

Specification for

Silica refractories for use in coke ovens

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Refractory Products Standards Policy Committee (RPM/-) to Technical Committee RPM/10, upon which the following bodies were represented:

- British Ceramic Research Ltd.
- British Coal Corporation
- British Metallurgical Plant Constructors' Association
- British Steel Industry
- Coke Oven Managers' Association
- Institute of Refractories Engineers
- Refractories Association of Great Britain

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Foreword

This British Standard has been prepared under the direction of the Refractory Products Standards Policy Committee. It supersedes BS 4966-1:1982 which is withdrawn. Attention is drawn to BS 6886:1987 "*Specification for alumina-silicate refractories for use in coke ovens*". The two specifications have been written in the same style.

NOTE For the convenience of readers, selected tables from BS 6065:1981 are given in Appendix D. 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 8, 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 Scope

This British Standard specifies classification, the chemical and physical requirements, and tolerances on dimensions and defects, for silica refractories that contain not less than 93 % silica and are for use in coke oven construction.

It specifies the methods of sampling, testing and analysis to be used for bricks and shapes of silica material.

NOTE The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this British Standard, the definitions given in BS 3446 apply, together with the following.

surface crazing

a rectilinear network of fine hairline microcracks, generally intergranular and entirely confined to within 5 mm of the brick face

NOTE It is not usually visible to the naked eye on clean as-fired brick faces, but is revealed by a surface cover of dark powder or dust.

3 Classification

3.1 Two types of silica refractories are specified: type 1 and type 2 (dense). These shall be defined by the properties given in Table 1, Table 2 and Table 3.

3.2 Two categories of brick shall be defined by differences in manufacturing processes: category P bricks are pressed and category M bricks are rammed or hand moulded.

3.3 For the purposes of this British Standard the faces of the bricks shall be classified as follows:

- class A: faces in contact with the coal;
- class B: faces in contact with the gases;
- class C: other faces.

NOTE Classification of the faces is designated by the customer and bricks may have a combination of classified faces.

4 Sampling

4.1 General

When a sampling plan from BS 6065 is used (see 4.2 and 4.3), it shall be stated whether the acceptance is to be based on either a mean value with a standard deviation (see Table 1) or on a limiting quality value accompanied by an acceptance quality level (AQL) (see Table 2).

NOTE 1 Since the use of this specification will involve the determination of the suitability of material supplied for a specific purpose, the importance of sampling cannot be overemphasized.

NOTE 2 Guidance on the use of BS 6065 is given in BS 6434.

4.2 Sampling for testing control properties

Sampling for testing control properties (see clause 6) shall be carried out in accordance with one of the methods given in BS 6065.

4.3 Sampling for measurement of attributes

Sampling for measurement of attributes (see clauses 7 and 8) shall be carried out in accordance with a fixed sampling plan.

NOTE Such a plan should be agreed between the manufacturer and the purchaser and may be one of the methods given in BS 6065.

Table 1 — Schedule of composition and physical properties when selection is based on procedures using a guaranteed value for the mean^a

Properties	Type of brick			
	Silica type 1		Silica type 2 (dense)	
	Mean (μ_G)	Standard deviation (σ)	Mean (μ_G)	Standard deviation (σ)
Apparent porosity (%)				
Category P	23.25	1.5	20.25	1.5
Category M	25.75	1.5	22.25	1.5
Powder density (g/cm ³) (see Appendix B)	2.33	0.01	2.33	0.01
Permanent linear change at 1 500 °C (%)	0.3	0.1	0.3	0.1
Refractoriness-under-load (°C) (Load of 0.35 MPa $\pm$ 0.006 MPa)	1 640	15	1 640	15
Silica content (%)	94.5	1.0	94.5	1.0
^a The mean (μ_G) and the standard deviation (σ) as used in the tables represent the mean and the standard deviation of the population as a whole. The sample mean ($\bar{x}$) and the sample standard deviation (s) may be related to the values in Table 6.				