

Methods of testing

Refractory materials —

Part 3: General and textural
properties —

Section 3.13 Measurement of
dimensions and external defects of
refractory bricks —
Corner and edge defects and other
surface imperfections

ICS 81.080

Committees responsible for this British Standard

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- British Ceramic Research Ltd.
- British Industrial Ceramic Manufacturers' Association
- British Metallurgical Plant Constructors' Association
- British Steel Industry
- British Vermiculite Association
- Refractories Association of Great Britain
- Refractory Contractors' Association
- Society of Glass Technology

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National foreword

This British Standard has been prepared by Subcommittee RPI/1/1. It is identical with ISO 12678-2:1996 *Refractory products — Measurement of dimensions and external defects of refractory bricks — Part 2: Corner and edge defects and other surface imperfections*, published by the International Organization for Standardization (ISO). It supersedes BS 1902-3.13:1985 which is withdrawn.

Cross-references

Publications referred to	Corresponding British Standard
	BS 3056 <i>Sizes of refractory bricks</i>
ISO 5019-4:1988	Part 4:1985 <i>Specification for bricks for electric arc furnace roofs</i> (Identical)
ISO 5417:1986	Part 3:1986 <i>Specification for bricks for rotary cement kilns</i> (Technically equivalent)

The Subcommittee has reviewed the provisions of ISO 5019-1:1984, ISO 5019-2:1984, ISO 5019-3:1984, ISO 5019-5:1984 and ISO 5019-6:1984 to which normative reference is made in the text, and has decided that they are acceptable for use in conjunction with this standard.

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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 part of ISO 12678 describes apparatus and specifies simple methods for routine measurement of corner and edge defects, as well as other surface imperfections of refractory bricks. It does not apply to the measurement of internal defects. It does not establish criteria for acceptance or rejection of bricks.

The application of these methods is limited to standard shapes in accordance with ISO 5019-1 to ISO 5019-6 and ISO 5417, unless otherwise agreed.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 12678. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 12678 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 5019-1:1984, *Refractory bricks — Dimensions — Part 1: Rectangular bricks.*

ISO 5019-2:1984, *Refractory bricks — Dimensions — Part 2: Arch bricks.*

ISO 5019-3:1984, *Refractory bricks — Dimensions — Part 3: Rectangular checker bricks for regenerative furnaces.*

ISO 5019-4:1988, *Refractory bricks — Dimensions — Part 4: Dome bricks for electric arc furnace roofs.*

ISO 5019-5:1984, *Refractory bricks — Dimensions — Part 5: Skewbacks.*

ISO 5019-6:1984, *Refractory bricks — Dimensions — Part 6: Basic bricks for oxygen steel-making converters.*

ISO 5417:1986, *Refractory bricks for use in rotary kilns — Dimensions.*

3 Definitions

For the purposes of this part of ISO 12678, the following definitions apply

3.1

corner defect

missing corner, defined by the three dimensions a , b and c as indicated in Figure 1

3.2

edge defect

missing edge, defined by the three dimensions e , f and g as indicated in Figure 2

3.3

crater

clearly defined hole in the surface of a brick whose parameters (maximum diameter, minimum diameter and depth) can be measured with the apparatus specified in clause 4

3.4 Cracks

subdivided as follows:

3.4.1

hairline cracks

fine cracks visible on the surface of a brick whose length may be measured and whose width is less than or equal to 0,2 mm

3.4.2

surface crazing

network of hairline cracks confined to the surface of the brick

3.4.3

open cracks

cracks or tears in the surface whose length is more than 10 mm and whose width is more than 0,2 mm

NOTE 1 The above types of cracks may appear as indicated in Figure 3, from left to right respectively.

3.5

protrusions and indentations

imperfections that may occur during the moulding or firing process of bricks and blocks

3.6

fins

thin layer of material on a face of a brick that projects beyond the edge

4 Apparatus

4.1 General

All instruments shall be calibrated or certified to within the accuracy of the measurement. The accuracy of the linear measuring device (4.2) shall be checked regularly against a length bar complying with national standards.

4.2 *Linear measuring device* (steel tape graduated in millimetres, calipers, graticule with 0,1 mm graduations), in accordance with the tolerance agreed upon, and conforming to an accuracy of half the intended accuracy of the measurement.

NOTE 2 Steel tape measurements are accurate to 1 mm (0,5 mm can be estimated), whereas caliper measurements are accurate to 0,1 mm. Linear tolerances less than 1 mm should be measured with calipers.

4.3 *Steel straightedge*, at least 5 mm thick and of sufficient length to span the diagonal of the largest shape to be measured.