



Designation: C 241 – 90 (Reapproved 1997)<sup>e1</sup>

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

This standard is issued under the fixed designation C 241; 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 approval. 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.*

<sup>e1</sup> NOTE—Editorial changes were made in September 1997.

### 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 *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:

- C 97 Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone<sup>2</sup>
- 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 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. (254 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. (25.4 mm) thick and 8 in. (203.2 mm) square.

### 7. Test Specimens

7.1 At least three specimens 2 in. (50.8 mm) square and preferably 1 in. (25.4 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. (0.8 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  $60 \pm 2^\circ\text{C}$  ( $140 \pm 4^\circ\text{F}$ ). At the 46th, 47th, and 48th hour, weigh the specimens to ensure that the weight is the same. If the weight continues to drop, continue to dry the specimens until there are three successive hourly readings with the same weight. After removing the specimens from the oven, cool them to room temperature in a desiccator before testing them.

### 9. Procedure

9.1 Weigh the test specimens to the nearest 0.01 g; then place them in the abrasion testing apparatus and abrade for 225 revolutions of the grinding lap with No. 60 Alundum abrasive

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee C-18 on Dimension Stone and is the direct responsibility of Subcommittee C18.01 on Test Methods.

Current edition approved April 27, 1990. Published June 1990. Originally published as C 241 – 50 T. Last previous edition C 241 – 85 $\epsilon$ <sup>1</sup>.

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