



Standard Test Method for Resistance to Impact for Resilient Floor Tile¹

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1. Scope

1.1 This test method measures the resistance to impact of resilient floor tile.

1.2 The values stated in inch-pound units are to be regarded as the standard. The values in parentheses are for information only.

1.3 *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:*

F 141 Terminology Relating to Resilient Floor Coverings²

F 1066 Specification for Vinyl Composition Floor Tile²

3. Terminology

3.1 *Definitions*—For definitions of terms used in this test method refer to Terminology F 141.

4. Significance and Use

4.1 Resilient floor tile is subjected to impacts from objects that may be inadvertently dropped on to surfaces. It is not possible to know all of the factors related to the dropped objects (shape, weight, height of drop) or the condition of the environment in which the tile is located (types of subfloor, degree of adhesion to subfloor, temperature). Therefore, this test method can only provide a relative measure of resistance of resilient floor tile to impact.

5. Apparatus

5.1 *Impact Testing Apparatus*, consisting essentially of a specimen support, weights, and a device for guiding a freely falling weight. A suitable apparatus is shown in Fig. 1.

5.1.1 *Specimen Support*, consisting of three steel balls, each 1 in. in diameter, equally spaced over a rigid steel base so that a circle drawn through the center of the balls is 5 in. in

diameter. The three balls shall be firmly attached to the base plate and the balls and the base plate shall weigh not less than 10 lbs (4.5 kg).

5.1.2 *Steel Ball*, 1-in. (2.54-cm diameter) weighing 0.143 ± 0.002 lb (0.065 ± 0.001 kg) shall be used for testing $\frac{1}{8}$ (0.317 cm) and thinner floor covering; and a 1-in. (2.54 cm) diameter steel cylinder weighing 0.350 ± 0.005 lb (0.159 ± 0.002 kg) shall be used and having a hemispherical end, for testing $\frac{3}{16}$ in. (0.476 cm) and $\frac{1}{4}$ in. (0.635 cm) material.

5.1.3 *Slotted Tube*, graduated in $\frac{1}{4}$ in. (0.635 cm) divisions, about 20 in. (50.8 cm) in height and of sufficient size to permit the weight to fall through it freely, is mounted vertically over the specimen support so as to guide the freely falling weight to the center of the circle formed by the three balls.

5.2 *Zinc Oxide Paste*, made by mixing powdered zinc oxide with water to form a thin paste.

6. Test Specimen

6.1 The specimen shall consist of a 6-in. by 6-in. (15 cm by 15 cm) portion of the test unit.

7. Conditioning

7.1 *Conditioning in Air*—Condition the specimens for physical test in air maintained at $73.4 \pm 1.8^\circ\text{F}$ ($25 \pm 1^\circ\text{C}$) and $50 \pm 5\%$ relative humidity for not less than 24 h before testing.

7.2 *Conditioning in Water*—Maintain the water temperature at $77 \pm 1.8^\circ\text{F}$ ($2 \pm 1^\circ\text{C}$) unless otherwise specified. Immerse the specimen for not less than 15 min or more than 30 min before testing.

8. Procedure

8.1 The height from which the weight is dropped and the number of times the weight is dropped shall be as specified in the detailed specification.

8.2 Spread a thin coating of zinc oxide paste over the center of the wearing surface of the specimen so as to form a circle $3 \pm \frac{1}{8}$ in. (7.62 ± 0.317 cm) in diameter. With the coated side down, immediately center the specimen over the three balls attached to the specimen support so that the falling weight will strike the specimen at the center. Drop the required weight, 5.1.2, freely through the guide tube from the specified height the specified number of times, 8.1, so that it will strike the specimen at the center. Carefully return the specimen to its

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² *Annual Book of ASTM Standards*, Vol 15.04.

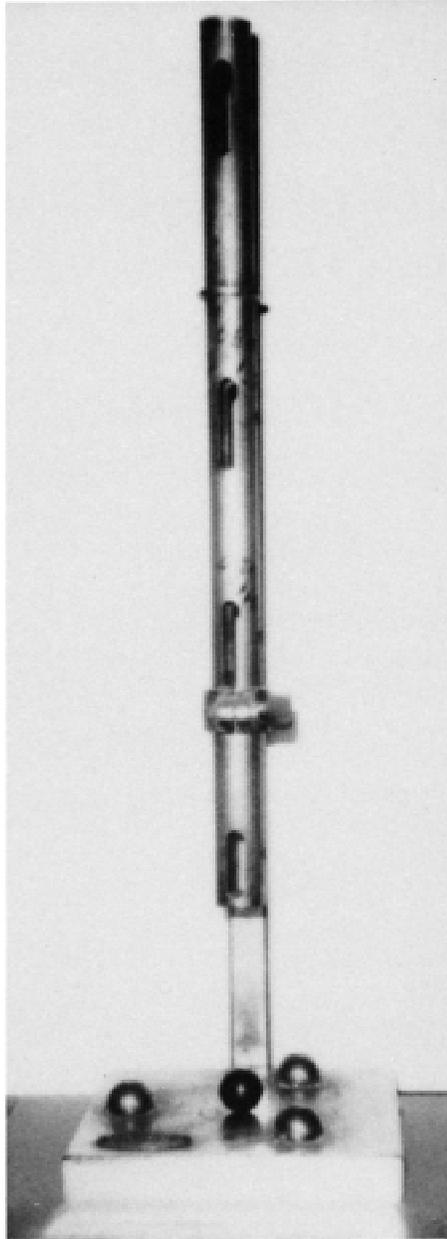


FIG. 1 Impact Tester

original position after each drop. After the final drop, remove the specimen and examine for breaks or cracks that extend beyond the coated circle. Failure is defined as a complete breakage of the tile or crack development beyond the circle. Examine the coated surface under good illumination without flexing the specimen. Test a second specimen by placing the specimen at 90° to that of the first sequence.

8.3 When the specimen is conditioned in water, remove it from the water, immediately wipe dry, and, within 15 s, coat with zinc oxide paste as described in 8.2. Immediately test as described in 8.2.

9. Report

9.1 Unless otherwise specified in the detailed specification, two specimens from each test unit shall be tested. Specimens shall be positioned 90° from each other.

9.2 The weight used, the height from which the weight was dropped, and the number of drops shall be recorded.

9.3 Record number of specimens with number that passed and failed. If specimen failed, note number of drops to failure, 8.2.

10. Precision and Bias

10.1 No statement is made about either the precision or bias of this test method since the results merely state whether there is conformance to the criteria for success specified in the procedure.³

³ A synopsis of the round robin test data is available from ASTM Headquarters. Request RR:F06-1000.

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11. Keywords

11.1 crack; impact; resilient; steel ball; tile