

Mortar — Methods of test for mortar and screed — Chemical analysis and physical testing

ICS 91.100.10

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Subcommittee B/519/2, Mortar, upon which the following bodies were represented:

Autoclaved Aerated Concrete Products Association

Brick Development Association

British Cement Association

British Lime Association

CERAM

Cementitious Slag Makers Association

Civil Testing Machine Manufacturers' Association

Department of the Environment (Building Research Establishment)

Federation of Plastering and Drywall Contractors

Institute of Concrete Technology

Institution of Structural Engineers

National House-Building Council

National Specialist Contractors Council

Quarry Products Association

United Kingdom Quality Ash Association

Vermiculite Association

Co-opted members

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C2	30 June 2014	Corrigendum to update the front cover and amendments table

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Foreword

This British Standard is published by BSI Standards Limited, under licence from The British Standards Institution.

This British Standard has been prepared by Subcommittee B/519/2. BS 4551:2005+A2:2013 supersedes BS 4551:2005+A1:2010, which is withdrawn.

Text introduced or altered by Amendments No. 1 and No. 2, respectively, are indicated in the text by tags **A1** **A1** and **A2** **A2**. Minor editorial changes are not tagged.

The revision specifies the chemical analysis of mortar **A2** and screed **A2** not covered in the BS EN 1015 series, which was formerly in BS 4551-2:1998. It also includes a physical test method for water retentivity and a physical test method for the determination of consistence by dropping ball. This was formerly in BS 4551-1:1998.

The requirements in this standard cover areas that are not addressed by BS EN 998-1, BS EN 998-2 and BS EN 1015 (all parts).

This British Standard describes methods of testing for mortar **A2** and screed **A2** only, and should not be used or quoted as a specification for mortar **A2** or screed **A2**. References to this standard should indicate that the methods of testing used are in accordance with BS 4551.

Only general guidance is given here, because of the variety of circumstances in which sampling of hardened mortars **A2** and screed **A2** might be required.

Samples might be required to ascertain the following.

- a) The variability in different parts of the work.

For this purpose, sub-samples should be kept separate and the areas represented by each should be carefully recorded. Results of tests on such samples should be regarded only as representative of the mortar **A2** or screed **A2** from the area indicated.

- b) The composition at specific points, e.g. where defects have been observed.

In this case, the location and the depths from the surface of the work represented by the sample should be recorded.

- c) The average composition over a significant area of masonry, **A2** plastering, rendering or screeding **A2**.

For this purpose, it should be realized that a number of different batches might have been used during construction, and a number of different sub-samples of approximately equal mass should be taken from representative areas and combined to make a composite main sample, which is as representative of the average as is practicable. The uncertainties in doing this inevitably limit the value of such average samples and this should be considered when interpreting and reporting results. Care should be taken to avoid taking samples for this purpose predominantly from points at which the mortar is more readily extractable, since the mortar at such points is likely to be untypical of the average composition.

- d) Information about adhesion.

In this case, the sample should include the substrate.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 37 and a back cover.

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1 Scope

This British Standard specifies methods of sampling, preparation, physical testing and chemical analysis of mortars for bricklaying, A_2 screeding, A_2 plastering and rendering. The methods described are for the determination of parameters that have traditionally been used in the UK but which are neither defined, nor superseded, by BS EN 998-1, BS EN 998-2 or BS EN 1015 (all parts).

Methods of interpretation of chemical analysis results are also described.

The methods of test given in this standard are not intended to be applied to mortars containing A_1 calcium aluminate A_1 cement or mortars whose principle binder is hydraulic lime.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced documents (including any amendments) applies.

A_1 BS 410-1, *Test sieves — Technical requirements and testing — Part 1: Test sieves of metal wire cloth*. [ISO 3310-1] A_1

BS 5404-1, *Specification for plastic laboratory ware — Part 1: Beakers*.

BS EN 933, *Tests for geometrical properties of aggregates — Determination of particle size distribution*.

BS EN 1015-2, *Methods of test for mortar for masonry — Part 2: Bulk sampling of mortars and preparation of test mortar*.

A_1 BS 6100-9, *Building civil engineering — Vocabulary — Part 9: Work with concrete and plaster*. A_1

BS EN ISO 3696, *Water for analytical laboratory use — Specification and test methods*.

3 Terms and definitions

For the purposes of this British Standard, the terms and definitions given in A_1 BS 6100-6.9 A_1 and the following apply.

3.1 admixture

material added in small quantities to produce specified modifications to the properties

3.2 aggregate

granular material that does not contribute to the hardening reaction of the mortar

3.3 binder

material used to hold solid particles together in a coherent mass, e.g. cement, building lime

3.4 lime

material comprising any physical and chemical forms under which calcium and/or magnesium oxide (CaO and/or MgO) and/or hydroxide (Ca(OH)_2 and/or Mg(OH)_2) can appear

3.5 hydrated limes

air limes, calcium limes or dolomitic limes, resulting from the controlled slaking of quicklimes [they are produced in the form of a dry powder or putty or as a slurry (milk of lime)]

3.6 masonry mortar

mix of one or more inorganic binders, aggregates, water, and sometimes additions and/or admixtures for bedding, jointing and pointing of masonry

3.7 render/plaster

materials used externally are referred to as render/rendering and materials used internally as plaster/plastering