



Standard Test Method for Carbon Black—Sieve Residue¹

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1. Scope

1.1 This test method describes the determination of the water wash sieve residue in regular untreated carbon blacks. It may not be applicable to oil-treated carbon blacks because the oil would prevent proper wetting of the black by water.

1.2 The values stated in SI units are to be regarded as the standard. The values 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.* For specific precautionary statements, see Section 6.

2. Referenced Documents

2.1 ASTM Standards:

D 1799 Practice for Carbon Black—Sampling Packaged Shipments²

D 1900 Practice for Carbon Black—Sampling Bulk Shipments²

D 4483 Practice for Determining Precision for Test Method Standards in the Rubber and Carbon Black Industries²

E 11 Specification for Wire-Cloth Sieves for Testing Purposes³

3. Summary of Test Method

3.1 A sample of carbon black is washed with water through a wire mesh screen of a specified size until all that remains is a non-carbon black residue. This residue is dried, weighed, and the amount of residue is expressed as mg/kg (ppm) of the original sample.

4. Significance and Use

4.1 The quantity of sieve residue of carbon black is important in some molded or extruded products as it may relate to the surface appearance of those products. The maximum residue in each application is normally determined and agreed to between the user and the producer.

5. Apparatus

5.1 *Sieve and Filtering Apparatus*,⁴ as shown in Fig. 1.

5.2 *Balance*, with a sensitivity of 0.01 g.

5.3 *Analytical Balance*, with a sensitivity of 0.1 mg.

5.4 *Oven*, gravity-convection type, capable of temperature regulation within $\pm 1^\circ\text{C}$ at 125°C and temperature uniformity within $\pm 5^\circ\text{C}$.

5.5 *Sieves* of either phosphor bronze or stainless steel. The sieve shall conform to Specification E 11. The sieve to be used shall be agreed upon between the purchaser and the seller.

5.6 *Weighing Dishes*.

6. Precautions

6.1 Keep the apparatus clean at all times to prevent contamination.

6.2 Examine the sieves each time they are used to make sure that no cracks or holes have developed.

6.3 Examine the strainer periodically to ascertain that the filter screen is in good condition.

7. Sampling

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

8. Calibration

8.1 Calculate the sieve residue to the nearest mg/kg (ppm) as follows:

$$R = (W/S) \times 10^6 \quad (1)$$

where:

R = sieve residue, mg/kg (ppm),

W = mass of sieve residue, g, and

S = mass of sample, g.

9. Procedure

9.1 Prior to making a test, clean the strainer by opening valves *A* and *B* and closing valve *C* as shown in Fig. 1. Allow the strainer to wash for 2 min.

9.2 Close valve *B* and open valve *C*. With valves *A* and *C* completely open, regulate the water pressure by means of a reducing valve. The recommended water pressure is 207 ± 34 kPa (30 ± 5 lbf/in.²).

¹ This test method is under the jurisdiction of ASTM Committee D24 on Carbon Black and is the direct responsibility of Subcommittee D24.31 on Non-Carbon Black Components of Carbon Black.

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² *Annual Book of ASTM Standards*, Vol 09.01.

³ *Annual Book of ASTM Standards*, Vol 14.02.

⁴ Sieve and filtering apparatus, available from Titan Specialties, Inc., P.O. Box 2316, Pampa, TX 70066-2316, has been found suitable.