SLOVENSKI STANDARD
SIST EN 12808-1:2000

01-september-2000

Lepila in fugirne mase za ploščice - Ugotavljanje kemijske odpornosti malt na osnovi smol

Adhesives and grouts for tiles - Part 1: Determination of chemical resistance of reaction resin mortars

Klebstoffe und Fugenmörtel für Fliesen und Platten - Teil 1: Bestimmung der Chemikalienbeständigkeit von Reaktionsharzmörtel

Mortiers de joints et colles a carrelage - Partie 1: Détermination de la résistance chimique des mortiers a base de résines réactives

Ta slovenski standard je istoveten z: **EN 12808-1:1999**

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 12808-1:2000 **en**

EUROPEAN STANDARD

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ICS 83.180; 91.100.10

English version

Adhesives and grouts for tiles - Part 1: Determination of chemical resistance of reaction resin mortars

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This European Standard was approved by CEN on 16 March 1999.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Contents

Foreword

This European Standard 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of an identical text or by endorsement, at the latest by October 1999, and conflicting national standards shall be withdrawn at the latest by October 1999.

This Standard is one of the series of draft standards for ceramic tile adhesives including:

EN 1308	Adhesives for tiles - Determination of slip
EN 1323	Adhesives for tiles - Concrete slab for test
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
prEN 12004	Adhesives for tiles - Definition and specifications

This document does not supersede any existing European Standard.

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

1 Scope

This European Standard specifies the test method to be used to determine the chemical resistance of ceramic tile adhesives and grouts under anticipated service conditions.

This standard applies to reaction resin ceramic tile grouts and adhesives for internal and external ceramic tile installations on walls and floors.

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

NOTE: Ceramic tile adhesives and grouts can be used also for other kinds of tiles (natural and agglomerated stones, etc.), where these do not adversely affect the materials.

This standard can involve hazardous materials and operations. Persons using this standard shall be familiar with normal laboratory practice. This standard does not purport to address all the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any European and national regulatory conditions.

2 Normative References

This draft European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references subsequent amendments to, or revisions of, any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 1066	Adhesives - Sampling
EN 1067	Adhesives - Examination and preparation of samples for testing

3 Sampling

Take a test sample of at least 2 kg of the adhesive or grout in accordance with EN 1066 and EN 1067.

4 Test conditions

Standard conditions shall be (23 ± 2)°C and (50 ± 5)% relative humidity and a circulation of air in the testing area less than 0,2 m/s.

5 Test materials

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

6 Apparatus

6.1 Mould

The mould shall be a right cylinder (25±1) mm in diameter by (25±1) mm high. The mould shall be constructed in any manner that allows the formation of the desired test specimen. Typical moulds consist of a (25±1) mm thick flat plastic board in which (25±1) mm diameter holes have been cut, and to the bottom of which a flat and smooth plastic sheet, at least 6 mm thick, without holes, which is attached by means of screws or any other suitable system. Alternatively, the moulds shall consist of sections of round plastic tubing or pipe, (25±1) mm in inside diameter, and (25±1) mm long, with sufficient wall thickness to be rigid and retain dimensional stability during the moulding operation, and a 6 mm thick flat plastic sheet on which one open end of each section shall be able to be rested.

NOTE: The material from which the mould is constructed should be chemically inert and have antistick properties. Polyethylene, polypropylene, polytetrafluoroethylene and metal forms having a sintered coating of tetrafluoroethylene polymer have been found satisfactory.

6.2 Containers

6.2.1 Wide mouth jars of sufficient capacity, fitted with plastic or plastic-lined metal screw caps for low temperatures tests involving media of low volatitlity.

6.2.2 Erlenmeyer Flasks, of sufficient capacity, fitted with standard-taper-joints and a reflux condenser attachment for use with volatile media.

6.2.3 Containers, as described in 6.2.1 and 6.2.2, of a suitable inert material for use with media which attack glass.

6.3 Compression machine

A test machine with suitable capacity and sensitivity for the test and with a variable testing speed. The machine shall be capable of applying the compression load to the specimen through a suitable compression jig designed to provide self-alignment with specimen.

6.4 Chemical agent

The chemical agent shall consist of the media to which the chemical resistant materials are to be exposed in service.

7 Test specimen

7.1 Number

The number of specimen required is dependent upon the number of test media to be employed, the number of different temperatures at which testing is performed and the frequency of test intervals. In any case the test specimen shall consist of sets of a minimum of three cylinders for one medium, at a single temperature and for each test interval. In addition one set of at least three specimens shall be available for test immediately following the conditioning period, and other sets of at least three, equivalent to the number of test temperatures, for the total test period. Calculate the total number of specimen required as follows:

$$N = n\left(M \cdot T \cdot I\right) + n \cdot T + n$$

where

N is the number of specimen
n is the number of specimen for a single test
M is the number of media
T is the number of test temperatures
I is the number of test intervals

7.2 Dimension

The test units shall be cast right cylinders, (25±1) mm in diameter by (25±1) mm high, with flat smooth faces normal to the axis of the cylinder, prepared in moulds described in 6.1 and employing no release agent in the mould.

7.3 Preparation

Mix the components in the ratio specified by the manufacturer's instructions. Blend the parts using a suitable hand tool or machine mixer, ensuring that any ingredients are thoroughly and uniformly mixed.
Place the product in the mould with a spatula, taking care to ensure complete filling of the mould cavity without entrapment of air. Scrape off the excess material with a flat trowel, making the exposed surface as smooth and even as possible. Permit the material to remain in the mould until it has set sufficiently to allow removal without danger of deformation or breakage.

7.4 Conditioning

Condition the test units for 7 days in standard conditions, 7 days includes the mixing time in the mould. After the 7 days proceed as described in 8.5 on one set of specimens.

8 Procedure

8.1 Immediately following the conditioning period measure the diameter of all test specimen to the nearest 0,03 mm using a micrometer. Make two measurements at right angles to each other and record the diameter as the average of the two.
Following the diameter measurement weigh all the specimen to the nearest 0,001 g on an analytical balance and record the values. Prior to immersion record a brief description of the colour and surface appearance of the specimen and of colour and transparency of the test medium.

8.2 Place the weighed specimen, to be immersed, on their curved sides into the container (6.2) taking care to prevent the cylinder faces coming in contact with each other. The total number of specimen per container is only limited except by the ability of the container to hold the specimen plus the required amount of test medium per specimen.

8.3 Add (100±5) ml of the chemical agent for each specimen and place the closed container in a constant-temperature oven adjusted to the required temperature or in a suitably adjusted liquid bath simulating the actual service and exposure as closely as possible. Replace agents that are known to be unstable, as often as necessary, in order to maintain the original chemical composition and concentration, for the planned intervals.

8.4 Remove the specimen after 28 days of immersion to determine the chemical attack. If necessary employ other exposure periods.

Clean the specimen by three quick rinses in running cold tap water and quick dry by blotting with a paper towel between each rinse. After the final blotting allow the specimen to dry for 30 min, resting on its curved surface, weigh to the nearest 0,001 g and measure the diameter of the test specimen as described in 8.1.

Note any indication of surface attack on the specimen, any discoloration of the test specimen and the formation of any sediment.

8.5 Determine the compressive strength for one set of specimens:
- immediately after the conditioning period,
- after the exposure period for each chemical agent and each temperature,
-after ageing in air for the total test period at each test temperature.

The elapsed time between the removal of the specimen from the test medium and the compressive test should be uniform for all specimens. Place each specimen in the testing machine with the plane faces of the cylinder in contact with the surface of the compression tool or cage. Apply the load to the specimen at a crosshead movement of (5,5±0,5) mm/min when the machine is running without load. Break the specimen and record the maximum load.

9 Evaluation and expression of results

9.1 Weight change

Calculate to the nearest 0,01 % the percentage loss or gain in weight of the specimen during exposure for each examination period as follows:

$$\Delta W = \left[(W - C)/C\right] \cdot 100$$

where:

ΔW is the weight change expressed in percentage
W is the weight of the specimen after immersion in grams
C is the weight of the specimen after initial conditioning in grams

Determine the mean of the three values or more. A result showing a plus (+) sign shall indicate a gain in weight and a minus (-) sign shall indicate a loss.

9.2 Diameter change

Calculate to the nearest 0,01 % the percentage change of the diameter of the specimen during exposure for each examination period, taking the diameter after the 7 days conditioning as 100 %.

Change in diameter is given by:

$$\Delta D = \left[(D_2 - D_1)/D_1\right] \cdot 100$$

where:

ΔD is the diameter change expressed in percentage
D_2 is the diameter of the specimen after the exposure period in millimetres
D_1 is the diameter of the specimen after the initial conditioning in millimetres

Determine the mean of three values or more. A result showing a plus (+) sign shall indicate a gain in diameter and a minus (-) sign shall indicate a loss.

9.3 Change of compressive strength value

Calculate to the nearest 0,01 % the percentage decrease or increase of compressive strength of the specimen during exposure for each examination period, taking the compressive strength after the 7 days conditioning period in standard conditions as 100 %. Calculate the cross sectional area of the specimen on the diameter value as determined in 8.1.

Change in compressive strength is given by: