Designation: D1513 – 05$^{\varepsilon 2}$

StandardTest Method for Carbon Black, Pelleted—Pour Density[1]

This standard is issued under the fixed designation D1513; 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.

ε^1 NOTE—Table 1 revised editorially in April 2010.
ε^2 NOTE—Added research report information to Section 10 editorially in November 2010.

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]

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 Pour density is determined by measuring the mass of carbon black in a known volume.

4. Significance and Use

4.1 Pour density is a function of the degree of compaction during pelletization. It is strongly influenced by and inversely proportional to structure (OAN). 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.

5. Apparatus

5.1 *Cylindrical Container,* 1000 or 624-cm^3 capacity, having a uniform height and no pouring lip or deformation of the wall. A stainless steel beaker 100 ± 5 mm (4 ± 0.2 in.) in diameter is acceptable.

NOTE 1—A satisfactory container can be made by pouring 1000 or 624 cm^3 of water at 20°C into a 1000 or 1200-cm^3 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.

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

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

6. Sampling

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

7. Procedure

7.1 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.

8. Calculation

8.1 Calculate the pour density to the nearest kg/m^3 as follows:

8.1.1 Using a 1000-cm^3 container:

$$D = W_{1000} \quad (1)$$

8.1.2 Using a 624-cm^3 container:

[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.

Current edition approved Oct. 4, 2010. Published May 2005. Originally approved in 1957. Last previous edition approved in 2004 as D1513 – 04. DOI: 10.1520/D1513-05E02.

[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.