



Standard Test Method for Total Moisture in Coal¹

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1. Scope

1.1 This test method covers the measurement of the total moisture in coal as it exists at the site, at the time, and under the conditions it is sampled. It is applicable to coals as mined, processed, shipped, or used in normal commercial pursuits. It is not applicable to coal-water slurries, sludges, or pulverized products under 0.5-mm-diameter sieve size. It is applicable to coals of all ranks within the recognized limitations imposed by oxidation and decomposition characteristics of lower rank coals. Because of its empirical nature, strict adherence to basic principles and permissive procedures are required for valid results (see Appendix X1). This complete standard is available to producers, sellers, and consumers as a total moisture method when other procedures or modifications are not mutually agreed on.

1.2 Since coal can vary from extremely wet (water-saturated) to completely dry, special emphasis must be placed on the sampling, sample preparation, and the moisture determination itself to ensure total reliability of measurement. Therefore, this standard entails collection of the gross sample, sample preparation, and the method of determination.

1.3 While it is recognized that such a standard may be unwieldy for routine usage in commercial operations, it can provide a common base for agreement in cases of dispute or arbitration. The complete standard is referred to as the referee method. Embodied in the standard is the commercial method starting with the crushed and divided sample when the gross sample is not too wet to crush and divide. See Test Methods D 2961 and D 3173 for other moisture methods.

1.4 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.5 *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.*

¹ This test method is under the jurisdiction of ASTM Committee D5 on Coal and Coke and is the direct responsibility of Subcommittee D05.21 on Methods of Analysis.

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2. Referenced Documents

2.1 ASTM Standards:

D 121 Terminology of Coal and Coke²

D 2013 Practice for Preparing Coal Samples for Analysis²

D 2234 Practice for Collection of a Gross Sample of Coal²

D 2961 Test Method for Single-Stage Total Moisture Less than 15% in Coal Reduced to 2.36-mm (No. 8 Sieve) Topsize²

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

D 5865 Test Method for Gross Calorific Value of Coal and Coke²

3. Terminology

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

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *air drying*—a process of partial drying of a coal sample to bring it to near equilibrium with the atmosphere in the room in which further reduction/division of the sample is to take place.

3.2.2 *air-dry loss*—the loss in weight, expressed as a percent, resulting from each air-drying operation.

3.2.3 *easily oxidized coals*—low-rank coals such as subbituminous or lignitic coals.

3.2.4 *equilibrium*—condition reached in air drying when the change in weight of the sample, under conditions of ambient temperature and humidity, is no more than 0.1 %/h or 0.05 %/½ h.

3.2.5 *residual moisture*—that moisture remaining in the sample after air drying.

3.2.6 *total moisture*—see Terminology D 121.

4. Summary of Test Method (See Fig. 1)

4.1 This test method is based on the loss in weight of a coal sample in an air atmosphere under rigidly controlled conditions of temperature, time, and airflow.

4.2 Alternative Methods:

4.2.1 *Referee Method*, which may be used in cases of dispute or arbitration. The gross moisture sample is air dried to

² *Annual Book of ASTM Standards*, Vol 05.06.

