ASTM Volume 09.01, July 2025

D2663-14(2019)e1 Standard Test Methods for Carbon Black—Dispersion in Rubber

D8363-20 Standard Test Method for Rubber—Stress Relaxation in Tension Under Non-Isothermal Conditions

D471-16a(2021) Standard Test Method for Rubber Property—Effect of Liquids

D412-16(2021) Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension

D1329-16(2021) Standard Test Method for Evaluating Rubber Property— Retraction at Lower Temperatures (TR Test)

D750-12(2021) Standard Practice for Rubber Deterioration Using Artificial Weathering Apparatus

D4482-11(2021) Standard Test Method for Rubber Property—Extension Cycling Fatigue

D1630-16(2021) Standard Test Method for Rubber Property—Abrasion Resistance (Footwear Abrader)

D3389-21 Standard Test Method for Coated Fabrics Abrasion Resistance (Rotary Platform Abrader)

D4583-21 Standard Practice for Carbon Black—Calculation of Process Indexes From an Analysis of Process Control Data

D8115-17(2021) Standard Test Method for Rubber Property—Abrasion Resistance (Multi-Directional Platform Abrader)

D5964-16(2021) Standard Practice for Rubber IRM 901, IRM 902, and IRM 903 Replacement Oils for ASTM No. 1, ASTM No. 2, ASTM No. 3 Oils, and IRM 905 formerly ASTM No. 5 Oil

D7854-21 Standard Test Method for Carbon Black-Void Volume at Mean Pressure

D6556-21 Standard Test Method for Carbon Black—Total and External Surface Area by Nitrogen Adsorption

D8362-21 Standard Test Method for Rubber—Determination of the Degree of Silanization by Dynamic Strain Softening

D3493-21 Standard Test Method for Carbon Black—Oil Absorption Number of Compressed Sample (COAN)

D2240-15(2021) Standard Test Method for Rubber Property—Durometer Hardness

D1149-18 Standard Test Methods for Rubber Deterioration—Cracking in an Ozone Controlled Environment

D5289-19a Standard Test Method for Rubber Property—Vulcanization Using Rotorless Cure Meters

D1415-18 Standard Test Method for Rubber Property—International Hardness

D430-06(2018) Standard Test Methods for Rubber Deterioration—Dynamic Fatigue

D4483-20 Standard Practice for Evaluating Precision for Test Method Standards in the Rubber and Carbon Black Manufacturing Industries

D865-11(2018) Standard Test Method for Rubber—Deterioration by Heating in Air (Test Tube Enclosure)

D3137-81(2018) Standard Test Method for Rubber Property—Hydrolytic Stability

D1148-13(2018) Standard Test Method for Rubber Deterioration—Discoloration from Ultraviolet (UV) or UV/Visible Radiation and Heat Exposure of Light-Colored Surfaces

D413-98(2017) Standard Test Methods for Rubber Property—Adhesion to Flexible Substrate

D1646-19a Standard Test Methods for Rubber—Viscosity, Stress Relaxation, and Pre-Vulcanization Characteristics (Mooney Viscometer)

D7050-04(2019) Standard Practice for Rubber from Natural Sources—Sampling and Sorting Bales Based on Predicted Processing Properties

D3192-09(2019) Standard Test Methods for Carbon Black Evaluation in NR (Natural Rubber)

D3191-10(2020) Standard Test Methods for Carbon Black in SBR (Styrene-Butadiene Rubber)—Recipe and Evaluation Procedures

D1799-20 Standard Practice for Carbon Black—Sampling Packaged Shipments

D6204-19a Standard Test Method for Rubber—Measurement of Unvulcanized Rheological Properties Using Rotorless Shear Rheometers

D395-18 Standard Test Methods for Rubber Property—Compression Set

D1171-18 Standard Test Method for Rubber Deterioration—Surface Ozone Cracking Outdoors (Triangular Specimens)

D2084-19a Standard Test Method for Rubber Property—Vulcanization Using Oscillating Disk Cure Meter

D1900-20 Standard Practice for Carbon Black—Sampling Bulk Shipments

D531-15(2019) Standard Test Method for Rubber Property—Pusey and Jones Indentation

D454-04(2019) Standard Test Method for Rubber Deterioration by Heat and Air Pressure

D573-04(2019) Standard Test Method for Rubber—Deterioration in an Air Oven

D2228-04(2019) Standard Test Method for Rubber Property—Relative Abrasion Resistance by Pico Abrader Method

D4575-09(2019) Standard Test Methods for Rubber Deterioration—Reference and Alternative Method(s) for Determining Ozone Level in Laboratory Test Chambers

D925-14(2019) Standard Test Methods for Rubber Property—Staining of Surfaces (Contact, Migration, and Diffusion)

D813-07(2019) Standard Test Method for Rubber Deterioration—Crack Growth

D1052-09(2019) Standard Test Method for Measuring Rubber Deterioration— Cut Growth Using Ross Flexing Apparatus

D814-95(2020) Standard Test Method for Rubber Property—Vapor Transmission of Volatile Liquids

D624-00(2020) Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers

D991-89(2020) Standard Test Method for Rubber Property—Volume Resistivity Of Electrically Conductive and Antistatic Products

D1456-86(2020) Standard Test Method for Rubber Property—Elongation at Specific Stress

D1460-86(2020) Standard Test Method for Rubber Property—Change in Length During Liquid Immersion

D3767-03(2020) Standard Practice for Rubber—Measurement of Dimensions

D6147-97(2020) Standard Test Method for Vulcanized Rubber and Thermoplastic Elastomer—Determination of Force Decay (Stress Relaxation) in Compression

D6739-20 Standard Test Method for Silica—pH Value

D1278-91a(2020) Standard Test Methods for Rubber from Natural Sources— Chemical Analysis

D1485-07(2020) Standard Practice for Rubber from Natural Sources—Sampling and Sample Preparation

D2227-96(2020) Standard Specification for Natural Rubber (NR) Technical Grades

D2449-88(2020) Standard Specification for Rubber Bales From Natural Sources—Limit on Coating

D3157-05(2020) Standard Test Method for Rubber from Natural Sources—Color

D6746-15(2020) Standard Test Method for Determination of Green Strength and Stress Relaxation of Raw Rubber or Unvulcanized Compounds

D8411-21 Standard Test Method for Rubber Compounding Materials— Determination of 2-Mercaptobenzothiazole (MBT) in Rubber

D5817-20 Standard Practice for Carbon Black, Pelleted—Reduction, Blending, and Drying of Gross Samples for Testing

D4821-20 Standard Guide for Carbon Black—Validation of Test Method Precision and Bias

D623-07(2019)e1 Standard Test Methods for Rubber Property—Heat Generation and Flexing Fatigue In Compression

D3185-06(2021) Standard Test Methods for Rubber—Evaluation of SBR (Styrene-Butadiene Rubber) Including Mixtures With Oil

D3186-07(2021) Standard Test Methods for Rubber—Evaluation of SBR (Styrene-Butadiene Rubber) Mixed With Carbon Black or Carbon Black and Oil

D3188-06(2021) Standard Test Methods for Rubber—Evaluation of IIR (Isobutene-Isoprene Rubber)

D3187-06(2021) Standard Test Methods for Rubber—Evaluation of NBR (Acrylonitrile-Butadiene Rubber)

D1417-16(2021) Standard Test Methods for Rubber Latices—Synthetic

D1817-05(2021) Standard Test Method for Rubber Chemicals—Density

D2702-05(2021) Standard Practice for Rubber Chemicals—Determination of Infrared Absorption Characteristics

D3182-21a Standard Practice for Rubber—Materials, Equipment, and Procedures for Mixing Standard Compounds and Preparing Standard Vulcanized Sheets

D4315-21 Standard Test Methods for Rubber Compounding Material—Zinc Oxide

D4572-21 Standard Test Method for Rubber Chemicals—Wet Sieve Analysis of Sulfur

D3189-06(2021) Standard Test Methods for Rubber—Evaluation of Solution BR (Polybutadiene Rubber)

D1566-21a Standard Terminology Relating to Rubber

D1766-05(2021) Standard Test Method for Rubber Chemicals—Solubility

D3156-96(2021) Standard Practice for Rubber—Chromatographic Analysis of Antidegradants (Antioxidants, Antiozonants and Stabilizers)

D4818-21 Standard Classification for Rubber Compounding Materials—Vulcanization Accelerators

D4924-21 Standard Classification for Petroleum Waxes for Use in Rubber Compounding

D3190-06(2021) Standard Test Method for Rubber—Evaluation of Chloroprene Rubber (CR)

D3314-02(2021) Standard Test Method for Rubber—Chemical Analysis for Polystyrene Blocks In SBR (Styrene-Butadiene Rubber) and Styrene-Reinforced Latices

D3452-06(2021) Standard Practice for Rubber—Identification by Pyrolysis-Gas Chromatography

D3403-07(2021) Standard Test Methods for Rubber—Evaluation of IR (Isoprene Rubber)

D5604-21 Standard Test Methods for Precipitated Silica—Surface Area by Single Point B.E.T. Nitrogen Adsorption

D3900-17(2021) Standard Test Methods for Rubber—Determination of Ethylene Units in Ethylene-Propylene Copolymers (EPM) and in Ethylene-Propylene-Diene Terpolymers (EPDM) by Infrared Spectrometry

D3896-07(2021) Standard Practice for Rubber From Synthetic Sources—Sampling

D4004-06(2021) Standard Test Methods for Rubber—Determination of Metal Content by Flame Atomic Absorption (AAS) Analysis

D4026-06(2021) Standard Test Method for Rubber Latex—Styrene-Butadiene Copolymer—Determination of Residual Styrene

D5667-21 Standard Test Method for Rubber From Synthetic Sources—Total and Water Soluble Ash

D4295-89(2021) Standard Classification for Rubber Compounding Materials—Zinc Oxide

D4075-06(2021) Standard Test Methods for Rubber Compounding Materials— Flame Atomic Absorption Analysis—Determination of Metals

D4569-06(2021) Standard Test Method for Rubber Compounding Materials— Determination of Acidity in Sulfur D4528-88(2021) Standard Classification for Rubber Compounding Materials—Sulfur

D4570-02(2021) Standard Test Method for Rubber Chemicals—Determination of Particle Size of Sulfur by Sieving (Dry)

D4620-02(2021) Standard Test Method for Evaluating the Effective Surface Area of Zinc Oxide in Rubber

D4817-88(2021) Standard Classification for Rubber Compounding Materials—Stearic Acid

D4676-94(2021) Standard Classification for Rubber Compounding Materials—Antidegradants

D4937-96(2021) Standard Test Method for p-Phenylenediamine Antidegradants Purity by Gas Chromatography

D4934-02(2021) Standard Test Method for Rubber Compounding Materials: 2-Benzothiazyl Sulfenamide Accelerators—Insolubles

D5051-06(2021)e1 Standard Test Method for Rubber Compounding Materials—Benzothiazyl Disulfide (MBTS)—Assay

D5044-06(2021) Standard Test Method for Rubber Compounding Materials— Free 2-Mercaptobenzothiazole (MBT) in Benzothiazyl Disulfide (MBTS)

D5376-06(2021) Standard Test Method for Rubber Compounding Materials— Determination of the Basic Nitrogen Content in Rubber Antioxidant: Polymerized TMQ

D5377-93(2021) Standard Classification for Rubber Compounding Materials—Ground Coal

D5460-02(2021)e1 Standard Test Method for Rubber Compounding Materials—Water in Rubber Additives

D5461-06(2021) Standard Test Method for Rubber Compounding Materials—Wet Sieve Analysis of Powdered Rubber Compounding Materials

D5605-94(2021) Standard Practice for Styrene-Butadiene Rubber (SBR)— Establishing Raw Mooney Viscosity Target Values

D5668-21 Standard Test Methods for Rubber From Synthetic Sources—Volatile Matter

D6047-17(2021) Standard Test Methods for Rubber, Raw—Determination of 5-Ethylidenenorbornene (ENB) or Dicyclopentadiene (DCPD) in Ethylene-Propylene-Diene (EPDM) Terpolymers

D297-21 Standard Test Methods for Rubber Products—Chemical Analysis

D1418-22 Standard Practice for Rubber and Rubber Latices—Nomenclature

D4574-22 Standard Test Methods for Rubber Compounding Materials— Determination of Ash Content

D3853-22 Standard Terminology Relating to Rubber and Rubber Latices—Abbreviations for Chemicals Used in Compounding

D4571-22 Standard Test Methods for Rubber Compounding Materials— Determination of Volatile Material

D4573-22 Standard Test Method for Rubber Chemicals—Determination of Oil Content in Oil-Treated Sulfur

D4578-22 Standard Test Methods for Rubber Chemicals—Determination of Percent Insoluble Sulfur by Extraction

D8466-22 Standard Guide for Recovered Carbon Black—Carbon Black Test Methods for Testing rCB

D5406-22 Standard Practice for Rubber—Calculation of Producer's Process Performance Indexes

D945-22 Standard Test Methods for Rubber Properties in Compression or Shear (Mechanical Oscillograph)

D6085-97(2022) Standard Practice for Sampling in Rubber Testing— Terminology and Basic Concepts

D7633-13(2022) Standard Test Method for Carbon Black—Carbon Content

D3849-22 Standard Test Method for Carbon Black—Morphological Characterization of Carbon Black Using Electron Microscopy

D5963-22 Standard Test Method for Rubber Property—Abrasion Resistance (Rotary Drum Abrader)

D3194-17(2022) Standard Test Method for Rubber From Natural Sources— Plasticity Retention Index (PRI)

D3346-17(2022) Standard Test Methods for Rubber Property—Processability of Emulsion SBR (Styrene-Butadiene Rubber) With the Mooney Viscometer (Delta Mooney)

D3484-06(2022) Standard Test Methods for Rubber—Evaluation of Oil-Extended Solution BR (Polybutadiene Rubber)

D926-17(2022) Standard Test Method for Rubber Property—Plasticity and Recovery (Parallel Plate Method)

D1917-03(2022) Standard Test Methods for Rubber Property—Shrinkage of Raw and Compounded Hot-Polymerized Styrene-Butadiene Rubber (SBR)

D1992-17(2022) Standard Guide for Testing Synthetic Plasticizers Used in Rubber

D2226-93(2022) Standard Classification for Various Types of Petroleum Oils for Rubber Compounding Use

D2230-17(2022) Standard Test Method for Rubber Property—Extrudability of Unvulcanized Compounds

D3184-11(2022) Standard Practice for Rubber—Evaluation of NR (Natural Rubber)

D3568-03(2022) Standard Test Methods for Rubber—Evaluation of EPDM (Ethylene Propylene Diene Terpolymers) Including Mixtures With Oil

D3848-03(2022) Standard Test Methods for Rubber—Evaluation of NBR (Acrylonitrile-Butadiene Copolymers) Mixed With Carbon Black

D1993-22 Standard Test Method for Precipitated Silica-Surface Area by Multipoint BET Nitrogen Adsorption

D8471-22a Standard Practice for Silica—Reference Compound

D4677-87(2022) Standard Classification for Rubber Compounding Materials— Titanium Dioxide

D6049-03(2022) Standard Test Method for Rubber Property—Measurement of the Viscous and Elastic Behavior of Unvulcanized Raw Rubbers and Rubber Compounds by Compression Between Parallel Plates

D7605-11(2022) Standard Test Method for Thermoplastic Elastomers— Measurement of Polymer Melt Rheological Properties and Congealed Dynamic Properties Using Rotorless Shear Rheometers

D6845-22 Standard Test Method for Silica, Precipitated, Hydrated—CTAB (Cetyltrimethylammonium Bromide) Surface Area

D8016-22 Standard Test Method for Silica, Precipitated, Hydrated—Sears Number

D1619-22 Standard Test Methods for Carbon Black—Sulfur Content

D8059-19(2022) Standard Test Method for Rubber Compounds—Measurement of Unvulcanized Dynamic Strain Softening (Payne Effect) Using Sealed Cavity Rotorless Shear Rheometers

D5099-08(2022) Standard Test Methods for Rubber—Measurement of Processing Properties Using Capillary Rheometry

D5900-23 Standard Specification for Physical and Chemical Properties of Industry Reference Materials (IRM)

D816-06(2023) Standard Test Methods for Rubber Cements

D4527-18(2023) Standard Test Method for Carbon Black—Solvent Extractables

D7724-18(2023)e1 Standard Test Method for Carbon Black—Non-Dispersible Matter by Mechanical Flushing (NDM)

D6602-13(2022)e1 Standard Practice for Sampling and Testing of Possible Carbon Black Fugitive Emissions or Other Environmental Particulate, or Both

D429-14(2023) Standard Test Methods for Rubber Property—Adhesion to Rigid Substrates

D1511-12(2023) Standard Test Method for Carbon Black—Pellet Size Distribution

D1513-05(2023) Standard Test Method for Carbon Black, Pelleted—Pour Density

D1514-23 Standard Test Method for Carbon Black—Sieve Residue

D7849-23 Standard Classification for Nomenclature of Reference Materials of Committee D24

D1506-23 Standard Test Methods for Carbon Black—Ash Content

D1937-23 Standard Test Method for Carbon Black, Pelleted—Mass Strength

D3958-23 Standard Test Methods for Rubber—Evaluation of BIIR and CIIR (Halogenated Isobutene—Isoprene Rubber)

D4122-17(2023) Standard Practice for Carbon Black—Evaluation of an Industry Reference Black

D5538-13(2023) Standard Practice for Thermoplastic Elastomers—Terminology and Abbreviations

D6048-07(2023) Standard Practice for Stress Relaxation Testing of Raw Rubber, Unvulcanized Rubber Compounds, and Thermoplastic Elastomers

D1076-23 Standard Specification for Rubber—Concentrated, Ammonia Stabilized, Creamed, and Centrifuged Natural Latex

D6915-23 Standard Practice for Carbon Black—Evaluation of Standard Reference Blacks

D1512-23 Standard Test Methods for Carbon Black—pH Value

D8474-23 Standard Test Method for Recovered Carbon Black (rCB)—Compositional Analysis by Thermogravimetry (TGA)

D8491-23 Standard Test Method for Recovered Carbon Black—Rheological Non-Linearity of a Rubber Compound by Fourier Transform Rheology

D6600-00(2023) Standard Practice for Evaluating Test Sensitivity for Rubber Test Methods

D6370-23 Standard Test Method for Rubber—Compositional Analysis by Thermogravimetry (TGA)

D3566-03(2023) Standard Practice for Rubber—Determination of Bromine in the Presence of Chlorine by Oxygen Combustion

D1519-95(2023) Standard Test Methods for Rubber Chemicals—Determination of Melting Range

D1991-15(2023) Standard Test Method for Rubber Chemicals—2-Mercaptobenzothiazole (MBT)—Assay

D4936-10(2023) Standard Test Method for Mercaptobenzothiazole Sulfenamide Assay by Reduction/Titration

D5297-95(2023) Standard Test Methods for Rubber Chemical Accelerator— Purity by High Performance Liquid Chromatography

D5666-95(2023) Standard Test Method for Rubber Chemical Antidegradants— Purity of p-Phenylenediamine (PPD) Antidegradants by High Performance Liquid Chromatography D5670-95(2023) Standard Test Method for Rubber—Determination of Residual Unsaturation in Hydrogenated Nitrile Rubber (HNBR) by Infrared Spectrophotometry

D5774-95(2023) Standard Test Methods for Rubber—Chemical Analysis of Extractables

D5775-95(2023) Standard Test Method for Rubber—Determination of Bound Styrene in Styrene Butadiene Rubber by Refractive Index

D5805-00(2023) Standard Test Methods for Rubber—Determination of Carbon Black in Masterbatches

D5902-05(2023) Standard Test Method for Rubber—Determination of Residual Unsaturation in Hydrogenated Nitrile Rubber (HNBR) by Iodine Value

D6738-15(2023) Standard Test Method for Precipitated Silica—Volatile Content

D8268-19(2023) Standard Practice for Rubber Compounding Materials— Evaluation of Recycled Vulcanizate Particulate Rubber

D8300-19(2023) Standard Test Method for Silica, Precipitated, Hydrated— Electrical Conductivity

D1618-23 Standard Test Method for Carbon Black Extractables—Transmittance of Toluene Extract

D5644-23 Standard Test Method for Rubber Compounding Materials— Determination of Particle Size Distribution of Recycled Vulcanizate Particulate Rubber

D5603-23 Standard Classification for Rubber Compounding Materials—Recycled Vulcanizate Rubber

D2414-23a Standard Test Method for Carbon Black—Oil Absorption Number (OAN)

D6843-10(2023) Standard Test Method for Silanes Used in Rubber Formulations (bis-(triethoxysilylpropyl)sulfanes): Characterization by Gas Chromatography (GC)

D6844-10(2023) Standard Test Method for Silanes Used in Rubber Formulations (bis-(triethoxysilylpropyl)sulfanes): Characterization by High Performance Liquid Chromatography (HPLC)

D7772-15(2023) Standard Test Method for Carbon Black Extractables – Absorbance of Cyclohexane Extract

D3677-10(2023) Standard Test Methods for Rubber—Identification by Infrared Spectrophotometry

D4678-15a(2023) Standard Practice for Rubber—Preparation, Testing, Acceptance, Documentation, and Use of Reference Materials

D6740-15(2023) Standard Test Method for Silanes Used in Rubber Formulations(bis-(triethoxysilylpropyl)sulfanes): Residue on Ignition

D6741-10(2023) Standard Test Methods for Silanes Used in Rubber Formulations(bis-(triethoxysilylpropyl)sulfanes): Sulfur Content

D8043-23 Standard Guide for Carbon Black—Shelf Life

D572-23 Standard Test Method for Rubber—Deterioration by Heat and Oxygen

D1765-23b Standard Classification System for Carbon Blacks Used in Rubber Products

D3053-23a Standard Terminology Relating to Carbon Black

D7969-16(2024) Standard Specification for Gravity Convection and Forced Ventilation Ovens

D6814-24 Standard Test Method for Determination of Percent Devulcanization of Crumb Rubber Based on Crosslink Density

D5899-24 Standard Classification System for Rubber Compounding Materials for Use in Computer Material Management Systems

D7723-24 Standard Test Method for Rubber Property—Macro-Dispersion of Fillers in Compounds

D8371-24 Standard Test Method for Trace Metal Content Analysis in Carbon Black

D575-91(2024) Standard Test Methods for Rubber Properties in Compression

D832-07(2024) Standard Practice for Rubber Conditioning For Low Temperature Testing

D1053-92a(2024) Standard Test Methods for Rubber Property—Stiffening at Low Temperatures: Flexible Polymers and Coated Fabrics

D3616-95(2024) Standard Test Method for Rubber—Determination of Gel, Swelling Index, and Dilute Solution Viscosity

D3847-01(2024) Standard Practice for Rubber—Directions for Achieving Subnormal Test Temperatures

D5992-96(2024) Standard Guide for Dynamic Testing of Vulcanized Rubber and Rubber-Like Materials Using Vibratory Methods

D7121-05(2024) Standard Test Method for Rubber Property—Resilience Using Schob Type Rebound Pendulum

D1508-23e1 Standard Test Method for Carbon Black, Pelleted Fines and Attrition

D5230-21e1 Standard Test Method for Carbon Black—Automated Individual Pellet Hardness

D3265-24a Standard Test Method for Carbon Black—Tint Strength

D8178-24 Standard Terminology Relating to Recovered Carbon Black (rCB)

D7426-24 Standard Test Method for Assignment of the DSC Procedure for Determining Tg of a Polymer or an Elastomeric Compound

D8582-24 Standard Practice for Recovered Carbon Black—Reference Compound

D8585-24 Standard Guide for Recovered Carbon Black - Shelf Life

D1510-24b Standard Test Method for Carbon Black—Iodine Adsorption Number

D8554-24a Standard Test Method for Determination of the Degree of Unsaturation of Butyl Rubber by FTIR and Multivariate Analysis

D1229-03(2024) Standard Test Method for Rubber Property—Compression Set at Low Temperatures

D1349-14(2024) Standard Practice for Rubber—Standard Conditions for Testing

D2632-15(2024) Standard Test Method for Rubber Property—Resilience by Vertical Rebound

D3183-10(2024) Standard Practice for Rubber—Preparation of Pieces for Test Purposes from Products

D1509-24 Standard Test Methods for Carbon Black—Heating Loss

D6601-19(2024) Standard Test Method for Rubber Properties—Measurement of Cure and After-Cure Dynamic Properties Using a Rotorless Shear Rheometer

D7662-15(2024) Standard Test Method for Carbon Content in Carbon Black Feedstock Oils

D7679-16(2024) Standard Test Method for Sulfur Content in Carbon Black Feedstock Oils

D8143-24e1 Standard Test Method for Determination of the EU-11 List of PAH Compounds in Carbon Black