



Designation: D 1513 – 99a (Reapproved 2004)

Standard Test Method for Carbon Black, Pelleted—Pour Density¹

This standard is issued under the fixed designation D 1513; 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 Department of Defense.

1. Scope

1.1 This test method covers the determination of the pour density of pelleted carbon blacks.

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

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

2. Referenced Documents

2.1 *ASTM Standards:*²

D 1799 Practice for Carbon Black—Sampling Packaged Shipments

D 1900 Practice for Carbon Black—Sampling Bulk Shipments

D 4483 Practice for Determining Precision for Test Method Standards in the Rubber and Carbon Black Industries

3. Significance and Use

3.1 The pour density of carbon black is useful for estimating the weight-to-volume relationship for certain applications, such as automatic batch loading systems, and for estimating weights of bulk shipments.

4. Apparatus

4.1 *Cylindrical Container*, 624-cm³ capacity, having a uniform height and no pouring lip or deformation of the wall. A satisfactory container can be made by pouring 624 cm³ of water at 20°C into a 1000 or 1200-cm³ stainless steel beaker

100 ± 5 mm (4 ± 0.2 in.) in diameter, marking the water level and then cutting at the mark after chucking firmly in a lathe.

4.2 *Straightedge or Spatula*, at least 150 mm (6 in.) in length.

4.3 *Balance*, torsion or trip, with a sensitivity of 0.1 g.

5. Sampling

5.1 Samples shall be taken in accordance with Practice D 1799 or Practice D 1900.

6. Procedure

6.1 Pour the carbon black into the center of the tared container from a height not more than 50 mm (2 in.) above the rim. A large enough excess should be used to form a cone above the rim of the cylindrical container. Level the surface with a single sweep of the straightedge or spatula held perpendicular to and in firm contact with the lip of the container. Record the mass of the carbon black to the nearest gram.

7. Calculation

7.1 Calculate the pour density to the nearest kg/m³ as follows:

$$D = W/10 \times 16 \quad (1)$$

where:

D = pour density, kg/m³, and

W = mass of carbon black, g.

NOTE 1—The density in inch-pound units can be calculated by the following equation:

$$d = D \div 16 = W/10 \quad (2)$$

where:

d = pour density, lb/ft³,

D = pour density, kg/m³, and

W = mass of carbon black, g.

8. Report

8.1 Report the following information:

8.1.1 Proper identification of the sample, and

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.