



# Standard Test Method for Air-Entraining Admixtures for Concrete<sup>1</sup>

This standard is issued under the fixed designation C233/C233M; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope\*

1.1 This test method covers the testing of materials proposed for use as air-entraining admixtures in the field.

1.2 The text of this test method references notes and footnotes which provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the standard.

1.3 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard. Some values have only SI units because the inch-pound equivalents are not used in practice.

NOTE 1—Sieve size is identified by its standard designation in Specification E11. The alternative designation given in parentheses is for information only and does not represent a different standard sieve size.

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.*

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>2</sup>

- C33 Specification for Concrete Aggregates
- C39/C39M Test Method for Compressive Strength of Cylindrical Concrete Specimens
- C78 Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading)
- C136 Test Method for Sieve Analysis of Fine and Coarse Aggregates
- C143/C143M Test Method for Slump of Hydraulic-Cement Concrete

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee C09 on Concrete and Concrete Aggregates and is the direct responsibility of Subcommittee C09.23 on Chemical Admixtures.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

- C150 Specification for Portland Cement
  - C157/C157M Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete
  - C172 Practice for Sampling Freshly Mixed Concrete
  - C173/C173M Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
  - C185 Test Method for Air Content of Hydraulic Cement Mortar
  - C192/C192M Practice for Making and Curing Concrete Test Specimens in the Laboratory
  - C231 Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
  - C232 Test Methods for Bleeding of Concrete
  - C260 Specification for Air-Entraining Admixtures for Concrete
  - C403/C403M Test Method for Time of Setting of Concrete Mixtures by Penetration Resistance
  - C666/C666M Test Method for Resistance of Concrete to Rapid Freezing and Thawing
  - C670 Practice for Preparing Precision and Bias Statements for Test Methods for Construction Materials
  - D75 Practice for Sampling Aggregates
  - D1193 Specification for Reagent Water
  - E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves
  - E70 Test Method for pH of Aqueous Solutions With the Glass Electrode
- 2.2 *ACI Standards:*  
ACI 211.1 Recommended Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete<sup>3</sup>

## 3. Significance and Use

3.1 This test method is used to develop data for comparison with the requirements of Specification C260. These tests are based on arbitrary stipulations permitting highly standardized testing in the laboratory, and are not intended to simulate actual job conditions.

## 4. Materials

4.1 *Cement*—The cement used in any series of tests shall be either the cement proposed for specific work in accordance

<sup>3</sup> American Concrete Institute Manual of Concrete Practice, Part 1, pp. 211-1 to 211-38 (1993).

\*A Summary of Changes section appears at the end of this standard