

SLOVENSKI STANDARD

SIST EN 15254-4:2019

01-februar-2019

Nadomešča:

SIST EN 15254-4:2008+A1:2011

Razširjena uporaba rezultatov preskusov požarne odpornosti - Nenosilne stene - 4. del: Zastekljena konstrukcija

Extended application of results from fire resistance tests - Non-loadbearing walls - Part 4: Glazed constructions

Erweiterter Anwendungsbereich der Ergebnisse von Feuerwiderstandsprüfungen - Nichttragende Wände - Teil 4: Verglaste Konstruktionen

Extension du champ d'application des résultats des essais de résistance au feu - Éléments non-porteurs - Partie 4: Constructions vitrées

Ta slovenski standard je istoveten z: EN 15254-4:2018

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

SIST EN 15254-4:2019

en,fr,de

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SIST EN 15254-4:2019

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 15254-4

December 2018

ICS 13.220.50; 91.060.10

Supersedes EN 15254-4:2008+A1:2011

English Version

**Extended application of results from fire resistance tests -
Non-loadbearing walls - Part 4: Glazed constructions**

Extension du champ d'application des résultats des
essais de résistance au feu - Éléments non-porteurs -
Partie 4 : Constructions vitrées

Erweiterter Anwendungsbereich der Ergebnisse von
Feuerwiderstandsprüfungen - Nichttragende Wände -
Teil 4: Verglaste Konstruktionen

This European Standard was approved by CEN on 28 September 2018.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 15254-4:2018) 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of an identical text or by endorsement, at the latest by June 2019, and conflicting national standards shall be withdrawn at the latest by June 2019.

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

This document supersedes EN 15254-4:2008+A1:2011.

Relevant changes compared to the previous edition EN 15254-4:2008+A1:2011 include:

- a) Replacement of the term “glass product group” by “glass product range”;
- b) Deletion of aspects now covered in the direct field of application (DIAP) of standard EN 1364-1:2015;
- c) Modification of exchange rules for fire resistant glass;
- d) Additional rule for decrease in dimensions for fire resistant glazed elements with classification EW;
- e) Editorial review of the standard.

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

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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This document provides guidance and, where appropriate, defines procedures for variations of certain parameters and factors associated with the design of fire resistant glazed elements which have been tested in accordance with EN 1364-1:2015, and classified according to EN 13501-2.

Extended application of fire resistant glazed elements is based on test evidence.

This standard only applies to vertically installed fire resistant glazed elements.

This standard does not apply to door sets and openable windows according to EN 1634-1 and does not apply to curtain walling – full configuration or curtain walling – part configuration according to EN 1364-3 and EN 1364-4.

Glass block assemblies and paver units and channel-shaped glass as defined in EN 1051-1 and EN 572-7 are excluded. There is currently insufficient information available to enable rules for extended application to be developed for these products.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 1279-1, *Glass in building - Insulating glass units - Part 1: Generalities, system description, rules for substitution, tolerances and visual quality*

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

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*

EN 1995-1-2, *Eurocode 5: Design of timber structures - Part 1-2: General - Structural fire design*

EN 13501-1, *Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests*

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

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*

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

EN ISO 12543-1, *Glass in building - Laminated glass and laminated safety glass - Part 1: Definitions and description of component parts (ISO 12543-1)*

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 13501-2, EN ISO 13943, EN ISO 12543-1, EN 1279-1 and EN 1364-1:2015, together with the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

charring rate

rate at which a test specimen responds to heat evidenced by the formation of a carbonaceous residue

[SOURCE: ISO 17493:2016, 3.1, modified]

Note 1 to entry Calculated as described in EN 1995-1-2.

3.2

resistance to fire classification

resistance to fire classification of the glazed element with respect to integrity E, radiation W and insulation I in accordance with EN 13501-2

3.3

fire resistant glass

glass product, (i.e. monolithic glass, laminated glass, insulating glass units), that when used in a glazed assembly, can have its performance determined and classified in accordance with EN 13501-2

Note 1 to entry The term “insulating” when used as an insulating glass unit according to EN 1279-1, should not be confused with the term “insulation” used in EN 13501-2 classification standard for fire resistant glazed element.

3.4

glass product range

group of fire resistant glass (see 3.3) products, including products from one or more glass product families, e.g. monolithic glass, laminated glass, insulating glass units, defined and produced by one manufacturer for which the characteristic resistance to fire from any one product within the range is valid for all other products within this range

Note 1 to entry: The glass product families are defined in the relevant product standards.

3.5

glazing system material

all materials used to glaze the fire resistant glass into its frame, e.g. glazing strips, beads and bead fixings, setting blocks, gaskets and sealant

Note 1 to entry: See example in Figure 1.

EN 15254-4:2018 (E)**3.6****pre-existing test data**

test data generated by fire resistance tests that have been undertaken in accordance with former versions of European test standards

3.7**reference test**

fire resistance test in accordance with EN 1364-1:2015 and EN 1363-1, and where applicable EN 1363-2 which the extended application is based and the results, which are used as the main source of data for the extended application

3.8**framing system**

frame profile and fixing to the supporting construction

Note 1 to entry: See example in Figure 1.

3.9**direct field of application of test results**

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

3.10**extended field of application of test results**

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

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4 Principles**4.1 General principles**

Extended application is a prediction of the expected fire resistance of fire resistant glazed elements. It may be based on interpolation between or extrapolation from test data. The fundamental consideration shall be that the fire resistant glazed element after extension would achieve the required fire performance if it were to be tested according to EN 1364-1:2015.

The test results are applicable to similar constructions where one or more of the changes in the direct field of application in EN 1364-1:2015 and this standard are made, and it is the manufacturer's responsibility that the construction continues to comply with the appropriate design code for its stiffness and stability.

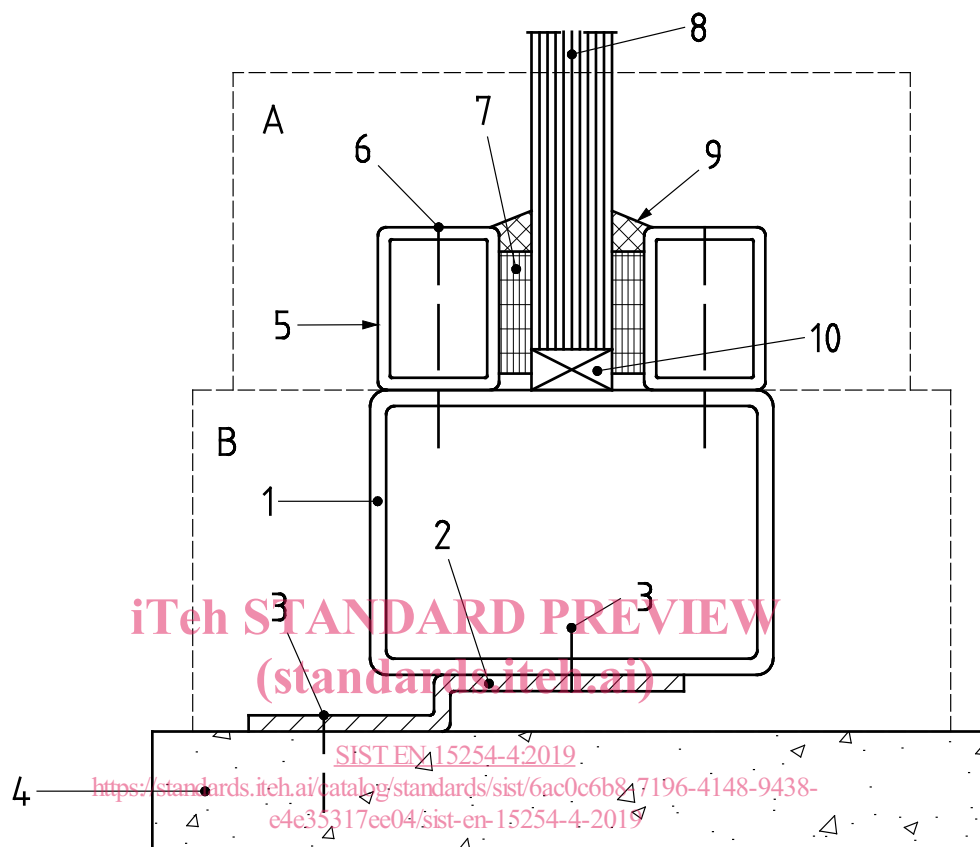
For test reports based on an edition of EN 1364-1 earlier than 2015, the direct field of application according to EN 1364-1:2015 may be applied.

An increase in the classification time (e.g. from EI 30 min to EI 45 min) and/or changes to the fire performance classification (e.g. from E to EW) achieved in the reference test shall not be permitted by the application of the extended application rules. The only exception is detailed in 7.2.

The overview regarding the relevant changeable parameters for extended application for fire resistant glazed elements is given in Table 1.

Extended application reports shall be prepared according to EN 15725.

Fire resistant glazed elements function as an integral system in which the individual components (glass, glazing system materials and framing system) are combined in such a way that they are effective in meeting the defined fire resistance criteria. However, in this document fire resistant glazed elements are separately characterized as the glazing system and the framing system (see example in Figure 1).



Key

- A glazing system
- B framing system
- 1 frame
- 2 metal anchor, screwed or bolted to the supporting construction (4) by a fixing anchor (3)
- 3 screw and fixing anchor
- 4 supporting construction
- 5 bead, screwed or clipped or clamped
- 6 bead fixing
- 7 glazing strip
- 8 glass
- 9 sealing or gasket
- 10 setting block

Figure 1 — Example of a framing system and glazing system

4.2 Use of test evidence

4.2.1 General

The applicant for the extended application shall either be the “owner” (i.e. sponsor) of all reference tests and pre-existing test data being submitted for the extension, or have written permission from the owner to use the submitted test evidence.

4.2.2 Reference tests

Reference tests are the basis for any changes. For some of the changes an overrun time is required in accordance with EN 1364-1:2015. A reference test may be submitted for either rectangular or non-rectangular panes.

Reference tests provide the main source of data to determine the following:

- resistance to fire classification (integrity E, integrity with radiation EW or integrity with insulation EI);
- maximum pane area and dimensions for the fire resistant glass;
- maximum dimensions of the fire resistant glazed element for each type of frame;
- side exposed to fire.

Reference tests may also provide other data to assist in determining the following:

- permitted dimensional changes to the framing system;
- changes to the glazing system.

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4.2.3 Use of pre-existing test data

Pre-existing test data may be used to support extended application, for instance to evaluate the influence of a particular component (e.g. glazing material) or aspect of the design (e.g. direction of fire exposure) or to establish which design variations affect the performance in the most or least onerous way. If this can be identified, then a reference test of the most onerous design may be undertaken. If the product achieves the required classification then the other less onerous variations will be covered. The relevant clauses state when pre-existing test data may be used.

The following parameters and factors are considered in this standard:

Table 1 — Parameters, Factors and Rules for glazing and framing systems and glazed elements

Parameter	Factor	Rule see clauses:
<u>Glazing system</u>		
Change of glass type and thickness	Replacement of glass within the same glass product range	5.1
Glass shapes	Rules to glass shapes	5.2
Glass dimensions	Increase in glass dimensions	5.3
Timber beads	Exchange of timber species / bead fixing / bead shape and dimensions	5.4
Metal beads	Exchange of bead fixing / bead shape and dimensions	5.5
Exchange of glazing materials	Gaskets/glazing strips / setting blocks	5.6
Bead surface coverings	Changes or adding surface coverings	5.7
<u>Framing system</u>		
Exchange of frames (general)	Type of material / junction types / edge cover	6.1.1
Timber frames	Thickness / profile / timber type (charring rate / density)	6.1.2
Metal frames	Frame materials / sections / thickness of chamber walls	6.1.3
Frame surface covering	Changes or adding frame surface coverings	6.2
<u>Fire resistant glazed element</u>		
Glazed element classified EW	Increase in dimensions and replication for fire resistant glazed elements	7.1
Glazed element classified EW	Decrease in dimensions for fire resistant glazed elements	7.2

4.3 Combination of extended application

Within the extended application, a combination of changes is allowed (see Clauses 5, 6 and 7), provided that each change needed for these combinations can be substantiated by the supporting test evidence and/or pre-existing test data.

An extended application that has already been granted can be used for a new extended application, provided it can be shown that the new changes do not contradict any of the principles used to establish the first extended application.

For reasons of traceability, all supporting documents used for any extension should be referenced in the extended application report.

5 Specific changes to the glazing system

5.1 Exchange of the fire resistant glass

5.1.1 General

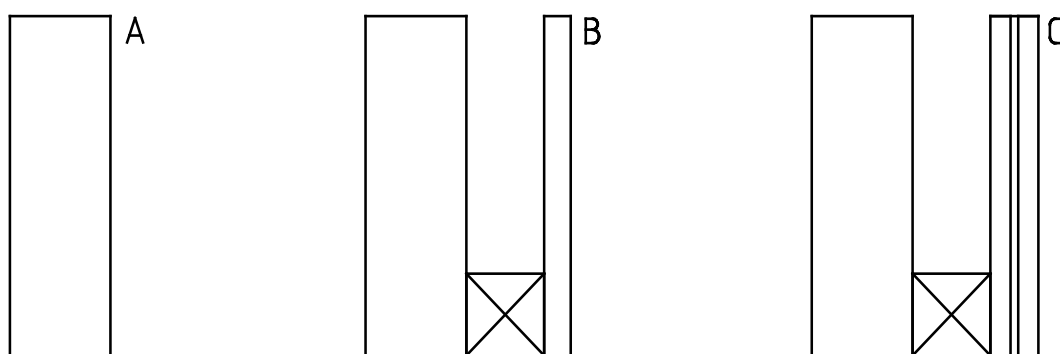
The exchange of the tested fire resistant glass, for another is allowed without additional test, provided that

- both glass types are within the same glass product range, and
- the replacing fire resistant glass has at least the same resistance to fire classification according to EN 13501-2 as the tested glass, and
- the dimensions (width x height) of the replacing glass are within the maximum dimensions given by the field of direct application of the tested glass.

There are three major types of fire resistant glass:

- fire resistant glass consisting only of the glass component that provides the fire resistance (i.e. a monolithic or a laminated glass) indicated in Figure 2, type A;
- an insulating glass unit (IGU) consisting of the component that provides the fire resistance, a monolithic counter pane with or without additional coatings on either side of the counter pane and an optional middle pane with or without coatings indicated in Figure 2, type B;
- an IGU consisting of the component that provides the fire resistance, a laminated counter pane with or without additional coatings on either side of the counter pane and an optional middle pane with or without coatings, indicated in Figure 2, type C.

NOTE An IGU can consist of a glass component that provides the fire resistance and one or more cavities and counter panes.



Key

- A fire resistant glass
- B IGU with monolithic counter pane
- C IGU with laminated counter pane

Figure 2 — Types of fire resistant glass