

Specification for

Supersulphated cement

UDC 666.943.4

NO COPYING WITHOUT BSI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW



Document Sharing Hub

Co-operating organizations

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

Association of Consulting Engineers*	Greater London Council*
British Precast Concrete Federation*	Gypsum Products Development Association
British Railways Board	Institution of Civil Engineers*
British Ready Mixed Concrete Association*	Institution of Municipal Engineers*
British Steel Industry*	Institution of Structural Engineers*
Cement and Concrete Association*	Institution of Water Engineers
Cement Makers' Federation*	National Federation of Building Trades
Chemical Industries Association*	Employers*
Concrete Society Limited*	The Royal Institution of Chartered
Department of the Environment	Surveyors*
(Building Research Establishment)*	Sand & Gravel Association of Great Britain
Federation of Civil Engineering	Society of Chemical Industry*
Contractors*	Welwyn Hall Research Association

The Government department and scientific and industrial 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:

British Transport Docks Board	Overseas Geological Surveys
Department of the Environment — Transport	Royal Institute of British Architects
and Road Research Laboratory	Royal Institute of Chemistry

This British Standard, having been approved by the Cement, Lime and Gypsum Products Industry Standards Committee, was published under the authority of the Executive Board on 14 February 1974

© BSI 03-1999

First published July 1968
First revision (metric)
February 1974

The following BSI references relate to the work on this standard:
Committee reference CEB/1
Draft for approval 72/12742

ISBN 0 580 07709 8

Amendments issued since publication

Amd. No.	Date	Comments
4420	March 1984	Indicated by a sideline in the margin

Contents

	Page
Co-operating organizations	Inside front cover
Foreword	ii
1 Scope	1
2 Composition and manufacture of supersulphated cement	1
3 Tests	1
4 Fineness	1
5 Chemical composition	1
6 Compressive strength	1
7 Consistence of standard cement paste	1
8 Setting time	1
9 Soundness	2
10 Heat of hydration	2
11 Sampling	2
12 Facilities for sampling and identifying	2
13 Manufacturer's certificate	2
14 Compliance and independent tests	2
15 Cement in tropical climates	2
16 Marking	2
Appendix A — Appendix F <i>Text deleted</i>	
Figure 1 — Details of permeability cell	3
Figure 2 — Permeability apparatus with manometer and flowmeter	4
Figure 3 — Typical vibration machine for compacting mortar cubes for the compressive strength test	5
Figure 4 — Typical trowel	6
Figure 5 — Vicat apparatus for determining the standard consistence and setting time of cement	7
Figure 6 — Apparatus for conducting the "Le Chatelier" test	7
Figure 7 — Calorimeter	8
Figure 8 — Water content determination apparatus	9
Publications referred to	10

Foreword

This standard has been prepared, in accordance with the change to the metric system in the construction industry, giving values in terms of SI units. For further information on SI units, reference should be made to BS 3763, "The International system of units (SI)".

The values represent the metric equivalents of the values in imperial units in BS 4248:1968, rounded to convenient numbers. Although the values are not exact equivalents of the imperial ones, this is not a technical revision of the standard.

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.

Pending a future technical revision, it was considered desirable that the contents of the Foreword of the 1968 edition, which was published in imperial units, should be retained in this edition to draw attention to the historical background. The substance of the 1968 Foreword is therefore repeated as follows:

This British Standard has been prepared under the authority of the Cement, Lime and Gypsum Products Industry Standards Committee.

Supersulphated cement is a product with a chemical resistance to most of the aggressive conditions commonly encountered by the construction industries. In particular, concretes and mortars made with this cement have considerable resistance to sulphates.

It has also been found in practice that dense concretes of a water/cement ratio of 0.45 or less made with this cement have given an acceptable life in contact with weak solutions of mineral acids of pH of the order of 3.5 upwards.

The chemical and physical properties of supersulphated cement are different from those of other cements dealt with in British Standard specifications. These differences have made it necessary to modify this standard with respect to other cement standards, the more important differences being as follows.

The water/cement ratio, by weight, for the concrete cube test for compressive strength has been fixed at 0.55 rather than 0.60. The lower value is considered to be more appropriate to a finely ground slag-based cement and also gives better test reproducibility.

The soundness test included is a cold water modification of the Le Chatelier test of BS 12, "Portland cement (ordinary and rapid-hardening)". The boiling procedure in the form of the test in BS 12 is specifically designed to detect expansion due to an excessive free lime content. As there will be no measurable quantity of free lime present in supersulphated cement complying with this standard, the test has been modified to act as a general safeguard against potential unsoundness.

No "loss-on-ignition" limit is included in the standard as this test is not appropriate to cements containing high percentages of blastfurnace slag. The fulfilment of the compressive strength, setting time and soundness test requirements, together with the chemical limits specified, are considered to be adequate safeguards.

No limit for a tricalcium aluminate component is specified as cement complying with this standard will not contain a measurable quantity of this phase.

Supersulphated cement has an intrinsically low heat of hydration and a suitable test for verifying this property is included. The test however, involves a protracted and laborious series of observations which can only be satisfactorily performed by operatives possessing a high degree of experimental proficiency. For these reasons the test is listed as “optional” and is only applicable when the cement is to be used for low heat purposes.

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.

