Tsemendi katsetamine. Osa 1: Tugevuse määramine

Methods of testing cement - Part 1: Determination of strength

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 196-1:2005 sisaldab Euroopa standardi EN 196-1:2005 ingliskeelset teksti. Käesolev dokument on jõustatud 28.04.2005 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN 196-1:2005 consists of the English text of the European standard EN 196-1:2005. This document is endorsed on 28.04.2005 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.

Käsitlusala: This document describes the method for the determination of the compressive and, optionally, the flexural strength of cement mortar.	**Scope:** This document describes the method for the determination of the compressive and, optionally, the flexural strength of cement mortar.

ICS 91.100.10

Võtmesõnad: katsekehade valmistamine, katseseadmed, katsetamine, koostis, mört, omadused, paindetugevus, survetugevus, tsement

EUROPEAN STANDARD

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English version

Methods of testing cement - Part 1: Determination of strength

Méthodes d'essais des ciments - Partie 1: Détermination des résistances mécaniques

Prüfverfahren für Zement - Teil 1: Bestimmung der Festigkeit

This European Standard was approved by CEN on 29 December 2004.

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, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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Foreword

This document (EN 196-1:2005) has been prepared by Technical Committee CEN/TC 51 '*Cement and building limes*', the secretariat of which is held by IBN/BIN.

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 August 2005, and conflicting national standards shall be withdrawn at the latest by August 2005.

This document supersedes EN 196-1:1994.

This 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*

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 196-8, *Methods of testing cement — Part 8: Heat of hydration — Solution method*

EN 196-9, *Methods of testing cement — Part 9: Heat of hydration — Semi-adiabatic method*

NOTE A previous Part, EN 196-21: *Methods of testing cement — Part 21: Determination of the chloride, carbon dioxide and alkali content of cement*, has been revised and incorporated into EN 196-2

Another document, ENV 196-4 *Methods of testing cement — Part 4: Quantitative determination of constituents*, has been drafted and will be published as a CEN Technical Report.

This edition introduces the following technical changes based on comments received by the secretariat.

a) The testing procedure has been revised with respect to hardness and surface texture of moulds (4.5) and compression strength testing machine platens (4.8) as supplied; suitability of mould oil (4.5); frequency of operation of jolting apparatus (4.6); the inclusion and accuracy of a balance (4.10); deionised water is now permitted (5.3); procedures for mixing mortar (6.2) and the moulding (7) and conditioning (8) of test specimens have been revised to reflect current best practice.

b) Test results (10) are now reported in megapascals replacing newtons per square millimetre. (One megapascal is equivalent to one newton per square millimetre).

c) The requirement for a flexural strength testing machine (4.7) is now optional.

d) Estimates of the precision for compressive strength testing (10.2.3) have been revised to include both short and long term repeatability together with reproducibility data for laboratories of 'normal' performance and an indication of precision data for 'expert' laboratories.

e) The procedure for validation testing of CEN Standard sand (11.2) includes initial certification testing, validation criteria, verification testing and annual confirmation testing.

f) The procedure for validation testing of alternative compaction equipment (11.3) has been revised and a normative annex (annex A) has been introduced detailing two alternative vibration compaction equipments which have been validated.

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, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This document describes the method for the determination of the compressive and, optionally, the flexural strength of cement mortar. The method applies to common cements and to other cements and materials, the standards for which call up this method. It may not apply to other cement types that have, for example, a very short initial setting time.

The method is used for assessing whether the compressive strength of cement is in conformity with its specification and for validation testing of a CEN Standard sand, EN 196-1, or alternative compaction equipment.

This document describes the reference equipment and procedure and allows alternative compaction equipment and procedures to be used provided that they have been validated in accordance with the appropriate provisions in this document. In the event of a dispute, only the reference equipment and procedure are used.

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

EN 196-7, *Methods of testing cement — Methods of taking and preparing samples of cement*

EN ISO 1302, *Geometrical Product Specifications (GPS) — Indication of surface texture in technical product documentation (ISO 1302:2002)*

EN ISO 7500-1, *Metallic materials — Verification of static uniaxial testing machines — Part 1: Tension/compression testing machines - Verification and calibration of the force-measuring system (ISO 7500-1:2004)*

ISO 565, *Test sieves — Metal wire cloth, perforated metal plate and electroformed sheet — Nominal sizes of openings*

ISO 1101:, *Geometrical Product Specifications (GPS) — Geometrical tolerancing — Tolerances of form, orientation, location and run-out*

ISO 3310-1, *Test sieves — Technical requirements and testing — Part 1: Test sieves of metal wire cloth*

ISO 4200, *Plain end steel tubes, welded and seamless; general tables of dimensions and masses per unit length*

3 Principle

The method comprises the determination of the compressive, and optionally the flexural, strength of prismatic test specimens 40 mm × 40 mm × 160 mm in size.

These specimens are cast from a batch of plastic mortar containing one part by mass of cement, three parts by mass of CEN Standard sand and one half part of water (water/cement ratio 0,50). CEN Standard sands from various sources and countries may be used provided that they have been shown to give cement strength results which do not differ significantly from those obtained using the CEN Reference sand (see Clause 11).