



Designation: D 3053 – 04b

Standard Terminology Relating to Carbon Black¹

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1. Scope

1.1 This terminology covers a compilation of definitions of technical terms used in the carbon black and rubber industries. Terms that are generally understood or adequately defined in other readily available sources are not included.

2. Referenced Documents

2.1 ASTM Standards:²

- D 1508 Test Method for Carbon Black, Pelleted Fines and Attrition
- D 1509 Test Methods for Carbon Black—Heating Loss
- D 1510 Test Method for Carbon Black—Iodine Adsorption Number
- D 1511 Test Method for Carbon Black—Pellet Size Distribution
- D 1513 Test Method for Carbon Black, Pelleted—Pour Density
- D 1514 Test Method for Carbon Black—Sieve Residue
- D 1566 Terminology Relating to Rubber
- D 1618 Test Method for Carbon Black Extractables—Transmittance of Toluene Extract
- D 1765 Classification System for Carbon Blacks Used in Rubber Products
- D 1799 Practice for Carbon Black—Sampling Packaged Shipments
- D 1900 Practice for Carbon Black—Sampling Bulk Shipments
- D 1937 Test Method for Carbon Black, Pelleted—Mass Strength
- D 2414 Test Method for Carbon Black—Oil Absorption Number (OAN)
- D 3037 Test Methods for Carbon Black—Surface Area by

Nitrogen Adsorption³

- D 3265 Test Method for Carbon Black—Tint Strength
- D 3313 Test Method for Carbon Black—Individual Pellet Hardness
- D 3493 Test Method for Carbon Black—Oil Absorption Number of Compressed Sample
- D 3849 Test Method for Carbon Black—Morphological Characterization of Carbon Black Using Electron Microscopy
- D 4820 Test Methods for Carbon Black—Surface Area by Multipoint B.E.T. Nitrogen Adsorption³
- D 5230 Test Method for Carbon Black—Automated Individual Pellet Hardness
- D 5816 Test Methods for Carbon Black-External Surface Area by Multipoint Nitrogen Adsorption³
- D 6602 Practice for Sampling and Testing of Possible Carbon Black Fugitive Emissions or Other Environmental Particulate, or Both

3. Terminology

3.1 Definitions:

aciniform, *adj*—shaped like a cluster of grapes.

DISCUSSION—The spheroidal primary particles of carbon black are fused into aggregates of colloidal dimension forming an aciniform morphology.

carbon black, *n*—an engineered material, primarily composed of elemental carbon, obtained from the partial combustion or thermal decomposition of hydrocarbons, existing as aggregates of aciniform morphology which are composed of spheroidal primary particles, uniformity of primary particle sizes within a given aggregate, and turbostratic layering within the primary particles.

DISCUSSION—Particle size and aggregate size (number of particles per aggregate) are distributional properties and vary depending on the carbon black grade. Transmission electron micrographs shown in Annex A1 of Practice D 6602 demonstrate that while particle and aggregate sizes vary greatly within a given grade of carbon black, the primary particle size is essentially uniform within an individual aggregate.

³ Withdrawn.

¹ This terminology 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.

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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.