



## Standard Guide for Characterization of Coal Fly Ash and Clean Coal Combustion Fly Ash for Potential Uses<sup>1</sup>

This standard is issued under the fixed designation D 5759; 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 guide recommends standards for the characterization of fly ash from the combustion of coal, fly ash from coal combusted in the presence of alkaline materials, and fly ash from combusted coal in which the flue gases have been treated with alkaline materials in the presence of the fly ash.

1.2 This guide provides recommended and optional test methods for fly ash evaluation. Acceptance criteria can be negotiated between the producer and the user according to the potential end use.

1.3 The coal fly ash and clean coal combustion fly ash of this guide do not include the following:

1.3.1 Dusts from kilns producing products such as lime, portland cement, activated clays, etc.;

1.3.2 By-products of flue gas desulfurization that are not collected with the primary fly ash removal equipment such as the baghouse or electrostatic precipitator; and

1.3.3 Fly ash or other combustion products derived from the burning of waste; municipal, industrial, or commercial garbage; sewage sludge or other refuse, or both; derived fuels; wood; wood waste products; rice hulls; agriculture waste; or other non-coal fuels or other such fuels blended with coal, or some combination thereof.

1.4 Fly ash may contain some trace elements that may affect performance or potential end use.

1.5 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

1.6 *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:

C 22 Specification for Gypsum<sup>2</sup>

C 25 Test Methods for Chemical Analysis of Limestone, Quicklime, and Hydrated Lime<sup>2</sup>

C 51 Terminology Relating to Lime and Limestone (As Used by the Industry)<sup>2</sup>

C 109 Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or 50-mm Cube Specimens)<sup>2</sup>

C 110 Test Methods for Physical Testing of Quicklime, Hydrated Lime, and Limestone<sup>2</sup>

C 114 Test Methods for Chemical Analysis of Hydraulic Cement<sup>2</sup>

C 150 Specification for Portland Cement<sup>2</sup>

C 191 Test Method for Time of Setting of Hydraulic Cement by Vicat Needle<sup>2</sup>

C 311 Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use as a Mineral Admixture in Portland-Cement Concrete<sup>3</sup>

C 400 Test Method for Testing Quicklime and Hydrated Lime for Neutralization of Waste Acid<sup>2</sup>

C 593 Specification for Fly Ash and Other Pozzolans for Use with Lime<sup>2</sup>

C 595 Specification for Blended Hydraulic Cements<sup>2</sup>

C 602 Specification for Agricultural Liming Materials<sup>2</sup>

C 618 Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete<sup>3</sup>

D 546 Test Method for Sieve Analysis of Mineral Filler for Road and Paving Materials<sup>4</sup>

D 1973 Guide for Design of a Linear System for Containment of Wastes<sup>5</sup>

D 2795 Method for Analysis of Coal and Coke Ash<sup>6</sup>

D 3178 Test Method for Carbon and Hydrogen in the Analysis Sample of Coal and Coke<sup>6</sup>

D 3682 Test Method for Major and Minor Elements in Coal and Coke Ash by the Atomic Absorption Method<sup>6</sup>

D 3683 Test Method for Trace Elements in Coal and Coke Ash by the Atomic Absorption Method<sup>6</sup>

D 4326 Test Method for Major and Minor Elements in Coal and Coke by X-Ray Fluorescence<sup>6</sup>

<sup>1</sup> This guide is under the jurisdiction of ASTM Committee D34 on Waste Management and is the direct responsibility of Subcommittee D34.06 on Recovery and Reuse.

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 04.01.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 04.02.

<sup>4</sup> *Annual Book of ASTM Standards*, Vol 04.03.

<sup>5</sup> *Annual Book of ASTM Standards*, Vol 11.04.

<sup>6</sup> *Annual Book of ASTM Standards*, Vol 05.05.