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# Standard Method of Preparing Coal Samples for Analysis[1]

This standard is issued under the fixed designation D 2013; 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 method[2] covers the reduction and division of gross or divided samples, collected in accordance with Test Methods D 2234, up to and including the individual portions for laboratory analysis.

1.2 Reduction and division procedures are prescribed for coals of the following groups:

1.2.1 *Group A* includes coals that have been cleaned in all sizes.

1.2.2 *Group B* includes all other coals. Unknown coals are to be considered under Group B.

1.2.3 Group A allows smaller weights of laboratory samples to be retained than Group B. These lower weights may be used for particular coals if they have been shown by using the procedure of Annex A1.2 to give a sample preparation and analysis variance which is no more than 20 % of the total allowable variance.

1.3 Two methods are given for preparing the analysis sample for making the moisture determinations:

1.3.1 *Referee Method*—This method shall be used where the possibility of unaccounted changes in moisture content during the reduction and division of the gross or divided sample must be held to a minimum. It is intended to be used for evaluation of nonreferee methods and for testing of equipment. Only under certain conditions will this referee method be directly applicable to routine test programs.

1.3.2 *Nonreferee Method*—This method may be used for routine work.

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 197 Test Method for Sampling and Fineness Test of Pulverized Coal[3]

D 410 Method for Sieve Analysis of Coal[4]

D 431 Method for Designating the Size of Coal from its Sieve Analysis[4]

D 2234 Test Methods for Collection of a Gross Sample of Coal[3]

D 3173 Test Method for Moisture in the Analysis Sample of Coal and Coke[3]

D 3174 Test Method for Ash in the Analysis Sample of Coal and Coke from Coal[3]

D 3302 Test Method for Total Moisture in Coal[3]

E 11 Specification for Wire-Cloth Sieves for Testing Purposes[5]

E 177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods[5]

## 3. Significance and Use

3.1 This method is intended to provide an analysis sample of coal from a gross or divided sample that has been collected in accordance with Test Methods D 2234. In addition, a method to determine the percent air dried moisture loss of the sample is provided. The analysis sample can be used to determine the value of the coal represented, its ability to meet specifications, its environmental impact, as well as for other purposes.

## 4. Definitions of Terms Specific to This Standard

4.1 *air drying*—a process of partially drying coal to bring moisture near to equilibrium with the atmosphere in the room in which further reduction and division of the sample is to take place.

4.2 *analysis sample*—final subsample prepared from the original gross or divided sample but reduced to 100 % through No. 60 (250-µm) sieve and divided to not less than 50 g.

4.3 *bias (systematic error)*—an error that is consistently negative or consistently positive. The mean of errors resulting from a series of observations which does not tend towards zero.

4.4 *C test*—a standard statistical test for homogeneity of variance.[6]

4.5 *divided sample*—a sample that has been reduced in quantity.

4.6 *gross sample*—a sample representing one lot of coal and

[1] This method is under the jurisdiction of ASTM Committee D05 on Coal and Coke and is the direct responsibility of Subcommittee D05.23 on Sampling.

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[2] For more detailed explanation of this method see Keller, G. E., "Determination of Quantities Needed in Coal Sample Preparation and Analysis," *Transactions*, Vol 232, 1965, pp. 218–226.

[3] *Annual Book of ASTM Standards*, Vol 05.06.

[4] *Discontinued; see 1988 Annual Book of ASTM Standards*, Vol 05.05.

[5] *Annual Book of ASTM Standards*, Vol 14.02.

[6] Details appear in standard texts. A good text for this purpose is Grubbs, F. E., "An Introduction to Some Precision and Accuracy of Measurement Problems," JTEVA, Vol 10, No. 4, July 1982, pp 133–143.

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