

# INTERNATIONAL STANDARD

# ISO 9051

First edition  
1990-11-01

---

---

## Glass in building — Glazed assemblies containing fire-resistant transparent or translucent glass, for use in building

iTeh STANDARD PREVIEW

*Verre dans la construction — Ensembles vitrés comportant du verre transparent ou  
translucide, résistant au feu, pour utilisation dans le bâtiment*

[ISO 9051:1990](https://standards.iteh.ai/catalog/standards/sist/934fe7be-2c95-4a9d-a666-a4903bba8ed7/iso-9051-1990)

[https://standards.iteh.ai/catalog/standards/sist/934fe7be-2c95-4a9d-a666-  
a4903bba8ed7/iso-9051-1990](https://standards.iteh.ai/catalog/standards/sist/934fe7be-2c95-4a9d-a666-a4903bba8ed7/iso-9051-1990)



Reference number  
ISO 9051 : 1990 (E)

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 9051 was prepared by Technical Committee ISO/TC 160, *Glass in building*.

ITeH STANDARD PREVIEW  
(standards.iteh.ai)  
<https://standards.iteh.ai/catalog/standards/sist/934fe7be-2c95-4a9d-a666-a4903bba8ed7/iso-9051-1990>

# Glass in building — Glazed assemblies containing fire-resistant transparent or translucent glass, for use in building

## 1 Scope

This International Standard specifies the classification and marking of transparent and translucent glass products, which will be described in future International Standards on basic or processed glass products, in assemblies for use in building and intended to provide some degree of fire-resistance.

## 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 834 : 1975, *Fire-resistance tests — Elements of building construction*.

ISO 3009 : 1976, *Fire-resistance tests — Glazed elements*.

## 3 Fire-resistance characteristics of glazed assemblies

Glass is a non-combustible material and therefore will not contribute to or propagate fire.

Glass if affected by heat may fracture by thermal shock or may soften and then not be held by the frame. Only certain types of glazed assemblies are, therefore, recognized as fire-resisting. The ability of glazed assemblies to resist fire depends on the type of glass products, glazing method, frame type, pane size, fixing method and the type of construction surrounding the glazed area.

Some transparent and translucent glazed assemblies can meet requirements for stability and integrity (RE), and in some cases insulation (REI, where R is for resistance, E for étanchéité and I for insulation).

Not only is the possibility of direct fire propagation through openings caused by glass breakage to be considered for fire protection precautions: it may also be necessary to take into account the heat transmitted through the glazed assembly, which may still be intact, as such heat may cause ignition of combustible materials.

## 4 Classes

As glazed assemblies perform differently in case of fire, the type shall be classified into one of the following categories.

### 4.1 Class RE

Glazed assemblies of fire-resistance according to class RE under the fire conditions as defined in ISO 834 provide, for a given time, stability and integrity. The temperature of the unexposed side is not taken into account.

### 4.2 Class REI

Glazed assemblies of fire-resistance according to class REI under the fire conditions as defined in ISO 834 provide, for a given time, stability, integrity and insulation.

## 5 Frame, glass, glazing material and surrounding construction

The frame, glazing material and surrounding construction shall be such that the glazed assembly as a whole corresponds to the test report.

Glass of class RE could for example be:

- glass bricks,
  - glass with a low coefficient of thermal expansion, or glass ceramics,
  - glass toughened by thermal or chemical treatment,
  - wired glass,
  - flat glass in small panes,
  - laminated glass,
- in single or multiple glazings.

Glass of class REI could for example be:

- some types of glass bricks,
- some types of laminated glazings in single or multiple glazings.

**6 Test requirements**

**6.1 Specimens**

A specimen, for the purposes of this International Standard, is a complete glazed assembly.

**6.2 Installation**

The fixing of the specimen into the furnace opening shall be in accordance with ISO 3009.

**6.3 Procedure**

The test procedure shall be accordance with ISO 3009 and for the temperature of the unexposed side (class REI), see ISO 834 : 1975, subclause 6.2.2 with at least one thermocouple for the measurement of the maximum temperature on the glazing.

**6.4 Criteria**

A glazed assembly for fire-resistance class RE shall meet the integrity requirements of ISO 3009 (see table 1).

A glazed assembly for fire-resistance class REI shall meet both the integrity requirements of ISO 3009 and the insulation requirements of ISO 834 (see table 1).

- e) details of materials, construction and conditioning of the assembly tested;
- f) description of the fixings between the assembly tested and the test frame or surround;
- g) side exposed to heat;
- h) test result as determined by the furnace time/pressure chart and temperature curves, and the time(s) at which particular criteria in 6.4 are no longer satisfied;
- i) any other relevant observations;
- j) fire-resistance class(es) RE and/or REI and code number(s) according to table 1.

**Table 1 – Fire-resistance time**

Code number	Resistance time min
15	15 to 29
30	30 to 44
45	45 to 59
60	60 to 89
90	90 to 119
120	120 or more

**7 Test report**

The test report shall state the following information :

- a) name of test laboratory;
- b) name of sponsor(s);
- c) date of test;
- d) name(s) of manufacturer(s) and trade name(s) (if any) of the major components of the glazed assembly;

If marking is essential, the following particulars shall be indelibly and distinctly marked on every glazed assembly in a position which is visible to anyone requiring the information :

- a) manufacturer's name or trade-mark;
- b) the number of this International Standard, i.e. ISO 9051;
- c) fire-resistance class RE and/or REI;
- d) code number(s) for the resistance time(s).

---



---

**UDC 691.6 : 539.434 : 666.117.3**

**Descriptors** : construction materials, fire resistant materials, glazing, glass, translucent glasses, specifications.

Price based on 2 pages

---



---