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Standard Test Methods for Proximate Analysis of the Analysis Sample of Coal and Coke by Instrumental Procedures¹

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¹ These test methods are under the jurisdiction of ASTM Committee D05 on Coal and Coke and are the direct responsibility of Subcommittee D05.21 on Methods of Analysis.

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1. Scope

1.1 These instrumental test methods cover the determination of moisture, volatile matter, and ash, and the calculation of fixed carbon in the analysis of coal and coke samples prepared in accordance with Method D 2013 and Practice D 346. Results obtained through the use of the instrumental tests have been shown to differ from those obtained with Test Methods D 3173, D 3174, and D 3175 on some coals and cokes. Where a relative bias between the instrumental methods and Test Methods D 3173, D 3174, and D 3175 for proximate analysis of coal and coke are shown to exist, the instrumental results shall be corrected or the instrument calibrated using samples of known proximate analysis. Test Methods D 3173, D 3174, and D 3175 shall be considered the referee test methods. The instrumental test methods are not applicable to thermogravimetric analyzers using microgram size samples.

1.2 The moisture value determined is used for calculating other analytical results to a dry basis. When used in conjunction with the air dry loss moisture, as determined in accordance with Method D 2013, Test Method D 3302, or Practice D 346, the calculated total moisture can be used to convert dry basis analytical results to the as-received basis.

1.3 The result of the ash determinations can be applied in the ultimate analysis, Practice D 3176.

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

2. Referenced Documents

2.1 ASTM Standards:

D 121 Terminology of Coal and Coke²

D 346 Practice for Collection and Preparation of Coke Samples for Laboratory Analysis²

D 1757 Test Method for Sulfate Sulfur in Ash from Coal and Coke²

D 2013 Practice for Preparing Coal Samples for Analysis²

D 3173 Test Method for Moisture in the Analysis Sample of Coal and Coke²

D 3174 Test Method for Ash in the Analysis Sample of Coal and Coke from Coal²

D 3175 Test Method for Volatile Matter in the Analysis Sample of Coal and Coke²

D 3176 Practice for Ultimate Analysis of Coal and Coke²

D 3180 Practice for Calculating Coal and Coke Analyses from As-Determined to Different Bases²

D 3302 Test Method for Total Moisture in Coal²

3. Terminology

3.1 For definitions of terms used in this test method, refer to Terminology D 121.

4. Summary of Test Methods

4.1 Moisture is determined by establishing the loss in mass of the analysis specimen of coal or coke when heated under rigidly controlled conditions of temperature, time, atmosphere, specimen mass, and equipment specifications.

4.2 Volatile matter is determined by measuring the loss in mass of the moist or dried analysis specimen of coal or coke when

² Annual Book of ASTM Standards, Vol 05.06.