SLOVENSKI STANDARD

SIST EN 13501-2:2008+A1:2009

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Poġarna klasifikacija gradbenih proizvodov in elementov stavb - 2. del: Klasifikacija na podlagi podatkov iz preskusov poġarne odpornosti, razen za prezraļ evalne naprave

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

Klassifizierung von Bauprodukten und Bauarten zu ihrem Brandverhalten - Teil 2: Klassifizierung mit den Ergebnissen aus den Feuerwiderstandsprüfungen, mit Ausnahme von Lüftungsanlagen

Classement au feu des produits et éléments de construction - Partie 2: Classement à partir des données d'essais de résistance au feu à l'exclusion des produits utilisés dans les systèmes de ventilation

Ta slovenski standard je istoveten z: **EN 13501-2:2007+A1:2009**

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13.220.50	Požarna odpornost gradbenih materialov in elementov	Fire-resistance of building materials and elements

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This European Standard was approved by CEN on 30 November 2006 and includes Amendment 1 approved by CEN on 17 July 2009.

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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 CEN Management Centre has the same status as the official versions.

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Foreword

This document (EN 13501-2:2007+A1:2009) 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of an identical text or by endorsement, at the latest by March 2010, and conflicting national standards shall be withdrawn at the latest by March 2010.

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 includes Amendment 1, approved by CEN on 2009-07-17.

This document supersedes [A1⟩ EN 13501-2:2007 ⟨A1].

The start and finish of text introduced or altered by amendment is indicated in the text by tags [A1⟩ ⟨A1].

The first edition of this European Standard was prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, supporting essential requirements of the Construction Products Directive.

[A1⟩ Amendment 1 provides for the use of extended application reports in the classification procedure. ⟨A1]

CEN, CENELEC and EOTA committees preparing technical specifications which contain performance requirements against resistance to fire tests should make reference to the resistance to fire classification given in this European Standard and not refer directly to any specific fire test method.

Changes have been made in this revision to bring it in line with the relevant current EC Decisions on fire resistance classification, and experience in use in the first edition.

EN 13501 *Fire classification of construction products and building elements* consists of the following Parts:

Part 1: Classification using data from reaction to fire tests

Part 2: Classification using data from fire resistance tests, excluding ventilation services

Part 3: Classification using data from fire resistance tests on products and elements used in building service installations: fire resisting ducts and fire dampers

Part 4: Classification using data from fire resistance tests on components of smoke control systems

Part 5: Classification using data from external fire exposure to roof tests

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

The aim of this European Standard is to define a harmonised procedure for the classification for resistance to fire of construction products and building elements. This classification is based on the test procedures listed in [A1] Clause 2 and the relevant field of application procedures [A1].

This European Standard is prepared in support of the second essential requirement in the EC Construction Products Directive (89/106/EEC) which is detailed in the Interpretative Document number 2 (ID2): Safety in case of fire (OJ C62 Vol 37). It reflects the Commission Decision of 3 May 2000 on the implementation of the Council Directive 89/106/EEC as regards the classification of the resistance to fire performance of construction products, construction works and parts thereof.

The Interpretative Document and the Commission Decision of 2 May 2000 specify performance and classes regarding fire resistance. These classes are identified by designation letters, each of which refers to an important characteristic of fire resistance behaviour.

This European Standard provides for a common understanding for these requirements. It interprets the functional requirements for the different groups of building elements and explains the method for deriving their classification on the basis of [A1] test results and/or extended application results for individual elements [A1].

[A1] NOTE Test reports constitute the basis for extended application reports as explained in prEN 15725. [A1]

1 Scope

This European Standard specifies the procedure for classification of construction products and building elements using data from fire resistance and smoke leakage tests which are within the direct field of application of the relevant test method. [A1] Classification on the basis of extended application of test results is also included in the scope of this European Standard. [A1]

This European Standard deals with:

a) loadbearing elements without a fire separating function:

walls;
floors;
roofs;
beams;
columns;
balconies;
walkways;
stairs.

b) loadbearing elements with a fire separating function, with or without glazing, services and fixtures:

walls;
floors;
roofs;
raised floors.

c) products and systems for protecting elements or parts of the works

ceilings with no independent fire resistance;
fire protective coatings, claddings and screens;

d) non-loadbearing elements or parts of works, with or without glazing, services and fixtures:

partitions;
facades (curtain walls) and external walls;
ceilings with independent fire resistance;
fire doors and shutters and their closing devices;
smoke control doors;
conveyor systems and their closures;
penetration seals;
linear joint seals;
service ducts and shafts;
chimneys.

e) wall and ceiling coverings with fire protection ability.

f) lift landing doors which are tested according to EN 81-58 are excluded from this European Standard. Lift landing doors which are tested according to EN 1634-1 are classified in accordance with 7.5.5.

Relevant test methods which have been prepared for these elements are listed in Clauses 2 and 7.

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

EN 1364-1, *Fire resistance tests for non-loadbearing elements — Part 1: Walls*

EN 1364-2, *Fire resistance tests for non-loadbearing elements — Part 2: Ceilings*

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

EN 1364-4, *Fire resistance tests for non-loadbearing elements — Part 4: Curtain walling — Part configuration*

EN 1365-1, *Fire resistance tests for loadbearing elements — Part 1: Walls*

EN 1365-2, *Fire resistance tests for loadbearing elements — Part 2: Floors and roofs*

EN 1365-3, *Fire resistance tests for loadbearing elements — Part 3: Beams*

EN 1365-4, *Fire resistance tests for loadbearing elements — Part 4: Columns*

EN 1365-5, *Fire resistance tests for loadbearing elements — Part 5: Balconies and walkways*

EN 1365-6, *Fire resistance tests for loadbearing elements — Part 6: Stairs*

EN 1366-3, *Fire resistance tests for service installations — Part 3: Penetration seals*

EN 1366-4, *Fire resistance tests for service installations — Part 4: Linear joint seals*

EN 1366-5, *Fire resistance tests for service installations — Part 5: Service ducts and shafts*

EN 1366-6, *Fire resistance tests for service installations — Part 6: Raised access and hollow core floors*

EN 1366-7, *Fire resistance tests for service installations — Part 7: Conveyor systems and their closures*

EN 1634-1, *Fire resistance tests for door and shutter assemblies — Part 1: Fire doors and shutters*

EN 1634-3, *Fire resistance tests for door and shutter assemblies — Part 3: Smoke control doors and shutters*

EN 13216-1, *Chimneys — Test methods for system chimneys — Part 1: General test methods*

CEN/TS 13381-1, *Test methods for determining the contribution to the fire resistance of structural members — Part 1: Horizontal protective membranes*

ENV 13381-2, *Test methods for determining the contribution to the fire resistance of structural members — Part 2: Vertical protective membranes*

ENV 13381-3, *Test methods for determining the contribution to the fire resistance of structural members — Part 3: Applied protection to concrete members*

ENV 13381-4, *Test methods for determining the contribution to the fire resistance of structural members — Part 4: Applied protection to steel members*

ENV 13381-5, *Test methods for determining the contribution to the fire resistance of structural members — Part 5: Applied protection to concrete/profiled sheet steel composite members*

ENV 13381-6, *Test methods for determining the contribution to the fire resistance of structural members — Part 6: Applied protection to concrete filled hollow steel columns*

ENV 13381-7, *Test methods for determining the contribution to the fire resistance of structural members — Part 7: Applied protection to timber members*

EN 14135, *Coverings — Determination of fire protection ability*

EN 14600, *Doorsets and openable windows with fire resisting and/or smoke control characteristics — Requirements and classification*

〚A1〛 EN 15080-8, *Extended application of results from fire resistance tests — Part 8: Beams*

EN 15254-2, *Extended application of results from fire resistance tests — Non-loadbearing walls — Part 2: Masonry and gypsum blocks*

prEN 15254-5, *Extended application of results from fire resistance tests — Non-loadbearing walls — Part 5: Metal sandwich panel construction*

prEN 15254-6[1)], *Extended application of results from fire resistance tests — Non-loadbearing walls — Part 6: Curtain walling*

prEN 15254-7, *Extended application of results from fire resistance tests — Non-loadbearing walls — Part 7: Non-loadbearing sandwich panels — Ceilings*

prEN 15269-1, *Extended application of test results for fire resistance and/or smoke control for door, shutter and openable window assemblies, including their elements of building hardware — Part 1: General requirements*

prEN 15269-2, *Extended application of test results for fire resistance and/or smoke control for door, shutter and openable window assemblies, including their elements of building hardware — Part 2: Fire resistance of hinged and pivoted steel doorsets*

prEN 15269-3, *Extended application of test results for fire resistance and/or smoke control for door, shutter and openable window assemblies, including their elements of building hardware — Part 3: Fire resistance of hinged and pivoted timber doorsets and openable timber framed windows*

prEN 15269-4[1)], *Extended application of test results for fire resistance and/or smoke control for door, shutter and openable window assemblies, including their elements of building hardware — Part 4: Fire resistance of hinged and pivoted glass doorsets*

prEN 15269-5[1)], *Extended application of test results for fire resistance and/or smoke control for door, shutter and openable window assemblies, including their elements of building hardware — Part 5: Fire resistance of hinged and pivoted, metal framed, glazed doorsets and openable windows*

prEN 15269-6[1)], *Extended application of test results for fire resistance and/or smoke control for door, shutter and openable window assemblies, including their elements of building hardware — Part 6: Fire resistance of sliding timber doorsets*

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1) 〚A1〛 To be published. 〚A1〛

prEN 15269-7, *Extended application of test results for fire resistance and/or smoke control for door, shutter and openable window assemblies, including their elements of building hardware — Part 7: Fire resistance of sliding steel doorsets*

prEN 15269-8[1)], *Extended application of test results for fire resistance and/or smoke control for door, shutter and openable window assemblies, including their elements of building hardware — Part 8: Fire resistance of horizontally folding timber doorsets*

prEN 15269-9[1)], *Extended application of test results for fire resistance and/or smoke control for door, shutter and openable window assemblies, including their elements of building hardware — Part 9: Fire resistance of horizontally folding steel doorsets*

prEN 15269-10[1)], *Extended application of test results for fire resistance and/or smoke control for door, shutter and openable window assemblies, including their elements of building hardware — Part 10: Fire resistance of steel rolling shutters*

prEN 15269-11[1)], *Extended application of test results for fire resistance and/or smoke control for door, shutter and openable window assemblies, including their elements of building hardware — Part 11: Fire resistance of fabric curtains*

prEN 15269-20, *Extended application of test results for fire resistance and/or smoke control for door, shutter and openable window assemblies, including their elements of building hardware — Part 20: Smoke control for hinged and pivoted steel, timber and metal framed glazed doorsets*

prEN 15725, *Extended application reports on the fire performance of construction products and building elements*

prEN 15882-1, *Extended application of results from fire resistance tests for service installations — Part 1: Fire resisting ducts*

prEN 15882-2, *Extended application of results from fire resistance tests for service installations — Part 2: Dampers*

EN 15882-3, *Extended application of results from fire resistance tests for service installations — Part 3: Penetration seals*

prEN 15882-4[1)], *Extended application of results from fire resistance tests for service installations — Part 4: Linear joint seals* 〈A1〉

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 ISO 13943:2000 and the following apply.

3.1
element of building construction
defined part of a construction component, e.g. wall, partition, floor, roof, beam or column (EN 1363-1:1999). An element, for the purpose of this European Standard, covers both individual products and elements made up of one or more products

3.2
ceiling
non-loadbearing element of a building construction designed to provide horizontal fire separation

(EN 1364-2:1999)

3.3
self-supporting ceiling
ceiling with a span from wall to wall, without any additional suspension devices

(EN 1364-2:1999)

3.4
door or shutter assembly (doorset)
complete assembly, including any frame or guide, door leaf or leaves, rolling or folding curtain etc., which is provided for closing of permanent openings in separating elements. This includes all side-panels, vision panels or transom panels, together with the door hardware and any seals (whether provided for the purpose of fire or smoke control or for other purposes such as draught control or acoustics) which are used in the assembly

(EN 1634-1:2000)

3.5
floor
horizontal element of building construction which is loadbearing

(EN 1365-2:1999)

3.6
roof
horizontal or sloped element of building construction which is loadbearing

(EN 1365-2:1999)

3.7
suspended ceiling
ceiling which is suspended from a supporting construction

(EN 1364-2:1999)

3.8
loadbearing wall
wall designed to support an applied load

(EN 1365-1:1999)

3.9
non-loadbearing wall
wall designed not to be subjected to any load other than its self weight

(EN 1364-1:1999)

3.10
internal wall
wall which provides fire separation. It can be exposed separately to a fire from either side

(EN 1364-1:1999 and EN 1365-1:1999)

3.11
external wall
wall forming the external envelope of a building which may be exposed separately to an internal or an external fire

(EN 1364-1:1999 and EN 1365-1:1999)

3.12
insulated wall
wall, with or without glazing, which satisfies both the integrity and insulation criteria for the achieved fire resistance period

(EN 1364-1:1999 and EN 1365-1:1999)

3.13
un-insulated wall
wall, with or without glazing, which satisfies the integrity and, where required, the radiation criteria for the achieved fire resistance period but which is not intended to provide insulation. Such a wall can consist entirely of un-insulated fire resistant glazing

(EN 1364-1:1999 and EN 1365-1:1999)

3.14
separating wall
wall with or without glazing provided within a building or between adjoining buildings to prevent the transfer of fire from one side to the other

(EN 1364-1:1999 and EN 1365-1:1999)

3.15
curtain wall
external non-loadbearing wall which is independent of the structural frame and supported in place in front of loadbearing structures. A curtain wall typically includes panels, glazing, seals, fixings, transoms and mullions

(EN 1364-3:2006)

3.16
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

(EN 1364-1:1999)

3.17
insulated glazing
fire resistant glazing which satisfies both the integrity and insulation criteria for the achieved fire resistance period

(EN 1364-1:1999)

3.18
un-insulated glazing
fire resistance glazing which satisfies the integrity and, where required, the radiation criteria for the achieved fire resistance period but which is not intended to provide insulation

(EN 1364-1:1999)

3.19
glazed element
building element with one or more (light transmissive) panes, fire resistant or not, that are built in a frame with fixings and seals

(EN 1364-1:1999)

3.20
test specimen
element (or part) of building construction provided for the purpose of determining either its fire resistance or its contribution to the fire resistance of another building element

(EN 1363-1:1999)

3.21
loadbearing element
element that is intended for use in supporting an external load in a building and maintaining this support in the event of a fire

(EN 1363-1:1999)

3.22
separating element
element that is intended for use in maintaining separation between two adjacent areas of a building in the event of a fire

(EN 1363-1:1999)

3.23
smoke leakage
ability of an element of construction to reduce the passage of hot and/or cold gases or smoke from one side of the element to the other to below specified levels

(EN 1363-1:1999)

3.24
sustained flaming
continuous flaming for a period of time greater than 10 s

(EN 1363-1:1999)

3.25
load level
magnitude of the test load (mechanical actions) in relation to the loadbearing capacity of the member at normal temperature

NOTE The loadbearing capacity of the member at normal temperature is determined by testing or calculation, taking into account the actual mechanical properties of the loadbearing element tested.

3.26
covering
product intended to protect underlying products against damage during a specified fire exposure

3.27
direct field of application
〚A1〛 outcome of a process (involving the application of defined rules) whereby a test result is deemed to be equally valid for variations in one or more of the product properties and/or intended end use applications 〚A1〛

3.28
extended field of application
〚A1〛 outcome of a process (involving the application of defined rules that may incorporate calculation procedures) that predicts, for a variation of a product property and/or its intended end use application(s), a test result on the basis of one or more test results to the same test standard 〚A1〛

3.29
closure and conveyor system assembly
complete assembly of the closure for the conveyor system and, where relevant, its frame or guide, which is provided for closing off a permanent opening in a separating element. This includes the anchoring parts for the connection with the separating element, a length of any penetrating component on either side of the construction and the penetration seal, any sealing system between the closure for a conveyor system, the conveyor system and any closing and/or separating device

(EN 1366-7:2004)

[A1⟩ 3.30
extended application result
predicted result for a performance parameter obtained following the process of extended field of application

3.31
extended application report
document reporting extended application results, including all details of the process leading to those results, prepared in accordance with prEN 15725 ⟨A1]

4 Fire scenarios

4.1 General

The second essential requirement of the Construction Products Directive addresses spread of fire and smoke and the loadbearing capacity of the construction. These requirements are considered to be satisfied by proving fire resistance of loadbearing and/or separating elements.

Fire resistance of loadbearing and/or separating elements shall be assessed using one or more of the levels of thermal attack given in 4.2 to 4.6. Further clauses of this European Standard identify which attack(s) shall be used for which elements.

NOTE 1 The various levels of thermal action given in 4.2 to 4.6 reflect different fire scenarios and the standards which prescribe their translation into practical tests give tolerances for their application.

NOTE 2 Other heating curves exist, for example the hydrocarbon curve. Also, for extreme fire scenarios (e.g. traffic tunnels, nuclear plants), more severe conventional curves can be specified. These are not, however, used for the classification of elements according to this European Standard.

4.2 The standard temperature/time curve (post flash-over fire)

When applied as a basis for testing, the standard temperature/time relationship shall be applied for the full duration of the test. The relationship, which is a model of a fully developed fire in a compartment, is given by the following relationship:

$$T = 345 \log_{10} (8t + 1) + 20$$

where

t is the time from the start of the test in minutes (min);

T is the mean furnace temperature in degrees Celsius (°C).

NOTE Further details relating to the practical application of this curve and other test parameters, e.g. tolerances, are given in EN 1363-1.