

**Byggnadsglas – Termiskt härdat säkerhetsglas  
av alkalisk jordartsmetall-silikattyp –  
Del 1: Definition och beskrivning**

**Glass in building – Thermally toughened alkaline  
earth silicate safety glass –  
Part 1: Definition and description**

Europastandarden EN 14321-1:2005 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN 14321-1:2005.

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## Glass in building - Thermally toughened alkaline earth silicate safety glass - Part 1: Definition and description

Verre dans la construction - Verre de silicate alcalino-terreux de sécurité trempé thermiquement - Partie 1 : Définition et description

Glas im Bauwesen - Thermisch vorgespanntes Erdalkali-Silicat-Einscheibensicherheitsglas - Teil 1: Definition und Beschreibung

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<b>Contents</b>	<b>Page</b>
Foreword .....	4
Introduction.....	5
<b>1 Scope .....</b>	<b>6</b>
<b>2 Normative references .....</b>	<b>6</b>
<b>3 Terms and definitions.....</b>	<b>6</b>
<b>4 Glass products.....</b>	<b>7</b>
<b>5 Fracture characteristics .....</b>	<b>7</b>
<b>6 Dimensions and tolerances.....</b>	<b>7</b>
6.1 Nominal thickness and thickness tolerances .....	7
6.2 Width and length (sizes) .....	8
6.2.1 General .....	8
6.2.2 Maximum and minimum sizes.....	9
6.2.3 Tolerances and squareness .....	9
6.2.4 Edge deformation produced by vertical toughening.....	10
6.3 Flatness .....	11
6.3.1 General .....	11
6.3.2 Measurement of overall bow .....	11
6.3.3 Measurement of local bow .....	13
6.3.4 Limitation on overall and local bow.....	13
<b>7 Edge work, holes, notches and cut-outs.....</b>	<b>14</b>
7.1 Warning .....	14
7.2 Edge working of glass before toughening .....	14
7.3 Profiled edges .....	15
7.4 Round holes .....	15
7.4.1 General .....	15
7.4.2 Diameter of holes .....	15
7.4.3 Limitations on position of holes .....	15
7.4.4 Tolerances on hole diameters.....	17
7.4.5 Tolerances on position of holes .....	17
7.5 Notches and cut-outs .....	18
7.6 Shaped panes.....	18
<b>8 Fragmentation test.....</b>	<b>19</b>
8.1 General .....	19
8.2 Dimensions and number of test specimens .....	19
8.3 Test procedure .....	19
8.4 Assessment of fragmentation .....	20
8.5 Minimum values from the particle count.....	20
8.6 Selection of the longest particle .....	21
8.7 Maximum length of longest particle .....	21
<b>9 Other physical characteristics .....</b>	<b>21</b>
9.1 Optical distortion .....	21
9.1.1 Thermally toughened alkaline earth silicate safety glass produced by vertical toughening .....	21
9.1.2 Thermally toughened alkaline earth silicate safety glass produced by horizontal toughening .....	21
9.2 Anisotropy (iridescence) .....	21
9.3 Thermal durability .....	21
9.4 Mechanical strength .....	22

9.5 Classification of performance under accidental human impact.....22

10 Marking.....22

Annex A (informative) Curved thermally toughened alkaline earth silicate safety glass.....23

Annex B (informative) Example of particle count .....24

**Figures**

Figure 1 — Examples of width, *B*, and length, *H*, relative to the pane shape .....8

Figure 2 — Tolerance limits for dimensions of rectangular panes .....9

Figure 3 — Tong mark deformation .....10

Figure 4 — Representation of overall and local bow .....12

Figure 5 — Support conditions for the measurement of overall bow.....13

Figure 6 a) — Arrissed edge (with blank spots) .....14

Figure 6 b) — Ground edge (with blank spots).....14

Figure 6 c) — Smooth ground edge (no blank spots) .....15

Figure 6 d) — Polished edge.....15

Figure 7 — Relationship between hole and edge of pane .....16

Figure 8 — Relationship between two holes .....16

Figure 9 — Relationship between hole and corner of pane .....17

Figure 10 — Examples of the positioning of holes relative to the datum point.....18

Figure 11 — Examples of notches and cut-outs .....18

Figure 12 — Position of impact point.....19

Figure 13 — Area to be excluded from the particle count determination and largest particle measurement.....20

Figure 14 — Examples of crack-free particles and the assessment regarding the number .....20

Figure B.B1 — Select the area of coarsest fracture, place the template on the test specimen and draw round the template .....24

Figure B.B2 — Mark and count the perimeter fragments as 1/2 particle each.....25

Figure B.B3 — Mark and count the central fragments and add these to the perimeter count to obtain the particle count for the specimen .....26

**Tables**

Table 1 — Nominal thicknesses and thickness tolerances .....8

Table 2 — Tolerances on width, *B*, and length, *H* .....10

Table 3 — Maximum values for overall and local bow .....14

Table 4 — Tolerances on hole diameters.....17

Table 5 — Minimum particle count values .....21

Table 6 — Values for the mechanical strength of thermally toughened alkaline earth silicate safety glass.....22

## EN 14321-1:2005 (E)

### Foreword

This European Standard (EN 14321-1:2005) has been prepared by Technical Committee CEN/TC 129 "Glass in building", the secretariat of which is held by IBN/BIN.

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 December 2005, and conflicting national standards shall be withdrawn at the latest by December 2005.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

No existing European Standard is superseded.

This Part of the European Standard does not stand-alone, it is a part of one standard:

- EN 14321-1: Glass in building – Thermally toughened alkaline earth silicate safety glass – Part 1: Definition and description;
- prEN 14321-2: Glass in building – Thermally toughened alkaline earth silicate safety glass – Part 2: Evaluation of conformity.

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

## **Introduction**

Thermally toughened alkaline earth silicate safety glass has a safer breakage behaviour when compared with annealed glass. When it should be used to offer protection under accidental human impact, thermally toughened alkaline earth silicate safety glass also should be classified according to EN 12600.

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

## EN 14321-1:2005 (E)

### 1 Scope

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

Information on curved thermally toughened alkaline earth silicate safety glass is given in Annex A, but this product does not form part of this European Standard.

Other requirements, not specified in this European Standard, can apply to thermally toughened alkaline earth silicate 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 alkaline earth silicate safety glass, in this case, does not lose its mechanical or thermal characteristics.

### 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.

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

EN 12600, *Glass in building — Pendulum test — Impact test method and classification for flat glass*

EN 14178-1, *Glass in building — Basic alkaline earth silicate glass products — Part 1: Float glass*

### 3 Terms and definitions

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

#### 3.1

##### **thermally toughened alkaline earth silicate 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 alkaline earth silicate safety glass**

thermally toughened alkaline earth silicate safety glass that has not been deliberately given a specific profile during manufacture

#### 3.3

##### **enamelled thermally toughened alkaline earth silicate safety glass**

thermally toughened alkaline earth silicate 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 alkaline earth silicate 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 alkaline earth silicate safety glass shall be made from a monolithic glass generally corresponding to the following standard:

- alkaline earth silicate glass according to EN 14178-1 (float glass);
- this may also be coated in accordance with EN 1096-1.

## **5 Fracture characteristics**

In the event of breakage, thermally toughened alkaline earth silicate 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 shall be those given in the relevant product standard (see Clause 4), some of which are reproduced in Table 1.

**Table 1 — Nominal thicknesses and thickness tolerances**

Dimensions in millimetres

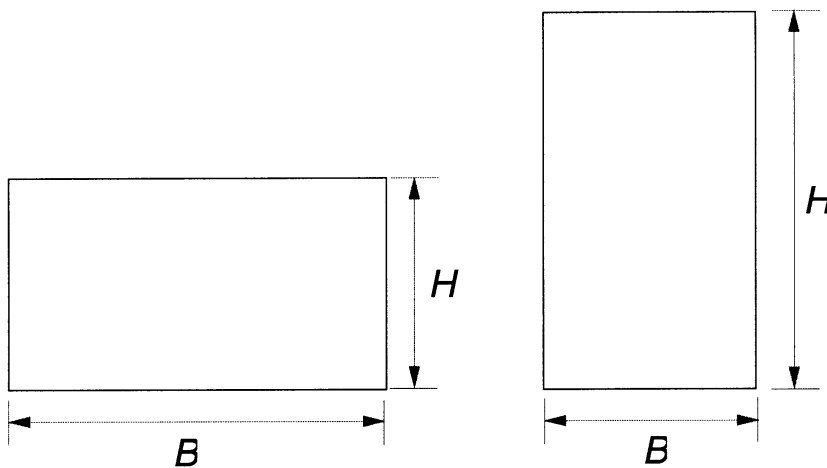
Nominal	Thickness tolerances for glass type
Thickness $d$	Alkaline earth silicate - Float
4	$\pm 0,2$
5	$\pm 0,2$
6	$\pm 0,2$
8	$\pm 0,3$
10	$\pm 0,3$
12	$\pm 0,3$
15	$\pm 0,5$

The thickness of a pane shall be determined as for the basic product. The measurement shall be taken at the centres of the 4 sides, and away from the area of any tong marks (see Figure 3), which may be present.

## 6.2 Width and length (sizes)

### 6.2.1 General

When thermally toughened alkaline earth silicate safety glass dimensions are quoted for rectangular panes, the first dimension shall be the width,  $B$ , and the second dimension the length,  $H$ , as shown in Figure 1. It shall be made clear which dimension is the width,  $B$ , and which is the length,  $H$ , when related to its installed position.



**Figure 1 — Examples of width,  $B$ , and length,  $H$ , relative to the pane shape**

### 6.2.2 Maximum and minimum sizes

For maximum and minimum sizes, the manufacturer shall be consulted.

### 6.2.3 Tolerances and squareness

The nominal dimensions for width and length being given, the finished pane shall not be larger than a prescribed rectangle resulting from the nominal dimensions increased by the tolerance,  $t$ , or smaller than a prescribed rectangle reduced by the tolerance,  $t$ . The sides of the prescribed rectangles are parallel to one another and these rectangles shall have a common centre (see Figure 2). The limits of squareness shall be determined by the prescribed rectangles. Tolerances are given in Table 2.

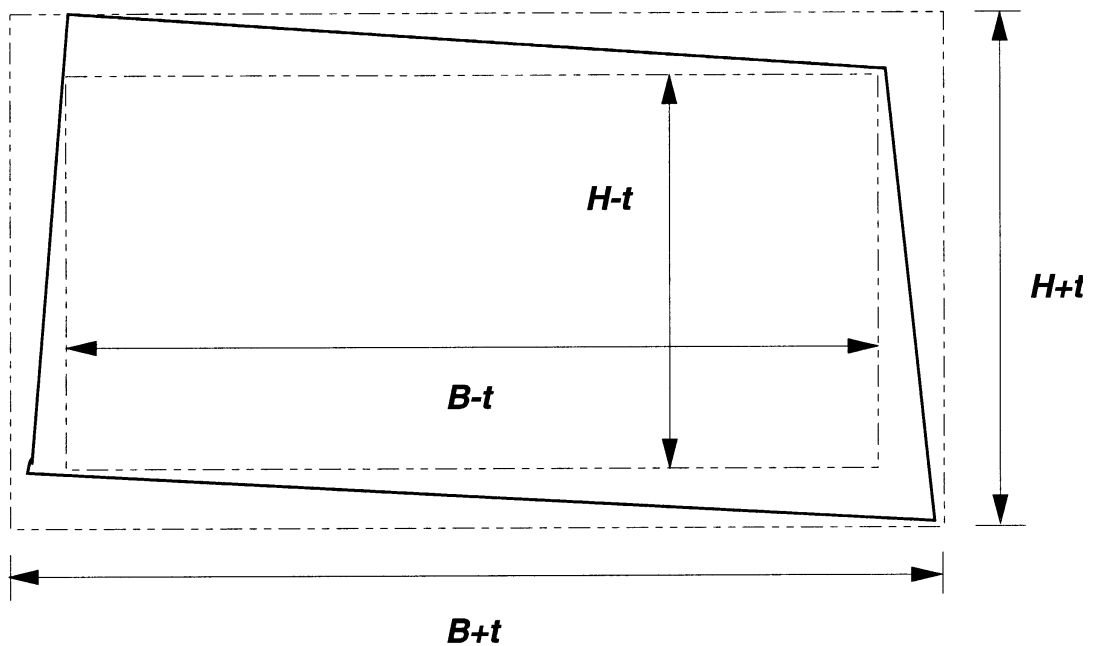


Figure 2 — Tolerance limits for dimensions of rectangular panes