

ICS 83.040.20

CCS G 49



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

GB/T 3780.27-2020

**Carbon black - Part 27: Determination of aggregate size
distribution by disc centrifuge photosedimentometry**

Issued on: November 19, 2020

Implemented on: October 1, 2021

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

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Foreword

GB/T 3780 "Carbon Black" is divided into the following parts.

---Part 1.Test method of iodine absorption value;

---Part 2.Determination of oil absorption value;

---Part 4.Determination of the oil absorption value of the compressed sample;

---Part 5.Determination of specific surface area by CTAB method;

---Part 6.Determination of tinting strength;

---Part 7.Determination of pH;

---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 light transmittance of toluene extract;

---Part 17.Indirect determination of particle size and reflectance method;

---Part 18.Identification method in natural rubber (NR);

---Part 21.Determination of the residue on the sieve with water washing method;

---Part 22.Use process control data to calculate process capability index;

---Part 23.Sampling and identification of fugitive carbon black or other environmental particles;

---Part 24.Determination of void volume;

---Part 25.Determination of carbon content;

---Part 26.Determination of carbon content in carbon black feedstock oil;

---Part 27.Determination of aggregate size distribution by disc centrifugal optical sedimentation measurement;

---Part 28.Determination of polycyclic aromatic hydrocarbon content.

This part is part 27 of GB/T 3780.

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

This part uses the redrafting method to amend and adopt ISO 15825.2017 "Determination of Carbon Black for Rubber Compounding Material by Disc Centrifugal Precipitator

Particle size distribution of carbon black aggregates".

Compared with ISO 15825.2017, this part has many structural adjustments. Appendix A lists this part and ISO 15825.2017

A list of chapter number comparisons.

The technical differences between this part and ISO 15825.2017 and the reasons are as follows.

--- "This part applies to carbon black." has been added to the scope to comply with the writing and usage habits of my country's standards (see Chapter 1, ISO

15825 Chapter 1 of.2017);

---Regarding normative reference documents, this section has made adjustments with technical differences to adapt to my country's technical conditions and adjustments.

The situation is collectively reflected in Chapter 2 "Normative Reference Documents", and the specific adjustments are as follows.

* Replace ISO 3696 (see 5.1) with GB/T 6682 modified to adopt international standards;

* Delete ISO 1124 and replace it with GB/T 3778 (see Chapter 6);

--- Deleted the "meaning and purpose" in ISO 15825.2017 to meet the structure and writing requirements of my country's national standards (see ISO

15825 Chapter 4 of.2017);

---Added "test data processing" to meet the structure and compilation requirements of my country's national standards (see Chapter 11);

--- Delete B.1 and B.2 in Appendix B of ISO 15825.2017, and only retain the provisions of precision. "Precision" is listed as a separate chapter.

For ease of application (see Chapter 12, Appendix B of ISO 15825.2017);

--- Added "The structural changes of this part compared with ISO 15825.2017" (see Appendix A).

This section has made the following editorial changes.

---Modified the standard name;

---References are deleted.

This part was proposed by the China Petroleum and Chemical Industry Federation.

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

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Co., Ltd., Jinneng Technology Co., Ltd., Shandong Huadong Rubber Material Co., Ltd.

1 Scope

This part of GB/T 3780 specifies a method based on the hydrodynamic characteristics of carbon black in a centrifugal field, which is tested with a disc centrifugal sedimentation instrument

The method of carbon black aggregate size distribution.

This section applies to carbon black.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this article

Pieces. For undated references, the latest version (including all amendments) applies to this document.

GB/T 3778 Carbon black for rubber

GB/T 6682 Analytical laboratory water specifications and test methods (GB/T 6682-2008, ISO 3696.1987, MOD)

3 Terms and definitions

The following terms and definitions apply to this document.

3.1

Carbon black aggregate

The discrete, rigid colloidal substance formed by the aggregation or extension of multiple carbon black particles is the smallest dispersible unit of carbon black.

Note. This constitutes a huge particle swarm.

3.2

Spinning fluid

It is composed of a buffer solution injected into a rotating disc, which is used to form a sedimentation of aggregates when the sample is added.

Note. Under most conditions, alkaline conditions can minimize agglomeration of aggregates.

3.3

Dispersions

A liquid in which aggregates are dispersed.

3.4

Stokes equation

The mathematical equation used to describe the sedimentation of spherical particles.