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Standard Practice for Preparation of Calcined Petroleum Coke Samples for Analysis¹

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1. Scope

1.1 This practice covers the preparation procedures necessary for the reduction and division of calcined petroleum coke samples in order to generate appropriate analytical samples upon which physical and chemical analytical tests will be performed.

1.2 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

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

2. Referenced Documents

2.1 ASTM Standards:²

- D1552 Test Method for Sulfur in Petroleum Products (High-Temperature Method)
- D2638 Test Method for Real Density of Calcined Petroleum Coke by Helium Pycnometer
- D4292 Test Method for Determination of Vibrated Bulk Density of Calcined Petroleum Coke
- D4422 Test Method for Ash in Analysis of Petroleum Coke
- D4930 Test Method for Dust Control Material on Calcined Petroleum Coke
- D4931 Test Method for Gross Moisture in Green Petroleum Coke
- D5004 Test Method for Real Density of Calcined Petroleum Coke by Xylene Displacement
- D5056 Test Method for Trace Metals in Petroleum Coke by Atomic Absorption

¹ This practice is under the jurisdiction of ASTM Committee D02 on Petroleum Products and Lubricants and is the direct responsibility of Subcommittee D02.05 on Properties of Fuels, Petroleum Coke and Carbon Material

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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.

- D5187 Test Method for Determination of Crystallite Size (L_c of Calcined Petroleum Coke by X-Ray Diffraction
- D5600 Test Method for Trace Metals in Petroleum Coke by Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES)
- D5709 Test Method for Sieve Analysis of Petroleum Coke
- D6376 Test Method for Determination of Trace Metals in Petroleum Coke by Wavelength Dispersive X-ray Fluorescence Spectroscopy

3. Terminology

3.1 Definitions:

- 3.1.1 *analysis sample*—the reduced and divided representative portion of the bulk sample, prepared for use in the laboratory.
- 3.1.2 *composite sample*—a sample, representative of an entire consignment of calcined petroleum coke, generated by mixing portions of gross samples from different lots together in mass fractions proportioned to the consignment.
- 3.1.3 *gross sample*—the original, uncrushed representative portion taken from a shipment or lot of coke.
- 3.1.4 *intermediate sample*—a sample, representative of a gross sample, upon which no analysis is to be performed, yet required for generation of analysis samples after undergoing further division and reduction.
- 3.1.5 *lot*—a quantity of calcined petroleum coke to be represented by a gross sample.
- 3.1.6 *riffle*—a manual sample divider which splits the sample stream into a number of alternate elements.
- 3.1.7 *sample division*—the process whereby a sample is reduced in mass without change in particle size.
- 3.1.8 *sample preparation*—the process that may include drying, crushing, division, and mixing of a gross sample for the purpose of obtaining an unbiased analysis sample.
- 3.1.9 *sample reduction*—the process whereby a sample is reduced in particle size by crushing or grinding without significant change in chemical properties.
- 3.1.10 *top size*—the size of the smallest opening of one sieve of a series upon which is cumulatively retained a total of