls (partitions), with and without glazing, non-loadbearing walls consisting almost wholly of glazing (glazed non-loadbearing walls) and other non-loadbearing internal and external non-loadbearing walls with and without glazing.

The fire resistance of external non-loadbearing walls can be determined under internal or external exposure conditions. In the latter case the external fire exposure curve given in EN 1363-2 is used.

It is not applicable to:

a) curtain walls (external non-loadbearing walls suspended in front of the floor slab), unless explicitly permitted under EN 1364-3 or EN 1364-4 which contain details of the methodology to be used.

b) non-loadbearing walls containing door assemblies that are tested according to EN 1634-1.

Specific requirements for testing glazed elements or non-loadbearing walls incorporating glazing are given in Annex A.

Specific requirements relating to the testing of non-loadbearing external and internal walls designed to span horizontally between two independently proven fire resisting vertical structural elements are given in Annex B.

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.

EN 1363-1, *Fire resistance tests - Part 1: General Requirements*

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

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1363-1 and EN ISO 13943, together with the following, apply:

3.1
non-loadbearing wall (partition)
wall designed not to be subject to any load other than its self-weight

3.2
internal non-loadbearing wall (partition)
wall, with or without glazing, which provides fire separation

Note 1 to entry It may be exposed separately to a fire from either side.

3.3
external non-loadbearing wall
wall forming the external envelope of a building

Note 1 to entry It may be exposed separately to an internal or an external fire.

3.4
insulated non-loadbearing wall
wall, with or without glazing, which satisfies both the integrity and insulation criteria for the anticipated fire resistance period

3.5
uninsulated non-loadbearing wall
wall with or without glazing which satisfies the integrity and/or the radiation criteria for the anticipated fire resistance period, but which is not intended to provide insulation

Note 1 to entry Such a non-loadbearing wall may consist entirely of uninsulated fire resistant glazing.

3.6
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, fixing materials etc, capable of satisfying the appropriate fire resistance criteria

3.7
insulated glazing
fire resistant glazing which satisfies both the integrity and insulation criteria for the anticipated fire resistance period

3.8
uninsulated glazing
fire resistant glazing which satisfies the integrity and/or the radiation criteria for the anticipated fire resistance period but which is not intended to provide insulation

3.9
glazed elements
building elements with one or more (light transmissive) panes, that are built in a frame with fixings and seals and which cannot be opened

3.10
pane
single piece of monolithic or laminated glass, or an insulating glass unit (IGU)

3.11
glazing system
glass and glazing materials used in the fire test to glaze the glass into its framing system, e.g. glazing strips, beads and bead fixings, setting blocks, gaskets, sealant (see Figure 16)

3.12
butt-joint(ed) glazing
glazing configuration where adjoining panes are connected without the use of framing profiles at the glass to glass joint

3.13
framing system
frame profiles and fixings to the supporting structure

Note 1 to entry See one example in Figure 16.

3.14
aspect ratio
ratio of the height of a pane to its width

3.15
mullion
vertical framing member separating and supporting two adjacent panes of glass or panels

3.16
transom
horizontal framing member separating and supporting two adjacent panes of glass or panels

3.17
standard supporting construction
form of construction used to close off the furnace and to support the non-loadbearing wall being evaluated and which has known resistance to thermal distortion

3.18
plinth
form of standard supporting construction that reduces the height of the opening by raising the support base to accommodate the test specimen

3.19
overrun time
period of fire resistance beyond the intended classification period achieved in the test

Note 1 to entry The overrun time is expressed in minutes.

4 Test equipment

In addition to the test equipment specified in EN 1363-1, and if applicable in EN 1363-2, the following is required:

A test frame shall be provided, the rigidity of which shall be evaluated by applying an expansion force within the frame at mid-way between two opposite members of the frame, and measuring the increase in the internal dimensions at these positions. This evaluation shall be conducted in both directions of the frame and the increase of the internal dimension shall be measured.

The increase in the internal dimensions of the test frame shall not exceed 5 mm with an applied force of 25 kN. In case of testing with a free edge, this requirement does not apply for the horizontal dimension.

5 Test conditions

The heating and pressure conditions and the furnace atmosphere shall conform to those given in EN 1363-1 or if applicable, EN 1363-2.

6 Test specimen

6.1 Size

If, in practice, the height or width of the construction is 3 m or smaller, then that dimension of the test specimen shall be tested at full size. If any dimension of the construction is greater than 3 m, then that dimension shall be tested at not less than 3 m when tested without a supporting construction or 2,8 m when tested with a supporting construction.

6.2 Number

The number of test specimens shall be as given in EN 1363-1. However, where information is required under different exposure conditions or where the construction is to be evaluated with and without glazing, additional tests shall be undertaken for each situation using separate test specimens.

6.3 Design

6.3.1 General

The test specimen shall be either:

a) fully representative of the construction intended for use in practice, including any surface finishes and fittings which are essential and may influence its behaviour in the test,

or,

b) be designed to obtain the widest applicability of the test result to other similar constructions.

NOTE The design features which influence fire performance that should be included to give the widest application can be derived from the field of direct application, Clause 13.

Guidance on testing glazed elements or non-loadbearing walls incorporating glazing is given in Annex A.

Guidance on testing non-loadbearing external and internal walls designed to span horizontally between two independently proven fire resisting vertical structural elements is given in Annex B.

6.3.2 Vertical joints

The test specimen shall contain as many full width boards or panels as possible. Where the test specimen can incorporate at least two full width boards or panels, the free edge shall be adjacent to a full width board or panel on the exposed face (see Figure 1, case A). When it is not possible to incorporate two full width boards or panels into the test specimen, the single full width board or panel shall be located in the centre of the specimen, with smaller boards or panels of equal width on each side. The smaller boards or panels shall not be less than 500 mm wide (see Figure 1, case B). Where the smaller boards or panels would be less than 500 mm wide, only one shall be used next to the free edge of the specimen (see Figure 1, case C).

The test specimen should be designed to obtain the widest applicability of the test result when considered in conjunction with the direct and extended field of application rules. Some design features which influence fire performance that should be included can be derived from the field of direct application, Clause 13.

The test specimen shall only contain a mixture of different designs providing this is representative of end use applications.

If the element incorporates vertical joints in practice, then the test specimen shall incorporate a vertical joint. This joint shall be located between 350 mm and 650 mm in from the free edge and shall be on the outer layer of the unexposed face (see Figure 1, case D). If these joints are not intended to be staggered, Figure 1, case A prevails.

6.3.3 Horizontal joints

If the element incorporates horizontal joints in practice, then the test specimen shall incorporate a horizontal joint. This joint shall be located between 350 mm and 650 mm in from the top edge and shall be on the outer layer on the unexposed face.

NOTE Test specimens can incorporate both horizontal and vertical joints in the same test. If large dimension boards or panels e.g. 3 m high are used in practice, then this will necessitate two tests for a 3 m x 3 m furnace: one test to evaluate the effect of joints and another to evaluate the full height board or panel. An alternative is to use a 4 m high (or more) furnace in which both the full height board or panel together with the joints at the specified locations can be incorporated in one test.

6.3.4 Restraint

The edges shall be restrained as in practice.

When the width of the element in practice is larger than the front opening of the furnace, one vertical edge shall be left unrestrained and there shall be a gap of 25 mm to 50 mm between the free edge of the test specimen and the test frame. This gap shall be packed with a resilient non-combustible material, e.g. mineral fibre, to provide a seal without restricting freedom of movement.

Any construction including any sealing of the free edge shall respect the following principles:

a) prevent as far as possible the leakage of hot gases from the furnace into the test specimen;

b) prevent as far as possible the leakage of gasses out of the test specimen;

c) have as minimal effect as possible on the deformations of the test specimen;

d) have as minimal effect as possible on the insulation rating of the test specimen.

6.4 Construction

The test specimen shall be constructed as described in EN 1363-1.

6.5 Verification

Verification of the test specimen shall be carried out as described in EN 1363-1.

7 Installation of test specimen

7.1 General

The test specimen shall be installed in the test frame and, if used, the supporting construction, as in practice.

The whole area of the test construction shall be exposed to the heating conditions.

7.2 Supporting construction

If the size of the test specimen is smaller than the opening in the test frame then it shall be installed in the test frame using one of the following approaches:

a) Where the height of the test specimen is smaller than the height of the test frame opening, then a plinth shall be provided to reduce the opening to the required height. The plinth shall possess sufficient stability for the test specimen and shall be selected from one of the rigid standard supporting constructions in EN 1363-1.

b) Where the width of the test specimen is smaller, a standard supporting construction shall be provided on the vertical sides of the opening selected from either the rigid or flexible standard supporting constructions given in EN 1363-1.

NOTE If the test specimen is mounted in a non-standard supporting construction, then the result will only be valid for non-loadbearing walls mounted in the construction as tested.

8 Conditioning

The test construction shall be conditioned in accordance with EN 1363-1.