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.

Designation: D3175 – 18

Standard Test Method for Volatile Matter in the Analysis Sample of Coal and Coke[1]

This standard is issued under the fixed designation D3175; 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.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope*

1.1 This test method covers the determination of the gaseous products, exclusive of moisture vapor, as volatile matter in the analysis sample of coal or coke from coal.

1.2 The test method for the determination of volatile matter is empirical.

1.3 *Units*—The values stated in SI units are to be regarded as standard. The values given in parentheses after SI units are provided for information only and are not considered standard.

1.4 *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.*

1.5 *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]

D121 Terminology of Coal and Coke

D346 Practice for Collection and Preparation of Coke Samples for Laboratory Analysis

D388 Classification of Coals by Rank

D2013 Practice for Preparing Coal Samples for Analysis

D3173/D3173M Test Method for Moisture in the Analysis Sample of Coal and Coke

D3180 Practice for Calculating Coal and Coke Analyses from As-Determined to Different Bases

D5142 Test Methods for Proximate Analysis of the Analysis Sample of Coal and Coke by Instrumental Procedures (Withdrawn 2010)[3]

D6374 Test Method for Volatile Matter in Green Petroleum Coke Quartz Crucible Procedure

D7582 Test Methods for Proximate Analysis of Coal and Coke by Macro Thermogravimetric Analysis

E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

3. Terminology

3.1 *Definitions:*

3.1.1 *popping*—unseating of the crucible cover due to swelling of the test sample resulting in mechanical loss of the test material.

3.1.1.1 *Discussion*—This phenomenon is normally associated with strongly swelling coals.

3.1.2 *sparking*—the evolution of gaseous products at a rate sufficient to mechanically carry solid particles out of the crucible; those particles escaping at higher temperatures become incandescent when they are emitted, creating sparks.

3.1.2.1 *Discussion*—This phenomenon is normally associated with non-swelling coals but can also be associated with swelling coals as well as cokes.

3.1.3 *swelling*—the change in volume which takes place when coal is heated under conditions allowing the softened coal to expand freely in a direction normal to the plane of heating.

3.2 Refer to Terminology D121 for additional definitions of terms used in this test method.

4. Summary of Test Method

4.1 Volatile matter is determined by establishing the mass loss resulting from heating a coal or coke under rigidly controlled conditions. The measured mass loss, corrected for moisture as determined in Test Method D3173/D3173M or Test Methods D7582 establishes the volatile matter content. Two procedures are described to permit conformity with differences in sample behavior.

[1] This test method is under the jurisdiction of ASTM Committee D05 on Coal and Coke and is the direct responsibility of Subcommittee D05.21 on Methods of Analysis.

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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.

[3] The last approved version of this historical standard is referenced on www.astm.org.

*A Summary of Changes section appears at the end of this standard

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