



Standard Practice for Carbon Black—Evaluation of Standard Reference Blacks¹

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1. Scope

1.1 This practice covers guidelines for the production and testing for uniformity of a set of carbon blacks to be used as Standard Reference Blacks (SRBs).

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:

- D 1510 Test Method for Carbon Black—Iodine Adsorption Number²
- D 1765 Classification System for Carbon Blacks Used in Rubber Products²
- D 2414 Test Method for Carbon Black—Oil Absorption Number²
- D 3265 Test Method for Carbon Black—Tint Strength²
- D 3493 Test Method for Carbon Black—Oil Absorption Number of Compressed Sample²
- D 4483 Practice for Determining Precision for Test Method Standards in the Rubber and Carbon Black Industries²
- D 4821 Guide for Carbon Black—Validation of Test Method Precision and Bias²
- D 6556 Test Method for Carbon Black—Total and External Surface Area by Nitrogen Adsorption²

3. Significance and Use

3.1 This practice is intended to ensure that SRBs are produced and evaluated by a standard procedure.

3.2 This practice is to be used to establish the average physicochemical properties of a set of carbon blacks to be used as SRBs.

3.3 The carbon black grades to be used as SRBs should be selected to give as much coverage of the typical usage range for each test and as nearly evenly spaced across the range as possible. Typically, the carbon black grades selected consist of three tread (hard) type furnace grades (designated A, B, and C), three carcass (soft) type furnace grades (designated D, E, and F), and one thermal type grade (designated G). Subcommittee D24.61 may elect to carry one or more of the existing SRBs into the next set provided there is enough remaining material at the rate of usage to last through the expected life of the next set. Limiting the choice of grades to be used means that not all tests will have an SRB set that is evenly spaced across the range of interest. All the SRB candidates are produced at approximately the same time by the various producers. They are used as a set once they are approved. The sets are consecutively numbered. Values and identification for the current set are given in Guide D 4821. Any SRBs carried forward will be renumbered for the new set.

4. Production, Quality Control, and Quality Assurance

4.1 It is assumed that manufacturers of the SRBs will use state-of-the-art techniques to ensure maximum uniformity throughout the entire production run. The production should be made in one continuous production and packaging lot run. The testing called for in this practice is not intended to be a substitute for in-process quality control. This interlaboratory study is only adequate to verify the quality of a homogeneous lot.

4.2 The size of the lot for each SRB is determined by historical records on the rate of use. The lot should have an expected life of about 5 years at the most recent rate of use. Historically, the lot size has usually been 10 000 lb.

5. Uniformity Sampling and Testing

5.1 It is the producer's responsibility to ensure the SRB is produced under stable conditions using good statistical process control techniques.

5.2 The producer shall maintain all test equipment in proper calibration and be able to supply proof of calibration records, if requested.

5.3 The producer of the SRB shall be responsible for performing all testing to demonstrate lot uniformity. The tests to be performed as a minimum are those listed in Section 6. All

¹ This practice is under the jurisdiction of ASTM Committee D24 on Carbon Black and is the direct responsibility of Subcommittee D24.61 on Carbon Black Sampling and Statistical Analysis.

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