



Standard Test Method for Compressive Strength of Architectural Cast Stone¹

This standard is issued, under the fixed designation C 1194; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last re-vision. 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 sampling, preparation of specimens, and determination of the compressive strength of architectural cast stone;
- 1.2 This standard does not purport to address all of the safety problems, 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.
- 1.3 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are provided for information only.

2. Referenced Documents

- 2.1 ASTM Standards:
 - C 42 Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
 - C 617 Practice for Capping Cylindrical Concrete Specimens²

3. Terminology

- 3.1 Definition:
 - 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 compressive strength of cast stone. Compressive strength is one measure of resistance of cast stone to weathering and structural stress,

5. Sampling

- 5.1 Select the sample to represent the cast stone under consideration. The sample may be 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 compression test specimens.

6. Test Specimens

- 6.1 For compression tests, take three specimens from each sample. Take specimens from any portion of the sample, except that for faced cast stone, cut specimens through the faced surface to consist of approximately equal parts of the facing mixture and the backup material.

6.2 Cut test 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 in. (3.2 mm).

7. Conditioning

7.1 For this test, oven dry specimens at a temperature of 100 to 110°C (212 to 230°F) until the loss in mass is not more than 0,1 % in 24 h of drying. Remove from the oven and allow to cool in room temperature for 4 to 6 h before testing for compressive strength.

8. Specimen Preparation

8.1 If bearing surfaces of specimens for compression tests are not smooth, make smooth by grinding to produce a bearing surface with deviation from plane no greater than 0.002 in. (0.05 rum), Grind bearing surfaces prior to oven drying. if the set of specimens cannot be ground to a smooth surface, cap each specimen using materials specified in Practice C 617. Form the cap by spreading the capping material upon a capping plate and pressing the specimen firmly on it. Make the cap as thin as possible but not to exceed 1/22 ill. (2.4 mm).

9. Procedure

9.1 Apply load through a spherical bearing block placed on top of the specimen in a vertical-testing machine. The loading of faced specimens shall be normal to the position in which the cast stone is laid in the wall (Fig. 1). The area of the bearing block shall be the same, or slightly larger, than that of the zest specimen.

9.2 Center the specimen in the testing machine and apply the initial load at a rate which will permit hand adjustment of the contact plate on the specimen.

9.3 Apply load uniformly and without shock. Do not exceed a rate of loading of 100 psi (690 kPa)/s or a speed for the moving head of more than 0.05 in. (1.3 mm)/min.

9.4 Load specimens to failure.

10. Calculations

10.1 Calculate the compressive strength of each specimen as follows:

$$C=W/A$$

where;

C = compressive strength of the specimen, psi (MPa),

W= maximum load. lbf (N), on the specimen at failure, and

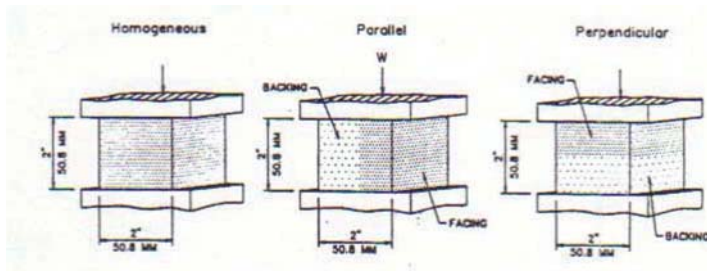
A = calculated area of the uncapped bearing surface in in.' (mm²).

11. Report

11.1 Report the following information.

11.1.1 The average compressive strength of three specimens taken from a single sample shall be reported as the compressive strength of the sample.

11.1.2 The following information shall be reported as applicable: identification of the sample, mixture proportions, compressive strength, name of the project, date of casting, loading position, and age of sample when tested.



Precision and Bias

12.1 Precision—The precision of this test is similar to Method C 42 for which data are not yet available. The FIG. 1 Loading Position precision of this test method will be stated when data become available.

12.2 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.

¹ This test method is under the jurisdiction of ASTM Committee C•27 on Precast Concrete Products and is the direct responsibility of Subcommittee C2710 Architectural and Structural Products.

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² Annual Book of ASTM standards, Vol 04.01

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