

Fire behaviour of building materials and elements

Fire-resistant glazing
Concepts, requirements and testing


DIN
4102
 Part 13

Brandverhalten von Baustoffen und Bauteilen; Brandschutzverglasungen;
Begriffe, Anforderungen und Prüfungen

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In keeping with current practice in standards published by the International Organization for Standardization (ISO), a comma has been used throughout as the decimal marker.

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1 Scope and field of application

This standard specifies requirements and methods of test for fire-resistant glazing of fire resistance classes F 30 to F 120 and G 30 to G 120¹⁾ and establishes relevant concepts. It does not apply to movable glazed elements, such as windows, doorsets and shutter assemblies.

2 Concepts

2.1 Fire-resistant glazing

Fire-resistant glazing is an assembly of one or more translucent elements fixed in a frame and installed horizontally, vertically or at an angle, with beads, sealant and fixings as specified by the manufacturer and complying with the requirements specified in clause 6.

2.2 Class F glazing

Class F glazing incorporates elements intended to prevent both the spread of fire and smoke and the passage of thermal radiation during a specified fire resistance time.

2.3 Class G glazing

Class G glazing incorporates elements intended to prevent the spread of fire and smoke and to impede the passage of thermal radiation²⁾.

- 1) The performance of fire-resistant glazing and whether it is properly classed cannot be assessed solely on the basis of this standard. Other proof of suitability need be provided (e.g. in form of a general building inspectorate approval (agrément)).
- 2) In accordance with the building regulations, class G glazing may only be installed where the degree of fire protection is not affected (e.g. glazed elements in hallway walls, where the lower edge of the elements is at least 1,8 m above the floor level including any floor covering). The use of such elements shall always be subject to an agrément.

Continued on pages 2 to 4

3 Fire resistance time

The fire resistance time is specified in table 1 as a function of the fire resistance classes (cf. DIN 4102 Part 2).

Table 1. Fire resistance classes^{1) 2)}

Fire resistance time, in minutes	Fire resistance class	
	Class F glazing	Class G glazing
30 or more	F 30	G 30
60 or more	F 60	G 60
90 or more	F 90	G 90
120 or more	F 120	G 120

4 Installation positions

When testing in accordance with this standard, the following installation positions (angles of installation to the horizontal) shall be used (cf. table 2).

Table 2. Installation positions

Angle of installation	Position	Valid for an actual angle of
90°	vertical	over 80° up to 90°
45°	inclined	over 15° up to 80°
0°	horizontal	0° to 15°

5 Classification of glazing

Glazing shall be classified into fire resistance classes on the basis of testing in accordance with clause 7, the criterion of classification being the most unfavourable result of the test carried out on two specimens or more.

6 Requirements

Fire-resistant glazing (including frame, beads, sealant, fixings and any surrounds) shall, when tested in accordance with this standard using the standard time/temperature curve specified in DIN 4102 Part 2, meet the requirements specified in table 1.

Table 3. Requirements for fire-resistant glazing

Class F glazing	Class G glazing
Fire test based on standard time/temperature curve	
<ol style="list-style-type: none"> Glazing shall not collapse under its weight*). The passage of fire and smoke shall be prevented. The separating effect shall be maintained, i.e. <ol style="list-style-type: none"> no flaming on the unexposed side, a cotton pad held against unexposed side shall not ignite. Temperature rise on unexposed side shall not be more than 140 K (mean value) or 180 K (maximum value) above initial ambient temperature. 	
*) For glazing subjected to imposed loads, see DIN 1045.	

7 Testing

7.1 Specimens

7.1.1 Size and installation

Size and installation position of the specimens (including frame, beads, sealants and fixings) as well as the method of fixing them to the surrounds shall be representative of those used in practice (cf. subclause 7.3).

The fire resistance class of the surrounding elements shall be at least equal to that of the glazing, their minimum dimensions being as specified in subclause 6.1 of DIN 4102 Part 2.

7.1.2 Dimensions of glass panels

The dimensions of glass panels shall be the same as the maximum dimensions used in practice.

For multiple-pane assemblies, the specimen shall incorporate at least one pane of maximum size.

7.1.3 Arrangement of panes

For multiple-pane assemblies, the panes shall be arranged in as many specimens as is necessary to reflect all configurations encountered in practice (cf. figure 1).

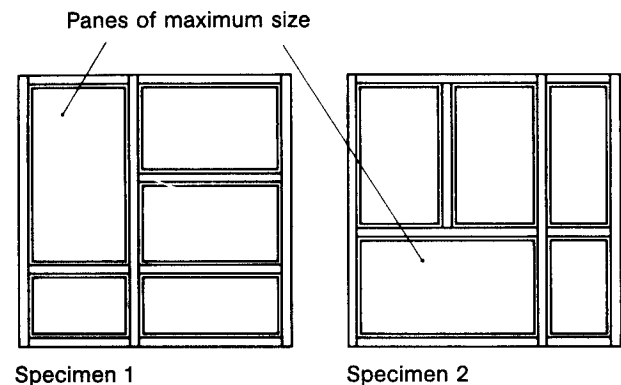


Figure 1. Arrangement of panes for testing multiple-pane assemblies

7.1.4 Installation position

7.1.4.1 Vertical position

In the case of glazed elements to be installed vertically in practice, the specimens shall be tested in the vertical position (cf. table 2). Where such elements are to be arranged to from a corner in practice (plan view), a minimum of two further specimens shall be subjected to testing, one being exposed from the inside, the other from the outside.

7.1.4.2 Inclined position

Where glazed elements are to be installed in an inclined position in practice (i.e. at an angle of 15° to 80°), specimens shall be tested at an angle of 45° (cf. table 2).

7.1.4.3 Horizontal position

Where glazed elements are to be installed horizontally in practice, i.e. at an angle of 0° to 15°, specimens shall be tested in the horizontal position (cf. table 2).

7.1.5 Hardware

Where glazed elements are to be fitted with hardware (e.g. latches, locks) in practice, the specimens shall be constructed accordingly.

7.1.6 Finishes

Where glazed elements are to be veneered, painted or otherwise coated and where such finishes are likely to affect the fire resistance time, the specimen shall also receive such a finish.

For 1), 2) see page 1.