

Specification for

Gypsum building plasters —

**Part 1: Excluding premixed lightweight
plasters**

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

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 committee entrusted with the preparation of this British Standard:

- British Gypsum Limited
- Modular Society
- National Federation of Plastering Contractors
- Royal Institute of British Architects
- Individual manufacturers

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Foreword

This British Standard has been revised under the authority of the Cement, Lime and Gypsum Industry Standards Committee to bring it into line with current practice. The terms used to describe the function and types of plaster accord with those given in BS 4049, "*Glossary of terms applicable to internal plastering, external rendering and floor screeding*".

The alphabetical classification of the plasters remains unchanged but the Class B category in this edition is restricted to undercoat and final coat plasters and their sub-divisions, while plasters in Classes C and D are for finishing purposes only.

Improvements have been made to a number of test procedures and additional test methods have been introduced. This has led to the modification of certain performance requirements.

In accordance with the change to the metric system this standard has now been metricated 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)*". Figure 1 and 1.8 have been amended and Figure 2 deleted, but otherwise the contents are the same as the previous edition which it is proposed to withdraw when this standard is published.

NOTE 1 N/mm² = 1 MN/m² = 1 MPa.

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 and ii, pages 1 to 12, 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.

1 General

1.1 Scope

This British Standard specifies requirements for those plasters which have a definite set due to the hydration of calcium sulphate to form gypsum and which are intended for general building operations and for the manufacture of preformed building products. Premixed lightweight building plasters are not included in this Part of the standard (see Foreword).

NOTE The British Standards referred to in this standard are listed on the inside back cover.

1.2 Definitions

For the purposes of this British Standard, the following definitions apply:

gypsum

the dihydrate of calcium sulphate, $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$, is the raw material from which the gypsum plasters are commonly manufactured; it is also the final stage in the setting of gypsum plasters

hemihydrate

an intermediate phase in the dehydration of gypsum by heat wherein the amount of combined water corresponds approximately to the formula $2\text{CaSO}_4 \cdot \text{H}_2\text{O}$, calcium sulphate hemihydrate. The formula is often written $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$, hence the designation hemihydrate

plaster of paris

a form of hemihydrate without any added retarder of set. It is manufactured in several grades for various industrial uses

retarded hemihydrate

a form of hemihydrate which contains an addition of a retarder of set

anhydrous gypsum plaster

a material consisting essentially of anhydrous calcium sulphate (CaSO_4), produced by the dehydration of gypsum, the set of which has been suitably accelerated

keene's plaster

a gypsum plaster of the anhydrous class which is characterized by being more easily brought to a smooth and true finish in continuous plastered surface, this property being associated as well with a gradual set

1.3 Classification

Gypsum plaster shall be of one of the following classes:

- | | |
|----------|-------------------------------------|
| Class A. | Plaster of Paris |
| Class B. | Retarded hemihydrate gypsum plaster |
| Class C. | Anhydrous gypsum plaster |
| Class D. | Keene's plaster |

1.4 Purity

No materials shall be added to gypsum plasters except such as are necessary to control the setting and working characteristics or to impart anti-corrosion or fungicidal properties.

1.5 Composition

Gypsum plaster shall comply with the relevant clause on chemical composition in Section 2. Materials present arising from impurities in the original gypsum used in manufacture, or from permissible additions under 1.4 shall not be of a type having deleterious effects on the set plaster.

1.6 Marking

The vendor shall show clearly on each package of plaster the number of this British Standard, i.e. BS 1191-1, the class and type to which the plaster belongs (see Appendix H for examples) and the date of manufacture. In addition, it shall be clearly indicated whether the plaster is to be used as an undercoat or final coat.

NOTE Attention is drawn to certification facilities offered by BSI: see the inside back cover of this standard.

1.7 Samples for testing and sampling

Each sample shall be not less than 5 kg in weight, and shall be enclosed immediately in a clean, dry, airtight container. The process of sampling shall be carried out in as short a time as possible.

Sufficient material shall be taken in approximately equal portions selected from at least twelve different positions when the plaster is loose, from not less than twelve different packages when the plaster is not loose, or, where there are fewer than twelve different packages, from each package. The portions shall be thoroughly mixed and shall be quartered down to give a sample of the weight required for testing. Every care shall be taken in the selection so that a fair, average sample is obtained. The vendor shall afford every facility for the efficient sampling of the bulk and for subsequently identifying the plaster sampled.

1.8 Manufacturer's certificate

At the purchaser's request the supplier shall provide statistical quality control certificates, or a certificate stating that the product complies with the requirements of this British Standard.

2 Quality of the different classes

2.1 Class A. Plaster of paris

2.1.1 Compliance with tests. Plaster of Paris shall comply with the requirements of 2.1.2 to 2.1.5 when tested by the methods described in the relevant Appendix A to Appendix G.

2.1.2 Chemical composition. The chemical compositions shall be as follows when determined as described in Appendix A:

- 1) The sulphur trioxide content, expressed as a percentage by weight of the plaster as received, shall be not less than 35 %.
- 2) The calcium oxide content shall be not less than two-thirds of the sulphur trioxide content, by weight.
- 3) The sum of the soluble sodium salt and magnesium salt contents, expressed as percentages of sodium oxide (Na_2O), and magnesium oxide (MgO), by weight of the plaster as received, shall be not greater than 0.2 %.
- 4) The loss on ignition shall be not greater than 9 % and not less than 4 % by weight of the plaster as received.

2.1.3 Freedom from coarse particles. The residue on a 1.18 mm sieve complying with the requirements of BS 410 shall be not greater than 5 % by weight when determined by the method described in Appendix G.

2.1.4 Soundness. The set plaster pats shall show no signs of disintegration, popping or pitting when examined by the method described in Appendix B.

2.1.5 Transverse strength. The transverse strength (modulus of rupture) of set plaster shall be not less than 2.5 N/mm^2 when determined in accordance with the method described in Appendix C.

2.2 Class B. Retarded hemihydrate gypsum plaster

2.2.1 Type. Retarded hemihydrate gypsum plasters shall be of one of the following types:

Type *a*: Undercoat plaster (plaster for use with sand)

1. Browning plaster
2. Metal lathing plaster

Type *b*: Final coat plaster

1. Finish plaster
2. Board finish plaster

2.2.2 Compliance with tests. When tested by the methods described in Appendix A to Appendix G, retarded hemihydrate plasters shall comply with the requirements of 2.2.3 and 2.2.5.

In addition, the following plasters shall comply with the subclauses indicated:

- | | |
|---------------------------|-------------------------------|
| 1) Browning plaster | |
| Type <i>a</i> . 1: | 2.2.6 |
| 2) Metal lathing plaster, | |
| Type <i>a</i> . 2: | 2.2.3 5) and 2.2.6 |
| 3) Finish plaster, | |
| Type <i>b</i> . 1: | 2.2.4 and 2.2.7 |
| 4) Board finish plaster, | |
| Type <i>b</i> . 2: | 2.2.4, 2.2.7 and 2.2.8 |

2.2.3 Chemical composition. The chemical composition shall be as follows when determined as described in Appendix A:

- 1) The sulphur trioxide content, expressed as a percentage by weight of the plaster as received, shall be not less than 35 %.
- 2) The calcium oxide content shall be not less than two-thirds of the content of sulphur trioxide by weight.
- 3) The sum of the soluble salt and magnesium salt contents, expressed as percentages of sodium oxide (Na_2O), and magnesium oxide (MgO), by weight of the plaster as received, shall be not greater than 0.2 %.
- 4) The loss on ignition shall be not greater than 9 % and not less than 4 % by weight of the plaster as received.
- 5) For metal lathing plaster, the free lime shall be not less than 3 % by weight at the time of despatch.

2.2.4 Freedom from coarse particles. The residue on a 1.18 mm sieve complying with the requirements of BS 410 shall be not greater than 1 % by weight when determined by the method described in Appendix G.

2.2.5 Soundness. The set plaster pats shall show no signs of disintegration, popping or pitting when examined by the method described in Appendix B.

2.2.6 Transverse strength. The transverse strength (modulus of rupture) of the set sanded plaster shall be not less than 1.2 N/mm^2 when tested in accordance with the method described in Appendix C.