SLOVENSKI STANDARD
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Steklo v stavbah - Posebni osnovni izdelki - 2-2. del: Steklena keramika - Ovrednotenje skladnosti/standard za izdelek

Glass in building - Special basic products - Glass ceramics - Part 2-2: Evaluation of conformity/Product standard

Glas im Bauwesen - Spezielle Basiserzeugnisse - Glaskeramik - Teil 2-2: Konformitätsbewertung/Produktnorm

Verre dans la construction - Produits de base spéciaux - Partie 2-2 : Vitrocéramique - Evaluation de la conformité/Norme de produit

Ta slovenski standard je istoveten z: **EN 1748-2-2:2004**

ICS:

81.040.20	Steklo v gradbeništvu	Glass in building
81.060.01	Keramika na splošno	Ceramics in general

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EUROPEAN STANDARD

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Glass in building - Special basic products - Part 2-2: Glass ceramics - Evaluation of conformity/Product standard

Verre dans la construction - Produits de base spéciaux - Partie 2 : Vitrocéramique - Evaluation de la conformité/Norme de produit

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This European Standard was approved by CEN on 27 May 2004.

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.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Contents

Foreword

This document (EN 1748-2-2:2004) 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 April 2005, and conflicting national standards shall be withdrawn at the latest by July 2006.

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, B, C or D, which is an integral part of this document.

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.

No existing document is superseded.

This part of the document does not stand-alone; it is a part of one document:

EN 1748-2-1: *Glass in building – Special basic products – Glass ceramics Part 2-1: Definitions and general physical and mechanical properties*

EN 1748-2-2: *Glass in building – Special basic products – Glass ceramics – Part 2-2: Evaluation of conformity/product standard*

This document contains other aspects of importance of trade.

1 Scope

This document covers the evaluation of conformity and the factory production control of glass ceramics 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 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*

ENV 1187, *Test methods for external fire exposure to roofs*

EN 1748–2-1:2004, *Glass in building - Special basic products - Glass ceramics - Part 2-1: Definitions and general physical and mechanical properties*

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*

prEN 13474, *Glass in building - Design of glass panes*

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 fire exposure roof tests*

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

3 Definitions

For the purposes of this document, the terms and definitions given in EN 1748-2-1:2004 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 document that demonstrates compliance with this document.

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 Conformity with the definition of glass ceramics

Products shall conform to the definition and fulfil the requirements of glass ceramics as defined in EN 1748-2-1.

4.2 Determination of the characteristic's performances

4.2.1 Characteristics of glass ceramics

Glass ceramics are made in accordance with EN 1748-2-1. The characteristics listed in Table 1, concern generally accepted values, calculated values or measured values.

Table 1: Necessary information on characteristics of glass ceramics

Characteristic	Symbol	Unit
Generally accepted values:		
- 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
Measured values:		
- light transmittance	τ_v	Dimensionless
- solar direct transmittance	τ_e	Dimensionless
Calculated values:		
- total solar energy transmittance	g	Dimensionless

4.2.2 Characteristics of glass ceramics

If the glass ceramics 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 document including his specific process control conditions.

4.2.2.1 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.

4.2.2.2 Safety in the case of fire - Reaction to fire

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

Glass ceramics products/materials 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)

4.2.2.3 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 and classified 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.

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

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

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

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

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

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

4.2.2.7 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.

4.2.2.8 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 1748-2-1 and shall be ensured by compliance with this document.

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

The mechanical resistance of glass ceramics is a characteristic value that is given in EN 1748-2-1 and shall be ensured by compliance with this document.

As long as on the concerned construction or building site no part of prEN 13474 is applicable then the current method available in the country of destination shall be applied.

4.2.2.10 Protection against noise - Direct airborne sound reduction

The sound reduction indexes shall be determined in accordance with EN 12758.

4.2.2.11 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: using the value of the emissivity as given in EN 1748-2-1.

— nominal thickness of the glass panes

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

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

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

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

4.3 Durability

When products conform to the definition of glass ceramics product as 4.1, the characteristic's performances in 4.2.2 are ensured during an economically reasonable working life.

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

— Compliance with this document

— 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 1: 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.

4.4 Characteristics other than those listed in 4.2

Optical and visual characteristics shall comply with EN 1748-2-1

Dimensional tolerances shall comply with EN 1748-2-1

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 document shall be as a result of Factory Production Control and Initial Type Testing in accordance with this document

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 may 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

All the product's characteristics shall be initial type tested to verify they are in conformity with the requirements of this document. In addition, instead of performing any actual testing, initial type testing may make use of:

– generally accepted and/or conventional and/or standardised values, in Clause 2 referenced standards, or in publications that are referred to in these standards;

– standardised calculation methods and recognised calculation methods in Clause 2 referenced standards, or in publications that are referred to in these standards;

– test report(s) on the basis of 5.2.1.2 when made available except for the characteristics listed in 5.2.2.

– where components are used whose characteristics have already been determined, by the component manufacturer, on the basis of conformity with other product standards, these characteristics need not be reassessed providing they remain unchanged by the manufacturing process;

– release of dangerous substances may be assessed indirectly by controlling the content of the substance concerned;

– durability may be assessed indirectly by controlling the production processes according to this document;

Note 1: Products CE marked in accordance with appropriate harmonised European specifications may be presumed to have the performances stated with the CE marking.

Note2: There may be a need to involve a third party for the purpose of regulatory marking (see Annex ZA).

When actual testing is required then the Initial Type Testing (ITT) shall be undertaken on a sample representative of the product taken from direct production or a prototype, any plant and/ or line.

Whenever a change occurs in the raw material or production process (subject to the definition of a family), which would change significantly one or more of the characteristics, the type tests shall be repeated for the appropriate characteristic(s).