



Designation: D1509 – 18 (Reapproved 2023)

Standard Test Methods for Carbon Black—Heating Loss¹

This standard is issued under the fixed designation D1509; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 These test methods cover the determination of the heating loss of carbon black at 125°C. This heating loss consists primarily of moisture, but other volatile materials may also be lost. These test methods are not applicable to treated carbon blacks that contain added volatile materials, if moisture loss is to be measured.

1.2 These test methods may also be used for the determination of the heating loss of recovered carbon fillers (rCF/rCB) at 125°C. However, these materials were not included in the precision studies and therefore, the precision statements contained in this standard may not be valid for these materials.

1.3 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

D1799 Practice for Carbon Black—Sampling Packaged Shipments

¹ These test methods are under the jurisdiction of ASTM Committee D24 on Carbon Black and are the direct responsibility of Subcommittee D24.31 on Non-Carbon Black Components of Carbon Black.

Current edition approved Jan. 1, 2023. Published February 2023. Originally approved in 1957. Last previous edition approved in 2018 as D1509 – 18. DOI: 10.1520/D1509-18R23.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

D1900 Practice for Carbon Black—Sampling Bulk Shipments

D4483 Practice for Evaluating Precision for Test Method Standards in the Rubber and Carbon Black Manufacturing Industries

3. Summary of Test Method

3.1 A carbon black sample is weighed before and after heating for 1 h at 125°C. The observed difference in mass is the heating loss.

4. Significance and Use

4.1 In addition to determining the heating loss (primarily moisture content) of carbon black, these drying conditions are used to prepare samples prior to performing other carbon black tests.

4.2 When larger samples are prepared for other tests, use an open vessel of suitable dimensions so that the depth of the black is no more than 10 mm during conditioning.

4.3 Carbon black is hygroscopic. The amount of moisture absorbed is related to the surface area of the black and to the relative humidity, ambient temperature, and time to which the material is exposed.

Method A—Convection–Gravity Oven Method

5. Apparatus

5.1 *Oven*, gravity-convection type, capable of temperature regulation of within $\pm 1^\circ\text{C}$ at 125°C and temperature uniformity within $\pm 5^\circ\text{C}$.

5.2 *Weighing Bottle*, low-form, 30 mm in height and 60 mm in diameter, equipped with a ground-glass stopper.

5.3 *Analytical Balance*, having a sensitivity of 0.1 mg.

5.4 *Desiccator*.

6. Sampling

6.1 Samples shall be taken in accordance with Practices **D1799** or **D1900**.

6.1.1 Place the samples of carbon black in airtight sample containers. Allow the closed container to reach room temperature before starting the test.