

Hard coal and coke — Mechanical sampling —

Part 3: Coal — Sampling from stationary lots

ICS 73.040

National foreword

This British Standard is the UK implementation of ISO 13909-3:2001.

Together with BS ISO 18283:2006, BS ISO 13909-1:2001, BS ISO 13909-2:2001, BS ISO 13909-4:2001, BS ISO 13909-5:2001, BS ISO 13909-6:2001, BS ISO 13909-7:2001 and BS ISO 13909-8:2001, it supersedes BS 1017-1:1989 and BS 1017-2:1994 which have been withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PTI/16, Solid mineral fuels.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this part of ISO 13909 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 13909-3 was prepared by Technical Committee ISO/TC 27, *Solid mineral fuels*, Subcommittee SC 4, *Sampling*.

ISO 13909 cancels and replaces ISO 9411-1:1994, *Solid mineral fuels — Mechanical sampling from moving streams — Part 1: Coal* and ISO 9411-2:1993, *Solid mineral fuels — Mechanical sampling from moving streams — Part 2: Coke*, of which it constitutes a technical revision. It also supersedes the methods of mechanical sampling of coal and coke given in ISO 1988:1975, *Hard coal — Sampling* and ISO 2309:1980, *Coke — Sampling*.

ISO 13909 consists of the following parts, under the general title *Hard coal and coke — Mechanical sampling*:

- *Part 1: General introduction*
- *Part 2: Coal — Sampling from moving streams*
- *Part 3: Coal — Sampling from stationary lots*
- *Part 4: Coal — Preparation of test samples*
- *Part 5: Coke — Sampling from moving streams*
- *Part 6: Coke — Preparation of test samples*
- *Part 7: Methods for determining the precision of sampling, sample preparation and testing*
- *Part 8: Methods of testing for bias*

Annex A of this part of ISO 13909 is for information only.

Hard coal and coke — Mechanical sampling —

Part 3:

Coal — Sampling from stationary lots

1 Scope

This part of ISO 13909 specifies procedures for the mechanical sampling of coal from stationary lots, for example from wagons, barges, ships and stockpiles. Procedures for sample preparation are given in ISO 13909-4.

This part is applicable to mechanical sampling from stationary coal lots, to obtain samples from which test samples for the determination of moisture, for general analysis including physical and chemical tests, and for size analysis can be prepared in accordance with the requirements and recommendations set out in ISO 13909-4.

In this part, the principles and procedures for designing a sampling scheme are given, together with typical examples of applications; in addition, practices for the execution of sampling in different sampling situations are described. The methods described are limited to those on which it is possible to conduct a test for bias.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 13909. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 13909 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 13909-1:2001, *Hard coal and coke — Mechanical sampling — Part 1: General introduction.*

ISO 13909-2:2001, *Hard coal and coke — Mechanical sampling — Part 2: Coal — Sampling from moving streams.*

ISO 13909-4:2001, *Hard coal and coke — Mechanical sampling — Part 4: Coal — Preparation of test samples.*

ISO 13909-7:2001, *Hard coal and coke — Mechanical sampling — Part 7: Methods for determining the precision of sampling, sample preparation and testing.*

ISO 13909-8:2001, *Hard coal and coke — Mechanical sampling — Part 8: Methods of testing for bias.*

3 Terms and definitions

For the purposes of this part of ISO 13909, the terms and definitions given in ISO 13909-1 apply.

4 Establishing a sampling scheme

4.1 General

The general procedure for establishing a sampling scheme is as follows.

- a) Define the quality parameters to be determined and the types of samples required.
- b) Define the lot.
- c) Define or assume the precision required (see 4.4.1).
- d) Decide whether continuous or intermittent sampling is to be used (see 4.2).
- e) Determine the method of combining the increments into samples and the method of sample preparation (see ISO 13909-4).
- f) Determine or assume the variability of the coal (see 4.4.2 and, if relevant, 4.4.3) and the variance of preparation and testing (see 4.4.4). Methods for determining variability and variance of preparation and testing are given in ISO 13909-7.
- g) Establish the number of sub-lots and the number of increments per sub-lot required to attain the desired precision (see 4.4.5).
- h) Decide upon the sampling interval, in tonnes.
- i) Ascertain the nominal top size of coal for the purpose of determining the minimum mass of sample (see 4.5).

NOTE The nominal top size may initially be ascertained by consulting the consignment details, or by visual estimation, and may be verified, if necessary, by preliminary test work.

- j) Determine the minimum average increment mass (see 4.6).

4.2 Continuous and intermittent sampling

4.2.1 Continuous sampling

In continuous sampling, every sub-lot is sampled and the same minimum number of increments (see 4.4.5.2) is collected from each sub-lot. There are as many sample results for the lot as there are sub-lots. The mean result for the lot should be of the required precision but if it is desired to check that the required precision has been attained, it is possible to do this by using the procedures of replicate sampling described in ISO 13909-7.

4.2.2 Intermittent sampling

If coal of the same type is sampled regularly, it may be satisfactory to collect increments from some of the sub-lots but not from others. This is called intermittent sampling. The same minimum number of increments shall be taken from every sub-lot that is sampled (see 4.4.5.3). The sub-lots to be sampled shall be chosen at random, unless it can be demonstrated that no bias, for example as a result of time-dependent variance, is introduced by choosing sub-lots systematically. Such demonstration shall be repeated from time to time and at random intervals.

There are as many sample results per lot as there are sub-lots sampled, but because some sub-lots are not sampled, it is not possible to say whether the average of these results will have the required precision for the lot unless information about the variation between sub-lots is available. This can be obtained by following the procedure described in ISO 13909-7. If the variation between sub-lots is too large, it may be necessary to introduce continuous sampling to achieve the desired precision.

Any use of intermittent sampling shall be agreed between contracting parties and shall be recorded in the sampling report.