

SLOVENSKI STANDARD

SIST EN 196-3

prva izdaja
september 1995

Metode preskušanja cementa - 3. del: Določanje časa vezanja in prostorninske obstojnosti (prevzet standard EN 196-3:1994 z metodo platnice)

Methods of testing cement - Part 3: Determination of setting time and soundness

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Méthodes d'essais des ciments - Partie 3: Détermination du temps de prise et de la stabilité

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Prüfverfahren für Zement - Teil 3: Bestimmung der Erstarrungszeiten und der Raumbeständigkeit

Deskriptorji: cement, preskušanje, določanje, čas vezanja, konsistenca, prostorninska obstojnost

ICS 91.100.10

Referenčna številka
SIST EN 196-3:1995 (en)

Nadaljevanje na straneh od II do IV in 1 do 8

UVOD

Standard SIST EN 196-3 (en), Metode preskušanja cementa - 3. del: Določanje časa vezanja in obstojnosti, prva izdaja, 1995, ima status slovenskega standarda in je z metodo platnice prevzet evropski standard EN 196-3, Methods of testing cement - Part 3: Determination of setting time and soundness, 1994, v angleškem jeziku.

NACIONALNI PREGOVOR

Evropski standard EN 196-3:1994 je pripravil tehnični odbor Evropske organizacije za standardizacijo CEN/TC 51 Cement in apno.

Odločitev za prevzem tega standarda po metodi platnice je sprejela delovna skupina USM/TC CAA/WG 1 Cement, potrdil pa tehnični odbor USM/TC CAA Cement, apno in vlaknato cementni izdelki.

Ta slovenski standard je dne 1995-08-29 odobril direktor USM.

SLOVENSKI STANDARD SIST EN 196 ZA PRESKUŠANJE CEMENTA OBSEGA NASLEDNJE DELE:

- | | |
|--------------------------|--|
| SIST EN 196-1:1995 (en) | Metode preskušanja cementa - 1. del: Določanje trdnosti |
| SIST EN 196-2:1995 (en) | Metode preskušanja cementa - 2. del: Kemijska analiza cementa |
| SIST EN 196-3:1995 (en) | Metode preskušanja cementa - 3. del: Določanje časa vezanja in prostorninske obstojnosti |
| SIST ENV 196-4:1995 (en) | Metode preskušanja cementa - 4. del: Kvantitativno določanje sestavin |
| SIST EN 196-5:1995 (en) | Metode preskušanja cementa - 5. del: Določanje pucolanske aktivnosti za pucolanske cemente |
| SIST EN 196-6:1995 (en) | Metode preskušanja cementa - 6. del: Določanje finosti |
| SIST EN 196-7:1995 (en) | Metode preskušanja cementa - 7. del: Metode odvzemanja in priprave vzorcev cementa |
| SIST EN 196-21:1995 (en) | Metode preskušanja cementa - 21. del: Določanje količine kloridov, ogljikovega dioksida in alkalij v cementu |

PREDHODNA IZDAJA

- JUS B.C8.023:1982 (sh) Cementi - Metode ispitivanja fizičnih osobina cementa

OSNOVA ZA IZDAJO STANDARDARDA

- Prevzem standarda EN 196-3:1994

OPOMBI

- Povsod, kjer se v besedilu standarda uporablja izraz "evropski standard", v SIST EN 196-3:1995 to pomeni "slovenski standard".
- Uvod in nacionalni predgovor nista sestavni del standarda.

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EUROPEAN STANDARD

EN 196-3

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 1994

ICS 91.100.10

Supersedes EN 196-3:1987

Descriptors: Cements, tests, determination, setting time, consistency, stability

English version

Methods of testing cement - Part 3: Determination of setting time and soundness

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Méthodes d'essais des ciments - Partie 3: Détermination du temps de prise et de la stabilité (standards.iteh.ai) Prüfverfahren für Zement - Teil 3: Bestimmung der Erstarrungszeiten und der Raumbeständigkeit

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This European Standard was approved by CEN on 1994-12-12. 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 was drawn up by Technical Committee CEN/TC 51 'Cement and building limes', of which the secretariat is held by IBN.

The European Standard on the methods of testing cement comprises the following Parts:

- 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 196-3 Methods of testing cement — Part 3: Determination of setting time and soundness
- ENV 196-4 Methods of testing cement — Part 4: Quantitative determination of constituents
- EN 196-5 Methods of testing cement — Part 5: Pozzolanicity test for pozzolanic cements
- EN 196-6 Methods of testing cement — Part 6: Determination of fineness
- EN 196-7 Methods of testing cement — Part 7: Methods of taking and preparing samples of cement
- EN 196-21 Methods of testing cement — Part 21: Determination of chloride, carbon dioxide and alkali content of cement

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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 June 1995, and conflicting national standards shall be withdrawn at the latest by June 1995.

This European standard supersedes EN 196-3:1987

According to the CEN/CENELEC Internal Regulations, 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, United Kingdom.

1 Scope

This European Standard describes the methods for determining setting time and soundness of cements.

It is applicable to all cements covered by ENV 197-1.

This standard describes the reference procedure; it allows the use of alternative procedures as indicated in notes provided that they do not affect the results significantly. In the event of a dispute, only the reference procedure described in this standard shall be used, excluding any alternatives.

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

ENV 197-1

Cement — Composition, specifications and conformity criteria —

Part 1: Common cements

3 Test principles

The setting time is determined by observing the penetration of a needle into cement paste of standard consistence until it reaches a specified value.

The soundness is determined by observing the volume expansion of cement paste of standard consistence as indicated by the relative movement of two needles.

Cement paste of standard consistence has a specified resistance to penetration by a standard plunger. The water required for such a paste is determined by trial penetrations of pastes with different water contents.

4 General requirements for testing

4.1 Laboratory

The laboratory in which specimens are prepared and tested shall be maintained at a temperature of (20 ± 2) °C and a relative humidity of not less than 65 %.

4.2 Apparatus

4.2.1 *Balance*, capable of weighing to the nearest 1 g.

4.2.2 *Graduated cylinder or burette*, capable of measuring to the nearest 1 % of the volume measured.

4.2.3 *Mixer*, conforming to EN 196-1.

4.3 Materials

4.3.1 Distilled or deionized water shall be used for making, storing and boiling specimens.

NOTE. Other water may be used provided that it can be shown to give the same test results.

4.3.2 Cement, water and apparatus used to make and test specimens shall be at a temperature of (20 ± 2) °C.

5 Standard consistence test

5.1 Apparatus

Use the Vicat apparatus as shown in figure 1(a) and 1(b) with the plunger shown in figure 1(c). The plunger (figure 1(c)) shall be of non-corrodible metal in the form of a right cylinder of (50 ± 1) mm effective length and of $(10,00 \pm 0,05)$ mm diameter. The total mass of moving parts shall be (300 ± 1) g. Their movement shall be truly vertical and without appreciable friction, and their axis shall coincide with that of the plunger.

The Vicat mould (see figure 1(a)) to contain the paste under test shall be of hard rubber. It shall be of truncated conical form $(40,0 \pm 0,2)$ mm deep and shall have internal diameters at top and bottom of (70 ± 5) mm and (80 ± 5) mm respectively. It shall be adequately rigid and shall be provided with a plane glass base-plate larger than the mould and at least 2,5 mm thick.

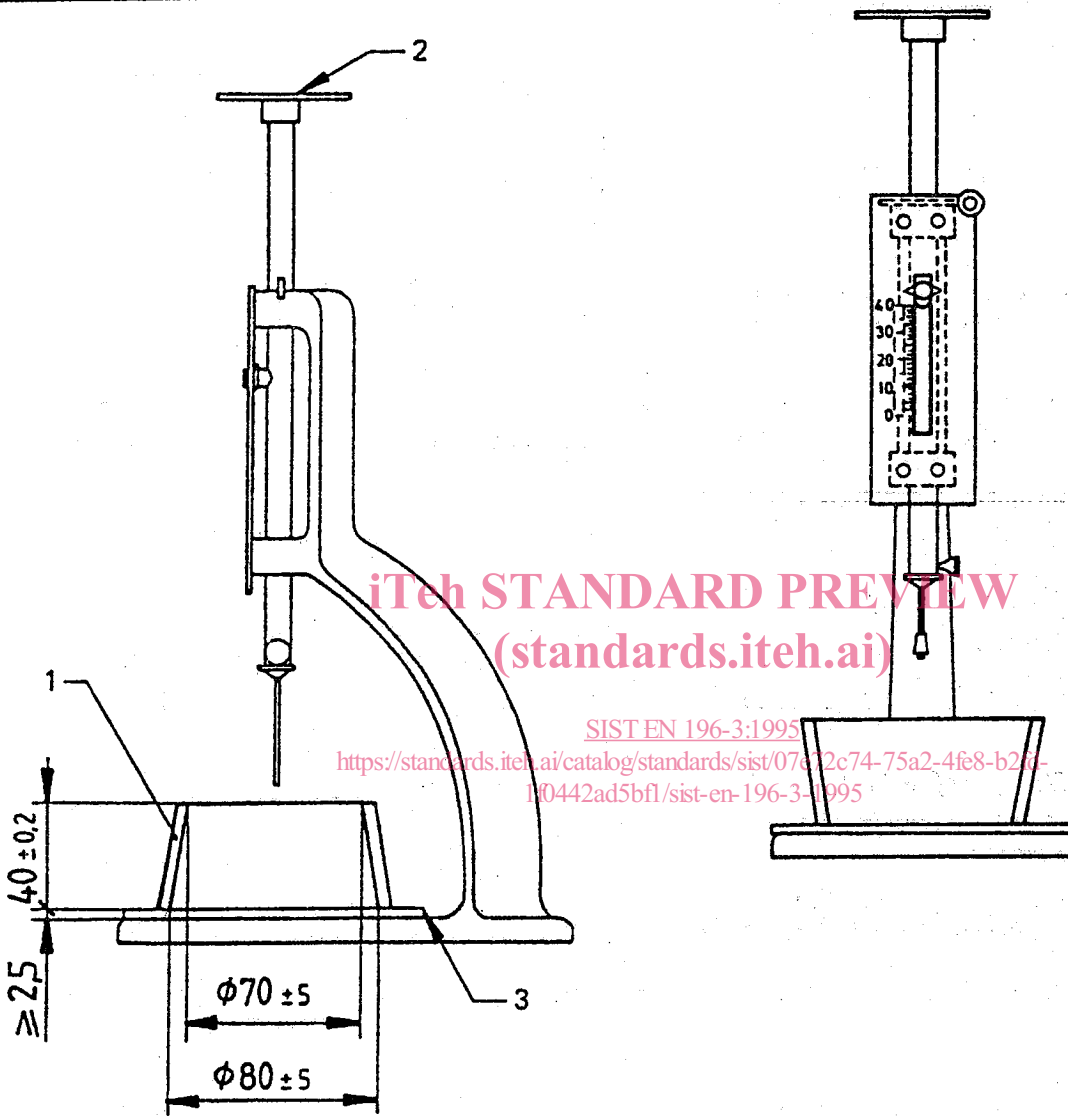
NOTE. Moulds of metal or plastics or of cylindrical form may be used provided that they are of the specified depth and that they can be shown to give the same test results as the specified hard rubber mould of truncated conical form.

5.2 Procedure

5.2.1 Mixing the cement paste

Weigh, to the nearest 1 g, 500 g of cement. Weigh a quantity of water, e.g. 125 g, in the mixer bowl or measure the water from the graduated cylinder or burette and place it into the mixer bowl.

Add the cement carefully to the water in order to avoid loss of water or cement. The time of addition shall be not less than 5 s nor more than 10 s. Note the time of completion of the addition as zero time from which later measurements of time shall be made. Start the mixer immediately and run at low speed for 90 s.



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(a) Side view with mould in upright position for initial setting time determination

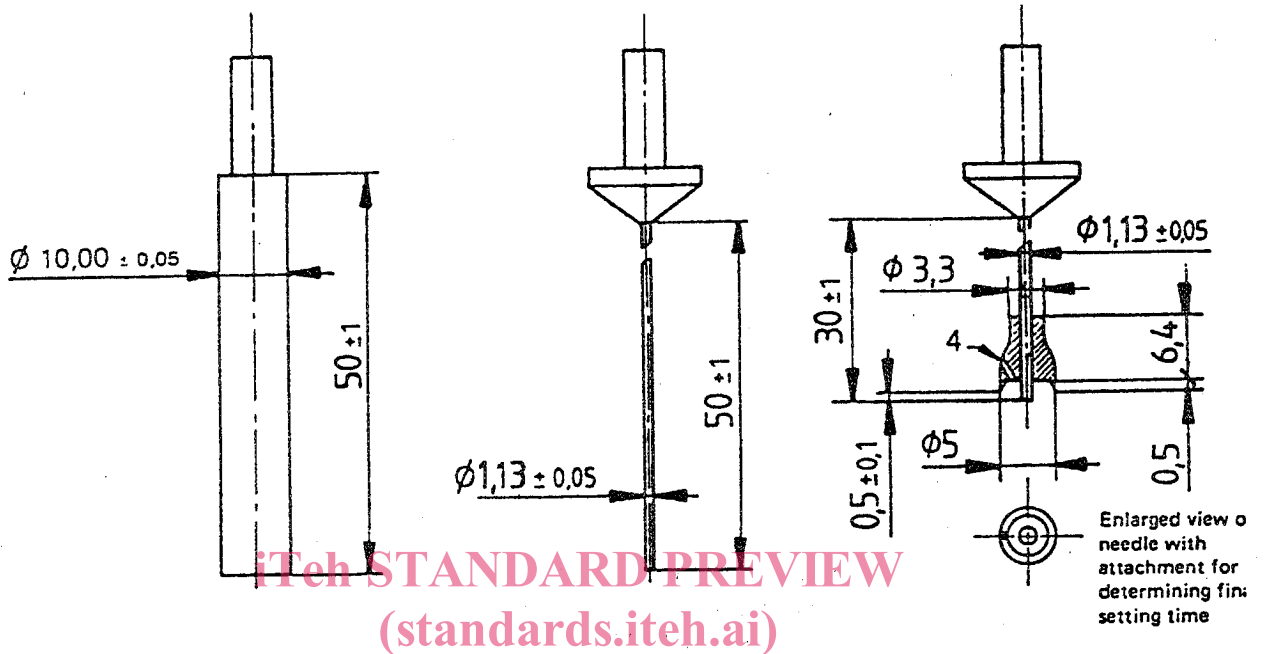
(b) Front view with mould inverted for final setting time determination

- 1. Hard rubber mould
- 2. Platform for correcting weights
- 3. Glass plate

Dimensions in millimetres

NOTE. The specified dimensions have to be observed. If the plunger, needle and needle with attachment are all adjusted to have the same mass, e.g. $(9 \pm 0,5)$ g, one correcting weight is sufficient for each apparatus.

Figure 1. Vicat apparatus for determining the standard consistence and setting time of cement



(c) Plunger for standard consistence

(d) Needle for initial set

(e) Needle and attachment for final set

4. Air vent

Dimensions in millimetres

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NOTE. The specified dimensions have to be observed. If the plunger, needle and needle with attachment are all adjusted to have the same mass, e.g. $(9 \pm 0,5)$ g, one correcting weight is sufficient for each apparatus.

Figure 1. Vicat apparatus for determining the standard consistence and setting time of cement (concluded)