

Specification for

High slag blastfurnace cement

Committees responsible for this British Standard

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- British Aggregate Construction Materials Industries
- British Cement Association
- British Precast Concrete Federation
- British Ready Mixed Concrete Association
- Cement Admixtures Association
- Cementitious Slag Makers' Association
- County Surveyors' Society
- Department of the Environment (Building Research Establishment)
- Department of Transport (Highways Agency)
- Electricity Association
- National Rivers Authority
- Quality Ash Association
- Society of Chemical Industry

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Foreword

This edition of this British Standard has been prepared by Subcommittee B/516/6. It introduces technical changes but it does not reflect a full review or revision of the standard, which will be undertaken in due course. It is based on the work of Technical Committee 51, Cement and building limes, of the European Committee for Standardization (CEN), which has prepared a European Prestandard specification for cements published as DD ENV 197-1. As an intrinsic part of this activity, CEN has published EN 196, a series of methods of testing cement, which the UK is implementing to replace the relevant Parts of BS 4550. In consequence, this British Standard specifies requirements in terms of the test procedures in BS EN 196. It supersedes BS 4246:1991 which is withdrawn.

The specification covers a type of blastfurnace cement which was originally intended as a low heat cement for use in structures where large masses of concrete have to be placed. In such masses of concrete, there is often a considerable rise in temperature resulting from the evolution of heat as the cement sets and hardens, and from the slow rate at which this heat is dissipated from the surface. Cracking may result owing to the building up of tensile stresses during the rise and fall of temperature within the mass. Owing to the lower heat of hydration of this type of cement the risk of shrinkage cracking can be reduced. The specification includes an option for the purchaser to specify the heat of hydration, and agree on a method for its measurement with the manufacturer, if advantage is to be taken of the low heat properties of the cement.

Moreover, this cement is now being used for a variety of purposes, e.g. resistance to chemical attack (see BS 8110 and BRE Digest 363) other than for its low heat properties; for those applications due consideration is required of the low early strength which is characteristic of this type of cement, particularly at low temperatures. The rate of strength development of this type of cement is similar to that of low heat Portland cement (see BS 1370) but lower than that of Portland blastfurnace cements (see BS 146).

This standard specification thus covers a cement with uses and strength characteristics different from those in the European Prestandard specification for common cements.

The requirements for compressive strength, physical and chemical properties are specified as characteristic values and conformity is assessed by means of a statistical procedure for continuous inspection operated by the cement manufacturer (autocontrol) (see annex A, derived from DD ENV 197-1). This includes the concept of “major defects” which are “likely to reduce materially the usability of the cement for its intended purpose”. However, DD ENV 197-1 is considered to be inappropriate in its entirety for the manufacture of cement in the UK and the annex therefore incorporates several footnotes identifying specific aspects. In particular, it is assumed, for this edition of this British Standard, that some limits are required for acceptance inspection. Clause 12 therefore gives appropriate values which in several cases are more stringent than those for major defects given in annex A.

The strength requirements are based on the BS EN 196-1 mortar prism test at 28 days. The 7 day minimum is lower than that in DD ENV 197-1.

This edition introduces the following changes.

- a) The two methods of producing high slag blastfurnace cement, i.e. by intergrinding and by dry blending, have been retained (see 6.2). A procedure for combining Portland cement and ground granulated blastfurnace slag in the concrete mixer is included in BS 5328-1.
- b) Compositional requirements are expressed as a percentage of the total mass of the constituents but excluding calcium sulfate and any additives. This departure from the traditional method of calculation in the UK is fully explained in annex B.

c) Guidance on the use of cement has been included in annex C and attention is drawn to the safety precautions recommended therein when working with cement. Cement will partially hydrate when exposed to water vapour, annex C also includes guidance on storage.

New editions of other British Standards for cement, i.e. BS 12, BS 146, BS 4027, BS 6588, BS 6610 and BS 7583 have been prepared at the same time.

Product certification. Purchasers are recommended to specify cement manufactured and supplied to a nationally recognized third party product certification scheme.

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.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 10, 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.

