



# Standard Test Method for Flexural Strength of Dimension Stone<sup>1</sup>

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## 1. Scope

1.1 This test method covers the procedure for determining the flexural strength of stone by use of a simple beam using quarter-point loading.

1.2 Stone tests shall be made when pertinent for the situation when the load is perpendicular to the bedding plane and when the load is parallel to the bedding plane.

1.3 As required, the flexural tests shall also be conducted under wet conditions.

1.4 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.

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:*<sup>2</sup>

- E4 Practices for Force Verification of Testing Machines
- C119 Terminology Relating to Dimension Stone
- C1799 Guide to Dimension Stone Test Specimen Sampling and Preparation

## 3. Terminology

3.1 *Definitions*—All definitions are in accordance with Terminology C119.

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee C18 on Dimension Stone and is the direct responsibility of Subcommittee C18.01 on Test Methods.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

## 4. Significance and Use

4.1 This test method is useful in indicating the differences in flexural strength between the various dimension stones. This test method also provides one element in comparing stones of the same type.

## 5. Apparatus

5.1 *Testing Machine* (Fig. 1), conforming to the requirements of the applicable sections of Practices E4. The quarter-point loading method shall be used in making flexure tests of stone employing bearing blocks which will ensure that forces applied to the beam will be vertical only and applied without eccentricity. The apparatus should be capable of maintaining the span length and distances between load-applying blocks and support blocks constant within  $\pm 0.05$  in. [ $\pm 1$  mm]. The load should be capable of being applied at a uniform rate and in such a manner as to avoid shock.

## 6. Sampling

6.1 Select the sample to represent a true average of the type or grade of stone under consideration and of the quality supplied to the market under the type designation to be tested. The sample may be selected by the purchaser or his authorized representative from the quarried stone or taken from the natural ledge and shall be of adequate size to permit the preparation of the desired number of test specimens. When perceptible variations occur, the purchaser may select as many samples as are necessary for determining the variations in flexural strength.

NOTE 1—Refer to Guide C1799 for additional information on selecting, preparing, and conditioning test specimens.

## 7. Test Specimen

7.1 The test specimens shall measure 4 in. [100 mm] wide by 1.25 in. [30 mm] thick by 15 in. [350 mm] long, with a span as tested of 12.5 in. [300 mm]. The sides of the specimen shall be at right angles with the top and bottom. The specimens shall have a fine abrasive finish on the planes perpendicular to the load and a fine saw finish on the other four planes. The dimensions of the specimen shall be measured and recorded to the nearest 0.01 in. [0.1 mm]. A minimum of five specimens shall be tested for each condition of test. The average value of the test results is reported as the flexural strength of the stone.