

Specification for

Low heat Portland cement

UDC 666.942.33

Confirmed December 2009

NO COPYING WITHOUT BSI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW



Document Sharing Hub

Cooperating organizations

The Cement, Gypsum, Aggregates and Quarry Products Standards Committee, under whose direction this British Standard was prepared, consists of representatives from the following Government departments and scientific and industrial organizations:

- Association of Consulting Engineers*
- Autoclaved Aerated Concrete Products Association
- British Precast Concrete Federation Limited*
- British Quarrying and Slag Federation*
- British Railways Board
- British Ready Mixed Concrete Association*
- British Steel Industry
- Cement Admixtures Association
- Cement and Concrete Association*
- Cement Makers' Federation*
- Chemical Industries Association
- Concrete Society Limited*
- Department of the Environment (Building Research Establishment)*
- Department of the Environment (Housing and Construction)
- Department of the Environment (PSA)*
- Department of the Environment (Transport and Road Research Laboratory)*
- Department of Transport
- Federation of Civil Engineering Contractors*
- Federation of Stone Industries
- Greater London Council
- Gypsum Products Development Association
- Institute of Quarrying
- Institution of Civil Engineers*
- Institution of Municipal Engineers
- Institution of Structural Engineers*
- Institution of Water Engineers and Scientists
- National Federation of Building Trades Employers
- Natural Environment Research Council (Institute of Geological Science)
- Royal Institute of British Architects
- Royal Institution of Chartered Surveyors*
- Sand and Ballast Hauliers and Allied Trades Alliance
- Sand and Gravel Association Limited
- Society of Chemical Industry*

This British Standard, having been prepared under the direction of the Cement, Gypsum, Aggregates and Quarry Products Standards Committee, was published under the authority of the Executive Board and comes into effect on 31 July, 1979

© BSI 02-1999

First published April 1947
First revision March 1958
Second revision, as Part 2, June 1974
Third revision, as BS 1370, July 1979

The following BSI references relate to the work on this standard:
Committee reference CAB/1
Draft for comment 77/14421 DC

ISBN 0 580 10847 3

The organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standard:

- Brick Development Association
- British Steel Corporation
- Electricity Supply Industry in England and Wales

Amendments issued since publication

Amd. No.	Date	Comments
4416	March 1984	Indicated by a sideline in the margin

Contents

	Page
Cooperating organizations	Inside front cover
Foreword	ii
1 Scope	1
2 References	1
3 Composition and manufacture of low heat Portland cement	1
4 Tests	1
5 Fineness	1
6 Chemical composition	1
7 Compressive strength	2
8 Setting times	2
9 Soundness	2
10 Heat of hydration	2
11 Manufacturer's certificate	2
12 Independent tests	2
13 Sampling	2
14 Facilities for sampling and identifying	2
15 Compliance	3
16 Cement in tropical climates	3
17 Marking	3
Table 1 — Maximum total sulphur expressed as SO ₃	1
Publications referred to	Inside back cover

Foreword

This British Standard has been revised under the direction of the Cement, Gypsum, Aggregates and Quarry Products Standards Committee, in order to bring it into line with present practice followed in the production and testing of cement. The previous edition, published in 1974 as BS 1370-2 which is now withdrawn, was a metric version of the amended 1958 edition.

This standard covers low heat Portland cement which is intended for use in structures where large masses of concrete have to be placed. The types of concrete work for which the cement is specially suited include concrete dams and many other types of water-retaining structures, bridge abutments, massive retaining walls, piers, slabs, etc. In large masses of concrete there is often a considerable rise in temperature resulting from the heat evolved as the cement sets and hardens and from the slow rate at which it is dissipated from the surface. The contraction which occurs on subsequent cooling sets up tensile stresses in the concrete which may result in cracking. The use of a cement of the type covered by this standard is advantageous since it evolves heat more slowly than ordinary or rapid-hardening Portland cement. The rate of strength development of low heat Portland cement is lower than that of ordinary Portland cement, but the ultimate strength is comparable.

The detailed test methods previously described in the appendices to cement standards have been revised and are now included in BS 4550-2 and BS 4550-3 so that this standard gives only the specification requirements with cross references to the appropriate clauses of BS 4550. The methods of sampling cement for test are now specified in BS 4550-1. It should be noted in particular that various details of the concrete cube strength test, introduced in 1958, have been made more stringent in order to produce more consistent results.

Specified minima for compressive strength are now only given at ages of 3 days and 28 days. The 28-day strength requirement is considered to provide a better indication of cement quality than the 7-day strength. Most of the specified minima for compressive strength represent substantial increases over the values in the previous edition.

The specified minimum fineness, expressed as specific surface, has been revised to permit a reduction in early heat of hydration of cements complying with this standard.

The clause dealing with the composition and manufacture of the cement has been brought into line with the definition now given in BS 4627.

Propylene glycol may be added to the cement clinker before grinding to reduce the energy required. It is driven off by the heat generated during grinding and only traces remain. A method for determining the amount of any propylene glycol in the ground cement has been included in BS 4550-2.

The requirements for lime have been expressed in terms of the lime saturation factor, in line with BS 12. The specified limiting values correspond to those given for lime in the 1974 edition of BS 1370 and are more restrictive than those for ordinary Portland cement and rapid-hardening Portland cement in BS 12.

The limits for total sulphur, expressed as SO_3 , are related to a revised threshold level of tri-calcium aluminate.

The clause in the 1974 edition of this standard, referring to the consistence of standard cement paste, has been incorporated into the clause on setting time.

The clause on delivery in the 1974 edition has been omitted as being a contractual arrangement but a requirement for marking has been introduced.

If necessary cement manufacturers may be consulted informally about the provision of information additional to that required by this standard.