



Designation: D7849 – 23

Standard Classification for Nomenclature of Reference Materials of Committee D24¹

This standard is issued under the fixed designation D7849; 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 classification covers instructions for naming the reference materials used by Committee D24.

1.2 *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.*

1.3 *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

D1510 Test Method for Carbon Black—Iodine Adsorption Number

D1619 Test Methods for Carbon Black—Sulfur Content

D2414 Test Method for Carbon Black—Oil Absorption Number (OAN)

D3265 Test Method for Carbon Black—Tint Strength

D3493 Test Method for Carbon Black—Oil Absorption Number of Compressed Sample (COAN)

D6556 Test Method for Carbon Black—Total and External Surface Area by Nitrogen Adsorption

D7854 Test Method for Carbon Black-Void Volume at Mean Pressure

3. Significance and Use

3.1 Standard reference materials are used for calibration and verification of many carbon black tests under the jurisdiction of D24. This practice defines a systematic means of naming these

¹ This classification is under the jurisdiction of ASTM Committee D24 on Carbon Black and is the direct responsibility of Subcommittee D24.41 on Carbon Black Nomenclature and Terminology.

Current edition approved May 1, 2023. Published May 2023. Originally approved in 2014. Last previous edition approved in 2018 as D7849 – 18a. DOI: 10.1520/D7849-23.

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.

reference materials and does so in a manner to clearly differentiate between the various reference materials as well as their version.

4. Basis of Classification

4.1 ASTM Committee D24 has established five different types of reference materials which serve to improve test precision of analytical tests on carbon black as well as in-rubber evaluation of carbon black.³

4.1.1 *SRB (Standard Reference Blacks)*—A set of eight carbon blacks, seven furnace blacks, and one thermal black with defined target values for iodine adsorption number (Test Method D1510), STSA (Test Method D6556), NSA (Test Method D6556), OAN (Test Method D2414), COAN (Test Method D3493), Tint Strength (Test Method D3265), and VV50 (Test Method D7854). The SRBs can be used to verify analytical test equipment and test procedures. For OAN and COAN, their application may be needed to normalize measured data. For VV50, their application is mandatory to normalize measured data.

4.1.2 *ITRB (Industry Tint Reference Black)*—ITRB represents a standard carbon black of the N330 type. It is used for verification and standardization in the test method for Tint Strength (Test Method D3265).

4.1.3 *INR (Iodine Number Reference, previously designated "HT")*—INR consist of three different reference blacks which have been heat-treated in order to provide particularly high stability of the iodine number over a long period of time, that is, over many years.

4.1.4 *IRB (Industry Reference Black)*—IRB is a carbon black of the N330 type which is produced in large quantities in order to serve as a reference material in rubber compounds. In-rubber properties of this reference black are determined during round robin testing when the material is introduced.

4.1.5 *STRM (Sulfur Test Reference Materials)*—A set of five carbon blacks with defined target values for sulfur in carbon black testing (Test Methods D1619).

4.1.6 *HNSA (High Nitrogen Surface Area)*—HNSA is a high surface area carbon black for use by those laboratories with a need to test high surface area carbon blacks for the NSA (Test

³ Target values and control limits are published on the website of the distributor of these reference materials, Balentine Enterprise Inc.: <http://carbonstandard.com/>.

Method **D6556**), STSA (Test Method **D6556**), and Tint Strength (Test Method **D3265**).

4.2 Nomenclature:

4.2.1 All letters in the designation are in caps.

4.2.2 The reference material is identified by its type: SRB, ITRB, INR, IRB, STRM, or HNSA.

4.2.3 When referring to just the material set, the set number follows the type, with no special characters or space as a separator, for example: SRB9.

4.2.4 In the case where several materials form a set (like SRB and INR materials), a letter is added, starting with A and progressing in alphabetical order. Preferably, the order of the materials is related to a relevant property, such as iodine adsorption number for the INR materials. For ease of readability, a single hyphen (-) is added to separate the type letters from the set number, material letter, and, when used, the lot number (for example, SRB-9A or SRB-9A2).

4.2.5 It may occur that a second lot of the same material is produced after depletion of the initial lot. In order to distinguish between both lots, a number is added in chronological order to designate the second and subsequent lots, for example: SRB-9A2 (second lot of SRB-9A).

NOTE 1—While the same letters will be used from one set to the next, the materials carrying the same letter designation may or may not be the same carbon black.

4.3 Examples of how to identify reference materials follow:

4.3.1 IRB and ITRB:

4.3.1.1 The IRB currently in use in 2023 is identified as IRB9.

4.3.1.2 The next IRB in the series will be identified as IRB10.

4.3.1.3 The ITRB currently in use in 2023 is identified as ITRB2. The original version of this reference material, ITRB, is no longer commercially available but may still be in use in some laboratories.

4.3.1.4 The next ITRB in the series will be identified as ITRB3.

4.3.2 SRB and INR are sets.

4.3.2.1 The SRB set currently in use in 2023 is identified as SRB9. Materials within SRB9 are SRB-9A through SRB-9H ranked in order of tread (A, B, C), carcass (D, E, F), and thermal (G) blacks, and then OAN number within each. The H material is a high structure (OAN number) reference material.

4.3.2.2 The next SRB set will be identified as SRB10.

4.3.2.3 The INR currently in use in 2023 is identified as INR since it is the first set of this reference material. This material is similar to the materials identified as HT1, HT2, and HT3 that are no longer commercially available. The HT identification does not comply with this identification system but will be used historically as long as there is a need to reference the HT materials.

4.3.2.4 The INR set currently in use in 2023 is INR-2A, INR-2B, and INR-2C ranked in ascending order of iodine number.

4.3.2.5 The next INR set will be identified as INR-3A, INR-3B, and INR-3C.

4.3.3 STRM is a set.

4.3.3.1 The STRM set currently in use in 2023 is identified as STRM. Materials within STRM are STRM-A through STRM-E ranked in increasing order of percent sulfur in carbon black content.

4.3.3.2 The next STRM set will be identified as STRM2.

4.3.4 The HNSA currently in use in 2023 is identified as HNSA since it is the first production of this reference material.

4.3.4.1 The next HNSA reference material will be identified as HNSA2.

5. Keywords

5.1 high nitrogen surface area; HNSA; industry reference black; industry tint reference black; INR; iodine number reference; IRB; ITRB; SRB; standard reference black; STRM; sulfur test reference material

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