

Methods of

Testing concrete —

**Part 5: Methods of testing hardened
concrete for other than strength**

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Co-operating organizations

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

Association of Consulting Engineers	Institution of Structural Engineers*
British Granite and Whinstone Federation	Institution of Water Engineers
British Precast Concrete Federation*	Limestone Federation*
British Railways Board	London Transport Board*
British Ready Mixed Concrete Association*	Ministry of Housing and Local Government
British Slag Federation	Ministry of Public Building and Works*
British Steel Industry	Ministry of Public Building and Works — Building Research Station*
Cement and Concrete Association*	Ministry of Transport*
Cement Makers' Federation*	National Federation of Building Trades Employers
Chalk Quarrying Association	Royal Institute of British Architects*
Chemical Industries Association	Royal Institution of Chartered Surveyors
Concrete Society Ltd.*	Sand and Gravel Association of Great Britain*
Federation of Civil Engineering Contractors*	Society of Chemical Industry
Greater London Council*	Welwyn Hall Research Association
Gypsum Plasterboard Development Association	
Institution of Civil Engineers*	
Institution of Municipal Engineers*	

The Government departments and scientific and industrial organizations marked with an asterisk in the above list, together with the following, were directly represented on the committees entrusted with the preparation of this standard:

District Surveyors' Association	Research Committee for the Cast Stone and Cast Concrete Products Industry
Incorporated Association of Architects and Surveyors	Scientific Instrument Manufacturers Association
Ministry of Transport—Road Research Laboratory	Society of Non-destructive Examination
National Paving and Kerb Association	United Kingdom Atomic Energy Authority
Non-destructive Testing Society of Great Britain	
Reinforcement Manufacturers' Association	

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 26 January 1970

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The following BSI references relate to the work on this standard:
Committee references CEB/4, CEB/4/3 and CEB/4/4
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Amendments issued since publication

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Foreword

A complete list of British Standards, numbering over 9,000, fully indexed and with a note of the contents of each, will be found in the BSI Catalogue which may be purchased from BSI Sales Department. The Catalogue may be consulted in many public libraries and similar institutions.

This standard makes reference to the following British Standards:

BS 12, *Portland cement (ordinary and rapid-hardening)*.

BS 604, *Graduated measuring cylinders*.

BS 915, *High alumina cement*.

BS 2028, BS 1364, *Precast concrete blocks*.

BS 2648, *Performance requirements for electrically-heated laboratory drying ovens*.

BS 3718, *Laboratory humidity ovens (non-injection type)*.

BS 3846, *Methods for calibration and grading of extensometers for testing of metals*.

BS 3898, *Laboratory humidity ovens (injection type)*.

The purpose of this British Standard is to provide suitable methods for testing concrete, both on site and in the laboratory, so that individual specifications can include references to this standard instead of giving test methods as appendices. The term “site” is used when samples are being taken from concrete to be used in the works and the term “laboratory”, when most of the concrete is to be used in the samples. Thus it is possible to provide uniformity in the methods of making and recording the tests carried out on the concrete.

The tests do not apply to concrete whose nominal maximum aggregate size exceeds 40 mm.

The standard has been revised under the authority of the Cement, Lime and Gypsum Products Industry Standards Committee in the light of experience gained in carrying out the tests described in the first edition published in 1952 and in order to expand its scope to cover additional methods of testing concrete.

The standard has been largely revised, except clause 6 of Part 5 on the initial surface absorption test, into Parts dealing with individual tests. Parts 101 onward contain methods of test and Parts 201 onwards contain recommendations for non-destructive tests.

Clause 6 describes a method of determining the initial surface absorption of concrete which has been developed by the British Precast Concrete Federation. It has been found that the results are closely related to those obtained by the procedure given in BS 1881-122 for the water absorption test and to weight loss during freezing and thawing tests. The test has been included in the standard because it is non-destructive and has the particular advantage that measurements can be taken on the surface of site concrete by a procedure which incorporates specified modifications of the general requirements for testing oven dried specimens.

Information on any other methods of test that are thought to be suitable for extensive use, or suggestions for improvement on the specified methods, are welcomed and will be considered in the course of future revision of this standard.

In view of the need for standardization of temperature and humidity conditions for laboratories engaged in testing building materials, the standard has been brought into line with the international recommendation adopting a mid-point of 20 °C for the control of temperature conditions in testing laboratories situated in temperate climates. Consideration was given to adopting the associated recommendation for control of relative humidity about a mid-point of 65 %, but as a result of a long term investigation of the actual humidity conditions in various laboratories, it became evident that such an attempt would be premature. However, a first step in this direction has been taken by fixing a minimum relative humidity of 50 % for the laboratory mixing room in line with a requirement in various American Society for Testing and Materials (A.S.T.M.) standards.

For the control of temperature conditions in testing laboratories situated in tropical climates, a mid-point of 27 °C has been internationally recommended. When tests specified in this standard are carried out in such climates, therefore. It is suggested that a temperature mid-point of 27 °C should be adopted, subject to the same tolerances as those laid down in the relevant clauses of the standard for use in temperate climates, and the fact reported.

In view of the change to metric in industry, this standard is expressed in metric terms. There is no intention, however, of denying users the opportunity of getting an acceptable life from existing apparatus. Apparatus for tests included in the original edition is specified solely in terms of rounded metric values, although some of these dimensions will cover not only the preferred metric sizes coming into use, but also existing inch sizes where these are not critical as indicated by any tolerances specified.

Apparatus for tests which have not appeared previously in the standard are given in terms of rounded metric values which generally do not relate to any inch sizes. Values of stress in this standard are given in terms of the MN/m², the preferred multiple of the basic unit. Values thus expressed are, however, numerically equal to values expressed in terms of the N/mm², which is often chosen for convenience of use (i.e. 1 MN/m² = 1 N/mm²).

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 6, 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.