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GB/T 2292-2018

Replacing GB/T 2292-1997

Determination of toluene insoluble content for coking products

焦化产品甲苯不溶物含量的测定

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Foreword

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

This Standard replaces GB/T 2292-1997 “Coking products - Determination of toluene insoluble content”. As compared with GB/T 2292-1997, the main technical changes of this Standard are as follows:

- ADD impregnating pitch to the scope (SEE Clause 1; Clause 1 of 1997 edition);
- REPLACE “sand” with “quartz sand” (SEE 4.2; 4.2 of 1997 edition);
- CHANGE the “electric heating jacket” to “adjustable voltage electric heating jacket” (SEE 5.3; 5.3 of 1997 edition);
- DELETE “Adjustable transformer: 2 kVAe” (SEE 5.9 of 1997 edition);
- CHANGE “Other general laboratory instruments such as beakers” to “Beakers, glass rods” (SEE 5.9; 5.10 of 1997 edition);
- ADD “POUR 5 mL of toluene into the weighing bottle; WASH the weighing bottle; then POUR the toluene into the filtration paper cylinder” (SEE 8.2);
- ADD “When the toluene extract washes the filtration paper cylinder and makes the filtration paper cylinder white or light yellow, and the extract in the extraction cylinder clarified, that is the extraction end point” (SEE 8.7);
- MODIFY the constant weight operation requirements (SEE 8.8);
- CHANGE “m_2” in 9.2 formula (2) to “m_4”, and “m_1” to “m_3” (SEE 9.2; 9.2 of 1997 edition);
- INTEGRATE the previous 9.3 and 9.4 (SEE 9.3; 9.3 and 9.4 of 1997 edition).

This Standard was proposed by China Iron and Steel Association.

This Standard shall be under the jurisdiction of Subcommittee 3 on Coking Chemistry of National Technical Committee 469 on Coal Chemical Industry of Standardization Administration of China (SAC/TC 469/SC 3).

Drafting organizations of this Standard: Sinosteel Anshan Research Institute of Thermo-Energy Co., Ltd., Shanghai Baosteel Chemical Co., Ltd., Beijing Inspect Technology Co., Ltd., China Metallurgical Information and Standardization Institute.

Determination of toluene insoluble content for coking products

Warning: The use of this Standard may involve certain hazardous materials, operations, and equipment, but does not give suggestions on all safety issues related thereto. Users, before using this Standard, are responsible for adopting appropriate safety and protection measures; and shall ensure compliance with the conditions stipulated in the relevant national regulations.

1 Scope

This Standard specifies the principles, reagents and materials, instruments and equipment, sampling and preparation of specimens, preparation work, test procedures, calculation results, and precision for determination of toluene insoluble content for coking products.

This Standard applies to the determination of toluene insoluble content in coal tar pitch, modified pitch, impregnating pitch, coal tar pitch road oil, coal tar, wood preservative oil, and coal feedstock oil for carbon black.

2 Normative references

The following documents are indispensable for the application of this document. For the dated references, only the versions with the dates indicated are applicable to this document. For the undated references, the latest version is applicable to this document.

GB/T 1999 Sampling of coking oil products

GB/T 2000 Coking solid products - Sampling

GB/T 2284 Coking toluene

GB/T 2291 Method for preparation of coal tar pitch specimens

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

YB/T 030 Determination of the viscosity of coal tar pitch for road

5.1.1 Flat-bottomed flask: Its volume is 250 mL. It has a standard grinding mouth with a diameter of 24/29 mm.

5.1.2 Extraction cylinder: Its height is (185±5) mm; cylinder diameter is (48±1) mm. The return pipe has a height of (43±1) mm, and a diameter of (6±1) mm. It has an upper standard grinding mouth with a diameter of 45/40 mm and a lower standard grinding mouth with a diameter of 24/29 mm.

5.1.3 Condenser: 5-ball water condenser. Its height is (200±5) mm, and diameter is (42±2) mm. It has a lower standard grinding mouth with a diameter of 45/40 mm.

5.2 Intelligent counter: The automatic counting range is 0~999; three-digit display; photoelectric probe plug-in signal acquisition; buzzer automatic alarm. The supply voltage is AC220 V. The power is 2.5 W. When used, the ambient temperature range is -10 °C~40 °C. The maximum service temperature of the photoelectric probe is 80 °C. Or other counting methods.

5.3 Adjustable voltage electric heating jacket: The volume is 250 mL. The power is 300 W. Or other adjustable voltage heaters.

5.4 Weighing bottle: 75 mm high and 35 mm in diameter, with a tight grinding cover.

5.5 Drying oven: It has automatic temperature control and blower device, and can maintain the temperature between 115 °C~120 °C.

5.6 Analytical balance: The sensitivity is 0.0001 g.

5.7 Desiccator: It contains desiccant.

5.8 Test tube: Its height is 170 mm, and outer diameter is 25 mm, for folding filtration paper cylinder, or other molds.

5.9 Beakers, glass rods.

6 Sampling and preparation of specimens

6.1 The coal tar pitch, modified pitch, and impregnating pitch are sampled according to GB/T 2000; and then, according to GB/T 2291, the specimens are prepared.

6.2 The preparation of coal tar pitch road oil analytical specimens is carried out according to YB/T 030.

6.3 Coal tar, wood preservative oil, coal feedstock oil for carbon black, and coal

the mass difference shall not be more than 0.001 g); TAKE out the absorbent cotton for use. WEIGH (3±0.2) g (accurate to 0.0001 g) of coal tar analytical specimen or (10±0.5) g (accurate to 0.01 g) of the analytical specimen of wood preservative oil and coal feedstock oil for carbon black INTO the filtration paper cylinder; TAKE the filtration paper cylinder out from the weighing bottle, and immediately PLACE in a 100 mL beaker containing 60 mL of toluene. After the toluene is infiltrated into the filtration paper cylinder, the specimen in the filtration paper cylinder is gently stirred with a glass rod for 2 min, to uniformly disperse the specimen in toluene. POUR 5 mL of toluene into the weighing bottle; WASH the weighing bottle; then POUR the toluene into the filtration paper cylinder; TAKE out the filtration paper cylinder; and USE the above-mentioned absorbent cotton to wipe the glass rod; PLACE the absorbent cotton in the filtration paper cylinder.

8.3 When measuring the toluene insoluble content of coal tar pitch road oil, firstly OPERATE as described in 8.1 (It shall add the treated absorbent cotton and make constant weight with filtration paper cylinder together). Then WEIGH 1 g (accurate to 0.0001 g) of specimen in the filtration paper cylinder; TAKE the filtration paper cylinder out from the weighing bottle, and immediately PLACE in a 100 mL beaker containing 60 mL of toluene. After the toluene is infiltrated into the filtration paper cylinder, USE a glass rod to mix the specimen with quartz sand (7.1); TAKE out the filtration paper cylinder; and USE the above-mentioned absorbent cotton to wipe the glass rod; PLACE the absorbent cotton in the filtration paper cylinder.

8.4 A flat-bottomed flask containing 120 mL of toluene is placed in an electric heating jacket. PLACE the filtration paper cylinder in the extraction cylinder so that the upper edge of the filtration paper cylinder is 20 mm higher than the return pipe. The extraction cylinder is attached to the flat-bottomed flask. Then along the inner wall of the filtration paper cylinder, about 30 mL of toluene is added.

8.5 CONNECT the condenser with drainage iron wire to the extraction cylinder; and CONNECT the cooling water. At the same time, the photoelectric probe of intelligent counter is horizontally clamped to the return pipe, as shown in Figure 2.

8.6 SWITCH on the power of the counter. According to Table 1, SET the extraction times.

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