

Glass in building — Thermally toughened borosilicate safety glass —

Part 1: Definition and description

The European Standard EN 13024-1:2002 has the status of a British Standard

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National foreword

This British Standard is the official English language version of EN 13024-1:2002.

The UK participation in its preparation was entrusted by Technical Committee B/520, Glass and glazing in building, to Subcommittee B/520/1, Basic and transformed glass products, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

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Beschreibung

This European Standard was approved by CEN on 27 December 2001.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

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Foreword

This document EN 13024-1:2002 has been prepared by Technical Committee CEN/TC 129 "Glass in building", the secretariat of which is held by IBN.

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of an identical text or by endorsement, at the latest by November 2002, and conflicting national standards shall be withdrawn at the latest by November 2002.

This European Standard forms part of a series of standards for thermally toughened borosilicate safety glass, the other part being: *Glass in building - Thermally toughened borosilicate safety glass - Part 2: Evaluation of conformity*.

Annex A is normative.

Annexes B and C are informative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

Thermally toughened borosilicate safety glass has a higher thermal shock resistance and a safer breakage behaviour when compared with annealed glass. When it should be used to offer protection under accidental human impact, thermally toughened borosilicate safety glass also should be classified according to prEN 12600.

NOTE CEN/TC129/WG8 is producing standards for the determination of the design strength of glass and is preparing a design method.

NOTE CEN/TC129/WG2 is preparing a standard for production control and evaluation of conformity.

1 Scope

This European Standard specifies tolerances, flatness, edgework, fragmentation and physical and mechanical characteristics of monolithic flat thermally toughened borosilicate safety glass for use in buildings.

Information on curved thermally toughened borosilicate safety glass is given in annex B, but this product does not form part of this standard.

Other requirements, not specified in this standard, can apply to thermally toughened borosilicate safety glass which is incorporated into assemblies, e.g. laminated glass or insulating units, or undergo an additional treatment, e.g. coating. The additional requirements are specified in the appropriate product standard. Thermally toughened borosilicate safety glass, in this case, does not lose its mechanical or thermal characteristics.

2 Normative References

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies (including amendments).

EN 673, *Glass in building – Determination of thermal transmittance (U value) – Calculation method.*

EN 1096-1, *Glass in building – Coated glass – Part 1: Definitions and classification.*

EN 1748-1, *Glass in building – Special Basic Products – Part 1: Borosilicate glasses.*

prEN 12600, *Glass in building - Pendulum test - Impact test method for flat glass and performance requirements.*

3 Terms and definitions

For the purposes of this European Standard the following terms and definitions apply.

3.1

thermally toughened borosilicate safety glass

glass within which a permanent surface compressive stress has been induced by a controlled heating and cooling process in order to give it greatly increased resistance to mechanical and thermal stress and prescribed fragmentation characteristics

3.2

flat thermally toughened borosilicate safety glass

thermally toughened borosilicate safety glass which has not been deliberately given a specific profile during manufacture

3.3

enamelled thermally toughened borosilicate safety glass

thermally toughened borosilicate safety glass which has a ceramic frit fired into the surface during the toughening process. After toughening the ceramic frit becomes an integral part of the glass

NOTE In the UK, this glass is also known as opaque thermally toughened borosilicate safety glass.

3.4

horizontal toughening

process in which the glass is supported on horizontal rollers

3.5

vertical toughening

process in which the glass is suspended by tongs

4 Glass products

Thermally toughened borosilicate safety glass is made from a monolithic glass generally corresponding to one of the following standards:

- borosilicate glass according to EN 1748-1
- coated glass according to EN 1096-1

Other nominal thicknesses of glass than those covered in the above standards are possible.

5 Fracture characteristics

In the event of breakage, thermally toughened borosilicate safety glass fractures into numerous small pieces, the edges of which are generally blunt.

NOTE Fragmentation in service does not always correspond to that described in clause 8, due to restraint from fixing or reprocessing (e.g. laminating), or due to the cause of fracture.

6 Dimensions and tolerances

6.1 Nominal thickness and thickness tolerances

The nominal thicknesses and thickness tolerances are those given in the relevant product standard (see clause 4), some of which are reproduced in Table 1.

Table 1a - Nominal thicknesses and thickness tolerances

Dimensions in millimetres

Nominal thickness d	Thickness tolerances
3	- 0,4 / + 0,5
4	- 0,4 / + 0,5
5	- 0,4 / + 0,5
6,5	- 0,4 / + 0,5
7,5	- 0,4 / + 0,5
9	- 0,9 / + 1,0
11	- 0,9 / + 1,0
13	- 0,9 / + 1,0
15	- 0,9 / + 1,0

Table 1b - Nominal thicknesses and thickness tolerances

Dimensions in millimetres

Nominal thickness d	Thickness tolerances for glass type	
	Drawn sheet	Float
3	- 0,4 / + 0,5	$\pm 0,2$
4	- 0,4 / + 0,5	$\pm 0,2$
5	- 0,4 / + 0,5	$\pm 0,2$
6	- 0,4 / + 0,5	$\pm 0,2$
8	- 0,4 / + 0,8	$\pm 0,3$
10	- 0,9 / + 1,0	$\pm 0,3$
12	- 0,9 / + 1,0	$\pm 0,3$
15	- 0,9 / + 1,0	$\pm 0,5$