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Standard Practice for CARBON BLACK—STATING THE PRECISION OF ASTM TEST METHODS¹

This standard is issued under the fixed designation D 3051; 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.

1. Scope

1.1 This practice offers simplified guidelines for stating the precision of ASTM test methods for carbon black as determined in Practice D 3396.

1.2 The two components of precision utilized are the repeatability of a test and the reproducibility of a test.

1.2.1 The component of repeatability is intended to be relevant to within-laboratory problems concerning statistical process control limits, quality assurance, and research. The repeatability represents the inherent error of the test method.

1.2.2 The component of reproducibility is intended to be relevant to between-laboratory problems concerning purchase specifications, quality assurance, and industry standard reference blacks. The reproducibility represents the inherent test error plus a component of variability due to different apparatus, reagents, ambient conditions, technique, and so forth, between laboratories.

1.3 *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety problems 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 Document

2.1 ASTM Standard:

D 3396 Practice for Carbon Black—Measuring the Precision of ASTM Test Methods²

3. Definitions

3.1 *test result*—the final result of one determination or multiple determinations run simultaneously or on the same day by the same technicians depending upon the directions of the procedures.

3.2 *test precision*—a measure of the ability of a test procedure in obtaining repeated values within and among laboratories on essentially identical samples.

3.3 *sample*—a homogenized portion of carbon black that usually represents a larger lot of nominally uniform material.

3.4 *standard deviation, s* —a measure of the agreement between test results.

3.5 *repeatability standard deviation, s_w* —a measure of the agreement between test results obtained in the same laboratory on different days by the same technician (or the same set of technicians) using the same apparatus and technique on the same sample.

3.5.1 *Discussion*—The phrase “or the same set of technicians” refers to cases in which common laboratory practice is to use more than one technician to carry out a test procedure. The phrase “or essentially the same sample” refers to cases in which the original sample is destroyed by the test procedure.

¹ This practice is under the jurisdiction of ASTM Committee D-24 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.