



# SLOVENSKI STANDARD

## SIST EN 1863-1:2000

01-junij-2000

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### **Steklo v stavbah - Toplotno utrjevano natrij-kalcijevo silikatno steklo - 1. del: Definicija in opis**

Glass in building - Heat strengthened soda lime silicate glass - Part 1: Definition and description

Glas im Bauwesen - Teilvorgespanntes Kalknatronglas - Teil 1: Definition und Beschreibung

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Verre dans la construction - Verre de silicate sodo-calcique durci thermiquement - Partie 1: Définition et description

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**Ta slovenski standard je istoveten z: EN 1863-1:2000**

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#### **ICS:**

81.040.20      Steklo v gradbeništvu      Glass in building

**SIST EN 1863-1:2000**

**en**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

EN 1863-1

January 2000

ICS 81.040.20

English version

## Glass in building - Heat strengthened soda lime silicate glass - Part 1: Definition and description

Verre dans la construction - Verre de silicate sodo-calciq  
durci thermiquement - Partie 1: Définition et description

Glas im Bauwesen - Teilvorgespanntes Kalknatronglas -  
Teil 1: Definition und Beschreibung

This European Standard was approved by CEN on 22 March 1999.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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## Foreword

This European Standard 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 July 2000, and conflicting national standards shall be withdrawn at the latest by July 2000.

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, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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## Introduction

Heat strengthened soda lime silicate glass has a higher resistance to thermal stress and an enhanced mechanical strength when compared to annealed glass.

NOTE 1: CEN/TC129/WG8 is producing standards for the determination of the design strength of glass and is preparing a design method.

NOTE 2: 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 heat strengthened soda lime silicate glass for use in buildings.

Information on curved heat strengthened soda lime silicate 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 heat strengthened soda lime silicate 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. Heat strengthened soda lime silicate 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 be 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.

EN 572-1	Glass in building - Basic soda lime silicate glass products - Part 1: Definitions and general physical and mechanical properties
EN 572-2	Glass in building - Basic soda lime silicate glass products - Part 2: Float glass
EN 572-4	Glass in building - Basic soda lime silicate glass products - Part 4: Drawn sheet glass
EN 572-5	Glass in building - Basic soda lime silicate glass products - Part 5: Patterned glass

EN 673	Glass in building - Determination of thermal transmittance (U value) - Calculation Method
prEN 1096-1	Glass in building - Coated glass - Part 1: Definitions and classification
prEN 1288-3	Glass in building - Determination of the bending strength of glass - Part 3: Test with specimen supported at two points (four point bending)

### 3 Definitions

For the purposes of this European Standard the following definitions apply:-

**3.1 heat strengthened soda lime silicate glass:** Glass within which a permanent surface compressive stress has been induced by a controlled heating and cooling process in order to give it increased resistance to mechanical and thermal stress and prescribed fracture characteristics.

**3.2 flat heat strengthened soda lime silicate glass:** Heat strengthened soda lime silicate glass which has not been deliberately given a specific profile during manufacture.

**3.3 enamelled heat strengthened soda lime silicate glass:** Heat strengthened soda lime silicate glass which has a ceramic frit fired into the surface during the heat strengthening process. After heat strengthening the ceramic frit becomes an integral part of the glass.

**NOTE:** In the UK, this glass is also known as opaque heat strengthened soda lime silicate glass.

**3.4 horizontal process:** Process in which the glass is supported on horizontal rollers.

**3.5 vertical process:** Process in which the glass is suspended by tongs.

### 4 Glass products

Heat strengthened soda lime silicate glass is made from a monolithic glass generally corresponding to one of the following standards:

- soda lime silicate glass according to EN 572-1
- float glass according to EN 572-2
- drawn sheet glass according to EN 572-4
- patterned glass according to EN 572-5
- coated glass according to prEN 1096-1.

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

## 5 Fracture characteristics

In the event of breakage, heat strengthened soda lime silicate glass fractures in a manner similar to annealed glass (see clause 8).

NOTE: Fragmentation in service does not 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 1: Nominal thicknesses and thickness tolerances

(standards.iteh.ai) Dimensions in millimetres

Nominal Thickness $d$	Thickness tolerances for glass type		
	Drawn sheet	Patterned	Float
3	$\pm 0,2$	$\pm 0,5$	$\pm 0,2$
4	$\pm 0,2$	$\pm 0,5$	$\pm 0,2$
5	$\pm 0,3$	$\pm 0,5$	$\pm 0,2$
6	$\pm 0,3$	$\pm 0,5$	$\pm 0,2$
8	$\pm 0,4$	$\pm 0,8$	$\pm 0,3$

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.

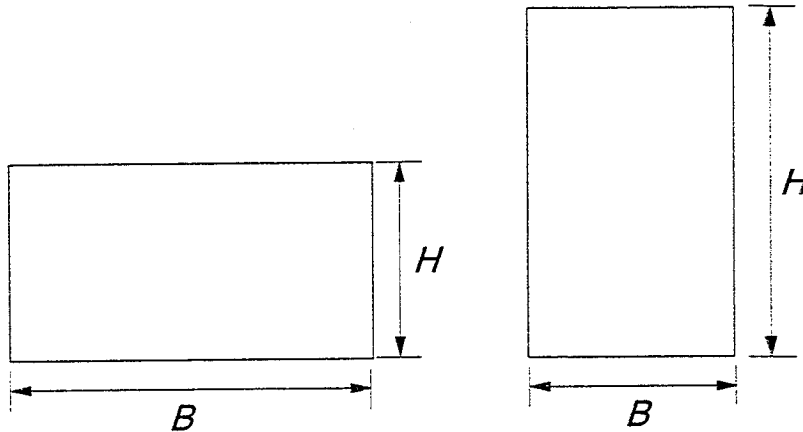
### 6.2 Width and length (sizes)

#### 6.2.1 General

When heat strengthened soda lime silicate 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**

NOTE: For heat strengthened soda lime silicate glass manufactured from patterned glass, the direction of the pattern should be specified relative to one of the dimensions.

### 6.2.2 Maximum and minimum sizes

For maximum and minimum sizes, the manufacturer should 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 are also the prescribed rectangles. Tolerances are given in table 2.

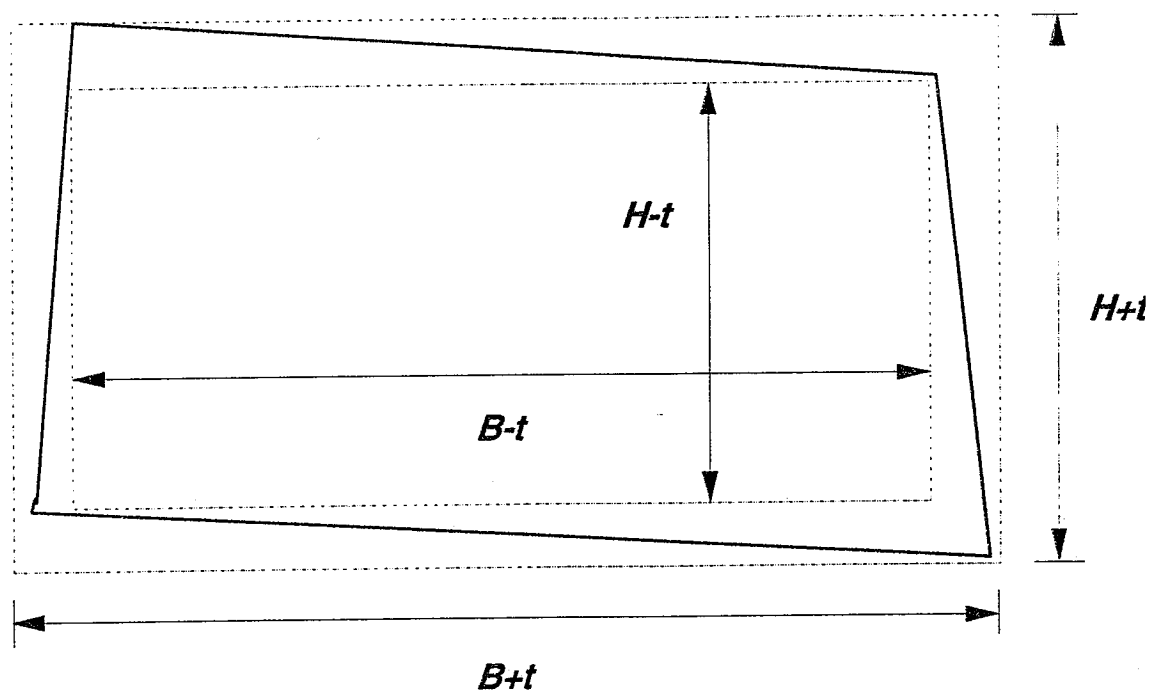


Figure 2: Tolerance limits for dimensions of rectangular panes

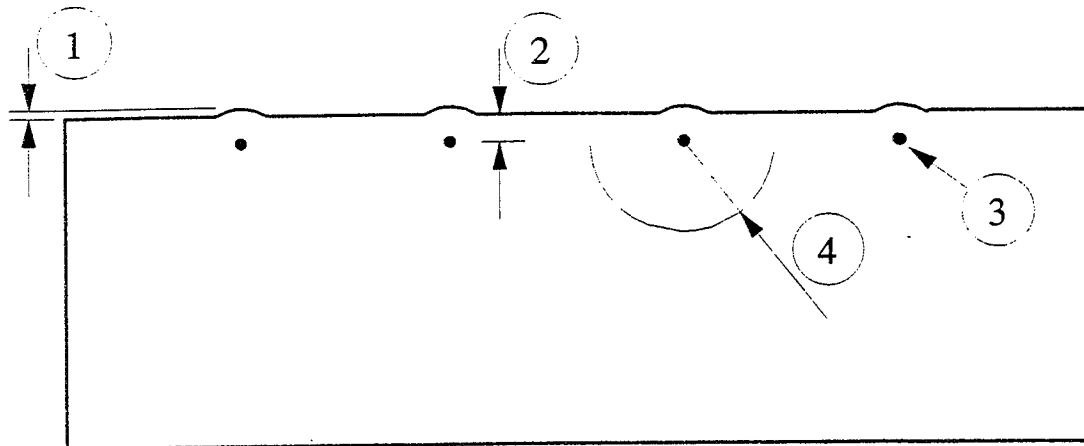
Table 2 : Tolerances on width,  $B$ , and length,  $H$

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<https://standards.iteh.ai/catalog/standards/sist/f2bb4b01-42f109e00b1804/sist-en-1863-1-2000> Dimensions in millimetres

Nominal dimension of side, $B$ or $H$	Tolerance, $t$
$\leq 2000$	$\pm 2,5$ (horizontal process) $\pm 3,0$ (vertical process)
$2000 < B$ or $H \leq 3000$	$\pm 3,0$
$> 3000$	$\pm 4,0$

#### 6.2.4 Edge deformation produced by the vertical process

The tongs used to suspend the glass during heat strengthening result in surface depressions, known as tong marks (see figure 3). The centres of the tong marks are situated up to a maximum of 20 mm in from the edge. A deformation of the edge less than 2 mm can be produced in the region of the tong mark and there may also be an area of optical distortion. These deformations are included in the tolerances in table 2.



- 1 - deformation
- 2 - up to 20 mm
- 3 - tong mark
- 4 - 100 mm radius maximum area of optical distortion

Figure 3: Tong mark deformation

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### 6.3 Flatness

#### 6.3.1 General

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By the very nature of the heat strengthening process, it is not possible to obtain a product as flat as annealed glass. The difference depends on the nominal thickness, the dimensions and the ratio between the dimensions. Therefore a distortion known as overall bow can occur. There are two kinds of bow (see figure 4):

- overall or general bow
- local bow

NOTE 1: Overall bow can, in general, be accommodated by the framing system.

NOTE 2: Local bow needs to be allowed for in the glazing materials and the weather seals. For special requirements the manufacturers should be consulted.