



Designation: D 1618 – 99

Standard Test Method for Carbon Black Extractables—Transmittance of Toluene Extract¹

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1. Scope

1.1 This test method covers the measurement of the degree of toluene discoloration by carbon black extractables and is useful in controlling the reaction processes for production of carbon black. This test method may not be applicable to carbon blacks with high extractables.

1.2 The values stated in SI units are to be regarded as standard.

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:

- 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

3. Terminology

3.1 Definition:

3.1.1 *carbon black toluene discoloration, n*— the transmittance, at 425 nm, of the filtrate obtained from the toluene extract of carbon black, compared to that of pure toluene.

4. Significance and Use

4.1 The toluene discoloration value provides an estimate of toluene-soluble discoloring residues present on the carbon black.

5. Apparatus and Reagent

5.1 *Spectrophotometer*, with tungsten filament lamp, 20-nm maximum spectral bandpass, capable of measuring percent

transmittance at a 425-nm wavelength. The instrument is to be operated in accordance with the manufacturer's directions for optimum performance.

5.2 *Cuvets*, rectangular, with an optical light path of 10 mm.

5.3 *Balance*, analytical, with a sensitivity of ± 0.01 g.

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

5.5 *Pipet*, automatic, bottle-type, 20 cm^3 , with a repeatability of ± 0.1 .

5.6 *Erlenmeyer Flasks*, 125 cm^3 with ground-glass stopper.

5.7 *Filter Paper*, qualitative grade, medium retention, medium-fast filter speed, 150-mm diameter.

5.8 *Glass Filtering Funnels*, 75-mm inside diameter at the top.

5.9 *Beakers*, 50 or 100 cm^3 , with pouring lips.

5.10 *Wiping Paper*, lint-free.

5.11 *Cotton Swabs*.

5.12 *Fume Hood*, fully enclosed on three sides, with spark-proof fan and motor.

5.13 *Toluene*, analytical reagent grade.

6. Sampling

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

7. Standardization of Apparatus

7.1 Turn on the spectrophotometer and allow it to warm for the length of time specified by the manufacturer.

7.2 Check the zero reading of the spectrophotometer in accordance with the manufacturer's instructions, and adjust if necessary.

7.3 Place the funnel with the filter paper into an Erlenmeyer flask. Filter approximately 30 cm^3 of toluene into the flask and stopper the flask.

7.4 Pour a portion of the toluene into the beaker with the pouring lip for simplifying the transfer of the toluene to the cuvet.

7.5 Rinse the cuvet with the filtered toluene three times, filling approximately one third full each time. Discard this rinsing toluene into an approved safety container.

NOTE 1—The cuvet must be handled on the ground-glass sides only. Do not touch the smooth, clear sides with the fingers.

¹ This test method is under the jurisdiction of ASTM Committee D-24 on Carbon Black and is the direct responsibility of Subcommittee D 24.31 on Non-Carbon Black Components of Carbon Black.

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