
Standard Method of Test for Slump of Hydraulic Cement Concrete

AASHTO Designation: T 119M/T 119-18 (2022)

Technically Revised: 2018

Reviewed but Not Updated: 2022

Editorially Revised: 2021

Technical Subcommittee: 3b, Fresh Concrete

ASTM Designation: C143/C143M-15a



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

- 1.1. This test method covers determination of slump of concrete, both in the laboratory and in the field.
- 1.2. The values stated in either SI units or inch-pound units are to be regarded separately as standard. Within the text, the inch-pound units are shown in brackets. The values stated in each system are not exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with the standard.
- 1.3. The text of the standard reference notes and footnotes provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the standard.
- 1.4. *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.
- 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:*
- R 18, Establishing and Implementing a Quality Management System for Construction Materials Testing Laboratories
 - R 60, Sampling Freshly Mixed Concrete
 - R 100, Making and Curing Concrete Test Specimens in the Field
 - T 121M/T 121, Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
 - T 152, Air Content of Freshly Mixed Concrete by the Pressure Method
 - T 196M/T 196, Air Content of Freshly Mixed Concrete by the Volumetric Method

2.2.

ASTM Standards:

- C150/C150M, Standard Specification for Portland Cement
- C670, Standard Practice for Preparing Precision and Bias Statements for Test Methods for Construction Materials

3. SUMMARY OF TEST METHOD

- 3.1. A sample of freshly mixed concrete is placed and compacted by rodding in a mold shaped as the frustum of a cone. The mold is raised and the concrete allowed to subside. The vertical distance between the original and the displaced position of the center of the top surface of the concrete is measured and reported as the slump of the concrete.

4. SIGNIFICANCE AND USE

- 4.1. This test method is intended to provide the user with a procedure to determine the slump of plastic hydraulic cement concretes.

Note 1—This test method was originally developed to provide a technique to monitor the consistency of unhardened concrete. Under laboratory conditions, with strict control of all concrete materials, the slump is generally found to increase proportionally with the water content of a given concrete mixture and thus to be inversely related to concrete strength. Under field conditions, however, such a strength relationship is not clearly and consistently shown. Care should therefore be taken in relating slump results obtained under field conditions to strength.

- 4.2. This test method is considered applicable to plastic concrete having coarse aggregate passing the 37.5-mm [1.5-in.] sieve. If the plastic concrete includes coarse aggregate particles sized larger than 37.5 mm [1.5 in.], the larger aggregate particles are to be removed according to Section 6 of R 60 before testing.

- 4.3. This test method is not considered applicable to nonplastic and noncohesive concrete.

Note 2—Concretes having slumps less than 15 mm [0.5 in.] may not be adequately plastic and concretes having slumps greater than about 230 mm [9 in.] may not be adequately cohesive for this test to have significance. Caution should be exercised in interpreting such results.

5. APPARATUS

- 5.1. *Mold*—The test specimen shall be formed in a mold made of metal not readily attacked by the cement paste. The metal shall not be thinner than 1.5 mm [0.060 in.] and, if formed by the spinning process, there shall be no point on the mold at which the thickness is less than 1.15 mm [0.045 in.]. The mold shall be in the form of the lateral surface of the frustum of a cone with the base 203 mm [8 in.] in diameter, the top 102 mm [4 in.] in diameter, and the height 305 mm [12 in.]. Individual diameters and heights shall be within ± 3.2 mm [0.125 in.] of the prescribed dimensions. The base and the top shall be open and parallel to each other and at right angles to the axis of the cone. The mold shall be provided with foot pieces and handles similar to those shown in Figure 1. The mold shall be constructed without a seam. The interior of the mold shall be relatively smooth and free from projections. A mold that clamps to a nonabsorbent base plate is acceptable instead of the one illustrated, provided the clamping arrangement is such that it can be fully released without movement of the mold and the base is large enough to contain all of the slumped concrete in an acceptable test.

- 5.1.1. Check and record conformance to the mold's specified dimensions when it is purchased or first placed in service and at least annually thereafter.