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PEOPLE'S REPUBLIC OF CHINA

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GB/T 24521-2018

Replacing GB/T 24521-2009

**Method for the determination of specific resistance of
carbon raw materials and coke**

炭素原料和焦炭电阻率测定方法

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Foreword

This Standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This Standard replaces GB/T 24521-2009 “Method for the determination of specific resistance of coke”. Compared with GB/T 24521-2009, main content changes in this Standard are as follows:

- modified the standard's name to “Method for the determination of specific resistance of carbon raw materials and coke”;
- modified the scope (see Clause 1 of this Edition, Clause 1 of Edition 2009);
- modified the instruments and equipment (see Clause 4 of this Edition, Clause 4 of Edition 2009);
- modified the requirements for preparation of particle size of specimen (see 5.3 of this Edition, 5.2 of Edition 2009);
- modified the test steps (see Clause 6 of this Edition, Clause 6 of Edition 2009);
- modified the results calculation (see Clause 7 of this Edition, Clause 7 of Edition 2009);
- modified the precision (see Clause 8 of this Edition, Clause 7 of Edition 2009).

This Standard was proposed by China Iron and Steel Association.

This Standard shall be under the jurisdiction of National Technical Committee on Steels of Standardization Administration of China (SAC/TC 183).

The drafting organizations of this Standard: Ningxia Ningping Carbon Co., Ltd., China Pingmei Shenma Group Kaifeng Carbon Co., Ltd., Shanghai Institute of Materials, Aiken Carbon (China) Co., Ltd., Shanxi Jinyang Carbon Co., Ltd., Metallurgical Industry Information Standards Institute.

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Version of standard substituted by this Standard is:

- GB/T 24521-2009.

Method for the determination of specific resistance of carbon raw materials and coke

1 Scope

This Standard specifies method for the determination of specific resistance of carbon raw materials and coke powders.

This Standard is applicable to the determination of specific resistance of raw materials for carbon production such as anthracite, graphite, roasted and crushed, calcined petroleum coke, graphitized coke, needle coke, as well as coke powders.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 1997, *Coke-sampling and preparation of samples*

GB/T 8170, *Rules of rounding off for numerical values & expression and judgement of limiting values*

3 Method principle

Put a dry specimen with a certain particle size into the specimen tank. Pass a certain intensity of current under a certain pressure. Measure the voltage drop at both ends of specimen. Calculate the resistance of the specimen according to Ohm's law.

4 Instruments and equipment

4.1 Powder resistance measuring instrument

4.1.1 See Figure 1 for the schematic diagram of specimen device.

to it.

5.2 After the specimen is shrunken, place 1kg of the specimen in the blast drying oven. Dry 2h at $150^{\circ}\text{C} \pm 10^{\circ}\text{C}$. Then crush to less than 1mm, shrink to 80g~100g. Store the rest specimens.

5.3 Crush the shrunken specimen 3~4 times to make them all pass the 0.5mm square hole standard sieve. Take the specimens of which the granularity is 0.315mm~0.500mm (it can also choose the granularity interval according to the product standard or the agreement between the supplier and purchaser, but the granularity interval needs to be indicated in the report). The well-prepared specimen is not less than 30g. Mix them evenly. Store in the drying oven for spare use.

6 Test steps

6.1 Specimen weighing

Weigh 3.3g of specimen. In order to ensure the specimen height is between 15mm~17mm, the specimen volume can be adjusted if necessary.

6.2 Determination

6.2.1 Short-circuit the bottom of the specimen cylinder and the indenter. Then apply a pressure of $3.9\text{MPa} \pm 0.03\text{MPa}$. Connect the wires and turn on the power. Adjust the regulated power supply current. Make the current through the line as $500\text{mA} \pm 0.1\text{mA}$. Then measure the voltage drop V_0 of the line (the reading shall be less than 1mV, otherwise the instrument needs to be adjusted). Determine twice and take the average value.

6.2.2 Add a specimen in the specimen cylinder (see 4.16). After compacting and smoothing the upper surface of the specimen, place the specimen tube in the testing machine (see 4.1.3). Then apply a pressure of $3.9\text{MPa} \pm 0.03\text{MPa}$. Measure the sample height h . Connect the wires and turn on the power. Adjust the regulated power supply current so that the current through the specimen is $500\text{mA} \pm 0.1\text{mA}$. Then measure the pressure drop of specimen.

6.3 Determination times

Determine twice independently. Each determination shall use the untested new specimen. Take the average value.

6.4 Testing time

When the specimen passes the current, the test shall be completed within 3min. If it exceeds 3min, the results shall be invalid.

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