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GB/T 7702.7-2008

Replacing GB/T 7702.7-1997

Test Method for Granular Activated Carbon from Coal - Determination of Iodine Number

煤质颗粒活性炭试验方法

碘吸附值的测定

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Foreword

GB/T 7702 "Test Method for Granular Activated Carbon from Coal" is divided into:

- Part 1: Determination of Moisture;
- Part 2: Determination of Particle Size;
- Part 3: Determination of Hardness;
- Part 4: Determination of Packing Density;
- Part 5: Determination of Absorption of Water;
- Part 6: Determination of Methylene Blue Absorption;
- Part 7: Determination of Iodine Number;
- Part 8: Determination of Phenol Absorption;
- Part 9: Determination of Ignition Temperature;
- Part 10: Determination of Service Life against Benzene and Chloroethane Vapours;
- Part 13: Determination of CCL₄ Vapour Absorption;
- Part 14: Determination of Sulphur Capacity;
- Part 15: Determination of Ash Content;
- Part 16: Determination of pH Value;
- Part 17: Determination of Floatation Ratio;
- Part 18: Determination of Caramel Absorption;
- Part 19: Determination of Carbon Tetrachloride (CCl₄) Desorption;
- Part 20: Determination of Pore Volume and Specific Surface Area.

This Part is part 7 of GB/T 7702.

This Part replaces GB/T 7702. 7-1997 "Test Method for Granular Activated Carbon from Coal - Determination of Iodine Number".

This Part modifies and adopts U.S. ASTM D 4607:1994 (reconfirmed in 2006) "Standard

Test Method of Activated Carbon Iodine Number". Revisions of this Part are as follows:

- a) According to provisions of our national standard, quantitative unit is modified to be legal metrological unit of our country.
- b) The difference of 2 measurement results in the same laboratory: U.S. ASTM D 4607:1994 stipulates that it is not greater than 5.6%; this Part stipulates that it is not greater than 2%.
- c) The difference of measurement results between 2 laboratories: U.S. ASTM D 4607:1994 stipulates that it is not greater than 10.2%; this Part stipulates that it is not greater than 5%.
- d) Add provisions on test report.

Compared with GB/T 7702.7-1997, the main differences of this Part are as follows:

- a) Modify the determination procedure to be consistent with U.S. ASTM D 4607:1994 (reconfirmed in 2006);
- b) Test sieve is changed to $\Phi 200 \times 50 - 0.075/0.050$ square hole;
- c) Add Chapter 3 "Terms and definitions".

This standard was proposed by and shall be under the jurisdiction of China North Industries Group Corporation.

Drafting organization of this Standard: Shanxi Xinhua Chemical Co., Ltd.

Main drafters of this Standard: Chi Guangxiu, Yuan Yidong, Cheng Qingjun, Li Weibing, Zhao Jijun, Pang Huisheng, and Li Ruomei.

This standard was first-time issued in 1987, and first-revised in 1997.

Test Method for Granular Activated Carbon from Coal

- Determination of Iodine Number

1 Scope

This Part specifies the content such as determination principle, determination procedures, result calculation of iodine number of granular activated carbon from coal.

This Part applies to determination of iodine number of granular activated carbon from coal. It is also applicable to powdered activated carbon from coal.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Part of GB/T 7702. For dated reference, the subsequent amendments (excluding correction) or revisions of these publications do not apply. However, the parties who enter into agreement based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards. For undated references, the latest edition of the normative document referred to applies.

GB/T 601-2002 Chemical Reagent - Preparations of Standard Volumetric Solutions

GB/T 603-2002 Chemical reagent - Preparations of reagent solutions for use in test methods (ISO 6353-1: 1982, NEQ)

GB/T 675 Chemical reagent - Iodine (GB/T 675-1993, neq ISO 6353-3: 1987 R68)

GB/T 1263 Chemical reagent - Disodium hydrogen phosphate dodecahydrate (GB/T 1263-2006, ISO 6353-2: 1983, NEQ)

GB/T 1272 Chemical reagent - Potassium iodide (GB/T 1272-2007, ISO 6353-2: 1983, NEQ)

GB/T 1914 Chemical analytical filter paper

GB/T 6682 Water for Analytical Laboratory Use - Specification and Test Methods (GB/T 6682-1992, neq ISO 3696:1987)

3 Terms and definitions

For the purpose of this Part of GB/T 7702, the following terms and definitions apply.

3.1

Capacity of iodine adsorption

The number, in milligrams, of iodine that is absorbed by per gram of activated carbon, after activated carbon and iodine solution are fully oscillated for absorption, and under specified test conditions.

3.2

***E* number**

The number of iodine that is absorbed by per gram of activated carbon.

3.3

Iodine number

The number of iodine that is absorbed by per gram of activated carbon, when residual concentration is 0.02 mol/L, and at iodine absorption isotherm.

4 Principle

Under specified conditions, after quantitative test portion and iodine solution are thoroughly oscillated for absorption, use titration method to measure the remaining iodine number. Obtain the iodine number, in milligrams, absorbed by each test portion. Draw adsorption isotherm. Use the iodine number that is absorbed by per gram of test portion when remaining iodine concentration is 0.02 mol/L, to express the iodine number of activated carbon.

5 Reagents and materials

5.1 Water: GB/T 6682, Grade 3 water.

5.2 Hydrochloric acid solution: prepare hydrochloric acid solution of which the mass fraction is 5%. Measure 70 mL of hydrochloric acid (GB/T 622, analytically pure). Slowly pour it into 550 mL of water. Mix uniformly.

5.3 Iodine standard titration solution: $c(1/2I_2)=0.1$ mol/L. Weigh 12.700 g of iodine (GB/T 675, analytically pure) and 19.100 g of potassium iodide (GB/T 1272, analytically pure).

- a) Serial number of test sample;
- b) Standard used;
- c) Method used;
- d) Test item;
- e) Test results;
- f) Testing personnel;
- g) Test date.

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Contact: Wayne Zheng, Sales@ChineseStandard.net

Linkin: <https://www.linkedin.com/in/waynezhengwenrui/>

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