



Designation: D1508 – 02 (Reapproved 2007)

## Standard Test Method for Carbon Black, Pelleted Fines and Attrition<sup>1</sup>

This standard is issued under the fixed designation D1508; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This test method covers the determination of the fines and attrition of pelleted carbon black.

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 and health practices and determine the applicability of regulatory limitations prior to use.*

### 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

**D1511** Test Method for Carbon Black—Pellet Size Distribution

**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

**D5817** Practice for Carbon Black, Pelleted—Reduction, Blending, and Drying of Gross Samples for Testing

**E11** Specification for Woven Wire Test Sieve Cloth and Test Sieves

### 3. Summary of Test Method

3.1 *Method A, Fines*—A sample of carbon black is placed on a 125- $\mu\text{m}$  sieve and shaken in a mechanical or vibratory sieve shaker for 5 min. The pellets, pellet fragments, dust, and unpelleted black that pass through the sieve are defined as carbon black fines. The fines are expressed in percent.

3.2 *Method B, Attrition*—The same test sample is shaken for an additional 15 min to determine the amount of pellet degradation or attrition created during this additional shake interval. The attrition is expressed in percent.

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee D24 on Carbon Black and is the direct responsibility of Subcommittee D24.51 on Carbon Black Pellet Properties.

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<sup>2</sup> 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 *Method A, Fines*—The fines content of carbon black is related to the bulk flowability, dustiness, and, in some instances, the level of dispersion. Due to the many other variables that influence dispersion and handling, the significance of fines content must be determined by the user.

4.2 *Method B, Attrition*—By comparing the percent fines and attrition, an indication can be obtained of pellet stability and the amount of fines that may be created by pellet degradation in conveying, handling or transit.

### 5. Apparatus

5.1 *Mechanical or Vibratory Sieve Shaker.*<sup>3</sup>

5.2 *Sieves*, six 125- $\mu\text{m}$  (U.S. Standard No. 120) having a 200-mm (8-in.) diameter and 25-mm (1-in.) height, or equivalent, conforming to Specification **E11**.

5.3 *Sieve Separator Receivers*, five required.

5.4 *Sieve Cover.*

5.5 *Bottom Receiver Pan.*

5.6 *Riffle Sample Splitter.*

5.7 *Small Scoop or Large Spoon.*

5.8 *Balance, 0.1-g sensitivity.*

### 6. Sampling

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

6.2 Practice **D5817** shall be used for reduction and blending of samples.

### 7. Procedure

7.1 *Method A, Fines* and *Method B, Attrition:*

7.1.1 Stack up to six sets of sieves and receivers with a receiver beneath each sieve.

7.1.2 Weigh 25.0 g portions, being careful to dip approximately 25 g of black from the riffle splitter.

NOTE 1—It is not good practice to weigh the sample by pouring it directly out of the black container since the fines and smaller pellets will tend to remain in the container while the larger pellets pour out first. Dipping the black from the container is the preferred technique.

7.1.3 Transfer each sample to an individual 125- $\mu\text{m}$  sieve.

NOTE 2—Six different materials or samples may be tested when all six

<sup>3</sup> A Ro-Tap or vibratory sieve shaker is satisfactory for this purpose. For a description of these refer to Test Method **D1511**.