



Designation: D4931 – 06 (Reapproved 2017)

Standard Test Method for Gross Moisture in Green Petroleum Coke¹

This standard is issued under the fixed designation D4931; 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 test method covers both the preparation procedure for samples containing free water (air drying loss (ADL) on gross moisture samples) and the determination of the gross moisture content of green petroleum coke.

1.2 The values stated in SI units are to be regarded as standard.

1.2.1 *Exception*—The values given in parentheses are for information only.

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

1.4 *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

D2013 Practice for Preparing Coal Samples for Analysis
D2234/D2234M Practice for Collection of a Gross Sample of Coal

D3302 Test Method for Total Moisture in Coal

E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *air drying, n*—a process of partial drying of a green petroleum coke sample to bring it to near equilibrium with the

atmosphere in the room in which further reduction/division of the petroleum coke sample is to take place.

3.1.2 *air dry loss, ADL, n*—the loss in mass, expressed as a percentage, resulting from each air drying operation.

3.1.3 *free water, n*—visible unbound water in the sample.

3.1.4 *green petroleum coke, n*—same as raw petroleum coke.

3.1.5 *gross moisture, n*—that moisture determined as the loss in mass in an air atmosphere under rigidly controlled conditions of temperature, time, and air flow.

3.1.5.1 *Discussion*—Test Method D3302 prescribes the above controlled conditions.

3.1.6 *petroleum coke, n*—solid, carbonaceous residue produced by thermal decomposition of heavy petroleum fractions, or cracked stocks, or both.

3.1.7 *residual moisture, n*—that moisture remaining in the sample after air drying.

3.1.8 *total moisture, n*—synonym for *gross moisture*.

4. Summary of Test Method

4.1 This test method is based on the loss in mass of a green petroleum coke sample in an air atmosphere under controlled conditions of temperature, time, and air flow.

4.1.1 *Preparation Procedure* shall be used when the petroleum coke sample contains free water. The gross moisture sample is weighed and air dried to equilibrate it with the atmosphere. Determination of residual moisture is that determined using the *Drying Oven Method*. Air drying and residual moisture losses are combined to report gross moisture.

4.1.2 *Drying Oven Method* shall be used in routine commercial practice when the sample does not contain *free water*. The sample is crushed to at least minus 25 mm (1 in.) top sieve size and divided into analytical portions of at least 500 g each. Determination of total gross moisture is calculated by summing the results of the *Drying Oven Method* and the results of the *Preparation Procedure*.

5. Significance and Use

5.1 Moisture adds mass to the coke and serves no useful purpose. A knowledge of the moisture content is important in the purchase and sale of green petroleum coke, both of which are conducted on a dry basis.

¹ This test method is under the jurisdiction of ASTM Committee D02 on Petroleum Products, Liquid Fuels, 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.