



Designation: C 99 – 87 (Reapproved 2000)

## Standard Test Method for Modulus of Rupture of Dimension Stone<sup>1</sup>

This standard is issued under the fixed designation C 99; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

*This standard has been approved for use by agencies of the Department of Defense.*

### 1. Scope

1.1 This test method covers the determination of the modulus of rupture of all types of dimension stone except slate.

1.2 *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 119 Terminology Relating to Dimension Stone<sup>2</sup>

### 3. Terminology

3.1 *Definitions*—All definitions are in accordance with Terminology C 119.

### 4. Significance and Use

4.1 This test method is useful in indicating the differences in modulus of rupture 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*—The accuracy of the testing machine shall be within 1 % for the range from 10 to 1000 lbf (44 to 4450 N).

5.2 *Knife Edges*—The supports for the specimen shall be two knife edges of the rocker type (Fig. 1) with edges at least

as long as the width of the specimen. The loading knife edge may be of either the rocker or rigid type.

### 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 modulus of rupture.

### 7. Test Specimens

7.1 The specimens shall be approximately 4 by 8 by 2¼ in. (101.6 by 203.2 by 57.2 mm) in size. They shall be sawed from the sample and finished by grinding to smooth surfaces. The 4 by 8-in. faces shall be as nearly plane and parallel as practicable. For loading perpendicular to the rift (Note 1) five specimens shall be prepared with the 4 by 8-in. faces parallel to the rift planes (see  $A_2$  in Fig. 1), and for loading parallel to the rift, five specimens shall be prepared with the 4 by 2¼-in. (101.6 by 57.2 mm) faces parallel to the rift (Note 2). When tests are desired on the stone in both the wet and dry condition, ten specimens shall be prepared for each direction of loading; that is, five for tests dry, perpendicular to the rift, five for tests wet, perpendicular to the rift, etc.

NOTE 1—The term rift is used here to designate the direction in which the stone splits most easily. In stratified stones it is considered to coincide with the bedding or stratification. The rift direction should always be marked on the sample by the quarryman, since it often is not possible to determine it on a small block.

NOTE 2—Another condition of loading may occur in structures when the rift planes are vertical and parallel to the length of the beam. The strength of the stone may be obtained for such loading by cutting the

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<sup>2</sup> *Annual Book of ASTM Standard*, Vol 04.07.