BS EN 196-2:2013

BSI Standards Publication

Method of testing cement

Part 2: Chemical analysis of cement

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National foreword

This British Standard is the UK implementation of EN 196-2:2013. It supersedes BS EN 196-2:2005 which is withdrawn.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

Method of testing cement - Part 2: Chemical analysis of cement

Méthodes d'essais des ciments - Partie 2: Analyse chimique des ciments

Prüfverfarhen für Zement - Teil 2: Chemische Analyse von Zement

This European Standard was approved by CEN on 5 April 2013.

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 CEN-CENELEC 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 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.

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Contents

Page

Foreword

This document (EN 196-2:2013) 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 December 2013, and conflicting national standards shall be withdrawn at the latest by December 2013.

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

This document supersedes EN 196-2:2005.

This edition adds, to the previous version EN 196-2:2005, provisions for the use of X-ray fluorescence (XRF) analysis as an alternative method. In relation to correctly calibrating the method, specified procedures, reference materials and performance criteria are included in order to attain and maintain suitable accuracy and precision for equivalence. The method has not been validated for use yet as a reference procedure for conformity or dispute purposes.

This European Standard on the methods of testing cement is comprised of the following parts:

— *Part 1: Determination of strength*

— *Part 2: Chemical analysis of cement*

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

— *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*

NOTE Another document, CEN/TR 196-4 *Methods of testing cement — Part 4: Quantitative determination of constituents*, has been published as a CEN Technical Report.

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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 European Standard specifies the methods for the chemical analysis of cement.

This document describes the reference methods and, in certain cases, an alternative method which can be considered to be equivalent. In the case of a dispute, only the reference methods are used.

An alternative performance-based method using X-ray fluorescence (XRF) is described for SiO_2, Al_2O_3, Fe_2O_3, CaO, MgO, SO_3, K_2O, Na_2O, TiO_2, P_2O_5, Mn_2O_3, SrO, Cl and Br. When correctly calibrated according to the specified procedures and reference materials, it provides a method equivalent to the reference methods but has not been validated for use yet as a reference procedure for conformity and dispute purposes. It can be applied to other relevant elements when adequate calibrations have been established. This method is based on beads of fused sample and analytical validation using certified reference materials, together with performance criteria. A method based on pressed pellets of un-fused sample can be considered as equivalent, providing that the analytical performance satisfies the same criteria.

Any other methods may be used provided they are calibrated, either against the reference methods or against internationally accepted reference materials, in order to demonstrate their equivalence.

This document describes methods which apply principally to cements, but which can also be applied to their constituent materials. They can also be applied to other materials, the standards for which call up these methods. Standard specifications state which methods are to be 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*

ISO 385, *Laboratory glassware — Burettes*

ISO 835, *Laboratory glassware — Graduated pipettes*

ISO Guide 30, *Terms and definitions used in connection with reference materials*

ISO Guide 31, *Reference materials — Contents of certificates and labels*

3 General requirements for testing

3.1 Number of tests

Analysis of a cement may require the determination of a number of its chemical properties. For each determination, one or more tests shall be carried out in which the number of measurements to be taken shall be as specified in the relevant clause of this document.

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

Where the analysis is not part of a series subject to statistical control, the number of tests for determination of each chemical property shall be two (see also 3.3 and 5.8).

In the case of a dispute, the number of tests for determination of each chemical property shall be two (see also 3.3).