SLOVENSKI STANDARD
oSIST prEN 1748-2-2:2017

01-oktober-2017

Steklo v stavbah - Posebni osnovni proizvodi - Steklena keramika - 2-2. del: Standard za proizvod

Glass in building - Special basic products - Glass ceramics - Part 2-2: Product standard

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

Verre dans la construction - Produits de base spéciaux - Vitrocéramiques - Partie 2-2 : Norme de produit

Ta slovenski standard je istoveten z: prEN 1748-2-2

ICS:

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

oSIST prEN 1748-2-2:2017 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 1748-2-2

August 2017

ICS 81.040.20; 81.060.01

Will supersede EN 1748-2-2:2004

English Version

Glass in building - Special basic products - Glass ceramics - Part 2-2: Product standard

Verre dans la construction - Produits de base spéciaux - Vitrocéramiques - Partie 2-2 : Norme de produit

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

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 129.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

European foreword

This document (prEN 1748-2-2:2017) has been prepared by Technical Committee CEN/TC 129 “Glass in building”, the secretariat of which is held by NBN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 1748-2-2:2004.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports basic work requirements of EU Regulation 305/2011.

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

The main changes compared to the previous edition are the following:

a) The standard has been revised to fulfil the requirements of the Regulation (EU) No 305/2011 (Construction Product Regulation), modified by Regulations (EU) No 157/2014, (EU) No 568/2014 and (EU) No 574/2014.

b) The solar factor, g, is listed within the spectrophotometric characteristics to be declared in the Declaration of Performances (DoP).

c) The durability/conformity assessment is listed within the characteristics to be declared in the DoP.

d) The mechanical resistance shall be given in the DoP by the characteristic bending strength of the glass.

EN 1748 is currently composed with the following parts:

— EN 1748-1-1, *Glass in building — Special basic products —Borosilicate glasses — Part 1-1: Definition and general physical and mechanical properties*;

— EN 1748-1-2, *Glass in building — Special basic products — Borosilicate glasses — Part 1-2: Evaluation of conformity/Product standard*;

— 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: Product standard*.

This document contains other aspects of importance for trade.

1 Scope

This European standard covers the evaluation of conformity and the factory production control of basic 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 documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 356:1999, *Glass in building — Security glazing — Testing and classification of resistance against manual attack*

EN 410:2011, *Glass in building — Determination of luminous and solar characteristics of glazing*

EN 673:2011, *Glass in building —Determination of thermal transmittance (U value) — Calculation method*

EN 1063:1999, *Glass in building — Security glazing — Testing and classification of resistance against bullet attack*

prEN 1748-2-1:2017, *Glass in Building — Special basic products - Glass ceramics — Part 2-1: Definitions and general physical and mechanical properties*

EN 12600:2002, *Glass in building — Pendulum test — Impact test method and classification for flat glass*

EN 12758:2011, *Glass in building — Glazing and airborne sound insulation — Product descriptions and determination of properties*

EN 13501-1:2007+A1:2009, *Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire tests*

EN 13501-2:2016, *Fire classification of construction products and building elements — Part 2: Classification using data from fire resistance tests, excluding ventilation services*

EN 13501-5:2016, *Fire classification of construction products and building elements — Part 5: Classification using data from external fire exposure to roofs tests*

EN 13541:2012, *Glass in building — Security glazing —- Testing and classification of resistance against explosion pressure*

EN 15998:2010, *Glass in building — Safety in case of fire, fire resistance - Glass testing methodology for the purpose of classification*

prEN 16612:2017, *Glass in building — Determination of the lateral load resistance of glass panes by calculation*

ISO 9385:1990, *Glass and glass-ceramics — Knoop hardness test*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in prEN 1748-2-1:2017 and the following apply.

3.1
Factory Production Control
FPC
documented, permanent and internal control of production in a factory, in accordance with this standard

Note 1 to entry: See also Annex A.

3.2
product-type
set of representative performance levels or classes of a construction product, in relation to its essential characteristics, produced using a given combination of raw materials or other elements in a specific production process

3.3
essential characteristic
characteristic of the construction product which relate to the basic requirements for construction works

Note 1 to entry: Basic requirements for construction work are given in Regulation (EU) No 305/2011, Annex I.

3.4
performance of a construction product
performance related to the relevant essential characteristics, expressed by level or class, or in a description

3.5
level
result of the assessment of the performance of a construction product in relation to its essential characteristics, expressed as a numerical value

3.6
class
range of levels, delimited by a minimum and a maximum value, of performance of a construction product

3.7
type testing
TT
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 generally accepted values, standardised or recognised calculation methods, test reports when made available, ...), in accordance with this European standard and that demonstrates compliance with this European standard

3.8
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

3.9
product description
document that details the relevant parameters, e.g. process conditions, structure, etc., for defining a product that complies with the standard and that includes specific reference(s) to characteristics that are modified by the production process

3.10
product family
group of products determined by the manufacturer, which is made with similar components and processes and which is tested for FPC using the same test method

3.11
significant change
variation in performance beyond the permitted tolerance for the characteristic

4 Requirements

4.1 Product description

For conformity purposes the basic glass ceramics products 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 basic glass ceramics products manufacturer or his agent except in the case of regulatory requirements.

The product description shall contain at least the following:

— a reference to prEN 1748-2-1:2017 and prEN 1748-2-2:2017 and all other standards with which the manufacturer claims compliance;

— the type of manufacturing process used, i.e. float glass or rolled glass;

— a description of the product family(ies);

— the spectrophotometric properties of the basic glass ceramics products.

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

4.2 Determination of the characteristic's performances

4.2.1 Characteristics of basic glass ceramics

Basic glass ceramics products are made in accordance to prEN 1748-2-1:2017. For the characteristics listed in Table 1, the values given in prEN 1748-2-1:2017, 5.1 and 5.2 shall be used.

Table 1 — Information on the characteristics of basic glass ceramics

Characteristic	Symbol	Unit
Density	ρ	kg/m³
Hardness (Knoop hardness in accordance with ISO 9385)	$HK_{0,1/20}$	Dimensionless
Young's modulus	E	GPa
Poisson's ratio	μ	Dimensionless
Characteristic bending strength	$f_{g,k}$	MPa
Resistance against temperature changes and temperature		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

4.2.2 Determination of characteristics of basic glass ceramics products

4.2.2.1 General

If the basic 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.

4.2.2.2 Safety in the case of fire - Resistance to fire

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

EN 15998 specifies the testing methodology to be used for glass products that are claiming fire resistance.

4.2.2.3 Safety in the case of fire - Reaction to fire

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

Glass ceramics 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).

4.2.2.4 Safety in the case of fire - External fire performance (for roof coverings only)

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.

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

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

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

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

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

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

4.2.2.8 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.

4.2.2.9 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 1748-2-1:2017 and shall be ensured by compliance with this standard.

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

The mechanical resistance of basic glass ceramics is a characteristic value that shall be ensured by compliance with this document.

The value to be declared is the characteristic bending strength, as defined in prEN 1748-2-1:2017, 5.2.

As long as prEN 16612 is not applicable for the glass design with respect to the concerned construction or building site, then the current method of determining mechanical resistance in the country of destination shall be applied.

4.2.2.11 Protection against noise - Direct airborne sound reduction

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

The values to be declared shall be rounded down to the nearest whole number.

4.2.2.12 Energy conservation and heat retention - Thermal properties

The thermal transmittance value (U-value) shall be determined in accordance with the following procedure:

a) The emissivity shall be taken equal to 0,837, as given in prEN 1748-2-1:2017

b) The U-value shall be determined by calculation in accordance with EN 673, with the normal emissivity as defined above and the nominal thickness of the glass panes.

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

The light transmittance and light reflectance shall be determined either:

a) in accordance with the following procedure:

   1) The light transmittance and light reflectance of one sample of basic glass ceramics product shall be determined in accordance with EN 410 and Annex B. The exact thickness of the glass shall be measured.

   2) The light transmittance and the light reflectance of any other thickness shall be calculated according to EN 410.

   3) The tool used to calculate the light transmittance and the light reflectance shall be validated.

b) or measured following EN 410 and Annex B.

The tolerances on the calculated light transmittance and light reflectance are given in Annex B.

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

The solar direct transmittance, the solar direct reflectance and the total solar energy transmittance (solar factor or g-value) shall be determined either:

a) in accordance with the following procedure:

1) The solar direct transmittance and solar direct reflectance of one sample of basic glass ceramics product shall be determined in accordance with EN 410 and Annex B. The exact thickness of the glass shall be measured.

2) The solar direct transmittance, the solar direct reflectance and the total solar energy transmittance (solar factor or g-value) of any other thickness shall be calculated according to EN 410.

3) The tool used to calculate the solar direct transmittance, the solar direct reflectance and the total solar energy transmittance (solar factor or g-value) shall be validated.

b) or measured following EN 410 and Annex B.

The tolerances on the calculated solar energy characteristics are given in Annex B.

4.2.2.15 Durability / Conformity with the definition of basic glass ceramics products

Products shall conform to the definition, to the manufacturer product description and fulfil the requirements of basic glass ceramics products as defined in prEN 1748-2-1:2017.

The type testing concerns the product aspects as listed in Table 2.

Table 2 — Product aspects to be checked if product belongs to the group basic glass ceramics products

Product aspect	Requirement	Number of samples
Chemical composition	prEN 1748–2-1:2017, Clause 4	1
Thickness	prEN 1748–2-1:2017, 6.2	1
Light transmittance (distinction clear glass from tinted glass)	prEN 1748–2-1:2017, 5.3	1

When products conform to the definition of basic glass ceramics as in 4.1, the other characteristics' performances in 4.2 are ensured during an economically reasonable working life.

The durability / conformity of basic glass ceramics products, including their characteristics, is ensured by the following:

— compliance with this 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 The durability of glass products depends also on:

— building and construction movements due to various actions;