Standard Method of Test for

Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete

AASHTO Designation: T 121M/T 121-16
Release: Group 1 (April 2016)
ASTM Designation: C138/C138M-10a

AASHTO

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1. SCOPE

1.1. This method covers determination of the density (see Note 1) of freshly mixed concrete and gives formulas for calculating the yield, cement content, and the air content of the concrete. Yield is defined as the volume of concrete produced from a mixture of known quantities of the component materials.

1.2. Nonplastic concrete, such as is commonly used in the manufacture of pipe and unit masonry, is not covered by this test method.

1.3. The values stated in either SI or inch-pound units shall be regarded separately as standard. The inch-pound units are shown in brackets. The values stated might not be exact equivalents; therefore, each system must be used independently of the other.

Note 1—Unit weight was the previous terminology used to describe the property determined by this test method, which is mass per unit volume.

1.4. The text of this test method references notes and footnotes that provide explanatory information. These notes and footnotes (excluding those in tables) shall not be considered as requirements of this test method.

1.5. *This standard may involve hazardous materials, operations, and equipment. 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.* **Warning**—*Fresh hydraulic cementitious mixtures are caustic and may cause chemical burns to skin and tissue upon prolonged exposure.*

2. REFERENCED DOCUMENTS

2.1. *AASHTO Standards*:

- M 85, Portland Cement
- R 18, Establishing and Implementing a Quality Management System for Construction Materials Testing Laboratories
- R 60, Sampling Freshly Mixed Concrete
- R 61, Establishing Requirements for Equipment Calibrations, Standardizations, and Checks
- T 19M/T 19, Bulk Density ("Unit Weight") and Voids in Aggregate
- T 23, Making and Curing Concrete Test Specimens in the Field
- T 119M/T 119, Slump of Hydraulic Cement Concrete