



SLOVENSKI STANDARD

SIST EN 480-5:1998

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Admixture for concrete, mortar and grout - Test methods - Part 5: Determination of capillary absorption

Zusatzmittel für Beton, Mörtel und Einpreßmörtel - Prüfverfahren - Teil 5: Bestimmung der kapillaren Wasseraufnahme

Adjuvants pour béton, mortier et coulis - Méthodes d'essai - Partie 5: Détermination de l'absorption capillaire

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Ta slovenski standard je istoveten z: EN 480-5:1996

ICS:

91.100.10	Cement. Mavec. Apno. Malta	Cement. Gypsum. Lime. Mortar
91.100.30	Beton in betonski izdelki	Concrete and concrete products

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EUROPEAN STANDARD

EN 480-5

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September 1996

ICS 91.100.10; 91.100.30

Descriptors: construction materials, concrete, mortars : material, grouting, concrete admixtures, tests, water absorption tests, capillarity

English version

**Admixtures for concrete, mortar and grout - Test
methods - Part 5: Determination of capillary
absorption**

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This European Standard was approved by CEN on 1996-08-04. 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.

The European Standards exist 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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 104 "Concrete (performance, production, placing and compliance criteria)", the secretariat of which is held by DIN.

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 March 1997, and conflicting national standards shall be withdrawn at the latest by March 1997.

This standard is applicable together with the other standards of the series EN 480 for testing admixtures according to the series EN 934.

This Standard series EN 480 consists of the following parts:

- Part 1: Reference concrete and reference mortar for testing
- Part 2: Determination of setting time
- Part 4: Determination of bleeding of concrete
- Part 5: Determination of capillary absorption
- Part 6: Infrared analysis
- Part 8: Determination of the conventional dry material content
- Part 10: Determination of water soluble chloride content
- Part 11: Determination of air void characteristics in hardened concrete
- Part 12: Determination of the alkali content of admixtures

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

1 Scope

This European Standard describes a test method for the determination of the effect of admixtures on the capillary absorption of mortar.

2 Normative references

This 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 196-1 Methods of testing cement - Part 1: Determination of strength

EN 413-2 Masonry cement - Part 2: Test methods

EN 480-1 Admixtures for concrete, mortar and grout - Test methods - Part 1: Reference concrete and reference mortar for testing

3 Principle

The test consists of measuring the mass of water absorbed by a mortar test sample under specified conditions.

4 Apparatus

- a) Balance with an accuracy of 0,1 g;
- b) Receptacle 200 mm high large enough to contain twelve prismatic specimens, with a flat base and a cover;
- c) A means of allowing a constant level of water to be maintained in the receptacle;
- d) Equipment for the preparation of (40 x 40 x 160) mm prisms made of mortar that conforms to EN 196-1;
- e) An enclosure controlled at $(20 \pm 2) ^\circ\text{C}$ and $(65 \pm 5) \%$ relative humidity.

5 Reference mortar

The reference mortar shall be as specified in EN 480-1. The test mix shall either have the same consistence as the control mix as described in EN 480-1 or the test mix shall have the same water/cement ratio as the control mix¹⁾. The water content of the admixture shall be taken into account when calculating the required water content of the test mix.

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6 Test Specimens

6.1 Preparation of test specimens

Materials for the control mix and test mix, and moulds for the test specimens, shall be conditioned for at least 24 h before use. Conditioning shall be by placing in an enclosure maintained at $(20 \pm 2) ^\circ\text{C}$ and $(65 \pm 5) \%$ relative humidity.

Mixing of the mortar shall be as described in EN 480-1. Mortar specimens (40 x 40 x 160) mm shall be prepared as described in EN 196-1 except that the moulds shall not be oiled.

In case of equal w/c ratio the water content of the admixture shall be taken into account when calculating the required water content of the mortar.

In case the test mix shall have the same consistence as the control mix this shall be measured by using the workability meter in accordance with EN 413-2.

6.2 Number of specimens

Twelve specimens shall be tested as follows:

- 6 specimens for control mix;
- 6 specimens for test mix.

6.3 Curing of specimens

On both the control mix and the test mix, two series of measurements of capillary absorption shall be carried out. The first series shall be performed on three specimens of test mix and three specimens of control mix after 7 days curing. The second series shall be carried out on the other specimens after 90 days curing. The specimens shall be demoulded after 24 h and further cured in the enclosure (see 4e) until 7 days and 90 days old respectively.

¹⁾ The use of constant consistence or constant water/cement ratio is specified in the requirements or agreed between the purchaser and supplier.

7 Procedure

7.1 Placing of specimens

The specimens shall be weighed (M_0) in the enclosure (see clause 4e) when 7 days or 90 days old as appropriate and placed vertically in a receptacle (see clause 4b) containing water at a constant level.

The samples shall rest on rods or pins to allow free access of water to the base. The water level shall be maintained at (3 ± 1) mm above the base of the specimen.

Avoid contact between the specimens.

Immediately after placing the specimens in position, put the cover on the receptacle.

7.2 Weighing

At the time specified in 7.3, each specimen shall be removed from the receptacle, wiped lightly with dry paper or cloth in order to remove any surplus water, weighed (M_j) and then again put vertically in the receptacle. The other specimens in each series shall be treated individually in the same way.

7.3 Test schedule

a) Specimens cured for 7 days under the conditions specified in 6.3 shall then be tested after 1 day and after 7 days in contact with water as described in 7.2.

b) Specimens cured for 90 days under the conditions specified in 6.3 shall then be tested after 1 day, 7 days and 28 days in contact with water as described in 7.2.

8 Results

The results obtained by testing three specimens at each date, for each type of mortar (control mix and test mix) are expressed as the mean of the three measured values.

Capillary absorption (C_A) after the required time is given in g/mm^2 by

$$C_A = \frac{M_j - M_0}{1600} \quad (1)$$

where

M_0 is the mass of the specimen after curing for 7 days or 90 days, in grams,

M_j is the mass of the specimen after the required absorption time, in grams.