Designation: D8466 – 22

Standard Guide for Recovered Carbon Black—Carbon Black Test Methods for Testing rCB[1]

This standard is issued under the fixed designation D8466; 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.

1. Scope

1.1 This guide includes a list of standards under jurisdiction of ASTM Committee D24 on Carbon Black; however, they can be applied for use in the rCB industry.

1.2 *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.*

1.3 *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]

D1506 Test Methods for Carbon Black—Ash Content
D1508 Test Method for Carbon Black, Pelleted Fines and Attrition
D1509 Test Methods for Carbon Black—Heating Loss
D1511 Test Method for Carbon Black—Pellet Size Distribution
D1512 Test Methods for Carbon Black—pH Value
D1513 Test Method for Carbon Black, Pelleted—Pour Density
D1514 Test Method for Carbon Black—Sieve Residue
D1618 Test Method for Carbon Black Extractables—Transmittance of Toluene Extract
D1619 Test Methods for Carbon Black—Sulfur Content
D1799 Practice for Carbon Black—Sampling Packaged Shipments
D1900 Practice for Carbon Black—Sampling Bulk Shipments
D1937 Test Method for Carbon Black, Pelleted—Mass Strength
D2663 Test Methods for Carbon Black—Dispersion in Rubber
D3053 Terminology Relating to Carbon Black
D3191 Test Methods for Carbon Black in SBR (Styrene-Butadiene Rubber)—Recipe and Evaluation Procedures
D3192 Test Methods for Carbon Black Evaluation in NR (Natural Rubber)
D3849 Test Method for Carbon Black—Morphological Characterization of Carbon Black Using Electron Microscopy
D4122 Practice for Carbon Black—Evaluation of an Industry Reference Black
D4821 Guide for Carbon Black—Validation of Test Method Precision and Bias
D5230 Test Method for Carbon Black—Automated Individual Pellet Hardness
D5817 Practice for Carbon Black, Pelleted—Reduction, Blending, and Drying of Gross Samples for Testing
D6915 Practice for Carbon Black—Evaluation of Standard Reference Blacks
D7771 Test Method for Determination of Benzo-α-Pyrene (BaP) Content in Carbon Black

3. Significance and Use

3.1 Committee D36 has concluded that typical carbon black characterization methods based on structure level and surface area measurements do not seem to correlate to in-rubber performance in an equal manner for Recovered Carbon Black products. Therefore, the committee does not recommend such test methods for predicting the applications performance of recovered carbon black products. The committee is open to new research that can contradict above statement.

3.2 Committee D36 approved to recognize the standards in 2.1 as acceptable for use in the rCB industry until rCB statistical data is available that may suggest otherwise.

4. Carbon Black Standards for Use in rCB Testing

4.1 *Properties*—Ash Content according to Test Methods D1506, Pellet Fines and Attrition according to Test Method

[1] This guide is under the jurisdiction of ASTM Committee D36 on Recovered Carbon Black (rCB) and is the direct responsibility of Subcommittee D36.10 on Recovered 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.

D1508, Heating Loss according to Test Methods D1509, Pellet Size Distribution according to Test Method D1511, pH Value according to Test Methods D1512, Pour Density according to Test Method D1513, Sieve Residue according to Test Method D1514, Transmittance of Toluene Extract according to Test Method D1618, Sulfur Content according to Test Methods D1619, Pellet Mass Strength according to Test Method D1937, Dispersion in Rubber according to Test Methods D2663, Morphological Characterization by Electron Microscopy according to Test Method D3849, Automated Individual Pellet Hardness according to Test Method D5230, Benzo-α-Pyrene (BaP) Content according to Test Method D7771.

NOTE 1—Caution must be exercised when applying Test Method D3849 to recovered carbon blacks as these products are derived mainly from tires and will contain two or more grades of carbon black. Using primary particle size measurements on rCB to establish equivalence to N series, and hence predict reinforcement properties will likely be erroneous due to the mixture of virgin carbon blacks in the feedstock (tires) used in the recovery process. Also, the smallest dispersible unit of rCB is an agglomerate of carbon blacks, silica, and other substances bound together and therefore this method is not suited to determine the primary particle size or aggregate size, or both, of the carbon black component of rCB.

4.2 *Sampling and Preparation*—Sampling Packaged Shipments according to Practice D1799, Sampling Bulk Shipments according Practice D1900.

4.3 *Reference Materials and Statistics*—Evaluation of an Industry Reference Black according to Practice D4122, Validation of Test Method Precision and Bias according to Guide D4821, Reduction, Blending, and Drying of Gross Samples for Testing according to Practice D5817, Evaluation of Standard Reference Blacks according to Practice D6915.

4.4 *Reference Compounds*—Carbon Black in SBR according to Test Methods D3191, Carbon Black in NR according to Test Methods D3192.

4.5 *Terminology*—Terminology Relating to Carbon Black according to Terminology D3053.

5. Keywords

5.1 recovered carbon black; testing