
Steklo v gradbeništvu - Varnost v primeru požara, požarna odpornost - Metodologija preskušanja stekla za namene klasificiranja

Glass in building - Safety in case of fire, fire resistance - Glass testing methodology for the purpose of classification

Glas im Bauwesen - Brandsicherheit, Feuerwiderstandsfähigkeit - Verfahrensweise von Glasprüfungen zur Klassifizierung

Verre dans la construction - Sécurité en cas d'incendie, résistance au feu - Méthodologie d'essai du verre à des fins de classification

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13.220.50	Požarna odpornost gradbenih materialov in elementov	Fire-resistance of building materials and elements
81.040.20	Steklo v gradbeništvu	Glass in building

SIST EN 15998:2011**en,fr,de**

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Glass in building - Safety in case of fire, fire resistance - Glass testing methodology for the purpose of classification

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Foreword

This document (EN 15998:2010) has been prepared by Technical Committee CEN/TC 129 "Glass in building", the secretariat of which is held by NBN.

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of an identical text or by endorsement, at the latest by May 2011, and conflicting national standards shall be withdrawn at the latest by May 2011.

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Introduction

According to mandate M/135 "Glass in building", one of the essential characteristics that may be claimed is *Safety in case of fire – Resistance to fire (for glass for use in a glazed assembly intended specifically for fire resistance)*. However, glass products cannot be tested and classified for fire resistance without being incorporated into a fire resistant glazed assembly.

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1 Scope

This European Standard specifies the testing methodology to be used for glass products that are claiming fire resistance. The methodology covers Initial Type Testing as defined in the relevant glass product standard.

NOTE This document provides guidance with the declaration of the characteristic, Safety in case of fire – Resistance to fire (for glass for use in a glazed assembly intended specifically for fire resistance) for the CE marking.

The same methodology can also be used to determine the performance classification for market applications (see Annex B).

The methodology covers all glass product types that may require testing and classification for fire resistance.

Fire resistance testing covers end use applications for example:

- doors;
- partitions, walls (including curtain walling);
- floors, roofs;
- ceilings.

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, *Fire resistance tests — Part 1: General requirements*

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 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 1634-1, *Fire resistance and smoke control tests for door, shutter and openable window assemblies and elements of building hardware — Part 1: Fire resistance tests for doors, shutters and openable windows*

EN 13501-2:2007+A1:2009, *Fire classification of construction products and building elements — Part 2: Classification using data from fire resistance tests, excluding ventilation services*

EN 15254-4, *Extended application of results from fire resistance tests — Non-loadbearing walls — Part 4: Glazed constructions*

EN 15998:2010 (E)**3 Terms and definitions**

For the purposes of this document, the following terms and definitions apply.

3.1**extended field of application****EXAP**

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 result(s) to the same test standard

[EN 13501-2:2007+A1:2009]

3.2**fire-resistant glass**

glass product group, i.e. monolithic, multiple layers or insulating glass unit, that when used in a fire resistant glazed assembly can have its performance determined and classified in accordance with EN 13501-2

3.3**fire performance classification**

result of a fire resistance test(s) expressed as required in EN 13501-2

NOTE 1 The classification is reported with respect to integrity (E), integrity and radiation (EW), integrity and insulation (EI), and loadbearing capacity and integrity (RE) and loadbearing capacity, integrity and insulation (REI).

NOTE 2 The classification of a specific glass product will be one or more of E, EW, EI, RE, REI

NOTE 3 The time obtained for different classifications may be different, e.g. EW 30, EI 20.

3.4**framing system**

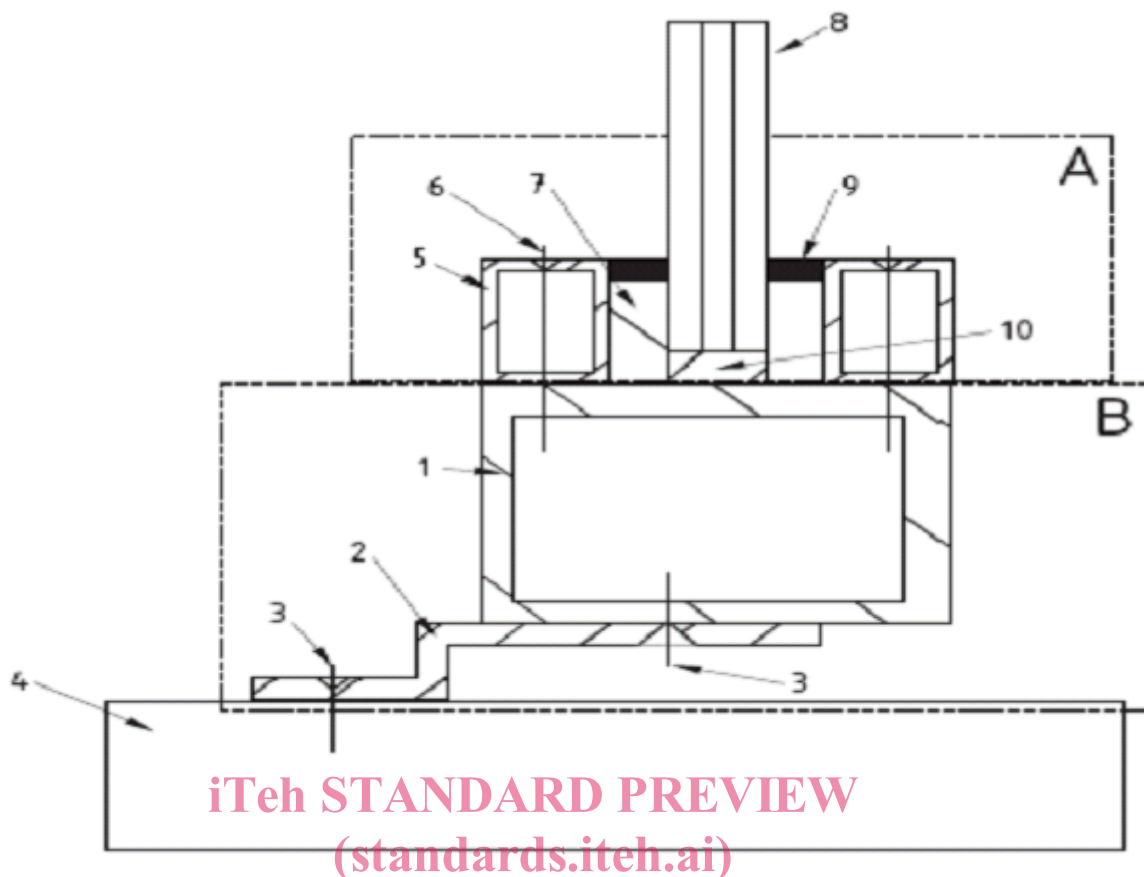
frame profile and fixings to the supporting structure (e.g. wall)

NOTE See Figure 1, B.

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**Key**

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A glazing system <https://standards.iteh.ai/catalog/standards/sist/885ab241-b73a-418b-9f79-d5aefedeed16/sist-en-15998-2011>

B framing systems

Framing system consisting of:

- 1 frame;
- 2 metal anchor, screwed or bolted to the wall 4 by a fixing anchor 3;
- 3 screw and fixing anchor;
- 4 wall.

Glazing system consisting of:

- 5 bead, screwed or clipped;
- 6 bead fixing;
- 7 glazing strip;
- 8 glass;
- 9 sealing of gasket;
- 10 setting block.

Figure 1 — Fire resistant metal framing and glazing system

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**3.5
glazed assembly**
fire-resistant glass together with the framing system and glazing materials subjected to the fire resistance test

NOTE 1 Also referred to as glazed element, glazed construction, glazed screen.

NOTE 2 See Figure 1.

**3.6
glazing system**
fire-resistant glass together with the glazing materials used in the fire resistance test to glaze the glass into its framing system

NOTE See Figure 1, A.

**3.7
glazing materials**
materials used to glaze the fire-resistant glass into its frame, e.g. glazing strips, beads and bead fixings, setting blocks, gaskets and sealant

**3.8
historic data**
test data obtained by tests previously performed in accordance with the European Standard with the following provisos: same product, same characteristic(s), same or more onerous test method, sampling method and attestation of conformity

**3.9
initial type testing
ITT**
determination of the performance of a product (characteristic, durability), on the basis of either actual tests or other procedures (such as conventional, standardized, tabulated or general accepted values, standardized or recognized calculation methods, test reports when made available, etc.), in accordance with this European Standard that demonstrates compliance with this European Standard

NOTE The European Standard referred to is the applicable "Evaluation of conformity/product standard" for the glass product under consideration, e.g. EN 1279-5; EN 12150-2; EN 13024-2; EN 14449.

**3.10
reference test**
fire resistance test in accordance with the appropriate standard (see 4.3), on which the extended application is based and the results of which are used as the main source of data for the extended application

NOTE 1 This test may also be used as the initial type test to support CE marking of fire-resistant glass or as a market application test. In each case, Annex ZA of the product standard should be considered: e.g. involvement of a Notified Certification Body, sample traceability, product sampling (when necessary) and checks of the factory production control.

NOTE 2 The reference test provides the main source of data to determine the following:

- performance rating (integrity, integrity with radiation or integrity with insulation);
- maximum pane area and dimensions for the fire-resistant glass;
- maximum dimensions of the fire-resistant glazed element for each type of frame material.

NOTE 3 The reference test may also provide other data to assist in determining, through EXAP rules, the following:

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

3.11**test report**

document that covers the results of tests undertaken on a representative sample of the product from production or on a prototype design of the product

NOTE This definition comes from an "Evaluation of conformity/product standard".

3.12**technical file**

document, produced and maintained by the manufacturer, that contains all relevant information dealing with product traceability/testing/manufacture, etc.

3.13**virtual assembly**

glazed assembly that is defined by the glass manufacturer for the Initial Type Testing of the characteristic "Safety in case of fire – Resistance to fire (for glass for use in a glazed assembly intended specifically for fire resistance)"

NOTE 1 The acceptable components and the scope of application for the "Virtual Assembly" are those defined by the relevant classification report.

NOTE 2 Classification is in accordance with EN 13501-2 and based upon:

- a) fire resistance test(s) for direct application; or
- b) for extended application according to EXAP rules

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4 Principles**4.1 General**

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According to EN 357:2004, 5.1, the fire resistance classification shall be related to the complete glazed element which incorporates the glass products and all given dimensions and tolerances.

Therefore the principle is established that the glass shall be fitted into a framing system, complete with seals and mounting and fixing arrangements. Therefore as a consequence the glass cannot be classified on its own. The classification relates to a complete glazed assembly. The glazed assembly is tested in accordance with the applicable test method (see 4.3).

The determination of the fire resistance classification is primarily undertaken for two separate reasons:

- determination of the fire resistance performance of the glass product as one of its characteristics for regulatory marking (see 4.2);
- determination of the fire resistance performance of a glazed assembly for specific market applications (see Annex B).

NOTE A test may satisfy both of the above items.

4.2 Testing to determine fire resistance as a product characteristic for a glass

According to any of the "Evaluation of conformity/product standards" for glass the characteristic "Safety in case of fire – Resistance to fire (for glass for use in a glazed assembly intended specifically for fire resistance)" can be determined and classified in accordance with EN 13501-2.

Therefore the testing shall be undertaken on a complete fire resistant glazed assembly. This requires the glass product manufacturer to specify all the details of the glass and glazed assembly to be tested. The glass