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GB/T 7702.14-2008

Replacing GB/T 7702.14-1997, GB/T 7702.22-1997

Test Method for Granular Activated Carbon from Coal - Determination of Sulphur Capacity

煤质颗粒活性炭试验方法

硫容量的测定

Issued on: November 20, 2008 **Implemented on: May 01, 2009**

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Standardization Administration of the People's Republic of China.

Table of Contents

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;

— Part5: 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;

— Part14: 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 14 of GB/T 7702.

This Part replaces GB/T 7702.14-1997 *Standard test method for sulphur capacity of granular activated carbon from coal* and GB/T 7702.22-1997 *Standard test method for granular activated carbon from coal - Determination of breakthrough sulphur capacity.*

Compared with GB/T 7702.14-1997 and GB/T 7702.22-1997, the main changes of this

Part are as follows:

a) Change the standard structural according to GB/T 1.1-2000 *Directives for standardization - Part 1: Rules for the structure and drafting of standards* and GB/T 20001.4-2001 *Rules for drafting standards - Part 4: Methods of chemical analysis*;

b) Combine the GB/T 7702.14-1997 *Standard test method for sulphur capacity of granular activated carbon from coal* and GB/T 7702.22-1997 *Standard test method for granular activated carbon from coal - Determination of breakthrough sulphur capacity* into GB/T 7702.14-2008 *Test method for granular activated carbon from coal - Determination of sulphur capacity*;

c) Stipulate that the division value of timer is 0.1s;

d) Correct the volume fraction of oxygen of saturated sulphur capacity to be 0.6% ~ 1.0%;

e) Modify the metrological quantity and units according to regulations.

This Part was proposed by China North Industries Group.

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

The main drafting staffs of this Part: Chi Guangxiu, Zhao Jijun, Li Weibing, Yuan Yidong, Zhang Xu, Pang Huisheng, and Li Ruomei.

This Part replaces the following historical editions:

— GB/T 7702.14-1987, GB/T 7702.14-1997;

— GB/T 7702.22-1987, GB/T 7702.22-1997.

Test Method for Granular Activated Carbon from Coal - Determination of Sulphur Capacity

1 Scope

This Part specifies the content such as principle, steps and result calculation for the determination of sulphur capacity of granular activated carbon from coal. This Part applies to the determination of sulphur capacity of granular activated carbon from coal. It also applicable to impregnated activated carbon.

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

GB/T 625 Chemical Reagent - Sulfuric Acid (GB/T 625-2007, ISO 6353-2: 1983, NEQ)

GB/T 631 Chemical Reagent - Ammonia Solution (GB/T 631-2007, ISO 6353-2: 1983, NEQ)

GB/T 676 Chemical Reagent - Acetic Acid (GB/T 676-2007, ISO 6353-2: 1983, NEQ)

GB/T 6682 Water for Analytical Laboratory Use - Specification and Test Methods (GB/T 6682-2008, ISO 3696:1987, MOD)

GB/T 7702.10-2008 Test Method for Granular Activated Carbon from Coal - Determination of Service Life Against Benzene and Chloroethane Vapours

GB/T 10500 Industrial Natrium Sulfide

WJ 2281 Verification Regulation of Float Meter for Protective Equipment Test

constant-temperature drying oven at 150°C±5°C to dry for 2 h. Then place in dryer to cool down for later use.

7.2 Penetration sulfur capacity

Take about 200 g of specimen by using quartering method. Place in electrothermal constant-temperature drying oven at 150°C±5°C to dry for 2 h. Then place in the dryer to cool down for later use.

8 Determination preparations

8.1 Instrument installation

Use rubber tube and glass tube to connect the various instrument parts in sequence according to the schematic diagrams (Figure 1, 2 and 3).

8.2 Air tightness inspection

8.2.1 Check the air tightness of the instruments connected before being used.

8.2.2 When checking air tightness, connect a pressure gauge at piston K_2 (Figure 1). Close all pistons that are through the atmosphere. Access in the compressed air slowly. Close K_1 when the internal pressure of the whole instrument reaches 13.3 kPa (gauge pressure). Observe the pressure change. If the pressure drop is less than 0.26 kPa within 1 min, the air tightness is qualified. Otherwise, find out the causes and handle the non-hermetic parts.

8.3 Air flow

The control of air flow shall meet the requirements of 9.3 in GB/T 7702.10-2008.

8.4 Humidity of air flow

The control of air flow humidity shall meet the requirements of Annex A in GB/T 7702.10-2008.

8.5 Determination of initial mass concentration of hydrogen sulfide

Inject 50 mL of zinc acetate solution, of which the mass concentration is 2%, into two in-series suction bottles. Remove the suction bottles after accessing gas for 20 min. Blow and wash the solution in the suction bottles into a 200 mL conical flask. Add excessive standard iodine solution (above 40 mL). Use starch as the indicator; use sodium thiosulfate standard titration solution to titrate the excessive iodine.

The initial mass concentration of hydrogen sulfide, in ρ_0, its numeric value is expressed in mg/L, is calculated by Formula (1);

Where:

ρ_0 — initial concentration of hydrogen sulfide in mixed air flow, mg/L;

q_v — flow rate of gas mixture through the determination tube, L/min;

t_b — penetration time when the volume fraction of hydrogen sulfide reaches 50×10^{-6}, min;

m — mass of specimen, g.

10.3 For each specimen, conduct the parallel determination of 2 test materials. The results are expressed in arithmetic mean value, and shall be accurate to the integer.

10.4 The difference between the 2 determination results shall not be greater than 10%.

11 Test reports

The test report shall include the following contents:

a) Serial number of the sample;

b) The standards used;

c) The methods used;

d) Test items;

e) Test results;

f) Testing personnel;

g) Date of test.

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