



Designation: C 1403 – 00

Standard Test Method for Rate of Water Absorption of Masonry Mortars¹

This standard is issued under the fixed designation C 1403; 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 a standardized laboratory procedure for determining the relative water absorption by capillary uptake (wicking) characteristics of masonry mortars. This test method is not applicable for determining the effectiveness of water repellent coatings.

1.2 The values stated in SI units are to be regarded as the standard. The inch-pound units given in parentheses are for information only.

1.3 *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:

- C 109/C 109M Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)²
- C 270 Specification for Mortar for Unit Masonry³
- C 305 Practice for Mechanical Mixing of Hydraulic Cement Pastes and Mortars of Plastic Consistency²
- C 511 Specification for Moist Cabinets, Moist Rooms and Water Storage Tanks Used in the Testing of Hydraulic Cements and Concretes²
- C 778 Specification for Standard Sand²
- C 1437 Test Method for Flow of Hydraulic Cement Mortar²

3. Significance and Use

3.1 This test method provides a laboratory procedure for determining the relative water absorption properties over time of mortars used for masonry construction. Because the samples are made under laboratory conditions and do not take into account the effect of the masonry substrate or field mixing procedures, this method is not intended for field use. Data

generated from this test method may be useful for determining the relative effectiveness of water repellent admixtures or the effect of other admixtures or mortar components on the water repellency of a mortar. However, use caution in interpreting the results. While the resistance of masonry to water penetration may be related to the water absorption of the mortar, it also depends on other factors, such as the workmanship, extent of bond, and the properties of the masonry units and mortar.

4. Apparatus

4.1 *Balance*—A balance sensitive to 0.1 g.

4.2 *Immersion Tank*—A watertight container with a minimum cross section of 300 by 300 mm (12 by 12 in.) and a minimum depth of 75 mm (3 in.) and with a suitable cover to minimize evaporation. Provide specimen supports that allow a minimum of 3 mm (0.12 in.) clearance from the bottom of the container and that cover a maximum of 10 % of the specimen surface area. Provide a flat tank so that when a specimen is set on the supports the water level as specified in 6.4 shall not vary by more than 1 mm (0.04 in.) from one end of the specimen to the opposite end.

4.3 *Specimen Molds*—Metal 50-mm or 2-in. cube specimen molds with removable plastic water tight disposable liners. The plastic liners shall be rigid enough to retain their shape when free standing and filled with mortar.

4.4 *Spoon*—A metal spoon approximately 230 mm (9 in.) in length and with a bowl approximately 100 mm (4 in.) in length.

4.5 *Straightedge*—A steel straightedge not less than 150 mm (6 in.) long and approximately 1.5-3.0 mm ($\frac{1}{16}$ to $\frac{1}{8}$ in.) thick.

4.6 *Tamper*—A tamper made of a nonabsorptive, nonabrasive, nonbrittle material such as a rubber compound having a Shore A durometer hardness of 80 ± 10 , or seasoned oak wood rendered nonabsorptive by immersion for 15 minutes in paraffin at approximately 200°C (392°F), and having a cross section of 13 by 25 mm (0.5 by 1.0 in.) and a convenient length of 127 to 152 mm (5 to 6 in.). The tamping face of the tamper shall be flat and at right angles to the length of the tamper.

4.7 *Trowel*, having a steel blade 100 to 150 mm (4 to 6 in.) in length, with straight edges.

4.8 *Tapping Stick*—A hardwood rod, having a diameter of 16 mm ($\frac{5}{8}$ in.) and a length of 150 mm (6 in.).

¹ This test method is under the jurisdiction of ASTM Committee C12 on Mortars and Grouts for Unit Masonry and is the direct responsibility of Subcommittee C12.02 on Research and Methods of Test.

Current edition approved Nov. 10, 2000. Published December 2000. Originally published as C 1403-99. Last previous edition C 1403-99a.

² *Annual Book of ASTM Standards*, Vol 04.01.

³ *Annual Book of ASTM Standards*, Vol 04.05.

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