



# SLOVENSKI STANDARD oSIST prEN 12004-1:2020

01-september-2020

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**Lepila in malte za keramične ploščice - 1. del: Bistvene značilnosti in ocenjevanje ter preverjanje nespremenljivosti lastnosti (AVCP)**

Adhesives for ceramic tiles - Part 1: Essential characteristics and AVCP

Mörtel und Klebstoffe für keramische Fliesen und Platten - Teil 1: Anforderungen, Bewertung und Überprüfung der Leistungsbeständigkeit, Einstufung und Kennzeichnung

Colles à carrelage - Partie 1: Caractéristiques essentielles et EVCP

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**ICS:**

83.180	Lepila	Adhesives
91.100.10	Cement. Mavec. Apno. Malta	Cement. Gypsum. Lime. Mortar
91.100.23	Keramične ploščice	Ceramic tiles

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**DRAFT**  
**prEN 12004-1**

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ICS 83.180; 91.100.10

Will supersede EN 12004-1:2017

English Version

## Adhesives for ceramic tiles - Part 1: Essential characteristics and AVCP

Colles à carrelage - Partie 1: Caractéristiques essentielles et EVCP

Mörtel und Klebstoffe für keramische Fliesen und Platten - Teil 1: Anforderungen, Bewertung und Überprüfung der Leistungsbeständigkeit, Einstufung und Kennzeichnung

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 67.

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.

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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.

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

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## European foreword

This document (prEN 12004-1:2020) has been prepared by Technical Committee CEN/TC 67 “Ceramic tiles”, the secretariat of which is held by UNI.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 12004-1:2017.

This document has been prepared under a mandate request given to CEN by the European Commission and the European Free Trade Association, and supports basic requirements for construction works of the EU Construction Product Regulation (Regulation (EU) No. 305/2011).

For relationship with this Regulation, see informative Annex ZA, which is an integral part of this document.

The significant changes between this document and the previous edition are according to the requirements of the CPR.

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**prEN 12004-1:2020 (E)****Introduction**

It is essential that the characteristics of the construction products defined in this document consider that the normal stresses due to the works for which they are intended, assembled or installed, can be properly accommodated. Some special characteristics will take into account the type of substrate and that the adhesives should resist the degrading actions of climate, etc.

Many properties of adhesives for tiling are mainly determined by the type of binders used. Different types of tile adhesives are defined according to the chemical nature of their binders.

The different types of adhesives for ceramic tiles have specific characteristics in terms of their application properties and final performance.

The relationship between characteristics and the working conditions (dry or humid conditions, hot climate, fast setting, etc.) is not given in this document.

The manufacturer should give information about the use of the product and the correct conditions of use.

The specifier should evaluate the state of the job site (mechanical and thermal influences) and choose the appropriate product considering all the possible risks.

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## 1 Scope

This document is applicable to the following three types of adhesives for ceramic tiles, i.e. cementitious ones for internal and external tile installations, dispersion and reaction resin ones for internal tile installations, on walls and floors.

This document specifies the essential characteristics and the respective threshold levels of the adhesives for ceramic tiles.

It also specifies the appurtenant test methods and the assessment and verification of constancy of performance (AVCP).

NOTE This document does not provide criteria or recommendations for the design and installation of ceramic tiles.

## 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 12004-2:2017, *Adhesives for ceramic tiles - Part 2: Test methods*

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

## 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 <http://www.iso.org/obp>

### 3.1

#### **cementitious adhesive**

mixture of hydraulic binding agents, aggregates, and organic additives, mixed with water or liquid admix just before use

### 3.2

#### **fast setting cementitious adhesive**

modified cementitious adhesive achieving the adhesion strength in 6 h time

### 3.3

#### **dispersion adhesive**

ready to use mixture of organic binding agent(s) in the form of an aqueous polymer dispersion, organic additives and mineral fillers

### 3.4

#### **reaction resin adhesive**

one or more component mixture of synthetic resin, mineral fillers and organic additives in which hardening occurs by chemical reaction

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## 4 Characteristics

### 4.1 Cementitious adhesives (C)

The assessment of the essential characteristics of the normal setting cementitious adhesive for ceramic tiles shall be carried out in accordance with Table 1 a, and the assessment of the essential characteristics of the fast setting cementitious adhesive for ceramic tiles shall be carried out in accordance with Table 1 b.

The amount of water and/or liquid admixes required for preparing the cementitious adhesive shall be the same for all tests.

**Table 1 — Characteristics - Cementitious adhesives (C)**

<b>1 a</b>		
<b>NORMAL SETTING ADHESIVES</b>		
<b>Characteristic</b>	<b>Threshold level</b>	<b>Test method</b>
Bond strength expressed as; - Initial tensile adhesion strength	$\geq 0,5 \text{ N/mm}^2$	EN 12004-2:2017, 8.3
Durability of bond strength expressed as; - Tensile adhesion strength after water immersion	$\geq 0,5 \text{ N/mm}^2$	
- Tensile adhesion strength after heat ageing	$\geq 0,5 \text{ N/mm}^2$	
- Tensile adhesion strength after freeze-thaw cycles	$\geq 0,5 \text{ N/mm}^2$	
<b>1 b</b>		
<b>FAST SETTING ADHESIVES</b>		
<b>Characteristic</b>	<b>Threshold level</b>	<b>Test method</b>
Bond strength expressed as; - Early tensile adhesion strength	$\geq 0,5 \text{ N/mm}^2$ after not more than 6 h	EN 12004-2:2017, 8.3
All other requirements as in Table 1 a		EN 12004-2:2017, 8.3

### 4.2 Dispersion adhesives (D)

The assessment of the essential characteristics of the dispersion adhesive for ceramic tiles shall be carried out in accordance with Table 2.

**Table 2 — Characteristics - Dispersion adhesives (D)**

<b>Characteristic</b>	<b>Threshold level</b>	<b>Test method</b>
Bond strength expressed as; - Initial shear adhesion strength	$\geq 1 \text{ N/mm}^2$	EN 12004-2:2017, 8.4
Durability of bond strength expressed as; - Shear adhesion strength after heat ageing	$\geq 1 \text{ N/mm}^2$	
- Shear adhesion strength after water immersion	$\geq 0,5 \text{ N/mm}^2$	EN 12004-2:2017, 8.4
- Shear adhesion strength at elevated temperature	$\geq 1 \text{ N/mm}^2$	



### 4.3 Reaction resin adhesives (R)

The assessment of the essential characteristics of the reaction resin adhesive for ceramic tiles shall be carried out in accordance with Table 3.

**Table 3 — Characteristics - Reaction resin adhesives (R)**

Characteristic	Threshold level	Test method
Bond strength expressed as; - Initial shear adhesion strength	$\geq 2 \text{ N/mm}^2$	EN 12004-2:2017 , 8.5
Durability of bond strength expressed as; - Shear adhesion strength after water immersion	$\geq 2 \text{ N/mm}^2$	
- Shear adhesion strength after thermal shock	$\geq 2 \text{ N/mm}^2$	

### 4.4 Reaction to fire

The reaction to fire performance of adhesive for ceramic tiles shall be declared as the class in accordance with EN 13501-1:2018.

## 5 Testing, assessment and sampling methods

Testing and assessment methods and requirements for sampling shall be as set out in EN 12004-2:2017.

## 6 Assessment and verification of constancy of performance (AVCP)

### 6.1 General

The technical details necessary for the implementation of the system of assessment and verification of constancy of performance comprise provisions with regards to:

- the assessment of the performance of the adhesives for ceramic tiles, which may be carried out on the basis of testing (including sampling) of the product, and
- the applicable factory production control.

### 6.2 Assessment of performance

#### 6.2.1 General

When the intention is to declare any performance related to characteristics included in Annex ZA of this document this shall be carried out on the basis of testing (including sampling) of the product, in accordance with Clause Characteristics'.

Assessment previously performed in accordance with the provisions of this standard, may be considered, provided that this assessment was performed to the same or a more rigorous assessment method, under the same AVCP system on the same product or products of similar design, construction and functionality, such that the results are applicable to the product in question.

**prEN 12004-1:2020 (E)**

For the purposes of assessment, the products may be grouped into families, where it is considered that the results for one or more characteristics from any one product within the family are representative for that same characteristic for all products within that same family.

NOTE Products can be grouped into different families for different characteristics.

In addition, the determination of the product performance shall be:

- carried out for all characteristics included in the standard for which it is intended to declare the performance:
  - on first application of this standard, or
  - at the beginning of the production of a new or modified adhesive for ceramic tiles, unless a member of the same product family, or
  - at the beginning of a new or modified method of production, where the modification may affect the stated properties;
- repeated for the characteristic(s) in question, whenever a change occurs in the adhesive for ceramic tiles design, in the raw material(s) or in the supplier of the components, and/or in the method of production (subject to the definition of a family), which may affect significantly the performance in relation to one or more of the characteristics;
- done taking into consideration extended application rules where and when relevant.

Where components are used whose performance in relation to their characteristics has already been determined on the basis of assessment methods of other harmonised technical specifications and those components bear CE marking in accordance with those harmonised technical specifications, these performances do not need to be re-assessed if the intended use and the assessment methods of this document correspond to previously used. The specifications of these components shall be documented.

**6.2.2 Test samples, testing and compliance criteria**

The samples of ceramic tile adhesives to be tested/assessed shall be in accordance with Table 4.

Table 4 — Number of samples to be tested and assessment criteria

Characteristic	Clause	Assessment method	No. of samples	Assessment criteria
Initial tensile adhesion strength (cementitious adhesives)	4.1	EN 12004-2:2017, 8.3	1	Clause 4, Table 1a
Early tensile adhesion strength (fast setting cementitious adhesives)	4.1	EN 12004-2:2017, 8.3	1	Clause 4, Table 1b
Tensile adhesion strength after water immersion (cementitious adhesives)	4.1	EN 12004-2:2017, 8.3	1	Clause 4, Table 1a
Tensile adhesion strength after heat ageing (cementitious adhesives)	4.1	EN 12004-2:2017, 8.3	1	Clause 4, Table 1a
Tensile adhesion strength after freeze-thaw cycles (cementitious adhesives)	4.1	EN 12004-2:2017, 8.3	1	Clause 4, Table 1a
Initial shear adhesion strength (dispersion adhesives)	4.1	EN 12004-2:2017, 8.4	1	Clause 4, Table 2
Shear adhesion strength after heat ageing (dispersion adhesives)	4.2	EN 12004-2:2017, 8.4	1	Clause 4, Table 2
Shear adhesion strength after water immersion (dispersion adhesives)	4.2	EN 12004-2:2017, 8.4	1	Clause 4, Table 2
Shear adhesion strength at elevated temperature (dispersion adhesives)	4.2	EN 12004-2:2017, 8.4	1	Clause 4, Table 2
Initial shear adhesion strength (reaction resin adhesives)	4.3	EN 12004-2:2017, 8.5	1	Clause 4, Table 3
Shear adhesion strength after water immersion (reaction resin adhesives)	4.3	EN 12004-2:2017, 8.5	1	Clause 4, Table 3
Shear adhesion strength after thermal shock (reaction resin adhesives)	4.3	EN 12004-2:2017, 8.5	1	Clause 4, Table 3
Reaction to fire	4.4	EN 13501-1:2018	1	

## 6.3 Verification of constancy of performance

### 6.3.1 Factory production control (FPC)

#### 6.3.1.1 General

An FPC system shall be established, documented, operated and maintained to ensure that the products placed on the market comply with the declared performance in relation to the essential characteristics.

The FPC system shall consist of procedures, regular inspections and tests and/or assessments and the use of the results to control raw and other incoming materials or components, equipment, the production process and the product.

All the elements and provisions shall be documented in a systematic manner in the form of written policies and procedures.

The responsibility, authority and the relationship between personnel that manages, performs or verifies work affecting constancy of the performance of the product, shall be defined.