



Designation: D7348 – 21

Standard Test Methods for Loss on Ignition (LOI) of Solid Combustion Residues¹

This standard is issued under the fixed designation D7348; 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 These test methods cover the determination of the mass loss from solid combustion residues upon heating in an air or oxygen atmosphere to a prescribed temperature. The mass loss can be due to the loss of moisture, carbon, sulfur, and so forth, from the decomposition or combustion of the residue.

1.2 *Units*—The values stated in SI units are to be regarded as standard. The values given in parentheses after SI units are provided for information only and are not considered standard.

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

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*²

D121 Terminology of Coal and Coke

D3174 Test Method for Ash in the Analysis Sample of Coal and Coke from Coal

D3180 Practice for Calculating Coal and Coke Analyses from As-Determined to Different Bases

D3682 Test Method for Major and Minor Elements in Combustion Residues from Coal Utilization Processes

D3683 Test Method for Trace Elements in Coal and Coke Ash by Atomic Absorption (Withdrawn 2018)³

¹ These test methods are under the jurisdiction of ASTM Committee D05 on Coal and Coke and are the direct responsibility of Subcommittee D05.29 on Major Elements in Ash and Trace Elements of Coal.

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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 The last approved version of this historical standard is referenced on www.astm.org.

D4326 Test Method for Major and Minor Elements in Coal Ash By X-Ray Fluorescence

D6316 Test Method for Determination of Total, Combustible and Carbonate Carbon in Solid Residues from Coal and Coke

D6349 Test Method for Determination of Major and Minor Elements in Coal, Coke, and Solid Residues from Combustion of Coal and Coke by Inductively Coupled Plasma—Atomic Emission Spectrometry

D6357 Test Methods for Determination of Trace Elements in Coal, Coke, and Combustion Residues from Coal Utilization Processes by Inductively Coupled Plasma Atomic Emission Spectrometry, Inductively Coupled Plasma Mass Spectrometry, and Graphite Furnace Atomic Absorption Spectro

D7582 Test Methods for Proximate Analysis of Coal and Coke by Macro Thermogravimetric Analysis

D8146 Guide for Evaluating Test Method Capability and Fitness for Use

E177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods

E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

3. Terminology

3.1 *Definitions*—For definitions of terms used in these test methods, refer to Terminology D121.

4. Summary of Test Method

4.1 Loss on ignition (LOI) is determined by measuring the loss in mass of the test specimen when heated under controlled conditions of temperature, time, atmosphere, specimen mass, and equipment specifications. The LOI can be determined by measuring the mass loss in a single procedure or in a two-step procedure in which mass losses, equivalent to the moisture and ash values of the test specimen, are determined.

5. Significance and Use

5.1 LOI refers to the mass loss of a combustion residue whenever it is heated in an air or oxygen atmosphere to high temperatures. In the cement industry, use of the term LOI normally refers to a mass loss in a sample heated to 950 °C. To combustion engineers, the term LOI normally refers to mass losses in samples heated to temperatures normally less than