



SLOVENSKI STANDARD

SIST EN 480-13:2003

01-januar-2003

Kemijski dodatki za beton, malto in injekcijsko maso - Metode preskušanja - 13. del: Referenčna malta za zidanje za preskušanje kemijskih dodatkov za malte

Admixtures for concrete, mortar and grout - Test methods - Part 13: Reference masonry mortar for testing mortar admixtures

Zusatzmittel für Beton, Mörtel und Einpressmörtel - Prüfverfahren - Teil 13: Referenz-Baumörtel für die Prüfung von Zusatzmitteln für Mörtel

Adjuvants pour béton, mortier et coulis - Méthodes d'essai - Partie 13: Mortier a maçonner de référence pour les essais menés sur les adjuvants de mortier

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ICS:

91.100.10 Cement. Mavec. Apno. Malta Cement. Gypsum. Lime.
Mortar

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 480-13

August 2002

ICS 91.100.10

English version

Admixtures for concrete, mortar and grout - Test methods - Part 13: Reference masonry mortar for testing mortar admixtures

Adjuvants pour béton, mortier et coulis - Méthodes d'essai -
Partie 13: Mortier à maçonner de référence pour les essais
menés sur les adjuvants de mortier

Zusatzmittel für Beton, Mörtel und Einpressmörtel -
Prüfverfahren - Teil 13: Referenz-Baumörtel für die Prüfung
von Zusatzmitteln für Mörtel

This European Standard was approved by CEN on 10 May 2002.

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 Management Centre 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 Management Centre 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, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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Foreword

This document (EN 480-13:2002) 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 February 2003, and conflicting national standards shall be withdrawn at the latest by February 2003.

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, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

This document has been prepared by subcommittee 3 (SC 3) "Admixtures" of TC 104.

The present standard is applicable together with the standards of the series EN 480 and EN 934.

1 Scope

This Standard specifies the constituent materials, the composition and the mixing procedure to produce a reference masonry mortar with a prescribed consistence for testing mortar admixtures as defined in EN 934-3. It also describes the determination of the water reduction of the test mix compared to the control mix.

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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 (including amendments).

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.*

prEN 934-3, *Admixtures for concrete, mortar and grout - Part 3: Admixtures for masonry mortar - Definitions, requirements and conformity.*

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 1015-4, *Methods of test for mortar for masonry — Part 4: Determination of consistence of fresh mortar (by plunger penetration).*

EN 1015-7, *Methods of test for mortar for masonry — Part 7: Determination of air content of fresh mortar.*

EN 480-13:2002 (E)**3 Constituent materials****3.1 Cement**

The reference masonry mortar shall be made with CEM I cement of strength class 42.5, conforming to EN 197-1.

The cement used shall have a C_3A content of 7 %–11 % by mass calculated from chemical analysis according to EN 196-2 and a specific surface area of (320–400) m^2/kg determined according to EN 196-6.

3.2 Sand

A natural sand of normal density (relative density 2,5–2,8) shall be used. The size fractions of the sand shall comply with Table 1. The sand shall be used in an oven dry condition.

Table 1 — Sand for reference masonry mortar

Aperture size (mm)	Percentage by mass passing the test sieve
4,0	100
2,0	94–100
1,0	77–87
0,5	60–70
0,25	39–49
0,125	13–23
0,063	0–2

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3.3 Mixing water

Water according to EN 1008 shall be used as mixing water.¹⁾

4 Reference masonry mortar

Where 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). The air content of the control mix shall not exceed 5 % by volume when determined in accordance with EN 1015-7 method A.

1) Distilled or deionised water can be used for special tests.

5 Production of reference masonry mortar with standard consistence

5.1 Mix proportions

The control and test mixes shall be in accordance with Table 2.

Table 2 — Mix details

	Control mix	Test mix
Sand	3 440 g	3 440 g
Cement	640 g	640 g
Admixture	Nil	Compliance Dose
Water	As required	As required
Consistence measured according to EN 1015-4	40 ± 5 mm	within ± 3 mm of consistence of control mix

Record to the nearest 1 g the total quantity of water required (including any contributed by the admixture).

For test mix mortars, the quantity of admixture added shall be sufficient to produce the required air content and retardation time if appropriate. The dose of admixture shall be recorded.

5.2 Mixing procedure

Prior to mixing, each of the constituents shall be conditioned to a temperature of (20 ± 2) °C.

Place all the sand and then the cement in the mixing bowl of a mixer complying with EN 196-1 and mix for 30 s at low speed.

Continue mixing and add half of the mixing water during the next 30 s and mix for a further 60 s.

During a further 30 s of mixing add the third quarter of the water and the admixture²⁾.

During a further 30 s of mixing add the final quarter of the mixing water. If necessary, the quantity of water shall be adjusted to obtain the required consistence.

Continue mixing at low speed for 60 s after all the water has been added.

Stop the mixer for 60 s. During this time loosen any unmixed material adhering to the sides and bottom of the bowl, using the mixer paddle, so that it is dispersed during subsequent mixing.

Restart the mixer at high speed and mix for 60 s. Total mixing process time shall be 6 min.

Immediately after completion of mixing, the consistence shall be determined in accordance with EN 1015-4 and the air content in accordance with EN 1015-7 method A. If the required consistence and air content are not achieved, the mix shall be discarded. A new test mix shall be prepared with the water content adjusted.

5.3 Mortar for test after standing

Prepare a test mix as described in 5.1 and 5.2. Cover the mixing bowl to prevent loss of water by evaporation and allow to stand for the period of time prescribed in prEN 934-3. After the required standing period from completion of mixing, remix the mortar in the bowl for 10 s using a palette knife.

2) If recommended by the manufacturer, admixtures can be added at a different time in the mixing sequence.

EN 480-13:2002 (E)**5.4 Mortar for test after extended mixing**

Prepare a test mix as described in 5.1 and 5.2. Then continue mixing at low speed for a further 15 min.

6 Calculation of water reduction (air entraining/plasticizing admixtures)

Calculate the percentage water reduction, W , resulting from inclusion of the admixture, from the following formula:

$$W = \frac{(C - T)}{C} \times 100$$

where

C is the water requirement of the control mix in g;

T is the water requirement of the test mix in g, including the water content of the admixture.

The water reduction shall be reported to the nearest 1 %.

7 Test report

The test report shall include the following information for control and test mixes:

- Cement
 - Factory where produced
 - Type
 - C3A content
 - Specific surface area
- Sand
 - Source
 - Type
 - Grading
- Consistence
- Air content
- Water content of each mix
- Water reduction of test mix (for air entraining/plasticizing admixtures)
- Admixture name, batch/reference number and dose in g.

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