



Designation: C1148 – 92a(Reapproved 2008)

Standard Test Method for Measuring the Drying Shrinkage of Masonry Mortar¹

This standard is issued under the fixed designation C1148; 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 the measurement of unrestrained drying shrinkage of masonry mortars.

1.2 This test method is applicable to Specification C270 Type N, Type S, and Type M mortars under the property or proportion specifications. Due to the tendency to damage lower strength specimens during demolding, it is not applicable to lower strength mortars, such as Type O mortars.

1.3 This test method is intended for research purposes only.

1.4 The values stated in SI units are to be regarded as standard. The values given in parentheses are mathematical conversions to inch-pound units that are provided for information only and are not considered standard.

1.5 *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

C109/C109M Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)

C157/C157M Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete

C270 Specification for Mortar for Unit Masonry

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

C490 Practice for Use of Apparatus for the Determination of Length Change of Hardened Cement Paste, Mortar, and Concrete

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. 1, 2008. Published November 2008. Originally approved in 1990. Last previous edition approved in 2002 as C1148 – 92a(2002). DOI: 10.1520/C1148-92AR08.

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.

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

C778 Specification for Sand

3. Significance and Use

3.1 The drying shrinkage of mortar as determined by this test method is a measure of the decrease in length of test specimens under controlled drying conditions, after an initial period of moist curing.

3.2 Since test specimens are not completely unrestrained during the initial period of moist curing, measurements of drying shrinkage by this test method are most useful for comparative purposes rather than as absolute values.

3.3 The drying shrinkage of unrestrained laboratory tested mortar samples is different from that experienced in a masonry wall where influences include restraint, masonry unit absorption, ambient temperature and humidity, thickness of joint, length of continuous wall, etc.

4. Apparatus

4.1 *Scales and Weights, Glass Graduates, and Length Comparator*, conforming to requirements of Specification C490.

4.2 *Molds* (for test specimens), providing for 25 by 25 by 285-mm (1 by 1 by 11.25-in.) prisms having an effective gage length of 250 mm (10 in.), and conforming to the requirements of Specification C490.

4.3 *Studs*, conforming to the requirements of Specification C490.

4.4 *Tamper and Demolding Apparatus*, conforming to requirements of Test Method C157/C157M.

4.5 *Trowel*, having a straight edged steel blade 100 to 150 mm (4 to 6 in.) in length.

5. Temperature and Humidity

5.1 *Molding Room*—The temperature of the molding room, dry materials, mixing water, and the relative humidity of the air in the molding room shall conform to the requirements of Specification C490.



5.2 *Moist Storage Facility*—The temperature and humidity of the air in the moist storage facility shall conform to the requirements of Specification **C511**.