

## SLOVENSKI STANDARD SIST EN 17416:2021

01-junij-2021

# Steklo v gradbeništvu - Ocenjevanje sproščanja nevarnih snovi - Določevanje emisij iz steklenih izdelkov v zrak v zaprtih prostorih

Glass in building - Assessment of relaease of dangerous substances - Determination of emissions into indoor air from glass products

Glas im Bauwesen - Beurteilung der Freisetzung gefährlicher Stoffe - Bestimmung von Emissionen in die Innenraumluft aus Glasprodukten **PREVIEW** 

Verre dans la construction - Évaluation de l'émission de substances dangereuses -Détermination des émissions par les produits verriers dans l'air intérieur

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Ta slovenski standard je istoveten z.869b5/EN 17416:2021

### <u>ICS:</u>

13.020.99	Drugi standardi v zvezi z varstvom okolja
13.040.40	Emisije nepremičnih virov
81.040.20	Steklo v gradbeništvu

Other standards related to environmental protection Stationary source emissions Glass in building

SIST EN 17416:2021

en,fr,de



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#### SIST EN 17416:2021

# EUROPEAN STANDARD NORME EUROPÉENNE EUROPÄISCHE NORM

# EN 17416

March 2021

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**English Version** 

## Glass in building - Assessment of release of dangerous substances - Determination of emissions into indoor air from glass products

Verre dans la construction - Évaluation de l'émission de substances dangereuses - Détermination des émissions par les produits verriers dans l'air intérieur Glas im Bauwesen - Beurteilung der Freisetzung gefährlicher Stoffe - Bestimmung von Emissionen in die Innenraumluft aus Glasprodukten

This European Standard was approved by CEN on 8 February 2021.

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### iTeh STANDARD PREVIEW

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### **European foreword**

This document (EN 17416:2021) 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of an identical text or by endorsement, at the latest by September 2021, and conflicting national standards shall be withdrawn at the latest by September 2021.

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

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

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### Introduction

This document provides specific rules for flat glass products used in buildings to support the assessment of release of dangerous substances into indoor air.

This document aims at complementing the general rules established in EN 16516:2017+A1:2020, by providing additional detailed rules on technical aspects specific to the glass products.

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### 1 Scope

This document provides specific rules for the assessment of the release on dangerous substances from glass products into indoor air of buildings in complement to the horizontal rules given in EN 16516.

This document addresses specifically products as mentioned in TC 129 Mandate - M135 Amendment 1 EN (2012), i.e. products covered by the following European Standards: EN 1036-2 and EN 16477-2<sup>1</sup>. However, this document can also be applied to other glass products containing volatile organic compounds (VOC) such as: EN 1279-5, EN 15755-1 and EN 14449. Glass products that do not contain organic compounds are not in the scope of this document (see Annex A).

This document addresses the release of dangerous substances into indoor air from construction products, although it can also be applied to glass products used in other applications such as furniture.

#### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 16516:2017+A1:2020, Construction products: Assessment of release of dangerous substances - Determination of emissions into indoor air

EN ISO 12543-1, Glass in building - Laminated glass and laminated safety glass - Part 1: Definitions and description of component parts (ISO 12543-1) ARD PREVIEW

EN ISO 12543-2, Glass in building - Laminated glass and laminated safety glass - Part 2: Laminated safety glass (ISO 12543-2)

EN ISO 12543-3, *Glass in building - Lam<u>inated glass(and)</u>laminated safety glass - Part 3: Laminated glass (ISO 12543-3)* https://standards.iteh.ai/catalog/standards/sist/05eece5e-0fd2-4415-b8a6-6bd72bd869b5/sist-en-17416-2021

EN ISO 16000-11, Indoor air - Part 11: Determination of the emission of volatile organic compounds from building products and furnishing - Sampling, storage of samples and preparation of test specimens (ISO 16000-11)

#### 3 Terms, definitions and abbreviations

#### 3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 16516 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <u>http://www.electropedia.org/</u>
- ISO Online browsing platform: available at <u>https://www.iso.org/obp</u>

#### **3.2 Abbreviations**

For the purposes of this document, the following abbreviations apply.

VOC volatile organic compound

### 4 Intended conditions of use, emission scenarios and European reference room

#### 4.1 Intended conditions of use and emission scenario

#### 4.1.1 Product description

The glass that represent in general the main part of the glass product does not contain any VOC. Glass is manufactured in furnaces where the raw materials are melted at a temperature above 1 500 °C and therefore no organic compounds whatsoever are present within the glass itself. VOC in glass products are generally found in added components such as paint, plastic film, sealant, glue, etc. Moreover the organic containing component is rarely exposed directly to the indoor air but most likely placed against a hard surface (e.g. wall, ceiling, floor, frame, etc.).

#### 4.1.2 Mirrors, painted glass, and adhesive backed polymeric filmed glass

Mirrors (EN 1036-1), painted glass (EN 16477-1), adhesive backed polymeric filmed glass (EN 15755-1): the component that is susceptible to release VOC's is applied on the back of the product on the entire surface; it consists of paint and/or adhesive polymeric film (see Figure 1). During use, the face covered is generally applied on to a hard surface such as a wall. Those products are used inside the building as decorative wall covering; they rarely cover all four walls of a room but more generally two walls or less.



Key

- 1 glass
- 2 paint
- 3 adhesive polymeric film

# Figure 1 — Illustration of a section of a painted glass or mirror with an adhesive backed polymeric film

#### 4.1.3 Laminated glass

Laminated glass consists of one sheet of glass with one or more sheets of glass and/or plastic glazing sheet material joined together with one or more interlayers according to EN ISO 12543-1, EN ISO 12543-2 and EN ISO 12543-3 (see Figure 2).

In the case one external part of the laminated product consists of a VOC containing material (e.g. plastic glazing sheet material), the product shall be tested taking into account the specific intended application (e.g. the plastic glazing sheet can be facing the interior).

The interlayer is generally made of organic compounds (e.g. polyvinyl butyral) and is susceptible to releasing VOC's. Although, in most cases (see previous paragraph for exception) because the interlayer is comprised between two glass panes the contact between the interlayer and the indoor air is limited to a very small surface along the edge of the glass product. As laminated glass are usually placed into a frame, there is no direct contact between the indoor air and the interlayer material. Those products are used in insulating glass units (window) for façade (for safety or security purposes) and inside the building as partition or balustrade. Generally, they cover two walls or less.



Кеу

- 1 glass
- 2 interlayer

# Figure 2 — Illustration of a section of a laminated glass with two glass panes and one polymeric interlayer

#### 4.1.4 Insulating glass unit

Insulating glass units (EN 1279-1) are made of at least two panes of glass separated by spacers (see Figure 3). One or both glass panes may be laminated glass. The inside cavity is filled with dry air or an inert gas (usually Argon). The glass panes are held together to the spacer by an inner sealant (usually butyl based). The insulating glass unit is then sealed by an outer sealant (various compositions are available, e.g. polyurethane, polysulphides or silicone based products). The inner and the outer sealant contain organic compounds and are susceptible of releasing VOC. As the glazing is generally fixed into a frame there is no direct contact between the organic compounds and the indoor air. Those products are generally used for façade (windows) or partition inside the building and cover two wall or less. Most applications concern a standard window.



Кеу

- 1 glass
- 2 spacer
- 3 inside cavity filled with dry air or inert gas
- 4 outer sealant
- 5 inner sealant



#### 4.2 Reference room and emission scenario

#### 4.2.1 General

The horizontal European Standard EN 16516 specifies one reference room and one set of conditions that are used as conventional references for any specification of emission rates and any calculation of the related concentrations of emitted compounds in indoor air.

The reference room serves as a convention and is a model that does not represent a real room. It is used to calculate the relevant loading factor.

#### 4.2.2 Dimensions and loading factors in the reference room

As per EN 16516, the dimensions of the reference room are listed below:

- the walls are 2,5 m high;
- floor and ceiling both measure 3 m × 4 m resulting in surfaces of 12 m<sup>2</sup> each;
- there is one door of 0.8 m (width) × 2 m (height) ( $1.6 \text{ m}^2$ );
- there is one window of 2 m<sup>2</sup>;
- sealants and other very small surfaces up to 0,2 m<sup>2</sup>.

The total wall area (minus door and window) is 31,4 m<sup>2</sup>. The total air volume is 30 m<sup>3</sup>.

Using these reference room dimensions, the following loading factor shall be used:

- 1,0 m<sup>2</sup>/m<sup>3</sup> for glass products used as wall or wall covering (mirrors, painted glass, and adhesive backed polymeric filmed glass) when all walls are made of glass products;
   https://standards.iteh.ai/catalog/standards/sist/05eece5e-0fd2-4415-b8a6
- 0,5 m<sup>2</sup>/m<sup>3</sup> for glass products used as wall covering (mirrors, painted glass, and adhesive backed polymeric filmed glass;
- $0,05 \text{ m}^2/\text{m}^3$  for doors and windows;
- 0,007 m<sup>2</sup>/m<sup>3</sup> for VOC containing material along the edge of the glazing (e.g. insulating glass units, laminated glass, curtain walling).

NOTE For furniture, drawing board and other small items, a loading factor of  $0,03 \text{ m}^2/\text{m}^3$  can be used.

If the above surfaces and associated loading factors do not represent the intended application for a specific product or project, the appropriate loading factor shall be calculated on the basis of the foreseen use of the product and agreed between the manufacturer and the customer.

The test report shall clearly mention for what loading factors the test results were calculated. The reference room concentrations for other loading factors can be calculated according to EN 16516.

### 5 Product sampling and transport to the laboratory

#### 5.1 General

As per EN 16516.