



Designation: D1506 – 23

Standard Test Methods for Carbon Black—Ash Content¹

This standard is issued under the fixed designation D1506; 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 ash content of carbon black.

1.2 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.3 *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.* For specific precautionary statements see Sections 6 and 13.

1.4 *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

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 pre-dried sample (1 h at 125°C) is weighed before and after combustion for 16 h at 550°C. The remaining ash is weighed and calculated as a percent of the dried sample.

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.

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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.

4. Significance and Use

4.1 The ash content of a carbon black is the amount of non-carbon components present after combustion. Primary contributors to ash are the manufacturing process water and the catalyst in the feedstock.

Method A—Muffle Furnace Method

5. Apparatus

5.1 *Muffle Furnace*, capable of temperature regulation of $\pm 25^\circ\text{C}$ at 550°C, including capability of air exchange.

5.2 *Crucibles:*

5.2.1 *Porcelain Crucible*, high-form, size O, rim 35 mm, height 29 mm, capacity 15 cm³, with cover size E.

5.2.2 *Porous Quartz Fiber Crucible*, 20, 50, and 100 mL with optional disk inserts and lids.³

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

5.4 *Desiccator*.

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

6. Hazards

6.1 *Precautions:*

6.1.1 Open, if available, adjustable air inlets – for example, integrated in the door – to ensure a continuous stream of air passing through the furnace to support the combustion.

6.1.2 Exert care in removing ashed sample from furnace to desiccator.

6.1.3 Always keep the cover on the crucible when transferring it to and from the desiccator to prevent the loss of ash due to air currents.

6.1.4 After the sample has cooled in the desiccator, admit air slowly to avoid loss of ash from the crucible.

³ The sole source of supply of the apparatus (quartz ashing dishes, Part Number 303040) known to the committee at this time is CEM Corporation, P.O. Box 200, Matthews, NC 28106. If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,¹ which you may attend.