
**Glass in building — Glass blocks —
Specification and test methods**

*Verre dans la construction — Briques de verre — Spécification et
méthodes d'essai*

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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 2.

The main task of technical committees is to prepare International Standards. 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 document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 21690 was prepared by Technical Committee ISO/TC 160, *Glass in building*, Subcommittee SC 1, *Product considerations*.

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Introduction

Light transmitting glass blocks are used for the construction of building elements both in non-load bearing walls and load bearing horizontally spanning panels.

Glass blocks for non-load bearing walls carry only their own weight and withstand horizontal forces such as those generated by the wind. Glass block walls and horizontally spanning panels do not carry any forces generated by the building.

Glass blocks used for the construction of horizontally spanning panels (e.g. floors, vaults and domes) carry their own weight and any other imposed loads (e.g. pedestrian or vehicular traffic).

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Glass in building — Glass blocks — Specification and test methods

1 Scope

This International Standard specifies requirements for the properties of glass blocks used for the construction of non-load-bearing walls and horizontally spanning panels. This International Standard also specifies test methods used to verify these properties for square, rectangular and circular glass blocks.

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.

ISO 48, *Rubber, vulcanized or thermoplastic — Determination of hardness (hardness between 10 IRHD and 100 IRHD)*

ISO 9050:2003, *Glass in building — Determination of light transmittance, solar direct transmittance, total solar energy transmittance, ultraviolet transmittance and related glazing factors*

ISO 12567-1:2000, *Thermal performance of windows and doors — Determination of thermal transmittance by hot box method — Part 1: Complete windows and doors*

ISO 15099:2003, *Thermal performance of windows, doors and shading devices — Detailed calculations*

EN 998-2, *Specification for mortar for masonry — Part 2: Masonry mortar*

EN 10002-2, *Metallic materials — Tensile testing — Part 2: Verification of the force measuring system of the tensile testing machine*

ASTM D2047, *Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine*

3 Terms and definitions

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

3.1

hollow glass block

two pressed glass bodies fused together to form an airtight seal enclosing a cavity

3.2

dished glass block

pressed glass body having a concave face

3.3

solid glass block

one piece cast or pressed glass body without a concave face

3.4
manufacturing methods

3.4.1
automated production line

glass block formed or shaped from hot glass by mechanical pressure between a mould and a plunger

3.4.2
non-automated production line

glass block formed or shaped from hot glass by pressure between a mould and a plunger but not as part of an automated production line

3.4.3
cast production line

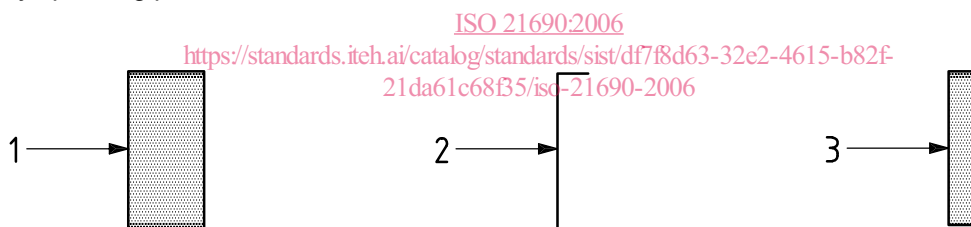
glass block formed or shaped from hot glass by pouring hot glass into a mould

4 Types of glass block

4.1 Categories

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The three categories of glass block shown in Figure 1 shall be used for construction of non-load bearing walls and horizontally spanning panels.



Key

- 1 hollow
- 2 dished
- 3 solid

Figure 1 — Categories of glass block

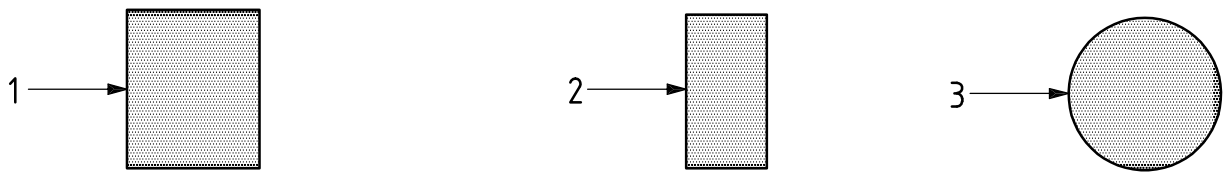
4.2 Shapes of glass block

It shall be acceptable for the three types of glass blocks to be manufactured in different shapes (for examples, see Figure 2).

NOTE Other shapes can be manufactured but test procedures are not covered by this International Standard.

4.3 Patterns

The inner and or outer surfaces of the glass blocks may be smooth, sandblasted, etched or embossed with a pattern.

**Key**

- 1 square
- 2 rectangular
- 3 circular

Figure 2 — Shapes**5 Materials****5.1 Glass composition**

Glass blocks shall be manufactured from soda lime silicate glass whose composition conforms to Table 1.

Table 1 — Glass chemical composition

Chemical	%
Silicon dioxide, SiO ₂	69 to 75
Calcium oxide, CaO	5 to 12
Sodium oxide, Na ₂ O	12 to 16
Magnesium oxide, MgO	0 to 6
Aluminium oxide, Al ₂ O ₃	0 to 3

It shall be acceptable for trace elements of other substances to also be present. The glass material shall be clear or body tinted.

Where the composition requirements of this subclause are met, the expectancy of normal durable performance in use is anticipated.

5.2 Edge coating

Edge coating, where used, shall be compatible with and bond to the glass blocks.

6 Requirements**6.1 Dimensional tolerances****6.1.1 Glass block face thickness**

The face thickness should be not less than 3 mm (see Figure 3).