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**Steklo v gradbeništvu - Ogledala iz stekla s srebrno prevleko za uporabo v notranjosti stavb - 2. del: Ovrednotenje skladnosti/standard za izdelek**

Glass in Building - Mirrors from silver-coated float glass for internal use - Part 2: Evaluation of conformity/Product standard

Glas im Bauwesen - Spiegel aus silberbeschichtetem Floatglas für den Innenbereich - Teil 2: Konformitätsbewertung; Produktnorm

Verre dans la construction - Miroirs en glace argentée pour l'intérieur - Partie 2: Evaluation de la conformité; norme de produit

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**ICS:**

81.040.20

**SIST EN 1036-2:2008**

**en,fr,de**

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English Version

Glass in building - Mirrors from silver-coated float glass for  
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produit

Glas im Bauwesen - Spiegel aus silberbeschichtetem  
Floatglas für den Innenbereich - Teil 2:  
Konformitätsbewertung; Produktnorm

This European Standard was approved by CEN on 29 December 2007.

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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 CEN Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
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EUROPÄISCHES KOMITEE FÜR NORMUNG

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## Foreword

This document (EN 1036-2:2008) has been prepared by Technical Committee CEN/TC 129 “Glass in building”, the secretariat of which is held by NBN.

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of an identical text or by endorsement, at the latest by August 2008, and conflicting national standards shall be withdrawn at the latest by August 2008.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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.

EN 1036 *Glass in building — Mirrors from silver-coated float glass for internal use* consists of the following parts:

*Part 1: Definition, requirements and test methods*

*Part 2: Evaluation of conformity; product standard*

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

## 1 Scope

This European Standard specifies requirements, the evaluation of conformity and the factory production control of flat mirrors from silver-coated float glass for internal 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 572-8, *Glass in building — Basic soda lime silicate glass products — Part 8: Supplied and final cut sizes*

EN 673, *Glass in building — Determination of thermal transmittance (U value) — Calculation method*  
<https://standards.iteh.ai/catalog/standards/sist/98beb1d0-0ccf-408d-80be-4b2770b0c654/en-1036-2-2008>

EN 1036-1:2007, *Glass in building — Mirrors from silver-coated float glass for internal use — Part 1: Definitions, requirements and test methods*

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

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 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*

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

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

### 3 Terms and definitions

For the purpose of this document, the terms and definitions given in EN 1036-1:2007 and the following apply.

#### 3.1

##### **Initial Type Testing (ITT)**

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, 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

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### 4 Requirements

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#### 4.1 Product description

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For conformity purposes the mirror 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 mirror 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 information:

- reference to EN 1036-1 and -2 and all other standards with which the manufacturer claims compliance;
- materials making up the layers of the mirror;
- glass substrates.

The layers may be listed either in full, i.e. chemical composition, or by manufacturers' code.

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



## 4.2 Conformity with the definition of mirror

Products shall conform to the definition and fulfil the requirements of mirror as defined in EN 1036-1.

## 4.3 Determination of the characteristic's performances

### 4.3.1 Characteristics of mirror

#### 4.3.1.1 General

The characteristics of mirror 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 mirrors

Panes shall be made of soda lime silicate float glass according to EN 572-1, EN 572-2, 572-8.

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 mirror production process does not change the majority of the characteristics of Table 1 significantly they shall be used for mirrors. The characteristics that are significantly changed are the light transmittance/reflectance and solar heat transmittance/reflectance.

**Table 1 — Information on the characteristics of soda lime silicate glass panes, according to EN 572-1, used for the production of mirrors**

Characteristic	Symbol	Unit
- density	$\rho$	kg/m <sup>3</sup>
- hardness	HK <sub>0,1/20</sub>	GPa
- young's modulus	$E$	Pa
- poisson's ratio	$\mu$	dimensionless
- characteristic bending strength	$f_{g,k}$	Pa
- resistance against sudden temperature changes and temperature differentials	$c$	K
- specific heat capacity		J/(kg·K)
- coefficient of linear expansion	$\alpha$	K <sup>-1</sup>
- thermal conductivity (for $U$ -value)	$\lambda$	W/(m·K)
- mean refractive index to visible radiation	$n$	dimensionless
- emissivity	$\varepsilon$	dimensionless
- light transmittance	$\tau_v$	dimensionless
- solar direct transmittance	$\tau_e$	dimensionless
- total energy transmittance	$g$	dimensionless

#### 4.3.2 Determination of characteristics of mirrors

##### 4.3.2.1 General

If the mirror 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.

NOTE Products complying with the definition from EN 1036-1, are unlikely to be capable of being classified for the following characteristics: 4.3.2.2; 4.3.2.5; 4.3.2.6; 4.3.2.7; 4.3.2.8.

##### 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 can 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.

Mirrors, manufactured from silvered float glass, 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 EN 13501-5.

##### 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 breakability) 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 EN 1036-1 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 mirror is a characteristic value that is given in EN 572-1 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<sup>1)</sup> is applicable then the current method available in the country of destination shall be applied.

The manufactured or supplied thickness of mirror 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 mirror production 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  $\varepsilon$ : 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.

#### 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.

#### 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.

### 4.4 Durability

When products conform to the definition of mirror as 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 European Standard;
- compliance with instructions from the glass product manufacturer or supplier.

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

NOTE Also the durability of glass products depends on:

<sup>1)</sup> Series prEN 13474 is in preparation.

- 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.

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### 5 Evaluation of conformity (standards.iteh.ai)

#### 5.1 General

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

##### 1) Factory production control.

This shall include the following:

- a) inspection of samples taken at the factory in accordance with a prescribed test plan;
- b) initial inspection of the factory and of factory production control;
- c) continuous surveillance and assessment of the factory production control.

##### 2) Initial type testing of the product.

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

#### 5.2 Initial type testing of the product (see 5.1, 2))

##### 5.2.1 General

###### 5.2.1.1 Introduction

The product's characteristics shall be initial type tested to verify they are in conformity with the requirements. Instead of performing any actual testing, initial type testing may make use of: