



Designation: D3265 – 17a

Standard Test Method for Carbon Black—Tint Strength¹

This standard is issued under the fixed designation D3265; 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 reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

1. Scope

1.1 This test method covers the determination of the tint strength of carbon black relative to an industry tint reference black (ITRB).

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

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

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](#)

[D4821 Guide for Carbon Black—Validation of Test Method Precision and Bias](#)

3. Summary of Test Method

3.1 A carbon black sample is mixed with a white powder (zinc oxide) and a liquid vehicle (epoxidized soybean oil, ESO)

¹ This test method is under the jurisdiction of ASTM Committee D24 on Carbon Black and is the direct responsibility of Subcommittee D24.21 on Carbon Black Surface Area and Related 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.

to produce a black or gray paste. This paste is then spread to produce a surface suitable for measuring the reflectance of the mixture by means of a photo-electric reflectance meter. The reflectance of the tested sample is then compared to the reflectance of the ITRB prepared in the same manner. The tint strength of the tested sample is expressed as units of the reflectance of the ITRB divided by the reflectance of the sample and multiplied by 100.

3.2 Correction Factor:

3.2.1 When ITRB-2, Paraplex G-62 (made before June 2012) and ZnO lot#8 are used, apply a correction factor of 1.0134 for the calibration and standardization in Section 8.

3.2.2 There should be no correction applied when ITRB is used with Paraplex G-62 and ZnO Lot#8 or earlier, that is, the correction factor is “1”.

3.2.3 There should be no correction applied in the calculation in Section 10 when using the currently available tint raw materials (see Section 6) for pastes prepared with either ITRB or ITRB2, that is, the correction factor is “1”.³

4. Significance and Use

4.1 For the broad range of commercial rubber grade carbon blacks, tint strength is highly dependent upon particle size. Tint strength can be used as an indication of particle size; however, tint strength is also dependent on structure and aggregate size distribution. Therefore, differences in tint strength within grades of carbon black may reflect differences other than particle size.

NOTE 1—This test method was developed primarily for the characterization of N100, N200, and N300 series carbon blacks.

³ In 2013 issues were reported when using Paraplex G-62 purchased after June 2012 and ZnO Lot#10. An ASTM task group investigated the issues and found the following raw materials acceptable for Tint testing:

1) ESO: Paraplex G-62 purchased before June 2012 or currently available GreenChem Greenflex 7170, lot 590911X24, and

2) zinc oxide Lot#8 or earlier, and currently available ZnO lot#11.

It is highly recommended to only use these raw materials identified as acceptable as other sources may lead to unacceptable differences in the test results. The tint task group has determined that Paraplex G-62 with lot numbers that begin with the digit 5 and zinc oxide lots 9 and 10 are suspect and may not give acceptable results.

When using the new raw materials for tint testing some differences may be observed with various grades of carbon black compared with historical data. For this reason it is the responsibility of the manufacturer to identify any such differences, and if necessary, revise any specifications between producer and user.