



Designation: C241/C241M – 13

## Standard Test Method for Abrasion Resistance of Stone Subjected to Foot Traffic<sup>1</sup>

This standard is issued under the fixed designation C241/C241M; 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 abrasion resistance of all types of stones for floors, steps, and similar uses where the wear is caused by the abrasion of foot traffic.

1.2 *Units*—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.

1.2.1 *Exception*—The formula for calculation of the result of this test method relies on the use of SI units; all measurements of weight in this test method shall be recorded in SI units. See 9.1 and 10.1.

1.3 *This standard does not purport to address 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>

C97 Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone

C119 Terminology Relating to Dimension Stone

C1353 Test Method for Abrasion Resistance of Dimension Stone Subjected to Foot Traffic Using a Rotary Platform, Double-Head Abraser

### 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, 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.

### 4. Significance and Use

4.1 This test method is useful in indicating the differences in abrasion resistance between the various building stones. This test method also provides one element in comparing stones of the same type.

### 5. Apparatus

5.1 The abrasion testing apparatus shown in Fig. 1 shall be used. This apparatus consists essentially of a power-driven grinding lap, *A*, 10 in. [250 mm] in diameter, which is revolved at 45 rpm; three specimen holders, *B*, with superimposed weights; gears, *C*, for revolving the specimen; and a means of feeding abrasive at a constant rate to the lap. The guide rings, *D*, are clamped in position slightly above the specimen holders, and the 2000 g weight bearing on the specimen is the combined weight of the specimen holder, vertical shaft above with the attached spur gear, and a weight hopper, *E*, containing additional adjustment weights. The frame, *F*, carrying the guide rings is adjustable vertically to accommodate different specimen thicknesses. Gears, *C*, are adjusted on the shafts for each specimen thickness, so that they are slightly above the plate, *G*, throughout the test.

### 6. Sampling

6.1 The sample may be selected by the purchaser or his authorized agent but shall represent the average quality of the type or grade of stone under consideration. It shall be of sufficient size to permit the preparation of at least three test specimens, and one face should have the finish to be exposed to traffic. The sample preferably should be 1 in. [25 mm] thick and 8 in. [200 mm] square.

### 7. Test Specimens

7.1 At least three specimens 2 in. [50 mm] square and preferably 1 in. [25 mm] in thickness shall be sawed from the sample. The sharp edges shall be rounded by grinding to a radius of approximately  $\frac{1}{32}$  in. [1 mm] in order to prevent crumbling during the test.

### 8. Conditioning

8.1 Dry the specimens for 48 h in a ventilated oven at a temperature of  $140 \pm 4^\circ\text{F}$  [ $60 \pm 2^\circ\text{C}$ ]. At the 46th, 47th, and