



**SLOVENSKI STANDARD**  
**kSIST FprEN 413-2:2016**

**01-februar-2016**

---

**Zidarski cement - 2. del: Preskusne metode**

Masonry cement - Part 2: Test methods

Putz- und Mauerbinder - Teil 2: Prüfverfahren

Ciment à maçonner - Partie 2 : Méthodes d'essai

**Ta slovenski standard je istoveten z: FprEN 413-2**

---

**ICS:**

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

**kSIST FprEN 413-2:2016**

**en,fr,de**



EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**FINAL DRAFT**  
**FprEN 413-2**

December 2015

ICS 91.100.10

Will supersede EN 413-2:2005

English Version

## Masonry cement - Part 2: Test methods

Ciment à maçonner - Partie 2 : Méthodes d'essai

Putz- und Mauerbinder - Teil 2: Prüfverfahren

This draft European Standard is submitted to CEN members for unique acceptance procedure. It has been drawn up by the Technical Committee CEN/TC 51.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

**Warning** : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

<b>Contents</b>		<b>Page</b>
European foreword.....		4
Introduction .....		5
<b>1</b>	<b>Scope .....</b>	<b>6</b>
<b>2</b>	<b>Normative references.....</b>	<b>6</b>
<b>3</b>	<b>General requirements for testing.....</b>	<b>6</b>
<b>3.1</b>	<b>Laboratory .....</b>	<b>6</b>
<b>3.2</b>	<b>Manufacturing tolerances for test equipment.....</b>	<b>6</b>
<b>3.2.1</b>	<b>Dimensions .....</b>	<b>6</b>
<b>3.2.2</b>	<b>Mass.....</b>	<b>6</b>
<b>3.3</b>	<b>Tolerances for test equipment in use .....</b>	<b>6</b>
<b>3.4</b>	<b>Number of tests.....</b>	<b>6</b>
<b>4</b>	<b>Determination of setting time .....</b>	<b>7</b>
<b>4.1</b>	<b>General.....</b>	<b>7</b>
<b>4.2</b>	<b>Method A.....</b>	<b>7</b>
<b>4.3</b>	<b>Method B.....</b>	<b>7</b>
<b>4.3.1</b>	<b>Test principle.....</b>	<b>7</b>
<b>4.3.2</b>	<b>Initial setting time procedure.....</b>	<b>7</b>
<b>4.3.3</b>	<b>Report - initial setting time.....</b>	<b>8</b>
<b>4.3.4</b>	<b>Final setting time procedure.....</b>	<b>8</b>
<b>4.3.5</b>	<b>Report - final setting time.....</b>	<b>8</b>
<b>4.3.6</b>	<b>Repeatability and reproducibility.....</b>	<b>8</b>
<b>5</b>	<b>Preparation of standard mortar .....</b>	<b>8</b>
<b>5.1</b>	<b>Principle .....</b>	<b>8</b>
<b>5.2</b>	<b>Consistence of fresh mortar by plunger apparatus (reference method).....</b>	<b>8</b>
<b>5.2.1</b>	<b>Apparatus.....</b>	<b>8</b>
<b>5.2.2</b>	<b>Procedure.....</b>	<b>9</b>
<b>5.2.3</b>	<b>Reproducibility.....</b>	<b>9</b>
<b>5.3</b>	<b>Consistence of fresh mortar by flow table (alternative method) .....</b>	<b>9</b>
<b>5.3.1</b>	<b>Method .....</b>	<b>9</b>
<b>5.3.2</b>	<b>Apparatus.....</b>	<b>9</b>
<b>5.3.3</b>	<b>Calibration .....</b>	<b>9</b>
<b>5.3.4</b>	<b>Procedure.....</b>	<b>9</b>
<b>6</b>	<b>Determination of water retention.....</b>	<b>10</b>
<b>6.1</b>	<b>Principle .....</b>	<b>10</b>
<b>6.2</b>	<b>Preparation .....</b>	<b>10</b>
<b>6.3</b>	<b>Apparatus.....</b>	<b>12</b>
<b>6.4</b>	<b>Procedure.....</b>	<b>13</b>
<b>6.5</b>	<b>Repeatability and reproducibility.....</b>	<b>13</b>
<b>7</b>	<b>Determination of air content .....</b>	<b>14</b>
<b>7.1</b>	<b>General.....</b>	<b>14</b>
<b>7.2</b>	<b>Pressure method (reference method).....</b>	<b>14</b>
<b>7.2.1</b>	<b>Principle .....</b>	<b>14</b>
<b>7.2.2</b>	<b>Apparatus.....</b>	<b>14</b>
<b>7.2.3</b>	<b>Calibration .....</b>	<b>14</b>

<b>7.2.4</b>	<b>Procedure.....</b>	<b>14</b>
<b>7.2.5</b>	<b>Repeatability and reproducibility.....</b>	<b>15</b>
<b>7.3</b>	<b>Alcohol method (alternative method).....</b>	<b>16</b>
<b>7.3.1</b>	<b>Principle .....</b>	<b>16</b>
<b>7.3.2</b>	<b>Apparatus.....</b>	<b>16</b>
<b>7.3.3</b>	<b>Procedure.....</b>	<b>16</b>
	<b>Bibliography.....</b>	<b>18</b>

**FprEN 413-2:2015 (E)****European foreword**

This document (FprEN 413-2:2015) has been prepared by Technical Committee CEN/TC 51 “Cement and building limes”, the secretariat of which is held by NBN.

This document is currently submitted to the Unique Acceptance Procedure.

This document will supersede EN 413-2:2005.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

EN 413, *Masonry cement*, consists of the following parts:

- *Part 1: Composition, specifications and conformity criteria;*
- *Part 2: Test methods.*

The main differences between this document and EN 413-2:2005 are:

- updating of normative references;
- revised guidance on the properties of gauzes used in the water retention test;
- inclusion of a requirement to measure plastic density of mortar as part of the determination of air content;
- revised repeatability and reproducibility limits for setting time, water retention and air content (these revisions are based on a round-robin test programme instituted following the introduction of a new class of Masonry cement MC22,5 into EN 413-1).

## Introduction

This draft European Standard includes additional test methods to those described in the EN 196 series, *Methods of testing cement*, that enable the performance of masonry cement to be assessed when used in mortar for bedding masonry units and for rendering and plastering.

**FprEN 413-2:2015 (E)****1 Scope**

This draft European Standard describes reference and alternative test methods to be used when testing masonry cements to assess their conformity to EN 413-1. It gives the tests on fresh mortar for consistence, water retention and air content.

In the event of a dispute, only the reference methods are used.

**2 Normative references**

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 196-3:2005+A1:2008, *Methods of testing cement — Part 3: Determination of setting times and soundness*

EN 459-2:2010, *Building lime — Part 2: Test methods*

**3 General requirements for testing****3.1 Laboratory**

Unless specifically stated to the contrary, all the tests described in this document shall be carried out in a laboratory where the air temperature is maintained at  $(20 \pm 2)$  °C and the relative humidity at not less than 50 %.

**3.2 Manufacturing tolerances for test equipment****3.2.1 Dimensions**

Figures indicating the specified requirements for apparatus used in the tests described in this document shall include essential dimensions for which manufacturing tolerances are given.

Unless otherwise stated, tolerance class m according to EN 22768-1 should be applied.

NOTE Other dimensions are given for guidance.

**3.2.2 Mass**

Specified masses shall have manufacturing tolerances within  $\pm 1$  % of the mass unless otherwise stated.

**3.3 Tolerances for test equipment in use**

Tolerances applying to apparatus, which has been subjected to wear in use shall not exceed twice the corresponding manufacturing tolerance unless alternative requirements are specified.

**3.4 Number of tests**

Where the test is one of a series subject to statistical control, determination of each property by a single test shall be the minimum required.