



# SLOVENSKI STANDARD

## SIST EN 17104:2021

01-marec-2021

---

### Plastomerne toge zaščitne stenske obloge za notranjo uporabo v stavbah - Tehnične lastnosti

Thermoplastics rigid protective wallcovering panels for internal use in buildings -  
Performance characteristics

Kunststoff-Wandschutzplatten für die Anwendung in Gebäuden - Leistungskenngrößen

Panneaux de protection murale rigides en thermoplastiques pour usage intérieur dans le  
bâtiment - Caractéristiques de performance

**iTeh STANDARD PREVIEW**

(Standards.Iteh.ai)

[SIST EN 17104:2021](http://standards.iteh.ai/catalog/standards/sist/en-17104/2021)

Ta slovenski standard je istoveten z: [EN 17104:2021](http://standards.iteh.ai/catalog/standards/sist/en-17104/2021) [cb1-4791-93cf-1850c520fa2f/sist-en-17104-2021](https://standards.iteh.ai/catalog/standards/sist/en-17104/2021)

---

#### **ICS:**

83.140.10	Filmi in folije	Films and sheets
91.180	Notranja zaključna dela	Interior finishing

**SIST EN 17104:2021**

**en,fr,de**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 17104:2021

<https://standards.iteh.ai/catalog/standards/sist/19d89eee-ccb1-4791-93cf-1850c520fa2f/sist-en-17104-2021>

EUROPEAN STANDARD

EN 17104

NORME EUROPÉENNE

EUROPÄISCHE NORM

January 2021

ICS 83.140.10

English Version

## Thermoplastics rigid protective wallcovering panels for internal use in buildings - Performance characteristics

Panneaux de protection murale rigides en thermoplastiques pour usage intérieur dans le bâtiment - Caractéristiques de performance

Kunststoff-Wandschutzplatten für die Anwendung in Gebäuden - Leistungsmerkmale

This European Standard was approved by CEN on 27 December 2020.

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 CEN-CENELEC Management Centre 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 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, 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 United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

## Contents

	Page
European foreword.....	4
Introduction .....	5
1 Scope.....	6
2 Normative references.....	6
3 Terms and definitions .....	7
4 Characteristics .....	7
4.1 Reaction to fire.....	7
4.2 Emission of dangerous substances into indoor air.....	8
4.2.1 General.....	8
4.2.2 Emissions of volatile organic compounds (VOC) with exception of formaldehyde .....	8
4.2.3 Emission of formaldehyde .....	8
4.3 Migration of heavy metals.....	9
4.4 Impact resistance.....	9
4.5 Sound absorption.....	9
4.6 Thermal resistance.....	9
5 Testing, assessment and sampling methods.....	10
5.1 Reaction to fire.....	10
5.2 Emissions of volatile organic compounds (VOC) with exception of formaldehyde .....	10
5.3 Emission of formaldehyde.....	10
5.4 Migration of heavy metals.....	10
5.5 Impact resistance.....	11
5.6 Sound absorption.....	11
5.7 Thermal resistance.....	11
6 Assessment and verification of constancy of performance - AVCP .....	12
6.1 General.....	12
6.2 Assessment of performance .....	12
6.2.1 General.....	12
6.2.2 Test samples, testing and assessment criteria.....	13
6.3 Verification of constancy of performance .....	14
6.3.1 Factory production control (FPC) .....	14
6.3.2 Initial inspection of factory and of FPC .....	15
6.3.3 Continuous surveillance of FPC.....	15
Annex A (normative) Extended application rules within a group of product.....	17
A.1 Tests for the reaction to fire performance.....	17
A.1.1 General.....	17
A.1.2 Sampling.....	17
A.1.3 Product parameter having an influence on the reaction to fire performance.....	17
A.1.4 End-use application parameters .....	17
A.1.5 Tests conducted according to EN 13823:2020 intended for an extended application .....	18

<b>A.1.6</b>	<b>Tests conducted according to EN ISO 11925-2:2020 intended for an extended application .....</b>	<b>19</b>
<b>A.2</b>	<b>Test for emission of dangerous substances into indoor air (VOC and formaldehyde) .....</b>	<b>19</b>
<b>A.2.1</b>	<b>General .....</b>	<b>19</b>
<b>A.2.2</b>	<b>Product parameters which influence indoor air emissions.....</b>	<b>19</b>
<b>Annex ZA</b>	<b>(informative) Relationship of this European Standard with Regulation (EU) No 305/2011 .....</b>	<b>20</b>
<b>ZA.1</b>	<b>Scope and relevant characteristics .....</b>	<b>20</b>
<b>ZA.2</b>	<b>System of Assessment and Verification of Constancy of Performance (AVCP) .....</b>	<b>21</b>
<b>ZA.3</b>	<b>Assignment of AVCP tasks .....</b>	<b>21</b>

## **iTeh STANDARD PREVIEW** **(standards.iteh.ai)**

[SIST EN 17104:2021](#)

<https://standards.iteh.ai/catalog/standards/sist/19d89eee-ccb1-4791-93cf-1850c520fa2f/sist-en-17104-2021>

**EN 17104:2021 (E)****European foreword**

This document (EN 17104:2021) has been prepared by Technical Committee CEN/TC 249 “Plastics”, 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 July 2021, and conflicting national standards shall be withdrawn at the latest by October 2022.

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.

This document has been prepared under a Standardization request (i.e. M/121) given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of Regulation (EU) No 305/2011.

For relationship with Regulation (EU) No 305/2011 on construction products (CPR), see informative Annex ZA, which is an integral part of this document.

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.

[SIST EN 17104:2021](https://standards.iteh.ai/catalog/standards/sist/19d89eee-ccb1-4791-93cf-1850c520fa2f/sist-en-17104-2021)

<https://standards.iteh.ai/catalog/standards/sist/19d89eee-ccb1-4791-93cf-1850c520fa2f/sist-en-17104-2021>

## Introduction

An overview of European standards for products used as wall finishes is given in Figure 1.

<p>EN 438-7:2005</p> <p>High-pressure decorative laminates (HPL) — Sheets based on thermosetting resins (Usually called Laminates) — Part 7: Compact laminate and HPL composite panels for internal and external wall and ceiling finishes (CEN/TC 249)</p>	<p>EN 13245-2:2008</p> <p>Plastics — Unplasticized poly(vinyl chloride) (PVC-U) profiles for building applications — Part 2: PVC-U profiles and PVC-UE profiles for internal and external wall and ceiling finishes (CEN/TC 249)</p>	<p><b>EN 17104 :2021</b></p> <p><b>Thermoplastics rigid protective wallcovering panels for internal use in buildings — Performance Characteristics (CEN/TC 249) (This document)</b></p>	
<p>EN 1013+A1:2014</p> <p>Light transmitting single skin profiled plastics sheets for internal and external roofs, walls and ceilings — Requirements and test methods (CEN/TC 128)</p>	<p>EN 16153+A1:2015</p> <p>Light transmitting flat multiwall polycarbonate (PC) sheets for internal and external use in roofs, walls and ceilings — Requirements and test methods (CEN/TC 128)</p>	<p>EN 16240:2013</p> <p>Light transmitting flat solid polycarbonate (PC) sheets for internal and external use in roofs, walls and ceilings — Requirements and test methods (CEN/TC 128)</p>	<p>EN 15102:2019</p> <p>Decorative wallcoverings — Roll form (CEN/TC 99)</p>
<p>EN 14782:2006</p> <p>Self-supporting metal sheet for roofing, external cladding and internal lining — Product specification and requirements (CEN/TC 128)</p>	<p>EN 13986+A1:2005</p> <p>Wood-based panels for use in construction — Characteristics, evaluation of conformity and marking (CEN/TC 112)</p>	<p>EN 14915:2017+A2:2020</p> <p>Solid wood panelling and cladding — Characteristics, requirements and marking (CEN/TC 175)</p>	<p>EN 15286:2013</p> <p>Agglomerated stone — Slabs and tiles for wall finishes (internal and external) (CEN/TC 246)</p>

Figure 1 — European standards for products used as wall finishes

**EN 17104:2021 (E)****1 Scope**

This document specifies characteristics for thermoplastics rigid protective wallcovering panels whose purposes are decorative and protective, but non-structural.

The thermoplastics rigid protective wallcovering panels are intended to be used as finishes for hanging onto internal walls and wall partitions by means of adhesive. Their surface may be with or without embossing.

It also specifies the procedures for the assessment and verification of constancy of performance (AVCP) of the thermoplastics rigid protective wallcovering panels.

This document does not cover thermoplastics rigid protective wallcovering panels:

- fixed onto internal walls and wall partitions by other means than by adhesives, as well as the adhesives and ancillary products themselves,
- intended to be used on ceilings.

**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 717-1:2004, *Wood-based panels - Determination of formaldehyde release - Part 1: Formaldehyde emission by the chamber method*

EN 12149:1997, *Wallcoverings in roll form - Determination of migration of heavy metals and certain other elements, of vinyl chloride monomer and of formaldehyde release*

EN 12667:2001, *Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Products of high and medium thermal resistance*

EN 13238:2010, *Reaction to fire tests for building products - Conditioning procedures and general rules for selection of substrates*

EN 13501-1:2018, *Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests*

EN 13823:2020, *Reaction to fire tests for building products - Building products excluding floorings exposed to the thermal attack by a single burning item*

CEN/TS 15117:2005, *Guidance on direct and extended application*

EN 16516:2017+A1:2020, *Construction products - Assessment of release of dangerous substances - Determination of emissions into indoor air*

EN ISO 354:2003, *Acoustics - Measurement of sound absorption in a reverberation room (ISO 354:2003)*

EN ISO 6603-1:2000, *Plastics - Determination of puncture impact behaviour of rigid plastics - Part 1: Non-instrumented impact testing (ISO 6603-1:2000)*



EN ISO 10456:2007/AC:2009, *Building materials and products - Hygrothermal properties - Tabulated design values and procedures for determining declared and design thermal values - Technical Corrigendum 1 (ISO 10456:2007/Cor 1:2009)*

EN ISO 11654:1997, *Acoustics - Sound absorbers for use in buildings - Rating of sound absorption (ISO 11654:1997)*

EN ISO 11925-2:2020, *Reaction to fire tests - Ignitability of products subjected to direct impingement of flame - Part 2: Single-flame source test (ISO 11925-2:2020)*

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

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

NOTE See Regulation (EU) No 305/2011 for additional definitions.

#### 3.1

##### **thermoplastics rigid protective wallcovering panel**

homogeneous or heterogeneous panel/sheet made from plastic material(s), covered or not with a decorative film, intended to wall protection without structural function

Note 1 to entry: On the market, the wording "thermoplastics rigid protective wallcovering sheet" is also used.

Note 2 to entry: Panels/sheets can have different shapes, dimensions, thicknesses, colours, designs or densities, and the protective face of panels may be with or without embossing.

#### 3.2

##### **product family**

group of products produced by one manufacturer for which the assessment results for one or more characteristics from any one product within the range are valid for all other products within this range

### 4 Characteristics

#### 4.1 Reaction to fire

NOTE The reaction to fire indicates the degree of contribution of the material of these panels to the behaviour of the construction product in the event of fire.

The reaction to fire performance of a thermoplastics rigid protective wallcovering panel shall be determined according to 5.1 for the claimed reaction to fire class, as specified in EN 13501-1:2018.

If so, the claimed class of the reaction to fire performance of a thermoplastics rigid protective wallcovering panel shall be expressed together with the type of the applied substrate, as defined in EN 13238:2010, Table 1, the 1<sup>st</sup> column (Nature).

EXAMPLE D-s1,d0 / Fibre cement board

When defining a product family of a particular type of the thermoplastics rigid protective wallcovering panel with regard to its reaction to fire performance, the panel's parameters, influencing such performance, as given in A.1, shall be taken into account.

## EN 17104:2021 (E)

## 4.2 Emission of dangerous substances into indoor air

### 4.2.1 General

Thermoplastics rigid protective wallcovering panels shall be assessed concerning emission from them of the following dangerous substances:

- volatile organic compounds (VOC), with exception of formaldehyde, as specified in 4.2.2, and
- formaldehyde, as specified in 4.2.3.

When assessing the emission of these dangerous substances from thermoplastics rigid protective wallcovering panel, the parameters influencing such performance, as given in A.2, shall be taken into account.

### 4.2.2 Emissions of volatile organic compounds (VOC) with exception of formaldehyde

Emission of volatile organic compounds (VOC) from thermoplastics rigid protective wallcovering panel shall be determined in accordance with 5.2.

The performance shall be expressed as an indication of the value (in  $\text{mg}/\text{m}^3$ ) rounded to the nearest upper  $10 \text{ mg}/\text{m}^3$ .

EXAMPLE Value  $225 \text{ mg}/\text{m}^3$  expressed as  $230 \text{ mg}/\text{m}^3$ .

### 4.2.3 Emission of formaldehyde

The emission of formaldehyde from the thermoplastics rigid protective wallcovering panel shall be determined in accordance with 5.3.

Depending on the result obtained, the performance of this characteristic shall be expressed as formaldehyde emissions Classes E1 or E2, considering the respective criterion specified in Table 1.

**Table 1 — Classification for emissions of formaldehyde**

Class	Test methods and criteria	
	EN 16516:2017+A1:2020 <sup>a)</sup>	EN 717-1:2004
E1	$\leq 0,12 \text{ mg}/\text{m}^3$	Equilibrium concentration in the air of the test chamber $\leq 0,12 \text{ mg}/\text{m}^3$
E2	$> 0,12 \text{ mg}/\text{m}^3$	Equilibrium concentration in the air of the test chamber $> 0,12 \text{ mg}/\text{m}^3$

<sup>a)</sup> Considered as the referenced method.

### 4.3 Migration of heavy metals

**4.3.1** The migration of heavy metals from the thermoplastics rigid protective wallcovering panel, as listed in Table 2, shall be determined in accordance with 5.4.

**Table 2 — Criteria for migration of heavy metals**

Heavy metal	Symbol	Maximum migration value mg/kg
Antimony	Sb	–
Barium	Ba	500
Selenium	Se	165

The obtained corrected analytical value of migration,  $C$ , of any of the heavy metals from thermoplastics rigid protective wallcovering panel, as listed in Table 2, except of antimony (Sb), shall not exceed the related maximum migration value, specified also therein.

**4.3.2** If so, the migration of heavy metals from the thermoplastics rigid protective wallcovering panel, as listed in Table 2, shall be expressed, as:

- a) for antimony (Sb), as indication of the achieved corrected analytical value,  $C$ , in mg/kg

EXAMPLES

200 mg/kg

0 mg/kg

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN 17104:2021](https://standards.iteh.ai/catalog/standards/sist/19d89eee-ccb1-4791-93cf-1956c520e278/sist-en-17104-2021)

- b) for barium (Ba) or selenium (Se) as indication “Compliant”.

### 4.4 Impact resistance

The impact resistance performance of thermoplastics rigid protective wallcovering panels shall be determined according to 5.5 and the value of the 50 % impact-failure energy ( $E_{50}$ ) reported.

The impact resistance performance of thermoplastics rigid protective wallcovering panel shall have the 50 % impact-failure energy ( $E_{50}$ ) higher than 15 J and, if so, the performance of this characteristic shall be expressed as indication “> 15 J”.

NOTE The threshold limit of 15 J is considered as protection from the risk of break of the thermoplastics rigid protective wallcovering panel and of the wall itself, on which surface such panels are mounted.

### 4.5 Sound absorption

The sound absorption performance of a thermoplastics rigid protective wallcovering panel shall be measured according to 5.6 and expressed as an indication of a value of the sound absorption coefficient,  $\alpha_p$ .

### 4.6 Thermal resistance

The performance of thermal resistance,  $R$ , of the thermoplastics rigid protective wallcovering panel shall be determined either by calculation, in accordance with to 5.7 a), or by testing, with 5.7 b).

NOTE The calculation method is considered as the reference method.