



Standard Test Method for Measuring Changes in Height of Cylindrical Specimens of Hydraulic-Cement Grout¹

This standard is issued under the fixed designation C1090/C1090M; 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 (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope*

1.1 This test method covers measurement of the changes in height of hydraulic-cement grout by the use of 75 by 150-mm [3 by 6-in.] cylinders, when the cylinders are protected so that the tendency to change in height does not include evaporation so as to cause drying, uptake of moisture, carbonation, or exposure to temperatures outside the range $23 \pm 2.0^\circ\text{C}$ [$73 \pm 3.5^\circ\text{F}$] or, optionally, to another specified temperature controlled within $\pm 2.0^\circ\text{C}$ [$\pm 3.5^\circ\text{F}$].

1.2 If desired, this test method can be adapted to studies of changes in height involving either schedules or environmental treatment different from the standard procedures prescribed by this test method.

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:²

¹ This test method is under the jurisdiction of ASTM Committee C09 on Concrete and Concrete Aggregates and is the direct responsibility of Subcommittee C09.68 on Volume Change.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

C125 Terminology Relating to Concrete and Concrete Aggregates

C172/C172M Practice for Sampling Freshly Mixed Concrete

C219 Terminology Relating to Hydraulic Cement

C305 Practice for Mechanical Mixing of Hydraulic Cement Pastes and Mortars of Plastic Consistency

C511 Specification for Mixing Rooms, Moist Cabinets, Moist Rooms, and Water Storage Tanks Used in the Testing of Hydraulic Cements and Concretes

C670 Practice for Preparing Precision and Bias Statements for Test Methods for Construction Materials

C827/C827M Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures

C939/C939M Test Method for Flow of Grout for Preplaced-Aggregate Concrete (Flow Cone Method)

E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves

3. Terminology

3.1 Definitions:

3.1.1 For definitions of terms used in this test method, refer to Terminologies C125 and C219.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *change in height*—either an increase or decrease in the vertical dimension of a test specimen, provided the change has been caused by factors other than externally applied forces, changes in ambient temperature not conforming to the specified range, drying caused by evaporation, carbonation, or uptake of moisture.

4. Significance and Use

4.1 This test method is intended to provide a means of assessing the ability of a hydraulic-cement grout to retain a stable volume during the stipulated testing period of 28 days, provided that the tendency to change height does not include the effects of drying caused by evaporation, uptake of moisture, carbonation, or exposure to temperatures outside the range $23.0 \pm 2.0^\circ\text{C}$ [$73 \pm 3.5^\circ\text{F}$] (Note 2). An exception is made when the options described in the section on test conditions are exercised.

NOTE 2—This test method does not measure the change in height before

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