SLOVENSKI STANDARD
SIST EN 14179-2:2005

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Steklo v gradbeništvu – HS-preskus kaljenega natrijevega-kalcijevega-silikatnega varnostnega stekla – 2. del: Ovrednotenje skladnosti/standard za izdelek

Glass in building - Heat soaked thermally toughened soda lime silicate safety glass - Part 2: Evaluation of conformity/Product standard

Glas im Bauwesen - Heißgelagertes thermisch vorgespanntes Kalknatron-Einscheibensicherheitsglas - Teil 2: Konformitätsbewertung/Produktnorm

Verre dans la construction - Verre de silicate sodo-calcique de sécurité trempé et traité Heat Soak - Partie 2: Evaluation de la conformité/Norme de produit

Ta slovenski standard je istoveten z: **EN 14179-2:2005**

ICS:

81.040.20	Steklo v gradbeništvu	Glass in building

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EUROPEAN STANDARD

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This European Standard was approved by CEN on 24 March 2005.

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, 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.

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COMITÉ EUROPÉEN DE NORMALISATION
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Contents

Foreword

This European Standard (EN 14179-2:2005) 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of an identical text or by endorsement, at the latest by November 2005, and conflicting national standards shall be withdrawn at the latest by November 2005.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

No existing European Standard is superseded.

This Part of the European Standard does not stand alone, it is a part of one standard with the general title *Glass in building – Heat soaked thermally toughened soda lime silicate safety glass*:

— *Part 1: Definition and description*

— *Part 2: Evaluation of conformity/Product standard*

This European Standard includes a Bibliography.

This European Standard contains other aspects of importance of trade.

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.

1 Scope

This European Standard specifies requirements, the evaluation of conformity and the factory production control of flat heat soaked thermally toughened soda lime silicate safety glass for use in buildings.

NOTE For glass products with electrical wiring or connections for, e.g. alarm or heating purposes, other directives, e.g. Low Voltage Directive, may apply.

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 356, *Glass in building – Security glazing – Testing and classification of resistance against manual attack*

EN 410, *Glass in building – Determination of luminous and solar characteristics of glazing*

EN 572-1, *Glass in building – Basic soda lime silicate glass products – Part 1: Definition 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*

EN 1063, *Glass in Building – Security glazing – Testing and classification of resistance against bullet attack*

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

EN 1096-2, *Glass in building – Coated glass – Part 2: Requirements and test methods for class A, B and S coatings*

EN 1096-3, *Glass in building – Coated glass – Part 3: Requirements and test methods for class C and D coatings*

EN 1288-3, *Glass in building – Determination of bending strength of glass – Part 3: Test with specimen supported at two points (four point bending)*

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

EN 12758, *Glass in building – Glazing and airborne sound insulation – Product descriptions and determination of properties*

EN 12898, *Glass in building – Determination of the emissivity*

EN 13501-1, *Fire classification of construction products and building elements – Part 1: Classification using test data from reaction to fire tests*

EN 13501-2, *Fire classification of construction products and building elements – Part 2: Classification using data from fire resistance tests, excluding ventilation services*

prEN 13501-5, *Fire classification of construction products and building elements – Part 5: Classification using data from external fire exposure to roof tests*

EN 13541, *Glass in building – Security glazing – Testing and classification of resistance against explosion pressure*

prEN 14179-1:2001, *Glass in building – Heat soaked thermally toughened soda lime silicate safety glass – Part 1: Definition and description*

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in prEN 14179-1:2001 and the following apply.

3.1
initial type testing
determination of the performance of a product (characteristic, durability), on the basis of either actual tests or other procedures (such as conventional, standardised, tabulated or general accepted values, standardised or recognised calculation methods, test reports when made available, …), in accordance with this European Standard that demonstrates compliance with this European Standard

3.2
test report
document that covers the results of tests undertaken on a representative sample of the product from production or on a prototype design of the product

3.3
product description
document that details the relevant parameters, e.g. process conditions, structure, etc., for defining a product that complies with the standard. It includes specific reference(s) to characteristics that are modified by the production process

3.4
significant change
variation in performance beyond the permitted tolerance for the characteristic

4 Requirements

4.1 Product description

For conformity purposes the heat soaked thermally toughened glass manufacturer is responsible for the preparation and maintenance of the product description. This description shall describe the product and/or product families.

Disclosure of the product description shall be at the discretion of the heat soaked thermally toughened glass manufacturer or his agent except in the case of regulatory requirements.

The description shall contain at least a normative part. The description may also contain an informative part, when the manufacturer foresees further development of the product.

The normative part of the description shall contain the following minimum information:

— a reference to prEN 14179 Parts 1 and 2 and all other standards with which the manufacturer claims compliance;

— the radiometric properties and durability of coated glass, i.e. coated glass that conforms with EN 1096-1, EN 1096-2, EN 1096-3, when those properties are changed, intentionally or unintentionally, by the thermal toughening and heat soaking process.

The definition of product families shall be consistent with the normative part of the product description.

The substitution of materials shall maintain the conformity with the product description. The substituting material can be added to the product family and also the product description when compliance has been demonstrated.

4.2 Conformity with the definition of heat soaked thermally toughened soda lime silicate safety glass

Products shall conform to the definition and fulfil the requirements of heat soaked thermally toughened soda lime silicate safety glass as defined in prEN 14179-1.

4.3 Determination of the characteristic's performances

4.3.1 Characteristics of heat soaked thermally toughened soda lime silicate safety glass

4.3.1.1 General

The characteristics of heat soaked thermally toughened soda lime silicate safety glass are in general those of the glass substrate (see 4.3.1.2).

4.3.1.2 Characteristics of the soda lime silicate glass panes used for the production of heat soaked thermally toughened soda lime silicate safety glass

Panes shall be made of soda lime silicate glass according to EN 572-1, EN 572-2, EN 572-4, EN 572-5. The panes can be coated according to EN 1096-1, EN 1096-2, EN 1096-3 and/or enamelled according to prEN 14179-1.

For the characteristics listed in Table 1, for the soda lime silicate glass panes, generally accepted values or calculated values shall be used.

Since the majority of the characteristics of Table 1 are not changed significantly by the thermal toughening process they shall be used for heat soaked thermally toughened soda lime silicate safety glass. The exceptions being the characteristic bending strength $f_{g,k}$ and the resistance against sudden temperature changes and temperature differentials.

Table 1 - Information on the characteristics of soda lime silicate glass panes, according to EN 572-1, used for the production of heat soaked thermally toughened soda lime silicate safety glass

Characteristic	Symbol	Unit
- density	ρ	kg/m³
- hardness	$HK_{0,1/20}$	GPa
- Young's modulus	E	Pa
- Poisson's ratio	μ	Dimensionless
- Characteristic bending strength	$f_{g,k}$	Pa
- Resistance against sudden temperature changes and temperature differentials		K
- Specific heat capacity	c	J/(kg·K)
- Coefficient of linear expansion	α	K^{-1}
- Thermal conductivity (for *U*-value)	λ	W/(m·K)
- Mean refractive index to visible radiation	n	Dimensionless
- Emissivity	ε	Dimensionless
- Light transmittance	τ_v	Dimensionless
- Solar direct transmittance	τ_e	Dimensionless
- Total energy transmittance	g	Dimensionless

If some coatings, i.e. coated glass conforming with the EN 1096 series, when heat soaked thermally toughened change their radiometric properties the manufacturer shall refer to the following for the determination of the appropriate characteristics, etc.:

— 4.3.2.12 for the emissivity;

— 4.3.2.13 for the light transmittance and reflectance;

— 4.3.2.14 for the solar energy transmittance;

— EN 1096-2 for the durability of A, B and S coatings;

— EN 1096-3 for the durability of C and D coatings.

4.3.2 Determination of characteristics of heat soaked thermally toughened soda lime silicate safety glass products

4.3.2.1 General

If the heat soaked thermally toughened glass manufacturer wishes to claim that any performance characteristic is independent of the production equipment used then the factory production control system shall be in accordance with this European Standard including his specific process control conditions.

4.3.2.2 Safety in the case of fire - Resistance to fire

Fire resistance shall be determined and classified in accordance with EN 13501-2.

NOTE EN 357 may be used as a classification reference specific to fire resistant glazed elements.

4.3.2.3 Safety in the case of fire - Reaction to fire

Reaction to fire shall be determined and classified in accordance with EN 13501-1.

Heat soaked thermally toughened soda lime silicate safety glass products are products/materials that do not require to be tested for reaction to fire (e.g. Products/materials of Classes A1 according to Commission Decision 96/603/EC, as amended 2000/605/EC).

4.3.2.4 Safety in the case of fire - External fire behaviour

Where the manufacturer wishes to declare external fire performance (e.g. when subject to regulatory requirements), the product shall be tested in accordance with prEN 13501-5.

NOTE Compliance with this requirement is not possible until a version of prEN 13501-5 later than 2002 becomes available.

4.3.2.5 Safety in use - Bullet resistance: shatter properties and resistance to attack

Bullet resistance shall be determined and classified in accordance with EN 1063.

4.3.2.6 Safety in use - Explosion resistance: impact behaviour and resistance to impact

Explosion resistance shall be determined and classified in accordance with EN 13541.

4.3.2.7 Safety in use - Burglar resistance: shatter properties and resistance to attack

Burglar resistance shall be determined and classified in accordance with EN 356.

4.3.2.8 Safety in use - Pendulum body impact resistance: shatter properties (safe breakablity) and resistance to impact

Pendulum body impact resistance shall be determined and classified in accordance with EN 12600.

4.3.2.9 Safety in use - Mechanical resistance: Resistance against sudden temperature changes and temperature differentials

The resistance against sudden temperature changes and temperature differentials is a generally accepted value that is given in prEN 14179-1 and shall be ensured by compliance with this European Standard.

4.3.2.10 Safety in use - Mechanical resistance: Resistance against wind, snow, permanent load and/or imposed loads of the glass unit

The mechanical strength of heat soaked thermally toughened soda lime silicate safety glass is a characteristic value that is given in prEN 14179-1 and shall be ensured by compliance with this European Standard.

As long as on the concerned construction or building site no part of the design standards[1] is applicable then the current method available in the country of destination shall be applied.

The manufactured or supplied thickness of heat soaked thermally toughened soda lime silicate safety glass shall conform to the ordered thickness.

4.3.2.11 Protection against noise - Direct airborne sound reduction

The sound reduction indexes shall be determined in accordance with EN 12758. However, the information supplied with the incoming glass can be used as the thermal toughening and heat soaking process does not alter the values.

4.3.2.12 Energy conservation and heat retention - Thermal properties

The thermal transmittance value (*U*-value) shall be determined by calculation in accordance with EN 673 with:

— emissivity ε: the declared value of the glass manufacturer. If the information is not available, the emissivity shall be determined in accordance with EN 12898;

— nominal thickness of the glass panes.

However, the information supplied about the thermal properties of the incoming glass can be used if the thermal toughening and heat soaking process does not alter the values.

4.3.2.13 Energy conservation and heat retention - Radiation properties: Light transmittance and reflectance

The light transmittance and reflectance shall be determined in accordance with EN 410.

However, the information supplied about the radiation properties of the incoming glass can be used if the thermal toughening and heat soaking process does not alter the values.

4.3.2.14 Energy conservation and heat retention - Radiation properties: Solar energy characteristics

The solar energy transmittance and reflectance shall be determined in accordance with EN 410.

However, the information supplied about the radiation properties of the incoming glass can be used if the thermal toughening and heat soaking process does not alter the values.

4.4 Durability

When products conform to the definition of heat soaked thermally toughened soda lime silicate glass as in 4.2, then the characteristics' performances in 4.3.2 are ensured during an economically reasonable working life.

The durability of glass products, including their characteristics, is ensured by the following:

— compliance with this standard;

— compliance with instructions from the glass product manufacturer or supplier.

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[1] prEN 13474 series is currently being prepared.

The manufacturer shall supply specific installation instructions or make reference to appropriate technical specifications.

NOTE Also the durability of glass products depends on:

— building and construction movements due to various actions;

— building and construction vibrations due to various actions;

— deflection and racking of the glass support due to various actions;

— glass support design (e.g. drainage of infiltrated water in the rebate, prevention of direct contact between glass support members and glass);

— accuracy of glass support and glass support member dimensions;

— quality of the assembling of glass support members up to a glass support;

— quality of installation of the glass support into or onto the buildings or constructions;

— glass support expansion due to adsorbed moisture from the air or other sources;

— the quality of installation of the glass product into or onto its support.

4.5 Dangerous substances

Materials used in products shall not release any dangerous substances in excess of the maximum permitted levels specified in a relevant European Standard for the material or permitted in the national regulations of the Member State of destination.

5 Evaluation of conformity

5.1 General

Evaluation of conformity in accordance with this standard shall be as a result of FPC and ITT in accordance with this European Standard:

Factory production control;

This shall include the following:

a) Inspection of samples taken at the factory in accordance with a prescribed test plan;

Initial inspection of the factory and of factory production control;

Continuous surveillance and assessment of the factory production control.

2) Initial type testing of the product;

NOTE There may be a need to involve a third party, with 1b, 1c, and/or 2, for the purpose of regulatory marking (see Annex ZA).