SLOVENSKI STANDARD
SIST EN 12002:2009

01-februar-2009

Nadomešča:
SIST EN 12002:2003

Lepila za ploščice - Ugotavljanje prečne deformacije cementnih lepil in cementnih fugirnih malt

Adhesives for tiles - Determination of transverse deformation for cementitious adhesives and grouts

Mörtel und Klebstoffe für Fliesen und Platten - Bestimmung der Verformung zementhaltiger Mörtel und Fugenmörtel

Colles à carrelage - Détermination de la déformation transversale d'un mortier-colle ou d'un mortier de joint pour carrelages

Ta slovenski standard je istoveten z: **EN 12002:2008**

ICS:

83.180	Lepila	Adhesives
91.100.10	Cement. Mavec. Apno. Malta	Cement. Gypsum. Lime. Mortar

SIST EN 12002:2009 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12002

October 2008

ICS 91.100.10

Supersedes EN 12002:2002

English Version

Adhesives for tiles - Determination of transverse deformation for cementitious adhesives and grouts

Colles à carrelage - Détermination de la déformation transversale d'un mortier-colle ou d'un mortier de joint pour carrelages

Mörtel und Klebstoffe für Fliesen und Platten - Bestimmung der Verformung zementhaltiger Mörtel und Fugenmörtel

This European Standard was approved by CEN on 22 August 2008.

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Ref. No. EN 12002:2008: E

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Foreword

This document (EN 12002 rev:2008) 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of an identical text or by endorsement, at the latest by April 2009, and conflicting national standards shall be withdrawn at the latest by April 2009.

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

This document supersedes EN 12002:2002.

This document is one of a series of European Standards for tests on tile adhesives including:

EN 1308, *Adhesives for tiles – Determination of slip*

EN 1323, *Adhesives for tiles – Concrete slabs for tests*

EN 1324, *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, *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, *Adhesives for tiles – Determination of shear adhesion strength of reaction resin adhesives*

EN 12004, *Adhesives for tiles – Requirements, evaluation of conformity, classification and designation*

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

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 the United Kingdom.

1 Scope

This European Standard specifies the test method to be used to determine the transverse deformation of cementitious ceramic tile adhesives and grouts.

This European Standard is applicable to all cementitious ceramic tile adhesives and grouts for internal and external tile installations on floors and walls.

It is not applicable to non-cementitious adhesives and grouts , e.g. dispersion and reactive resin adhesives and grouts.

This European Standard does not contain performance requirements or recommendations for the design and installation of ceramic tiles.

NOTE Ceramic tile adhesives can also be used for other kinds of tiles (natural and agglomerated stones, etc.), where these 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 196-1:2005*, Methods of testing cement – Part 1: Determination of strength*

EN 459-2*, Building lime – Part 2: Test methods*

EN 1067*, Adhesives – Examination and preparation of samples for testing*

EN ISO 15605*, Adhesives – Sampling (ISO 15605:2000)*

3 Principle

The test described in this European Standard measures the transverse deformation of cementitious adhesives and grouts, when subjected to a 3-point bending load, performed on test specimens of the stated dimension. The specimens are prepared and conditioned in accordance with the specific conditions described.

NOTE Transverse deformation is used to evaluate the deformability of the adhesive, i.e. its capacity to be deformed by stresses between the tile and the fixing surface without damage to the installed surface.

4 Sampling

Take a sample of at least 2 kg of the adhesive or grout in accordance with EN ISO 15605 and EN 1067.

5 Test conditions

Standard conditions shall be (23 ± 2)°C and (50 ± 5)% R.H. and air velocity in the working area of less than 0,2 m/s.

6 Test materials

6.1 General

Condition all test materials for at least 24 h under standard conditions. The adhesive or grout to be tested shall be within its shelf life, where this is specified.

6.2 Substrate

Shall be polyethylene film of minimum thickness 0,15 mm.

6.3 Plastic container

A plastic container that is capable of being sealed to make it air tight, with an internal volume of (26 ± 5) l, e.g. a container with dimensions (600 ± 20) mm x (400 ± 10) mm x (110 ± 10) mm.

6.4 Support

Rigid, smooth and flat support for the polyethylene film.

7 Apparatus

7.1 Anvil

A metallic construction conforming to the dimensions. See Figure 1.

7.2 Test jig

Two metallic cylindrical supports, of diameter (10 ± 0,1) mm, spaced (200 ± 1) mm centre to centre, of length 60 mm minimum. See Figure 2.

7.3 Template A

A smooth, rigid, non absorbent rectangular frame of internal dimensions (280 ± 1) mm x (45 ± 1) mm and thickness (5 ± 0,1) mm; e.g. made from polytetrafluoroethylene (PTFE) or metal.

NOTE A round hole of approximately 2 mm diameter drilled at each internal corner is recommended to ease production of the test piece. See Figure 3.

7.4 Template B

A smooth, rigid, non-absorbent mould (see Figure 4) or similar device capable of producing a test specimen of dimensions (300 ± 1) mm x (45 ± 1) mm x (3 ± 0,05) mm.

7.5 Test machine

The test machine shall be a press, capable of applying the anvil (7.1) to the test piece at a rate of 2 mm/min.

7.6 Flow table

The flow table used for the compaction of (280 ± 1) mm x (45 ± 1) x (5 ± 0,1) mm specimen shall comply with EN 459-2.

8 Mixing of adhesive or grout

The amount of water and/or liquid admix required for preparing the adhesive or grout shall be as stated by the manufacturer in parts by mass, i.e. liquid to dry powder (if a range of values is given, the mean shall be used).

Prepare a minimum of 2 kg of powder in a mixer of the type described in clause 4.4 of EN 196-1:2005, using the slow speed settings, (140 ± 5) r/min rotation and (62 ± 5) r/min planetary movement using the following procedure:

— pour the liquid into the pan;

— scatter the dry powder over the liquid;

— mix for 30 s;

— take out the mixing paddle;

— scrape down the paddle and pan within 1 min;

— replace the paddle and mix for 1 min.

If required by the adhesive or grout manufacturer's instructions, let the adhesive or grout mature and then mix for a further 15 s.

9 Procedure

9.1 Preparation of substrate

Fix the polyethylene film (6.2) firmly to the rigid support (6.4), ensuring the surface, to which the adhesive is to be applied, is not distorted, e.g. without pleats or wrinkles.

9.2 Preparation of test units

Hold the template A firmly onto the polyethylene film.

Trowel sufficient adhesive across the template and then screed clean so as to neatly and completely fill the hole in the template.

Clamp the mould firmly to the flow table and compact the sample using 70 jolts.

Lift the mould gently from the flow table and carefully remove the template vertically.

Apply a layer of release agent to the template B and position it centrally over the specimen. Load the template with a weight capable of exerting a force of (100 ± 0,1) N and an approximate cross-sectional area of (290 x 45) mm. The applied pressure ensures that the material fully fills the recess of the template to the required thickness. Remove any excess material from the sides of the template and one hour later remove the weight.

After 48 h remove the template B.

Prepare six samples for each test.

Condition the units according to the test requirements.

9.3 Conditioning

Immediately after the removal of template B place six specimens, on the support, horizontally into the plastic container and make it air tight.

Condition the test units at (23 ± 2)°C. After 12 days remove them from the plastic container and condition them for 14 days in air in standard conditions.

9.4 Transverse deformation

After conditioning has been completed, remove the specimens from the polyethylene film and measure their thickness, using a caliper with 0,01 mm precision, at three positions, ie in the middle and (50 ± 1) mm from each end. If the three values fall within the required tolerance of (3,0 ± 0,1) mm calculate the average value; discard any specimen which falls outside the required permissible thickness.

If less than three specimens are acceptable repeat the test.

The sample shall be flat when resting on a flat surface.

Place the test specimen on the test jig (7.2).

Deform it with a transverse load applied by the anvil (see Figure 2) at a rate of 2 mm/min until failure occurs.

Record the deformation in millimetres.

When no cracking occurs, report the maximum force and deformation.

Repeat the test on the other test pieces.

10 Expression of results

The transverse deformation is determined to 0,1 mm, by calculating the average value of the deformations obtained in the test.

11 Test report

The test report shall provide the following information:

a) name, number and issue of this European Standard;

b) place, date and time of sampling;