

Methods for

Analysis and testing of coal and coke —

Part 109: Size analysis of coal

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Solid Mineral Fuel Standards Policy Committee (SFI/-) to Technical Committee SFI/3, 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

	Page
Committees responsible	Inside front cover
National foreword	ii
Introduction	1
1 Scope	1
2 Normative references	1
3 Definitions	1
4 Apparatus	1
5 Preparation of test sample	2
6 Procedure	2
7 Expression of results	4
8 Test report	5
Annex A (informative) Guide to sampling	9
Annex B (informative) Use of mechanical sieving	10
Annex C (informative) Example of removal by wet sieving of fine material from a sample having a maximum particle size less than 4 mm	10
Figure 1 — Schematic diagram of a sieving procedure	7
Figure 2 — Graphical presentation of a size analysis	8
Table 1 — Example of the calculation of a size analysis involving sample division	6
Table A.1 — Minimum mass of gross sample	9
List of references	Inside back cover

National foreword

This British Standard has been prepared under the direction of the Solid Mineral Fuels Standards Policy Committee. It is identical with ISO 1953:1994 *Hard coal — Size analysis by sieving*, published by the International Organization for Standardization (ISO).

This British Standard is a revision of BS 1016-17 which is withdrawn. It is technically equivalent to BS 1016-17, from which ISO 1953 was developed. BS 1016-17 is renumbered as Part 109 under a scheme for rationalizing and restructuring 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 The Parts numbered from 1 to 21 are gradually being withdrawn and replaced by Parts in the new series.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 1016-100:1994.

Cross-references

International Standard	Corresponding British Standard
ISO 1213-1:1993	BS 3552:1994 <i>Glossary of coal preparation terms</i> (Identical)
ISO 1213-2:1992	BS 3323:1992 <i>Glossary of terms relating to sampling, testing and analysis of solid mineral fuels</i> (Identical)

The Technical Committee has reviewed the provisions of ISO 1988:1975, ISO 3310-1:1990, and ISO 3310-2:1990, to which normative reference is made in the text, and has decided that they are acceptable for use in conjunction with this standard.

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 10, 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

Size analysis involves the separation of a sample of coal into size fractions having defined limits. In the methods described in this International Standard the results are expressed in terms of the percentage mass of coal remaining on sieves of different aperture sizes. This information can be of use in a number of applications, including the following: assessing the yields of products from run-of-mine coals; providing design data for coal preparation plants; checking that products from screening plants are within the required limits; assessing the performance of coal-crushing plants; and selecting coals for particular processes and equipment.

1 Scope

This International Standard specifies reference methods for the size analysis of coal by manual sieving (wet or dry), using test sieves of aperture sizes between 125 mm and 45 μm . A guide to sampling is given in Annex A and notes on the use of mechanical sieving are given in Annex B.

This International Standard is applicable to all hard coals. It is not applicable to coke or other manufactured fuels.

In the case of pulverized coal which has been ground so that a high proportion passes through the test sieve of smallest aperture size, the methods described in this International Standard will determine only the percentage oversize.

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 1213-1:1993, *Solid mineral fuels — Vocabulary — Part 1: Terms relating to coal preparation*.

ISO 1213-2:1992, *Solid mineral fuels — Vocabulary — Part 2: Terms relating to sampling, testing and analysis*.

ISO 1988:1975, *Hard coal — Sampling*.

ISO 3310-1:1990, *Test sieves — Technical requirements and testing — Part 1: Test sieves of metal wire cloth*.

ISO 3310-2:1990, *Test sieves — Technical requirements and testing — Part 2: Test sieves of perforated metal plate*.

3 Definitions

For the purposes of this International Standard, the definitions given in ISO 1213-1 and ISO 1213-2 apply.

4 Apparatus

4.1 For all methods

4.1.1 Test sieves, exclusively round-hole or exclusively square-hole, complying with ISO 3310-1 or ISO 3310-2, as appropriate.

NOTE 1 The recommended series of test sieves for general purposes is 125 mm, 90 mm, 63 mm, 45 mm, 31,5 mm, 22,4 mm, 16 mm, 11,2 mm, 8 mm, 5,6 mm and 4 mm nominal aperture sizes, square-hole, or the same sizes of round-hole sieves. If this series is inadequate for the sizing of graded coals, sieves from the supplementary sizes 100 mm, 80 mm, 50 mm, 40 mm, 25 mm, 20 mm, 12,5 mm, 10 mm and 6,3 mm may be included. For samples containing pieces having a particle size greater than 125 mm, single-hole gauges of the required dimensions may be used for the larger pieces. Test sieves of nominal aperture size 4 mm and less should be of metal wire cloth; the recommended series of nominal aperture sizes is 4 mm, 2,8 mm, 2 mm, 1,4 mm, 1 mm, 710 μm , 500 μm , 355 μm , 250 μm , 180 μm , 125 μm , 90 μm , 63 μm and 45 μm .

NOTE 2 When a complete size analysis is required, it is preferable, subject to the range of sieve aperture sizes available, that the mass of coal in any size fraction does not exceed 30 % of the total mass of sample being sieved. The largest aperture size sieve should be that on which not more than 5 % mass fraction of the sample is retained and the smallest aperture size sieve should be that through which not more than 5 % mass fraction of the sample passes.

NOTE 3 It is important to check the sieves from time to time, by the methods described in ISO 3310-1 and ISO 3310-2, to ensure that the aperture dimensions are within the specified tolerances. Worn or damaged sieves can give rise to serious errors in size analysis and should be discarded.

4.1.2 Receivers, for collecting material passing through the sieves.

4.1.3 Weighing machine, capable of measuring the mass of the sample to be sieved to the nearest 0,1 %.

4.1.4 Three trays, smooth, of noncorrodible material, at least 400 mm $\times$ 400 mm.

NOTE 4 Glazed paper may be used if trays are not available.

4.1.5 Watch- or clock-glasses

4.2 For dry sieving

4.2.1 Lids, to fit the test sieves.

4.2.2 Flat brush, for cleaning the sieves and for brushing dust from the trays.

4.2.3 Hardwood block, about 150 mm long with a 10 mm $\times$ 10 mm cross-section, for tapping the sieves.

4.2.4 Shovel or scoop

4.3 For wet sieving

4.3.1 Buchner funnel