



## Standard Test Method for Air Content of Hydraulic Cement Mortar<sup>1</sup>

This standard is issued under the fixed designation C 185; 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 approval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

*This standard has been approved for use by agencies of the Department of Defense.*

### 1. Scope

1.1 This test method covers the determination of the air content of hydraulic cement mortar under the conditions hereinafter specified.

1.2 The values stated in SI units are to be regarded as the standard.

1.3 Values in SI shall be obtained by measurement in SI units or by appropriate conversion, using the Rules for Conversion and Rounding in IEEE/ASTM SI 10, of measurements made in other units.

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.*

1.5 **Warning**— Fresh hydraulic cementitious mixtures are caustic and may cause chemical burns to skin and tissue upon prolonged exposure.<sup>2</sup>

### 2. Referenced Documents

#### 2.1 ASTM Standards:

- C 91 Specification for Masonry Cement<sup>3</sup>
- C 109/C 109M Test Method for Compressive Strength of Hydraulic-Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)<sup>3</sup>
- C 150 Specification for Portland Cement<sup>3</sup>
- C 183 Practice for Sampling and the Amount of Testing of Hydraulic Cement<sup>3</sup>
- C 230/C 230M Specification for Flow Table for Use in Tests of Hydraulic Cement<sup>3</sup>
- C 305 Practice for Mechanical Mixing of Hydraulic Cement Pastes and Mortars of Plastic Consistency<sup>3</sup>
- C 511 Specification for Moist Cabinets, Moist Rooms, and Water Storage Tanks Used in the Testing of Hydraulic Cements and Concretes<sup>3</sup>

- C 595 Specification for Blended Hydraulic Cements<sup>3</sup>
- C 778 Specification for Standard Sand<sup>3</sup>
- C 1005 Specification for Weights and Weighing Devices for Use in the Physical Testing of Hydraulic Cements<sup>3</sup>
- C 1157 Performance Specification for Hydraulic Cement<sup>3</sup>
- C 1328 Specification for Plastic Stucco Cement<sup>3</sup>
- C 1328 Specification for Mortar Cement<sup>3</sup>
- E 438 Specification for Glasses in Laboratory Apparatus<sup>4</sup>
- E 694 Specification for Laboratory Glass Volumetric Apparatus<sup>4</sup>
- IEEE/ASTM SI 10 Standard for Use of the International System of Units (SI): The Modern Metric System<sup>4</sup>

### 3. Summary of Test Method

3.1 Prepare a mortar with standard sand and the cement to be tested, using a water content sufficient to give a required flow. Compact the mortar into a measure of known volume and determine mass. Calculate the air content from the measured density of the mortar, the known densities of the constituents, and the mixture proportions.

### 4. Significance and Use

4.1 The purpose of this test method is to determine whether or not the hydraulic cement under test meets the air-entraining or non-air-entraining requirements of the applicable hydraulic cement specification for which the test is being made. The air content of concrete is influenced by many factors other than the potential of the cement for air entrainment.

### 5. Apparatus

5.1 *Flow Table, Flow Mold, and Caliper*, shall conform to Specification C 230/C 230M.

5.2 *Measure*—A cylindrical measure having an inside diameter of  $76 \pm 2$  mm and a depth (approximately 88 mm) adjusted by standardization with water to contain  $400 \pm 1$  mL at  $23.0 \pm 2.0^\circ\text{C}$  (Note 1). For the purposes of this test, the capacity of the measure in millilitres is the mass of the water content of the measure, in grams, divided by 0.9976, no correction in mass being made for the buoyant effect of air. The measure shall have a uniform wall thickness. The thickness of

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee C01 on Cement and is the direct responsibility of Subcommittee C01.21 on Air Entrainment.

Current edition approved Aug. 10, 2002. Published September 2002. Originally published as C 185 – 44 T. Last previous edition C 185 – 01.

<sup>2</sup> Refer to the section on Safety Precautions, "Manual of Cement Testing," *Annual Book of ASTM Standards*, Vol 04.01.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 04.01.

<sup>4</sup> *Annual Book of ASTM Standards*, Vol 14.04.