
Standard Method of Test for Air-Entraining Admixtures for Concrete

AASHTO Designation: T 157-22

Technically Revised: 2022

Technical Subcommittee: 3b, Fresh Concrete

ASTM Designation: C233/C233M-10a



**American Association of State Highway and Transportation Officials
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1. SCOPE

- 1.1. This method covers the testing of materials proposed for use as air-entraining admixtures in the field.
- 1.2. The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information purposes only.
- 1.3. *This standard does not purport to address all of the safety concerns 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.*
- 1.4. The text of this standard references notes and footnotes that provide explanatory materials. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the standard.
- 1.5. *The quality of the results produced by this standard are dependent on the competence of the personnel performing the procedure and the capability, calibration, and maintenance of the equipment used. Agencies that meet the criteria of R 18 are generally considered capable of competent and objective testing/sampling/inspection/etc. Users of this standard are cautioned that compliance with R 18 alone does not completely assure reliable results. Reliable results depend on many factors; following the suggestions of R 18 or some similar acceptable guideline provides a means of evaluating and controlling some of those factors.*

2. REFERENCED DOCUMENTS

- 2.1. *AASHTO Standards:*
 - M 6, Fine Aggregate for Hydraulic Cement Concrete
 - M 80, Coarse Aggregate for Hydraulic Cement Concrete
 - M 85, Portland Cement
 - M 154M/M 154, Air-Entraining Admixtures for Concrete
 - M 201, Mixing Rooms, Moist Cabinets, Moist Rooms, and Water Storage Tanks Used in the Testing of Hydraulic Cements and Concretes
 - M 240M/M 240, Blended Hydraulic Cement
 - M 339M/M 339, Thermometers Used in the Testing of Construction Materials
 - R 18, Establishing and Implementing a Quality Management System for Construction Materials Testing Laboratories

- R 39, Making and Curing Concrete Test Specimens in the Laboratory
- R 60, Sampling Freshly Mixed Concrete
- T 22M/T 22, Compressive Strength of Cylindrical Concrete Specimens
- T 27, Sieve Analysis of Fine and Coarse Aggregates
- T 97, Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading)
- T 119M/T 119, Slump of Hydraulic Cement Concrete
- T 137, Air Content of Hydraulic Cement Mortar
- T 152, Air Content of Freshly Mixed Concrete by the Pressure Method
- T 158, Bleeding of Concrete
- T 160, Length Change of Hardened Hydraulic Cement Mortar and Concrete
- T 161, Resistance of Concrete to Rapid Freezing and Thawing
- T 196M/T 196, Air Content of Freshly Mixed Concrete by the Volumetric Method
- T 197M/T 197, Time of Setting of Concrete Mixtures by Penetration Resistance

2.2. *ASTM Standards:*

- C33/C33M, Standard Specification for Concrete Aggregates
- C136/C136M, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
- C185, Standard Test Method for Air Content of Hydraulic Cement Mortar
- C670, Standard Practice for Preparing Precision and Bias Statements for Test Methods for Construction Materials
- C1157/C1157M, Standard Performance Specification for Hydraulic Cement
- D75/D75M, Standard Practice for Sampling Aggregates
- E1, Standard Specification for ASTM Liquid-in-Glass Thermometers
- E70, Standard Test Method for pH of Aqueous Solutions with the Glass Electrode
- E1137/E1137M, Standard Specification for Industrial Platinum Resistance Thermometers
- *Manual of Aggregate and Concrete Testing*

2.3. *ACI Standard:*

- ACI 211.1-91, Recommended Practice for Selecting Proportions for Normal, Heavy-Weight and Mass Concrete

2.4. *International Electrotechnical Commission Standard:*

- IEC 60751: 2008 Industrial Platinum Resistance Thermometers and Platinum Temperature Sensors

3. SIGNIFICANCE AND USE

- 3.1. This test method is used to develop data for comparison with the requirements of M 154M/M 154. 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. *Cementitious Material*—The cementitious material used in any series of tests shall meet any of the following: