



SLOVENSKI STANDARD
SIST EN 480-1:2007

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

Zusatzmittel für Beton, Mörtel und Einpressmörtel - Prüfverfahren - Teil 1: Referenzbeton und Referenzmörtel für Prüfungen

Adjuvants pour béton, mortier et coulis - Méthodes d'essai - Partie 1: Béton et mortier de référence pour essais

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Ta slovenski standard je istoveten z: EN 480-1:2006

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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English Version

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

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Zusatzmittel für Beton, Mörtel und Einpressmörtel -
Prüfverfahren - Teil 1: Referenzbeton und Referenzmörtel
für Prüfungen

This European Standard was approved by CEN on 19 June 2006.

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, 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.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 480-1:2006) has been prepared by Technical Committee CEN/TC 104 "Concrete and related products", 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 May 2007, and conflicting national standards shall be withdrawn at the latest by May 2007.

This document supersedes EN 480-1:1997.

This European Standard is part of the series EN 480 *Admixtures for concrete, mortar and grout – Test methods* which comprises the following:

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*

Part 13 *Reference masonry mortar for testing mortar admixtures*

Part 14 *Determination of the effect on corrosion susceptibility of reinforcing steel by potentiostatic electrochemical test*

This standard is applicable together with the standards of the series EN 934 *Admixtures for concrete, mortar and grout – Concrete admixtures*.

Notification of revisions:

The previous edition EN 480-1:1997 has been revised as follows:

- choice of two strength classes for reference cement;
- deletion of the requirement to perform the test with four different cement types;
- changes in Table 1 for grading of aggregate;
- temperature of stored materials and fresh concrete;
- details of mixing and testing;

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- details of determination of consistence;
- general editorial revision.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, 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.

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1 Scope

This European Standard specifies the constituent materials, the composition and the mixing method to produce reference concrete and reference mortar for testing the efficacy and the compatibility of admixtures in accordance with the series EN 934.

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, *Methods of testing cement — Part 1: Determination of strength*

EN 196-2, *Methods of testing cement — Part 2: Chemical analysis of cement*

EN 196-6, *Methods of testing cement — Part 6: Determination of fineness*

EN 197-1, *Cement — Part 1: Composition, specifications and conformity criteria for common cements*

EN 413-2, *Masonry cement — Part 2: Test methods*

EN 934 (all parts), *Admixtures for concrete, mortar and grout*

EN 1008, *Mixing water for concrete — Specification for sampling, testing and assessing the suitability of water, including water recovered from processes in the concrete industry, as mixing water for concrete*

EN 12350-6 *Testing fresh concrete — Part 6: Density*

EN 12350-7, *Testing fresh concrete — Part 7: Air content — Pressure methods*

EN 12390-1, *Testing hardened concrete — Part 1: Shape, dimensions and other requirements for specimens and moulds*

EN 12390-2, *Testing hardened concrete — Part 2: Making and curing specimens for strength tests*

EN 12620, *Aggregates for concrete*

3 Constituent materials

3.1 Cement

The reference concrete and mortar shall be made with a CEM I cement of strength class 42,5 or 52,5 conforming to EN 197-1.

The cement used shall have a C₃A content of 7 % to 11 % by mass calculated from chemical analysis according to EN 196-2 and a specific surface of 3 200 cm²/g to 4 000 cm²/g determined according to EN 196-6.

3.2 Aggregate

3.2.1 Aggregate for reference concrete

A natural normal weight aggregate conforming to EN 12620 with low water absorption (less than 2 % by mass) shall be used. The size fractions of the aggregate used in the production of reference concretes shall lie within the limits given in Table 1.

Table 1 — Aggregate for reference concrete

Aperture size (mm)	Percentage by mass passing the test sieve ^{a b}
31,5	100
16,0	75 to 95
8,0	45 to 70
4,0	35 to 50
2,0	25 to 40
1,0	20 to 35
0,5	10 to 25
0,25	4 to 12
0,125	1 to 8

^a The range is selected to accommodate both crushed and uncrushed aggregate.

^b The variation in the quantity passing each sieve of the chosen grading for both mixes (control and test mix) shall not exceed $\pm 2,0$ % by mass.

3.2.2 Aggregate for reference mortar

Standard sand according to EN 196-1 shall be used as the aggregate for the reference mortar.

3.3 Mixing water

Water according to EN 1008 shall be used as mixing water.

Distilled or de-ionised water may be used in special cases.

It is not allowed to use wash water from concrete production.

4 Reference concrete

Unless otherwise specified, tests on reference concrete are performed as comparative tests. That is, the performance of admixtures is determined by comparing the reference concrete containing an admixture (test mix) with the reference concrete made without an admixture (control mix) but otherwise with the same aggregate/cement ratio and constituent materials from the same delivery.

The requirements of reference concretes shall be as given in Table 2. The fresh concrete shall be fully compacted. The air content in the control mix shall not exceed 2 % by volume.

Table 2 — Requirements for reference concrete ^a

Reference concrete	Cement content ^c kg/m ³	Consistence at required test temperature	
		Slump ^b (mm)	Flow ^d (mm)
I	350 ± 5	70 ± 10	400 ± 20
II	300 ± 5	120 ± 20	450 ± 20
III	350 ± 5	50 ± 10	350 ± 10
IV	350 ± 5	30 ± 10	350 ± 20
^a When testing at equal w/c ratio the requirements for consistence shall only apply to the control mix. ^b These tests are alternatives and have to be chosen before starting the test. Slump shall be determined in accordance with EN 12350-2 or flow in accordance with EN 12350-5 respectively. ^c Control mix only: The resulting cement content of the test mix may change as a result of volume change to concrete caused by water reducing or air entraining effects of the admixture under test. ^d For high range water reducing/superplasticising admixture the consistence of the test mix shall be not less the consistence of the control mix with no upper limit on consistence of the test mix.			

5 Reference mortar

Unless otherwise specified, tests on reference mortar are performed as comparative tests. That is, comparing the performance of the reference mortar containing an admixture (test mix) with the performance of the reference mortar without an admixture (control mix).

Standard mortar conforming to EN 196-1 shall be used as the reference mortar.

6 Production of reference concrete

6.1 Mix proportion

The cement content shall be in accordance with Table 2.

Aggregate shall be used in an oven dry condition (≥ 150 °C) to remove doubts on moisture content variation. If the aggregate is not oven dry, its moisture content shall be determined and the specific gravity shall be corrected accordingly. In case of dispute, oven dry aggregate shall be used.