BRITISH STANDARD

BS 1016-108.3: 1995
ISO 567:1995

Methods for

Analysis and testing of coke —

Part 108: Tests special to coke —

Section 108.3 Determination of bulk density (small container)

ICS 75.160.10

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee SFI/3, Analysis and testing of coal and coke, upon which the following bodies were represented:

British Cement Association
British Coal Corporation
British Gas plc
British Steel Industry
Electricity Association
GAMBICA (BEAMA Ltd.)
Power Generation Contractors Association (PGCA) (BEAMA Ltd.)

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Contents

National foreword

This British Standard has been prepared by Technical Committee SFI/3 and is identical with ISO 567:1995 *Coke — Determination of bulk density in a small container*, published by the International Organization for Standardization (ISO) and in the preparation of which the United Kingdom played a full part.

This British Standard is a revision of BS 1016-108.3:1991 which is withdrawn. Main changes in this edition are in the definition of bulk density and expression of results.

BS 1016-108.3 is part of a rationalized and restructured BS 1016. The Parts numbered from 1 to 21 are gradually being withdrawn and replaced by Parts in the new series. The full list of Parts in the new series, together with corresponding numbering of the old series and related ISO standards is given in BS 1016 *Methods for analysis and testing of coal and coke — Part 100:1994 General introduction and methods for reporting results.*

Cross-references

International standard	Corresponding British Standard
	BS 1016 *Methods for analysis and testing of coal and coke*
ISO 579:1981	Part 2:1973 *Total moisture of coke* (Technically equivalent)
ISO 1013:1995	Part 108 *Tests special to coke* Section 108.4:1991 *Determination of bulk density (large container)* (Technically equivalent)

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 and 2, 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.

Introduction

The bulk density of coke depends upon its physical characteristics, e.g. apparent relative density, shape and size of the coke particles, and upon the dimensions of the container. The container specified in this International Standard has a capacity of 0,2 m^3. The determination of bulk density of coke in a large container is described in ISO 1013.

1 Scope

This International Standard specifies a method for the determination of the bulk density of coke in a cubical container of capacity 0,2 m^3. It is applicable to coke with a nominal top size not greater than 125 mm.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard 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 579:1981, *Coke — Determination of total moisture content.*

ISO 1013:1995, *Coke — Determination of bulk density in a large container.*

3 Definition

For the purposes of this International Standard, the following definition applies.

3.1
bulk density

the mass of a portion of a solid mineral fuel divided by the volume of the container which is filled by that portion under specified conditions

4 Principle

A weighed container of known volume is filled with coke and the increase in mass is determined.

5 Apparatus

5.1 *Cubical container*, of capacity 0,200 m^3 and internal dimension 585 mm, with a smooth inner surface, rigidly constructed and fitted with handles.

5.2 *Weighing machine*, preferably of the platform type, of maximum capacity 300 kg and sufficiently accurate that the weighing error does not exceed 0,1 % of the maximum load or 250 g, whichever is the smaller.

6 Test sample

Take a sample (for physical testing) in accordance with ISO 2309:1980, *Coke — Sampling*[1)].

7 Procedure

Place the container (**5.1**) on the weighing machine (**5.2**) and record its mass. Charge the coke slowly into the container until pieces of coke project above the top of the container across the whole surface. The height of drop of the coke shall not exceed 250 mm.

Slide a straightedge across the top of the container and remove any pieces of coke which obstruct its passage. Weigh the charged container.

Carry out a duplicate determination by repeating the procedure using a second portion of the test sample.

8 Expression of results

The bulk density in a small container (ρ_S) of the coke, in kilograms per cubic metre, on a dry basis, is given by the equation:

$$\rho_S = \frac{m_2 - m_1}{V} \times \frac{100 - M}{100}$$

where

m_1 is the mass, in kilograms, of the empty container;

m_2 is the mass, in kilograms, of the container plus coke;

V is the capacity, in cubic metres, of the container;

M is the total moisture content of the coke, expressed as a percentage by mass, determined in accordance with ISO 579.

Calculate the mean of the two determinations and report the result to three significant figures.

For calculation of the result on an "as sampled" basis, omit the correction factor for moisture, i.e. "(100 – *M*)/100", in the equation.

[1)] In due course, ISO 2309 will be replaced by ISO 13909-6, *Hard coal and coke — Sampling — Part 6: Coke — Preparation of test samples.*

9 Precision

9.1 Repeatability limit

The results of duplicate determinations, carried out in the same laboratory by the same operator with the same apparatus on representative portions taken from the same test sample, should not differ by more than 30 kg/m^3.

9.2 Reproducibility

No value for reproducibility can be quoted for determinations carried out in different laboratories because the transport of coke samples involves the risk of breakage and thus alteration of the size distribution and the bulk density.

10 Test report

The test report shall include the following:

a) the method used by reference to this International Standard;

b) a complete identification of the sample;

c) the date of the test;

d) the results expressed in accordance with clause **8**;

e) any unusual features noted during the determination;

f) any operation not included in this International Standard, or regarded as optional.

List of references

See national foreword.

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