



Standard Test Method for Absorption of Architectural Cast Stone¹

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1. Scope

1.1 This test method covers the sampling, preparation of specimens, and determination of the absorption of architectural cast stone.

1.2 This test method describes two procedures: (1) cold water and (2) boiling water. The user of the test method should stipulate which is desired. If no stipulation is made, the cold water procedure will be used.

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

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

C642 Test Method for Density, Absorption, and Voids in Hardened Concrete

3. Terminology

3.1 *Definitions:*

3.1.1 *cast stone*—an architectural precast concrete building unit intended to simulate natural cut stone.

4. Significance and Use

4.1 This test method is to be used in determining the absorption of cast stone. Absorption is one measure of porosity of cast stone and, hence, its resistance to weathering and structural stress.

¹ This test method is under the jurisdiction of ASTM Committee C27 on Precast Concrete Products and is the direct responsibility of Subcommittee C27.20 on Architectural and Structural Products.

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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.

5. Sampling

5.1 Select the sample to represent the cast stone under consideration. The sample may be randomly selected by the purchaser or his authorized representative from each 500 ft³ (14 m³) of cast stone. Select a sample of adequate size to permit the preparation of three absorption test specimens.

6. Test Specimens

6.1 For absorption tests take three specimens from the sample. Cut specimens from the finished surface of the sample to consist of one surface intended to be exposed to view and five saw-cut surfaces, except that for faced cast stone, cut the specimens through the faced surface to consist of approximately equal parts of the facing material and the backup material.

6.2 Cut specimens from the sample with saws. The test specimens shall be 2-in. (50.8-mm) or 50-mm cubes. The allowable size tolerance of the cubes shall be $\pm 1/8$ in. (3.2 mm).

7. Conditioning

7.1 For this test, oven dry specimens at a temperature of 212 to 230°F (100 to 110°C) until the loss in mass is not more than 0.1 % in 24 h of drying. Remove specimens from the oven and allow to cool in room temperature to a final temperature of 68 to 77°F (20 to 25°C) before testing for absorption.

8. Procedure

8.1 Weigh the specimens immediately after conditioning and determine the mass to the nearest 0.1 g.

8.2 *Method A, Cold Water Test*—Immerse the specimens completely in filtered or distilled water at $73.4 \pm 3^\circ\text{F}$ ($23 \pm 1.7^\circ\text{C}$) for 48 h. At the end of this period, remove them from the water bath one at a time, surface dry with a damp cloth, and determine the mass to the nearest 0.1 g.

8.3 *Method B, Boiling Water Test*—Immerse the specimens completely in cold filtered or distilled water for 48 h and then immerse in boiling water at $212 \pm 9^\circ\text{F}$ ($100 \pm 5^\circ\text{C}$) for 5 h. Allow the specimens to cool to a final temperature of 68 to 77°F (20 to 25°C), surface dry, and weigh to the nearest 0.1 g.

9. Calculations

9.1 Calculate the absorption of each specimen as follows:

$$\text{absorption, mass \%} = [(B - A)/A] \times 100 \quad (1)$$

where:

A = mass of the dried specimen, and

B = mass of the specimen after immersion.

9.2 The absorption is the average absorption of the three specimens.

10. Report

10.1 Report the following information:

10.1.1 Identification of the sample,

10.1.2 Mixture proportions,

10.1.3 Test method,

10.1.4 Absorption value,

10.1.5 Name of the project,

10.1.6 Date of casting, and

10.1.7 Age of sample when test begins.

11. Precision and Bias

11.1 *Precision*—The precision of this test is similar to Test Method **C642** for which data are not yet available. The precision of this test method will be stated when data become available.

11.2 *Bias*—Since there is no accepted reference material suitable for determining the bias of results of this test method, no statement on bias is being made.

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