SLOVENSKI STANDARD
SIST EN 13395-4:2002

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Proizvodi in sistemi za zaģļ ito in popravilo betonskih konstrukcij - Preskusne metode - Doloļ evanje obdelavnosti - 4. del: Uporabnost malte za popravila nad glavo

Products and systems for the protection and repair of concrete structures - Test methods - Determination of workability - Part 4: Application of repair mortar overhead

Produkte und Systeme für den Schutz und die Instandsetzung von Betontragwerken - Prüfverfahren - Bestimmung der Verarbeitbarkeit - Teil 4: Überkopfanwendung von Instandsetzungsmörtel

Produits et systemes pour la protection et la réparation des structures en béton - Méthodes d'essai - Détermination de la maniabilité - Partie 4: Application de mortier de réparation en sous-face

Ta slovenski standard je istoveten z: **EN 13395-4:2002**

ICS:

91.080.40	Betonske konstrukcije	Concrete structures
91.100.10	Cement. Mavec. Apno. Malta	Cement. Gypsum. Lime. Mortar

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EUROPEAN STANDARD

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English version

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This European Standard was approved by CEN on 4 January 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.

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

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Contents

Foreword

This document EN 13395-4:2002 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 November 2002, and conflicting national standards shall be withdrawn at the latest by December 2002.

It is one of a series of inter-related parts dealing with the workability of repair grouts, mortars and concretes. The other parts of this standard are:

— *Part 1: Products and systems for the protection and repair of concrete structures - Test methods - Determination of workability - Part 1: Test for flow of thixotropic mortars.*

— *Part 2: Products and systems for the protection and repair of concrete structures - Test methods - Determination of workability - Part 2: Test for flow of grout or mortar.*

— *Part 3: Products and systems for the protection and repair of concrete structures - Test methods - Determination of workability - Part 3: Test for flow of concrete.*

Annex A is normative.

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.

1 Scope

This European Standard specifies a method for determining the applicability overhead of products and systems for the repair of concrete as defined in prEN 1504-3[1] under usual conditions.

NOTE This method can only demonstrate that products are capable of being applied overhead. It cannot take into account the possible effects of the operative's skill on site.

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 1542, *Products and systems for the repair and protection of concrete structures - Test methods - Measurement of bond strength by pull off.*

EN 1504-1, *Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 1: Definitions.*

EN 1766, *Products and systems for the protection and repair of concrete structures - Test methods - Reference concretes for testing.*

ISO 554, *Standard atmospheres for conditioning and/or testing – Specifications.*

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions contained in EN 1504-1 apply.

4 Principle

The repair mortar or concrete is applied to overhead face of a prepared concrete substrate. After hardening, the pull-off strength is determined and taken for evaluation of overhead applicability.

5 Apparatus

5.1 Standard laboratory climate of (21 ± 2) °C and 60 % ± 10 % RH in accordance with EN 1542 (see annex A).

5.2 Concrete slabs for substrates MC (0,45) according to EN 1766, of dimensions 300 mm × 300 mm × 100 mm, with one grit blasted surface 300 mm × 300 mm.

5.3 Mixer in accordance with EN 196-1 or **forced action pan mixer** for mixing the constituents of the repair mortar or concrete.

5.4 Rigid non absorbent panels for framework.

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[1] Under preperation.

5.5 Trowel and tools to apply the mortar or concrete to the prepared concrete substrates (**5.2**), and a plasterer's steel float for smoothing the surface.

5.6 Core drilling machine with a diamond tool, internal diameter 50 mm according to EN 1542.

5.7 Pull-off equipment for measuring the pull-off strength, according to EN 1542.

6 Test procedure

Two concrete slabs (see **5.2**), conditioned in accordance with the manufacturer's instructions, are mounted with the grit blasted surfaces at the bottom.

NOTE 1 The substrates can be supported by form work on two sides (see **5.4**) to ensure the required uniform thickness of repair mortar or concrete.

The layer thickness shall be (20 ± 2) mm for repair mortars up to 5 mm maximum particle size and (40 ± 4) mm for repair materials with larger maximum particle sizes, unless recommended otherwise by the manufacturer.

All materials shall be conditioned in the standard laboratory climate (**5.1**) for a period of not less than 24 hours prior to mixing.

The repair mortar or concrete is mixed according to the manufacturer's instructions. If no particular instructions are given, the maximum water content should be applied in the case of CC and PCC.

The repair mortar or concrete is applied to the overhead surface of the prepared substrates according to the manufacturer's instructions.

NOTE 2 If required, the substrates may be pre-wetted and/or a bonding aid used.

After application to the required layer thickness, the surface shall be finished with a steel float (**5.5**) to provide a smooth surface. The test specimens shall then be cured and stored according to annex A.

After the cure periods (28 days for CC and PCC, 7 days for PC repair mortars – see annex A) the pull off strength shall be determined for each slab according to EN 1542.

7 Test report

The test report shall include the following information:

a) a reference to this European Standard, including the number, title and date of issue;

b) name and address of the test laboratory;

c) identification number and date of the test report;

d) name and address of the manufacturer or supplier of the product(s);

e) name and identification marks or batch number of the product(s);

f) date of supply of the product(s);

g) date of preparation of the test specimens and any deviation from the prescribed method of preparation, including whether it is a single or multi layer system and whether a bonding agent was used;

h) conditions of storage of prepared specimens prior to test;

i) date of test and details of test equipment used including the make, type and capacity and calibration details or identification number of the apparatus;

j) the test results (single values, mean values and standard deviations) of the pull off test including individual forms of fracture;

k) precision data;

l) date of test report and signature.

Annex A
(normative)

Summary of temperatures and humidities for the curing, conditioning and testing of repair products and systems

A.1 Curing

A.1.1 CC (grouts, mortars and concretes)

— Prepare as EN 196-1, cover in film for 24 h;

— Demould after 24 h;

— Cure under water at (21 ± 2) °C for 27 d.

A.1.2 PCC (grouts, mortars and concretes)

— Prepare as EN 196-1, cover in film for 24 h;

— Demould after 24 h and wrap in film for 48 h;

— Unwrap and cure for 25 d in a standard laboratory climate of (21 ± 2) °C and (60 ± 10) % RH.

A.1.3 PC (grouts, mortars and concretes)

— Prepare as ISO 554;

— Cure for 7 d at (21 ± 2) ° C and (60 ± 10)% RH.

A.2 Conditioning and testing

For specific applications, the following requirements apply:

A.2.1 Standard laboratory climate (Dry conditioning)

Take from the curing/storage environment and condition for 7 d in a standard laboratory climate of (21 ± 2) °C and (60 ± 10) % RH.

A.2.2 Wet Conditioning

— Immerse for 48 h at (21 ± 2) °C, or for CC take directly for test after 28 d of immersion;

— Remove all surface water by standing upright for 30 min before using for tests.