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

GB/T 7048-2012

Colour carbon black -- Determination of blackness

色素炭黑 黑度的测定

(English Translation)

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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 7048-2003 "Colour carbon black -- Determination of blackness".

Compared with GB/T 7048-2003, the main changes of this Standard are as follows:

- Added GB/T 3780.8 (Chapter 2 of this Edition);
- Deleted "GSB 05-1427-2001" (Chapter 2 of GB/T 7048-2003);
- Deleted "GSB 05-1427-2001" and added "GB/T 9578" (2 and 4.3 of GB/T 7048-2003; Chapter 2 and 4.3 of this Edition);
- Appropriately modified "Principle" (Chapter 3 of GB/T 7048-2003; Chapter 3 of this Edition);
- Modified sample drying temperature from 105°C to 125°C (5.4 of GB/T 7048-2003; 5.4 of this Edition);
- Deleted the provision on syringe volume, and only its accuracy was specified (5.5 of GB/T 7048-2003; 5.5 of this Edition);

- Added "dryer" (5.6 of this Edition);
- Added "tough, conical" to "ink knife" (5.6 of GB/T 7048-2003; 5.7 of this Edition);
- Deleted "Figure 1" of GB/T 7048-2003, and added Figure 1 of this Edition;
- Deleted the provisions on the size of glass plates (5.7 of GB/T 7048-2003; 5.9 of this Edition);
- Changed "ink film-making device" to "ink film-making device, groove depth (0.07 ~0.10) mm, capable of preparing a film with uniform thickness (see Figure 1)" (5.9.2.1 of GB/T 7048-2003; 5.8 of this Edition) ;
- Deleted the "glass slide film preparation method" and related instruments and analysis steps h. At the same time, changed the numbering and content of the analysis steps accordingly (5.9, 8.8, 8.8.2, 8.9.2 of GB/T 7048-2003; Chapter 8 of this Edition);
- Edited the provisions on drying of the sample in "Sampling" of the previous edition into the steps of this Edition, and made appropriate modifications. At the same time, added notes (6.2 of GB/T 7048-2003; 8.1.1 of this Edition);
- Added "Place the ink slurry on one end of a smooth and clean glass plate (5.9) for Colour carbon black - Determination of blackness

WARNING -- Personnel using this standard shall have practical experience in regular laboratory work. This standard does not point out all possible safety issues. Users are responsible for taking appropriate safety and health measures and ensuring that the conditions specified in relevant national laws and regulations are met.

1 Scope

This Standard specifies the method for measuring the blackness of colour carbon black using a reflectometer based on standard reference carbon black No. 3 (SRB3).

This Standard is applicable to all types of colour carbon black.

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 3780.8, Carbon black -- Part 8: Determination of heating loss

GB/T 7044, Colour carbon black

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

GB/T 9578, Standard reference black 3 (SRB 3#)

3 Principle

The colour carbon black specimen (hereinafter referred to as the specimen) and the standard reference carbon black 3# (hereinafter referred to as the standard specimen) are mixed with refined 4# linseed oil. After grinding, a uniform ink slurry is obtained. Then it is coated into a film of uniform thickness. The blackness value is measured by a reflectometer. The blackness value of the sample is expressed by reflectivity.

4 Reagents

4.1 95% ethanol: chemically pure.

6 Sampling

Sampling shall be carried out in accordance with the provisions of GB/T 7044.

7 Test conditions

Room temperature of $(23\pm 2)^{\circ}\text{C}$, relative humidity of $(50\pm 5)\%$; or room temperature of $(27\pm 2)^{\circ}\text{C}$, relative humidity of $(65\pm 5)\%$.

8.1.1 Dry an appropriate amount of carbon black specimen and standard specimen (4.3)

according to the provisions of GB/T 3780.8. Place them in a desiccator (5.6) to cool to room temperature.

NOTE: Carbon black shall not be re-dried.

8.1.2 Weigh (0.4 ± 0.0001) g of the dried test specimen and standard specimen (8.1.1)

respectively.

8.1.3 Place a weighed portion of carbon black in the center of the lower plate of the mill

(5.2).

8.1.4 Use a syringe (5.5) to draw 2.0 mL of refined linseed oil 4# (4.2). Add it to the

carbon black on the lower plate. Use an ink knife to mix the carbon black and refined linseed oil 4# thoroughly. Apply a round cake in the center. Clean the ink sticking to the ink knife as much as possible onto the plate of the grinder. Minimize the loss of ink.

8.1.5 Close the upper plate of the grinder and start grinding at a pressure of 0.017 MPa

for 50 r.

8.1.6 Open the upper plate. Use the ink knife to transfer the ink slurry adhering to the

upper plate to the lower plate as much as possible. Then, as the lower plate rotates, use the ink knife to collect all the ink slurry at the center of the lower plate. Clean the ink slurry adhering to the ink knife as much as possible onto the plate of the grinder. Close the upper plate. Continue grinding for 50 r. Repeat this operation 3 times. Grind the ink slurry for a total of 200 r.

8.1.7 Collect the ink on sulphuric acid paper or glass paper (4.5) or place it on one end

of a smooth and clean glass plate (5.9) for later use.

8.1.8 Clean the grinding machine plate with a solvent (e.g., ethanol) (4.1) and cotton

wool or soft tissue paper (4.4).