SLOVENSKI STANDARD
SIST EN 12004:2007

01-oktober-2007

Nadomešča:
SIST EN 12004:2002
SIST EN 12004:2002/A1:2002
SIST EN 12004:2002/A1:2002/AC:2002

Lepila in malte za ploščice - Zahteve, ovrednotenje skladnosti, klasifikacija in označevanje

Adhesives for tiles - Requirements, evaluation of conformity, classification and designation

Mörtel und Klebstoffe für Fliesen und Platten - Anforderungen, Konformitätsbewertung, Klassifizierung und Bezeichnung

Colles a carrelage - Exigences, évaluation de la conformité, classification et désignation

Ta slovenski standard je istoveten z: **EN 12004:2007**

ICS:

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

SIST EN 12004:2007 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12004

August 2007

ICS 83.180; 91.100.10

Supersedes EN 12004:2001

English Version

Adhesives for tiles - Requirements, evaluation of conformity, classification and designation

Colles à carrelage - Exigences, évaluation de la conformité, classification et désignation

Mörtel und Klebstoffe für Fliesen und Platten - Anforderungen, Konformitätsbewertung, Klassifizierung und Bezeichnung

This European Standard was approved by CEN on 4 February 2007.

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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 Management Centre has the same status as the official versions.

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Ref. No. EN 12004:2007: E

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Foreword

This document (EN 12004:2007) has been prepared by Technical Committee CEN/TC 67 “Ceramic tiles”, the secretariat of which is held by UNI.

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of an identical text or by endorsement, at the latest by February 2008, and conflicting national standards shall be withdrawn at the latest by May 2009.

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, which is an integral part of this document.

This document supersedes EN 12004:2001.

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

Introduction

It is essential that the characteristics of the construction products defined in this standard 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 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 standard.

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.

1 Scope

This European Standard is applicable to ceramic tile adhesives for internal and external tile installations on walls, floors and ceilings.

This standard gives the terminology concerning the products, working methods, application properties, etc, for ceramic tile adhesives.

This European Standard specifies the values of performance requirements for ceramic tile adhesives (cementitious, dispersion and reaction resin adhesives).

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

NOTE Ceramic tile adhesives may also be used for other types of tiles (natural and agglomerated stones, etc.), if they do not adversely affect these materials.

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 1308, *Adhesives for tiles – Determination of slip*

EN 1324:2007, *Adhesives for tiles – Determination of shear adhesion strength of dispersion adhesives*

EN 1346, *Adhesives for tiles – Determination of open time*

EN 1347, *Adhesives for tiles – Determination of wetting capability*

EN 1348:2007, *Adhesives for tiles – Determination of tensile adhesion strength for cementitious adhesives*

EN 12002, *Adhesives for tiles – Determination of transverse deformation for cementitious adhesives and grouts*

EN 12003:1997, *Adhesives for tiles – Determination of shear adhesion strength of reaction resin adhesives*

EN 12808-1, *Adhesives and grouts for tiles – Part 1: Determination of chemical resistance of reaction resin mortars*

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

3 Terms and definitions

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

3.1 General

3.1.1
thin bed method
method used for installing tiles onto a plane surface with an adhesive

NOTE The adhesive is usually applied with a trowel to obtain a layer and then combed with a notched trowel to achieve the right thickness and planarity

3.1.2
fixing surface
plane rigid surface upon which the tile is fixed

3.1.3
wall and floor tiles
tiles made out of ceramic or natural and agglomerated stones

3.2 Products

3.2.1
cementitious adhesive
mixture of hydraulic binding agents, aggregates, and organic additives

NOTE 1 The adhesives are mixed with water or liquid admix just before use.

NOTE 2 Cementitious adhesives are designated as type C.

3.2.2
dispersion adhesive
mixture of organic binding agent(s) in the form of an aqueous polymer dispersion, organic additives and mineral fillers

NOTE 1 The mixture is ready for use

NOTE 2 Dispersion adhesives are designated as type D.

3.2.3
reaction resin adhesive
mixture of synthetic resin, mineral fillers and organic additives in which hardening occurs by chemical reaction

NOTE 1 They are available in one or more component forms

NOTE 2 reaction resin adhesive are designated as type R

3.3 Tools and working methods

3.3.1
notched trowel
toothed tool, which makes it possible to apply the adhesive as a series of ribs of a uniform thickness onto the fixing surface and/or the reverse face of the tile

3.3.2
application to one surface only, Notched trowel or Floating method
adhesive applied only to the fixing surface, usually with a trowel to obtain a uniform layer and then combed with a notched trowel

NOTE The tiles are then fixed before a film forms on the surface of the adhesive

3.3.3
application to both surfaces, Floating and buttering method
adhesive applied to the fixing surface and to the reverse of the tiles

NOTE The combined layer of adhesive should not exceed the maximum recommended thickness. The tiles are then fixed before a film forms on the surface of the adhesive

3.4 Application properties

3.4.1
shelf life
time of storage under stated conditions during which an adhesive is expected to maintain its working properties

3.4.2
maturing time
interval between the time when the cementitious adhesive is mixed and the time when it is ready for use

3.4.3
pot-life
maximum time interval during which the adhesive can be used after mixing

3.4.4
open time
maximum interval after application at which tiles can be embedded in the applied adhesive and meet the specified tensile adhesion strength requirement

NOTE Open time is measured by the method described in EN 1346

3.4.5
wetting capability
ability of a combed adhesive layer to wet the tile

NOTE Wetting capability is measured by the method described in EN 1347

3.4.6
slip
downward movement of a tile applied to a combed adhesive layer on a vertical or inclined surface

NOTE Slip is measured by the method described in EN 1308

3.4.7
adjustability
maximum time interval after which the tile's position in the adhesive layer can be adjusted without significant loss of adhesion strength

3.5 Final properties

3.5.1
adhesion strength
maximum strength per unit surface area which can be measured by shear or tensile testing

NOTE Adhesion strength is measured by the methods described in EN 1348, EN 1324 or EN 12003 depending on the type of adhesive

3.5.2
deformability
capacity of a hardened adhesive to be deformed by stresses between the tile and the fixing surface without damage to the installed surface

3.5.3
transverse deformation
deflection recorded at the centre when a beam of hardened adhesive is subjected to three point loading

NOTE Transverse deformation is used to evaluate the deformability of the adhesive. It is measured by the method described in EN 12002.

3.6 Failure pattern

3.6.1
adhesion failure (AF-S or AF-T)
when failure occurs at the interface between adhesive and substrate the notation AF-S is used, when it occurs between tile and adhesive the notation AF-T is used and in both cases the test values equal the adhesion strength (see Figure A.1 and Figure A.2)

NOTE In some cases failure can occur in the adhesive layer between the tile and the pull-head plate. In this case the notation BT is used, see Figure A.3, and the adhesion strength is greater than the test value. The test should be preferably repeated

3.6.2
cohesive failure within the adhesive (CF-A)
when failure occurs within the adhesive layer (see Figure A.4)

3.6.3
cohesive failure in the substrate or in the tile (CF-S or CF-T)
when failure occurs within the substrate the notation CF-S is used, see Figure A.5; when it happens within the body of the tile the notation CF-T is used (see Figure A.6)

NOTE In this case the strength of the adhesive is greater than the test value

3.7 Characteristics

3.7.1
fundamental characteristics
characteristics that an adhesive absolutely has to have

3.7.2 Optional characteristics

3.7.2.1
additional characteristics
characteristics for specific service conditions where enhanced levels of performance are required

3.7.2.2
special characteristics
characteristics of the adhesive which provide further information about its general performance

4 Requirements

4.1 Cementitious adhesives (C)

Normal setting cementitious adhesives shall comply with the characteristics specified in Table 1a, while fast setting cementitious adhesives shall comply with Table 1b.

Tables 1c and 1d give the optional characteristics that can be required for special service conditions.

For the characteristic of wetting capability (measured in accordance with EN 1347) there are no limit values, but it is left to the producer to declare the value to provide further information.

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