INTERNATIONAL STANDARD

ISO 9051

Second edition
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Glass in building — Fire-resistant glazed assemblies containing transparent or translucent glass, for use in building

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

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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.

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

International Standard ISO 9051 was prepared by Technical Committee ISO/TC 160, *Glass in building*, Subcommittee SC 2, *Use considerations*.

This second edition cancels and replaces the first edition (ISO 9051:1990)of which it constitutes a minor revision.

Glass in building — Fire-resistant glazed assemblies containing 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 normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 834-1:1999, *Fire-resistance tests — Elements of building construction — Part 1: General requirements*

ISO 3009, *Fire resistance tests — Elements of building construction — Glazed elements*

3 Fire-resistance characteristics of glazed assemblies

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

If affected by heat, glass 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 product, 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 integrity and I for insulation).

Not only is the possibility of direct propagation of fire and smoke 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.

a) **Class RE**

Glazed assemblies of fire-resistance according to class RE under the fire conditions as defined in ISO 834-1 provide, for a given time, stability and integrity. The temperature of the unexposed side is not taken into account.

b) **Class REI**

Glazed assemblies of fire-resistance according to class REI under the fire conditions as defined in ISO 834-1 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.

Glazings of class RE could, for example, contain

— glass blocks,

— 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, or

— laminated glass,

in single or multiple glazings.

Glazings of class REI could, for example, contain

— some types of glass blocks, or

— 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 in accordance with ISO 3009, and for the temperature of the unexposed side (class REI), see ISO 834-1:1999, subclause 5.5.12, with at least one thermocouple for the measurement of the maximum temperature on the glazing.