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NATIONAL STANDARD

OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 477-2008

Replacing GB/T 477-1998, GB/T 19093-2003

Method for Size Analysis of Coal

(ISO 1953:1994, Hard coal - Size analysis by sieving, MOD)

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Foreword

This Standard modifies and adopts ISO 1953:1994 “Hard Coal - Size Analysis by Sieving”.

This Standard is redrafted according to ISO 1953:1994. For ease of comparison, a general table of comparison of clauses between this Standard and the international standard is listed in informative Annex A.

In consideration of national conditions of our country, some revisions are made during the adoption of ISO 1953:1994; qualitative description is changed to operation procedure description; the technical differences are indicated with vertical single-line at the margin blank next to the relevant clauses. Annex B provides a general table on technical differences and the reasons.

For ease of use, this Standard also makes the following editorial changes:

- Changing the word “this international standard” to “this Standard”;
- Delete the foreword and introduction of ISO 1953:1994.

This Standard replaces GB/T 477-1998 “Method for Size Analysis of Coal” and GB/T 19093-2003 “Test Method for Size Analysis of Pulverized Coal”.

Compared with GB/T 477-1998 and GB/T 19093-2003, main changes of this Standard are as follows:

- Add the definitions of “size analysis of coal” and “fine coal size analysis”;
- Add Annex A and Annex B;
- The difference of coal sample mass before testing AND the mass sum of coal samples of various sizes after testing, that has been verified by test results, is changed from 2% and 2.5% to a unified 1%.

Annex C of this Standard is normative; Annex A, B, D and E are informative.

This Standard was proposed by China National Coal Association.

This Standard shall be under the jurisdiction of National Coal Standardization Technical Committee of China (SAC/TC 42).

Drafting organization of this Standard: China Coal Research Institute CCRI Tangshan Research Institute.

Main drafters of this Standard: Yang Junli, Xing Yumei, Cao Xuezhong, Li Zepu, An Wenhua, and Li Shaozhong.

The previous versions replaced by this Standard are as follows:

Method for Size Analysis of Coal

1 Scope

This Standard specifies coal size analysis method's general rules, coal sample, size analysis equipment and operation, laboratory analysis items and results processing.

This Standard applies to determination of yield, ash content, moisture, sulfur content, etc. of lignite, bituminous coal, anthracite and other coal samples of various sizes.

2 Normative references

The articles contained in the following documents have become part of this document when they are quoted herein. For the dated documents so quoted, all subsequent modifications (including all corrections) or revisions made thereafter do not apply to this Standard. However, the parties who reach an agreement according to this Standard are encouraged to study whether the latest versions of these documents may be used. For the undated documents so quoted, the latest versions (including all modification sheets) apply to this document.

GB 474-1996 Method of preparing coal samples (eqv ISO 1988:1975)

GB/T 478 Method for float and sink analysis of coal (GB/T 478-2008, ISO 7936:1992, MOD)

GB/T 4757-2001 Methods for the batch flotation testing of fine coal

GB/T 6003.1-1997 Test sieves of metal wire cloth (eqv ISO 3310-1:1990)

GB/T 6005-1997 Test sieves-Metal wire cloth, perforated metal plate and electroformed sheet - Nominal sizes of opening (eqv ISO 565:1990)

GB/T 7186 Terms relating to coal mining - Coal preparation (GB/T 7186-1998, eqv ISO 1213-1:1993)

MT/T 109-1996 Test methods for degradation in water of coal and gangue

MT/T 1034-2006 Method of sampling run-of-mine coal

3 Terms and definitions

The following terms and definitions apply to this Standard.

6.2 Sieving equipment

6.2.1 Size analysis of coal

6.2.1.1 Round-hole sieve is used for hole diameter of 25 mm or above; sieve plate thickness is about 1 mm~3 mm.

6.2.1.2 Metal wire woven square-hole sieve is used for hole diameter of 25 mm below.

6.2.1.3 For manual size analysis, sieve frame may be made of wooden planks. Reference dimensions are as follows:

- a) Size of sieve surface: 650mmX450 mm;
- b) Sieve frame height: (130 ± 10) mm;
- c) Handle length: (170 ± 10) mm.

6.2.2 Test sieve used for fine coal size analysis shall comply with the provisions of GB/T 6003.1-1997 and GB/T 6005-1997; sieve mesh hole diameters are respectively 0.500 mm, 0.250 mm, 0.125 mm, 0.075 mm and 0.045 mm. If they can not meet the requirements, mesh hole diameter may be increased by 0.355 mm, 0.180 mm and 0.090 mm respectively.

7 Sieving operations

7.1 Size analysis of coal

7.1.1 Sieve test shall be carried out in sieve laboratory; indoor area is generally 120 m²; the ground is of smooth cement. The place where manual crushing and division of coal sample is conducted shall be paved with steel plate (thickness is about 8mm).

7.1.2 Selected test sieve with maximum diameter of hole shall be ensured that the mass of above-sieve products after sieve test does not exceed 5% of the mass before the test; and the masses of all the other coals of various sizes do not exceed 30% of the mass sum in sieve test; otherwise sizes shall be increased appropriately.

7.1.3 Sieving operation shall be generally conducted from the largest sieve mesh hole to the smallest sieve mesh hole. If the content of large particle sizes of coal sample is small, use the sieve with mesh hole of 13 mm or 25 mm first; then respectively sieve the above-sieve products and under-sieve products from large mesh holes to small mesh holes step-by-step; products of various sizes shall be weighed respectively.

7.1.4 During sieve test, shake the sieve to reciprocate at an appropriate uniform speed; moving distance is always about 300 mm. Newly added coal sample for each sieving shall be ensured that the area of sieve surface covered by test sample is not greater than 75%, and above-sieve coal particles can contact with sieve surface when sieving operation is completed.

$$\left| \frac{A_d - \bar{A}_d}{A_d} \right| \times 100\% \leq 10\%$$

9.1.1.2 When ash content of coal sample is greater than or equal to 20%, the absolute difference value shall not exceed 2%, i.e.:

$$|A_d - \bar{A}_d| \leq 2\%$$

Where,

A_d - Ash content of prepared gross sample of various products after sieving;

$\bar{A}_d$ - Weighed average ash content of products after sieving, %.

9.1.2 Take the mass sum of products of various sizes after sieving as 100%; respectively calculate the yield of products of various sizes.

9.1.3 Yield (%) and ash content (%) of products of various sizes are accurate to 0.1%.

9.1.4 Fill up the test results in sieving test report; Annex D involves natural level sieving test results. Sieving test results report of other coal samples may also be prepared by referring to Annex D.

9.2 Fine coal size analysis

9.2.1 In order to ensure the accuracy of test results, relative difference value OF mass sum of products of various sizes after sieving AND the mass of coal sample before sieving shall not exceed 1%; meanwhile, use the difference OF weighed average value of products of various sizes after sieving AND ash content of coal sample before sieving to verify, otherwise the test is invalid.

9.2.1.1 When content of coal sample is less than 10%, the absolute difference value shall not exceed 0.5%, i.e.:

$$|A_d - \bar{A}_d| \leq 0.5\%$$

9.2.1.2 When ash content of coal sample is 10%~30%, the absolute difference value shall not exceed 1%, i.e.:

$$|A_d - \bar{A}_d| \leq 1\%$$

9.2.1.3 When ash content of coal sample is greater than 30%, the absolute difference value shall not exceed 1.5%, i.e.:

$$|A_d - \bar{A}_d| \leq 1.5\%$$

Annex A

(Informative Annex)

Comparison of clause number between this Standard ISO 1953:1994

Table A.1 provides the comparison of clause number between this Standard and ISO 1953:1994.

Table A.1 Table of comparison of clause number between this Standard and ISO 1953:1994

Clause Number of this Standard	Clause Number of ISO 1953:1994
1	1
2	2
3	3
4.1.1, 4.1.2	4.1.1
5	5 and Annex A
6	4.1.1 to 4.1.5; 4.2.1 to 4.2.4; 4.3.1 to 4.3.4
7.1, 7.2	6.2.1 to 6.2, 3; 6.3.1 to 6.3.4, Annex B, Annex C
8	-
9	7.1, 7.2
Annex A	-
Annex B	-
Annex C	7.1
Annex D	-

Annex E

(Informative Annex)

Table of Fine Coal Size Analysis Results

Coal sample name: Coal sample mass: g Sampling location:

Test No.: Ash content of coal sample: % Test date:

Sieving method:

Size/mm	Mass /g	Yield /%	A _d /%	Accumulation /%	
				Σ	A _d
≥0.500					
<0.500~0.250					
<0.250~0.125					
<0.125~0.075					
<0.075~0.045					
<0.045					
Total					

Test responsible person:

Checked by:

Calculated by:

_____**END**_____

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