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**NATIONAL STANDARD OF THE  
PEOPLE'S REPUBLIC OF CHINA**

**GB 3780.2-1983**

Replacing GB/T 3780.2-2007

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**Carbon black -- Part 2: Determination of oil absorption number  
(English Translation)**

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### Foreword

GB/T 3780 "carbon black" is divided into the following sections.

- Part 1. Iodine absorption test method;
- Part 2. Determination of oil absorption;
- Part 4. Determination of compressed sample absorption value;
- Part 5. Determination of specific surface area CTAB method;
- Part 6. Determination of color strength;
- Part 7. Determination of pH value;
- Part 8. Determination of heating loss;
- Part 10. Determination of ash;
- Part 12. Inspection of impurities;
- Part 14. Determination of sulfur content;
- Part 15. Determination of toluene extractable transmittance;
- Part 17 - Indirect determination of particle size reflectance method;
- Part 18. Identification of natural rubber (NR);
- Part 21. Determination of sieve residue water washing method;
- Part 22. Calculation of process capability index using process control data;
- Part 23. Sampling and identification of fugitive carbon black or other environmental particles;

--- Part 24. Determination of void volume.

This section GB/T 3780 Part 2.

This section drafted in accordance with GB/T 1.1-2009 given rules.

This Part replaces GB/T 3780.2-2007 "Part 2 carbon black. Determination of oil absorption," compared with GB/T 3780.2-2007, the main technical changes are as follows.

- Added the relevant reagents and materials (see 5.1, 5.3);
- Modify the accuracy of the microtiter (see 6.5, 2007 version 11.1);
- Added the "carbon black type listed in Table 1, the value of oil absorption are read curve fitting 70% of the maximum torque at the corresponding value" provisions more Surface and clear (see 8.1.9);
- Increase the density of the provisions of the oil (see Appendix A, A.6);
- Added "Evaluation of oil absorption chamber" (see Appendix E);
- Removed the 2007 edition of Table C.1.

This part is proposed by China Petroleum and Chemical Industry Federation.

This part of the National Rubber and Rubber Products Standardization Technical Committee (SAC/TC35) centralized.

This part of the drafting unit. Zhong Hao Black Chemical Research and Design Institute Co., Ltd., Lone Star Chemical Co., Ltd., Pu Lin Cheng Shan (Shandong) round Tire Co., Ltd., Hangzhou Zhongce Qingquan Industrial Co., Ltd., Shandong Linglong Tire Co., Ltd., Yunnan Yunwei Flying Tiger Chemical Co., Ltd., Dongying Best Chemical Technology Co., Ltd., Wuxi Shuangcheng Carbon Black Co., Ltd.

## 1 Scope

GB/T 3780 provisions of this part of the instrument method and manual method for the determination of carbon black oil absorption method, instrument method for the arbitration method.

This section applies to rubber carbon black and pigment black.

## 2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version applies to this article Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 3778 carbon black rubber GB/T 3780.8 Carbon black Part 8. Determination of heating loss GB/T 7044 pigment black GB/T 8170 rounded repair rules and limit values of the

representation and judgment GB/T 15338 carbon black test methods to determine the precision and bias

### **3.1 Instrument method**

#### **3.1.1**

The degree of aggregation of carbon black particles affect the process of carbon black rubber compound, vulcanized rubber performance. Void volume of carbon black aggregate Depending on the degree of aggregation of the carbon black particles and the void volume is obtained from the volume of oil absorbed by the carbon black, the carbon black oil absorption can be obtained as carbon black particles A measure of the degree of sub-aggregation.

#### **3.1.2**

With a constant-speed buret oil is added to the carbon black sample in the oil absorption chamber mixing chamber, as the sample oil absorption increases, the mixed material from the free-flowing state becomes a semi-plastic agglomerate and the viscosity of the mixture increases, which is transmitted to the torque sensing System, when the viscosity of the mixture reaches a preset torque value, both the oil absorber and the constant speed burette are automatically shut off at the same time. From the constant speed burette directly Read out the volume of oil added per unit mass of carbon black to absorb the volume of oil is the carbon black oil absorption value.

### **3.2 Manual method**

To a certain amount of oil droplets added to a certain amount of carbon black samples, with glass rods on the glass reconcile, stirring, rolling, so that the mixture from Free-flowing state becomes a semi-plastic agglomerate. All of the carbon blacks have a predetermined shape, and can be entirely rolled onto a glass rod, and in the glass no traces of oil on the board for the end.

## **4 Test conditions**

Laboratory temperature ( $23 \pm 5$ ) °C. Laboratory equipment and reagents used should be kept at laboratory temperature 24h.