



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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Mechanical sampling of coal - Part 1: Method for sampling

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1 Scope

This document specifies the general requirements and precision of mechanized coal sampling, the establishment of sampling schemes, the moving coal flow sampling method and stationary coal sampling method, as well as packaging and marking of coal samples, and sampling reports.

This document is applicable to lignite, bituminous coal and anthracite coal.

2 Normative References

The contents of the following documents constitute indispensable clauses of this document through the normative references in the text. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB/T 3715 Terms Relating to Properties and Analysis of Coal

GB/T 19494.2 Mechanical Sampling of Coal - Part 2.Method for Sample Preparation

GB/T 19494.3 Mechanical Sampling of Coal - Part 3.Determination of Precision and Bias Test

3 Terms and Definitions

What is defined in GB/T 3715, and the following terms and definitions are applicable to this document.

3.1 coal sample

A representative portion of coal taken for the purpose of determining certain properties.

3.2 test sample of coal

Sample prepared to satisfy specific test requirements.

3.3 common sample of coal

Coal sample taken for multiple tests.

3.4 moisture sample of coal

Coal sample specially taken for the determination of total moisture.

3.6 size analysis sample of coal

Coal sample taken specifically for particle size analysis.

3.7 sampling

The process of taking a representative portion of coal from a large amount of coal.

3.8 increment

A sample taken by operating the sampling device once or intercepting a full cross-section of the coal flow.

3.9 primary increment

An increment taken during the first stage of sampling, before any reduction or division.

3.14 lot

An independent quantity of coal, for which, bulk properties need to be determined.

3.15 continuous sampling

Take a gross sample from each sampling unit in a lot of coal. During sampling, the increment points are distributed at even intervals.

3.16 systematic sampling

Take increments at the same time, space or mass intervals, but the first increment is taken randomly within the first interval, and the remaining increments are taken at selected intervals.

3.31 relevant bias

A bias that is of practical importance or agreed by all parties to the contract.

4.1 General Requirements for Sampling

The purpose of coal sampling and sample preparation is to obtain a test sample of coal whose test results can represent the entire lot of sampled coal.

4.2 Precision

In principle, sampling schemes can be designed to achieve any level of precision.

Formula (1) is the precision estimation formula during continuous sampling, and its relevant theory is described in GB/T 19494.3.

5.1 Basic Procedures of Establishing Sampling Schemes

The basic procedures of establishing sampling schemes are as follows.

5.2.1 Determination of sampling object and type of specimen

The first step in designing a sampling scheme is to determine the coal to be sampled, including the source, variety, original production (or use) coal / new production (or use) coal, lot size of sampled coal, nominal top size and quality history.

5.2.2 Determination of Sampling Precision

The sampling precision is determined based on the purpose of sampling, the type of specimens and the requirements of all parties to the contract. In the absence of agreement, the precision can be determined with reference to Table 1.

5.2.3.1 Determination of variance of primary increments

The variance of primary increments depends on the variety of coal, the nominal top size, the degree of processing and mixing, the absolute value of the parameter to be measured and the mass of increments.

5.2.3.2 Sample preparation and assay variance

The variance of sample preparation and assay VPT is obtained through one of the following methods.

5.2.4.1 Overview

Theoretically speaking, the number of increments taken from a lot of coal to obtain a specific sampling precision is a function of the quality variability of that lot of coal, which has nothing to do with the size of that lot of coal. However, in practice, due to the serial correlation of coal, it is related to the quantity of coal.

5.2.4.2 Determination of number of sampling units and number of increments with known

VI and VPT

6.1 General Rules

The moving coal flow sampling is carried out in a time-basis or mass-basis systematic sampling mode or a stratified random sampling mode. From the perspective of operational convenience and economy, time-basis sampling is preferred.

6.2.1.3 Mass of increment

The mass of the increment is proportional to the coal flow rate. The average mass of primary increments and the absolute mass of primary increments shall be greater than the values calculated through Formula (12) and Formula (13).

6.2.2.1 Primary increment collection method

The primary increments are collected at preset mass intervals. The first increment is randomly taken within the first mass interval, and the remaining increments are taken at equal mass intervals. Variable-velocity or fixed-velocity samplers can be used for sampling. If the pre-calculated number of increments has been collected, but the coal flow in the sampling unit has not finished, then, sampling shall continue at the same mass interval, until the coal flow finishes.

6.3.1 Basic requirements

The quality of coal may periodically change during the sampling, and its change period shall not coincide with the increment collection period, otherwise, it may cause unacceptable sampling bias. For this purpose, stratified random sampling can be adopted.

6.3.2 Time-basis stratified random sampling

In accordance with the stipulations of 6.2.1.2 and 6.2.1.3, respectively calculate the