

Methods of testing cement —

Part 21: Determination of the chloride, carbon dioxide and alkali content of cement

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British Standard

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This British Standard, having been prepared under the direction of the Technical Sector Board for Building and Civil Engineering, was published under the authority of the Standards Board and comes into effect on 15 June 1992

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National foreword

This British Standard has been prepared under the direction of the Technical Sector Board for Building and Civil Engineering. It is the English language version of EN 196-21:1989 “*Methods of testing cement; Determination of the chloride, carbon dioxide and alkali content of cement*”, published by the European Committee for Standardization (CEN). EN 196-21 was drawn up by Technical Committee 51, Cement and building limes, as Part 21 of a series on testing cement which was accepted by CEN on 3 October 1989. The UK gave a negative vote at the final voting stage, but under the CEN Rules now in force, is bound to abide by the majority decision and to implement this Part. Thus, the European test procedures have been introduced, where relevant, into the 1991 revisions of British Standards for cement BS 12, BS 146, BS 4027, BS 4246, BS 6588 and BS 6610. This British Standard supersedes clauses **16** and **17** of BS 4550-2 which are withdrawn.

The UK negative vote on this Part was due to the fact that the European methods for alkalis give values for Na_2O equivalent of cement higher by approximately 0.025 % absolute than those obtained using either the current BS or the ASTM methods which have been used in the UK for the purpose of calculating the “reactive” alkali content of concrete.

In consequence, the BS 4550-2:1970 test method is retained as national annex NA to be used only for the determination of the alkali content of cement for the purpose of calculations to check compliance with the maximum value of 3.0 kg/m^3 of Na_2O equivalent for the reactive alkali content of a concrete mix, recommended when aggregate containing an alkali reactive constituent, or when an unfamiliar cement/aggregate combination, is in use (see **4.2.4** of BS 5328-1:1991¹⁾).

However, the European test method is called up in **8.3** of BS 4027:1991²⁾ which specifies the maximum permitted alkali content of sulfate-resisting Portland cement, type Low Alkali.

National annex NB gives the committees responsible for the UK participation in the preparation of this standard.

National annex NC gives details of corresponding British Standards for international standards referred to in the European Standard.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 20, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

¹⁾ BS 5328 Concrete, Part 1:1991 Guide to specifying concrete

²⁾ BS 4027:1991 Specification for sulfate-resisting Portland cement

UDC 666.94:691.54:620.1:543.84

Descriptors: Cements, tests, chemical analysis, determination of content, chlorides, carbon dioxide, alkali

English version

Methods of testing cement; Determination of the chloride, carbon dioxide and alkali content of cement

Méthodes d'essais des ciments; Détermination de la teneur en chlorures, en dioxyde de carbone et en alcalis dans les ciments

Prüfverfahren für Zement; Bestimmung des Chlorid-, Kohlenstoffdioxid- und Alkalianteils von Zement

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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.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Brief history

This European Standard was prepared by Technical Committee CEN/TC 51 “Cement”, the Secretariat of which is held by IBN.

It is intended, in a revision of European Standard EN 196-2, to adopt the methods of test in this standard into EN 196-2, so that this standard will then contain all methods of test required for the chemical analysis of cement.

In accordance with the Common CEN/CENELEC Rules, 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 and United Kingdom.

Foreword

The standard EN 196 on methods of testing cement consists of the following parts:

- *Part 1: Determination of strength;*
- *Part 2: Chemical analysis of cement;*
- *Part 3: Determination of setting time and soundness;*
- *Part 4: Quantitative determination of constituents;*
- *Part 5: Pozzolanicity test for pozzolanic cements;*
- *Part 6: Determination of fineness;*
- *Part 7: Methods of taking and preparing samples of cement;*
- *Part 21: Determination of the chloride, carbon dioxide and alkali content of cement.*

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