BS EN 196-1:2016

BSI Standards Publication

Methods of testing cement

Part 1: Determination of strength

bsi.

National foreword

This British Standard is the UK implementation of EN 196-1:2016. It supersedes BS EN 196-1:2005 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/516/12, Sampling and testing.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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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

Prüfverfahren für Zement - Teil 1: Bestimmung der Festigkeit

This European Standard was approved by CEN on 20 December 2015.

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Contents

Page

European foreword

This document (EN 196-1:2016) has been prepared by Technical Committee CEN/TC 51 “Cement and building limes”, the secretariat of which is held by NBN.

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of an identical text or by endorsement, at the latest by October 2016, and conflicting national standards shall be withdrawn at the latest by October 2016.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 196-1:2005.

In comparison to EN 196-1:2005, the following changes have been made:

— In Clause 2, the normative references have been updated.

— In 10.2.3 estimates of the precisions for compressive strength testing have been revised with an indication of repeatability and reproducibility at 2 d and 7 d.

— In 6.2 the mixing procedure has been revised with an indication of a maximum timing for the addition in the bowl.

— The standard has been editorially revised.

EN 196 consists of the following parts, under the general title *Methods of testing cement:*

— *Part 1: Determination of strength;*

— *Part 2: Chemical analysis of cement;*

— *Part 3: Determination of setting times and soundness;*

— *Part 4: Quantitative determination of constituents* (CEN/TR 196-4);

— *Part 5: Pozzolanicity test for pozzolanic cement;*

— *Part 6: Determination of fineness;*

— *Part 7: Methods of taking and preparing samples of cement;*

— *Part 8: Heat of hydration - Solution method;*

— *Part 9: Heat of hydration - Semi-adiabatic method;*

— *Part 10: Determination of the water-soluble chromium (VI) content of cement.*

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: 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 the United Kingdom.

1 Scope

This part of EN 196 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 part of EN 196 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 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 196-7, *Methods of testing cement - Part 7: Methods of taking and preparing samples of cement*

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

EN ISO 1101, *Geometrical product specifications (GPS) - Geometrical tolerancing - Tolerances of form, orientation, location and run-out (ISO 1101)*

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

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)*

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

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).