



**SLOVENSKI STANDARD**  
**kSIST FprEN 13501-2:2015**  
**01-december-2015**

---

**Požarna klasifikacija gradbenih proizvodov in elementov stavb - 2. del:  
Klasifikacija na podlagi podatkov iz preskusov požarne odpornosti, razen za  
prezračevalne 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: FprEN 13501-2**

---

**ICS:**

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

**kSIST FprEN 13501-2:2015**

**en,fr,de**



EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**FINAL DRAFT**  
**FprEN 13501-2**

October 2015

ICS 13.220.50

Will supersede EN 13501-2:2007+A1:2009

English Version

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

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

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

This draft European Standard is submitted to CEN members for unique acceptance procedure. It has been drawn up by the Technical Committee CEN/TC 127.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

**Warning** : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

**Contents**

Page

European foreword.....	5
Introduction .....	6
<b>1</b> <b>Scope</b> .....	<b>7</b>
<b>2</b> <b>Normative references</b> .....	<b>8</b>
<b>3</b> <b>Terms and definitions</b> .....	<b>11</b>
<b>4</b> <b>Fire scenarios</b> .....	<b>15</b>
4.1 <b>General</b> .....	15
4.2 <b>The standard temperature/time curve (post flash-over fire)</b> .....	15
4.3 <b>The slow heating curve (smouldering fire)</b> .....	16
4.4 <b>The ‘semi-natural’ fire</b> .....	16
4.5 <b>The external fire exposure curve</b> .....	17
4.6 <b>Constant temperature attack</b> .....	17
<b>5</b> <b>Resistance to fire performance characteristics</b> .....	<b>17</b>
5.1 <b>General</b> .....	17
5.2 <b>Performance characteristics</b> .....	17
5.2.1 <b>R - Loadbearing capacity</b> .....	17
5.2.2 <b>E - Integrity</b> .....	18
5.2.3 <b>I - Thermal insulation</b> .....	19
5.2.4 <b>W - Radiation</b> .....	20
5.2.5 <b>M - Mechanical action</b> .....	21
5.2.6 <b>C - Self-closing</b> .....	21
5.2.7 <b>S - Smoke leakage</b> .....	21
5.2.8 <b>G - ‘Soot fire’ resistance</b> .....	22
5.2.9 <b>K - Fire protection ability</b> .....	22
<b>6</b> <b>Declaration of fire resistance performance</b> .....	<b>23</b>
6.1 <b>Classification periods</b> .....	23
6.2 <b>Designatory letters</b> .....	23
6.3 <b>Declaration of performance</b> .....	23
6.4 <b>Combinations of classes</b> .....	23
6.5 <b>Particular classifications</b> .....	24
6.5.1 <b>Doors and shutters</b> .....	24
6.5.2 <b>Conveyor systems and their closures</b> .....	24
6.6 <b>Additional performance parameters</b> .....	24
6.6.1 <b>Optional performance parameters</b> .....	24
6.6.2 <b>Expansion of performance parameters</b> .....	24
6.6.3 <b>Particular performance parameters</b> .....	25
6.7 <b>Presentation of classification</b> .....	25
6.8 <b>Declaration of fire resistance classes in product specifications</b> .....	25
<b>7</b> <b>Classification procedure for fire resistance</b> .....	<b>26</b>
7.1 <b>General</b> .....	26
7.1.1 <b>Procedure</b> .....	26
7.1.2 <b>General rules for deducing the number of standard temperature/time fire resistance tests</b> .....	27

7.1.3	Field of application .....	29
7.2	Classification of loadbearing elements without a fire separating function .....	29
7.2.1	General .....	29
7.2.2	Classification of loadbearing walls without separating function .....	29
7.2.3	Classification of loadbearing floors and roofs without fire separating function .....	30
7.2.4	Classification of beams .....	31
7.2.5	Classification of columns .....	32
7.2.6	Classification of balconies, walkways and stairs .....	33
7.3	Classification of loadbearing elements with fire separating function .....	34
7.3.1	General .....	34
7.3.2	Classification of loadbearing walls with fire separating function .....	34
7.3.3	Classification of loadbearing floors and roofs with fire separating function .....	36
7.3.4	Classification of raised floors .....	37
7.4	Products and systems for protecting elements or parts of works .....	38
7.4.1	General .....	38
7.4.2	Tests to be carried out .....	39
7.4.3	Test methods .....	40
7.4.4	Performance criteria .....	40
7.4.5	Classes .....	40
7.4.6	Classification of protected structural members .....	40
7.5	Classification of non-loadbearing elements .....	44
7.5.1	General .....	44
7.5.2	Partitions .....	44
7.5.3	Classification of facades (curtain walling) and external walls (including glazed elements) .....	46
7.5.4	Classification of ceilings with independent fire resistance .....	47
7.5.5	Classification of fire doors and shutters including their closing devices .....	49
7.5.6	Classification of smoke control doors .....	51
7.5.7	Classification of closure and conveyor system assemblies .....	52
7.5.8	Classification of penetration seals .....	54
7.5.9	Classification of linear joint seals .....	55
7.5.10	Classification of service ducts and shafts .....	57
7.5.11	Classification of chimneys .....	59
7.6	Classification of wall and ceiling coverings for fire protection ability .....	60
7.6.1	General .....	60
7.6.2	Test method .....	61
7.6.3	Tests to be carried out .....	61
7.6.4	Performance criteria for fire protection ability .....	61
7.6.5	Classes .....	62
	<b>Annex A (normative) Classification report .....</b>	<b>63</b>
A.1	General .....	63
A.2	Content and format .....	63
A.3	Classification report format .....	64
	<b>Annex B (informative) Presentation of characterization data and their field of application for products and systems for protecting elements or parts of work .....</b>	<b>68</b>
B.1	General .....	68
B.2	Characterization data for protective vertical membranes .....	68
B.3	Characterization data for applied protection to concrete members .....	69

## FprEN 13501-2:2015 (E)

<b>B.4</b>	<b>Characterization data for applied protection to steelwork.....</b>	<b>70</b>
<b>B.5</b>	<b>Characterization data for applied protection to concrete/profiled sheet steel composite members.....</b>	<b>72</b>
<b>B.6</b>	<b>Characterization data for applied protection to concrete filled hollow steel columns.....</b>	<b>73</b>
<b>B.7</b>	<b>Characterization data for applied protection to timber members .....</b>	<b>74</b>
	<b>Bibliography.....</b>	<b>79</b>

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 13501-2:2016

<https://standards.iteh.ai/catalog/standards/sist/a37ae10c-0ec9-47b1-a8ff-ccc42a28671d/sist-en-13501-2-2016>

## European foreword

This document (FprEN 13501-2:2015) has been prepared by Technical Committee CEN/TC 127 “Fire safety in buildings”, the secretariat of which is held by BSI.

This document is currently submitted to the Unique Acceptance Procedure.

This document will supersede EN 13501-2:2007+A1:2009.

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

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 components of normal 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*
- *Part 6: Classification using data from reaction to fire tests on electric cables*

**FprEN 13501-2:2015 (E)****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 Clause 2 and the relevant field of application procedures.

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 abrogated by the Council Regulation 305/2011 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 test results and/or extended application results for individual elements.

NOTE Test reports constitute the basis for extended application reports as explained in EN 15725.

**STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN 13501-2:2016](https://standards.iteh.ai/catalog/standards/sist/a37ae10c-0ec9-47b1-a8ff-ccc42a28671d/sist-en-13501-2-2016)

<https://standards.iteh.ai/catalog/standards/sist/a37ae10c-0ec9-47b1-a8ff-ccc42a28671d/sist-en-13501-2-2016>



## 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. Classification on the basis of extended application of test results is also included in the scope of this European Standard.

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;
  - raised floors;
  - fire doors and shutters and their closing devices;
  - smoke control doors;

**FprEN 13501-2:2015 (E)**

- conveyor systems and their closures;
  - penetration seals;
  - linear gap 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 in accordance with 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 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 1363-2, *Fire resistance tests — Part 2: Alternative and additional procedures*

EN 1364-1:2015, *Fire resistance tests for non-loadbearing elements — Part 1: Walls*

<https://standards.iteh.ai/catalog/standards/sist/a37ae10c-0ec9-47b1-a8ff-ccc42a28671d/sist-1364-2-1999>, *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 1365-1:2012, *Fire resistance tests for loadbearing elements — Part 1: Walls*

EN 1365-2:2014, *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 1366-7:2004, *Fire resistance tests for service installations — Part 7: Conveyor systems and their closures*
- EN 1634-1:2014, *Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware — Part 1: Fire resistance test for door and shutter assemblies and openable windows*
- EN 1634-3:2004, *Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware — Part 3: Smoke control test for door and shutter assemblies*
- EN 13216-1, *Chimneys — Test methods for system chimneys — Part 1: General test methods*
- EN 13381-1, *Test methods for determining the contribution to the fire resistance of structural members — Part 1: Horizontal protective membranes*
- EN 13381-2, *Test methods for determining the contribution to the fire resistance of structural members — Part 2: Vertical protective membranes*
- EN 13381-3, *Test methods for determining the contribution to the fire resistance of structural members — Part 3: Applied protection to concrete members*
- EN 13381-4, *Test methods for determining the contribution to the fire resistance of structural members — Part 4: Applied passive protection to steel members*
- <https://standards.iteh.ai/catalog/standards/sist/a37ae10c-0ec9-47b1-a8ff-ccc42a28671d/sist-13381-5>  
EN 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 member*
- EN 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 13381-8, *Test methods for determining the contribution to the fire resistance of structural members — Part 8: Applied reactive protection to steel members*
- EN 13381-9, *Test methods for determining the contribution to the fire resistance of structural members — Part 9: Applied fire protection systems to steel beams with web openings*
- 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*
- EN 15080-8, *Extended application of results from fire resistance tests — Part 8: Beams*
- EN 15080-12, *Extended application of results from fire resistance tests — Part 12: Loadbearing masonry walls*

**FprEN 13501-2:2015 (E)**

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

EN 15254-4, *Extended application of results from fire resistance tests — Nonloadbearing walls — Part 4: glazed constructions*

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

EN 15254-6, *Extended application of results from fire resistance tests — Non-loadbearing walls — Part 6: Curtain walling*

EN 15254-7, *Extended application of results from fire resistance tests — Non-loadbearing ceilings — Part 7: Metal sandwich panel construction*

EN 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*

EN 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*

EN 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*

EN 15269-5, *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, *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*

EN 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 for steel sliding doorsets*

EN 15269-10, *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 shutter assemblies*

prEN 15269-11, *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 for operable fabric curtains*

EN 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*

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

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

EN 15882-4, *Extended application of results from fire resistance tests for service installations — Part 4: Linear joint seals*

EN ISO 13943:2010, *Fire safety — Vocabulary (ISO 13943:2008)*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 13943:2010 and the following apply.

#### 3.1

##### **element of building construction**

defined part of a construction component, such as wall, partition, floor, roof, beam or column

Note 1 to entry: Element covers both individual products and elements made up of one or more products.

[SOURCE: EN 1363-1: 2012]

#### 3.2

##### **ceiling**

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

[SOURCE: EN 1364-2:1999]

#### 3.3

##### **self-supporting ceiling**

ceiling with a span from wall to wall, without any additional suspension devices

[SOURCE: EN 1364-2:1999]

#### 3.4

##### **door or shutter assembly (doorset)**

pedestrian doorset or industrial type doorset including any frame or guide, door leaf or leaves, rolling or folding curtain, etc; which is provided to give a fire resisting capability when used for the closing of permanent openings in fire resisting elements, which includes any side panel(s), flush over panel(s) transom panel(s) and/or glazing together with the building hardware and any seals (whether provided for the purpose of fire resistance or smoke control or for other purposes such as draught or acoustics) which form the assembly

[SOURCE: EN 1634-1: 2014]

#### 3.5

##### **floor**

horizontal separating element of building construction which is loadbearing

[SOURCE: EN 1365-2: 2014]

**FprEN 13501-2:2015 (E)****3.6****roof**

horizontal or sloped separating element of building construction which is loadbearing and includes the roof covering

[SOURCE: EN 1365-2: 2014]

**3.7****ceiling (suspended)**

lining plus any supporting framework, including hangers, fixings and any insulation material suspended from the structural building member

[SOURCE: EN 1365-2: 2014]

**3.8****ceiling system**

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

[SOURCE: EN 1365-2: 2014]

**3.9****loadbearing wall**

wall designed to support a vertically applied load

**3.10****non-loadbearing wall**

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

[SOURCE: EN 1364-1:2015] [SIST EN 13501-2:2016](https://standards.iteh.ai/catalog/standards/sist/a37ae10c-0ec9-47b1-a8ff-ccc42a28671d/sist-en-13501-2-2016)

**3.11****internal wall**

wall with or without glazing which provides fire separation and which may be exposed separately to a fire from either side

[SOURCE: EN 1364-1:2015 and EN 1365-1: 2012]

**3.12****external wall**

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

[SOURCE: EN 1364-1:2015 and EN 1365-1: 2012]

**3.13****insulated wall**

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

[SOURCE: EN 1364-1:2015 and EN 1365-1: 2012]

**3.14****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.

Note 1 to entry: Such a wall can consist entirely of un-insulated fire resistant glazing.

[SOURCE: EN 1364-1:2015 and EN 1365-1:2012]

**3.15****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

[SOURCE: EN 1365-1:2012]

**3.16****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

**3.17****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

[SOURCE: EN 1364-1:2015]

[SIST EN 13501-2:2016](https://standards.iteh.ai/catalog/standards/sist/a37ae10c-0ec9-47b1-a8ff-ccc42a28671d/sist-en-13501-2-2016)

**3.18****insulated glazing**

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

[SOURCE: EN 1364-1:2015]

**3.19****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

[SOURCE: EN 1364-1:2015]

**3.20****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

[SOURCE: EN 1364-1:2015]