



Standard Test Method for Carbon Black, Pelleted Fines and Attrition¹

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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:*²

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- μm sieve and shaken in a mechanical or vibratory sieve shaker for 5 min. The pellets, pellet fragments, dust, and unpelletized 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.

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*.³

5.2 *Sieves*, six 125- μm (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.

³ A Mechanical Sieve Shaker or a vibratory sieve shaker is satisfactory for this purpose. For a description of these refer to Test Method **D1511**.

¹ 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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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.