



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:²

- D 2013 Practice for Preparing Coal Samples for Analysis
- D 2234/D 2234M Practice for Collection of a Gross Sample of Coal
- D 4749 Method for Performing the Sieve Analysis of Coal and Designating Coal Size
- E 177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods

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.

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

Current edition approved April 1, 2004. Published April 2004. Originally approved in 1989. Last previous edition approved in 1997 as D 4916 – 97.

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.

3.1.1.2 *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 *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.

3.1.4 *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).

3.1.5 *unbiased sample (representative sample)*—a sample free of bias.

4. Summary of Practice

4.1 A sample of coal is extracted from a stationary load contained within a railcar(s), truck(s), or barge(s) by inserting an auger into the vehicle in a vertical manner to extract a columnar sample of coal from the vehicle. The coal collected by the auger is then placed into sealed containers for storage or is processed by additional sampling equipment, for example, a secondary sampler or crusher. The processed auger increments produced by these on-line components should be placed into sealed containers for future laboratory analysis.

5. Significance and Use

5.1 Auger sampling systems can be used to extract samples from trucks, railcars, barges, or static compacted stockpiles where the use of a full-stream mechanical sampling system may be impractical. The samples obtained from these systems can be used to establish the materials' commercial value or constituents for quality control purposes at the shipping or receiving location of the interested parties in the transaction. The utilization of an auger system and procedures for collecting coal samples for subsequent analysis should be agreed