



Designation: D 4916 – 97

Standard Practice for Mechanical Auger Sampling¹

This standard is issued under the fixed designation D 4916; 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 practice describes procedures for the collection of an increment, partial sample, or gross sample of material using mechanical augers. Reduction and division of the material by mechanical equipment at the auger is also covered. Further manual or mechanical reduction or division of the material elsewhere shall be performed in accordance with Method D 2013.

1.2 The values stated in SI units are to be regarded as the standard. 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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

D 431 Method for Designating the Size of Coal from Its Sieve Analysis²

D 2013 Method of Preparing Coal Samples for Analysis³

D 2234 Practice for Collection of a Gross Sample of Coal³

E 177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods⁴

3. Terminology

3.1 Definitions:

3.1.1 accuracy:

3.1.1.1 *generally*, a term used to indicate the reliability of a sample, a measurement, or an observation.

3.1.1.2 *specifically*, a measure of closeness of agreement between an experimental result and the true value. An example

is the observed and true sulfur content of a coal consignment. This measurement is affected by chance errors as well as by bias.

3.1.2 *auger increment*—the retained portion of one extraction operation of the auger.

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

3.1.4 *chance error*—error that has equal probability of being positive or negative. The mean of the chance errors resulting from a series of observations tends toward zero as the number of observations approaches infinity.

3.1.5 *consignment*—a discrete amount of coal, such as a shipment, a car load, a unit train, or a day's production. A consignment may include more than one lot of coal and may correspond to a specific period of time, such as a sampling period or a billing period.

3.1.6 *error*—difference of an observation or a group of observations from the best obtainable estimate of the true value.

3.1.7 *gross sample*—a sample representing one lot of coal and composed of a number of increments on which neither reduction nor division has been performed.

3.1.8 *increment*—a small portion of the lot collected by one operation of a sampling device and normally combined with other increments from the lot to make a gross sample.

3.1.9 *lot*—a quantity of coal to be represented by the gross sample.

3.1.10 *precision*—a term used to indicate the capability of a person, an instrument, or a method to obtain reproducible results; specifically, a measure of the chance error as expressed by the variance, standard error, or a multiple of the standard error (see Practice E 177).

3.1.11 *representative sample*—a sample collected in such a manner that every particle in the lot to be sampled is equally represented in the gross or divided sample.

3.1.12 *sample*—a quantity of material taken from a larger quantity for the purpose of estimating the properties or composition of the larger quantity.

3.1.13 *sample division*—a process whereby a sample is reduced in weight without change in particle size.

¹ This practice is under the jurisdiction of ASTM Committee D-5 on Coal and Coke and is the direct responsibility of Subcommittee D05.23 on Coal Sampling. Current edition approved Nov. 10, 1997. Published May 1998. Originally published as D 4916 – 89. Last previous edition D 4916 – 91.

² Discontinued; see 1988 Annual Book of ASTM Standards, Vol 05.05.

³ Annual Book of ASTM Standards, Vol 05.05.

⁴ Annual Book of ASTM Standards, Vol 14.02.