



Designation: C 217 – 94 (Reapproved 1999)

Standard Test Method for Weather Resistance of Slate¹

This standard is issued under the fixed designation C 217; 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 (ϵ) 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 two procedures for weather resistance of slate in all outdoor installations by determining the depth of softening by an abraser or by hand scraping.

NOTE 1—The test is based on the fact that slates containing pyrite, calcite, and carbon undergo a chemical weathering which results in the conversion of the calcite particles to gypsum. The swelling action that results causes disintegration of the slate. The extent of this action on various slates in the test has been found to correlate with the durability of the materials in actual weathering.

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 Stone²

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 weather resistance between various slates. This test method also provides one element in the comparison of slates.

5. Apparatus

5.1 Either one of the following shall be used:

5.1.1 *Shear/Scratch Tester*, Taber Model 203 or 502,³ with the shear hardness tool, Model S-20, or its equivalent.

5.1.2 *Hand Scraping Tool*—The scraping tool shall be made by grinding down the blade of a putty knife to a length of 3 in. (76.2 mm) and a width of $\frac{3}{4}$ in. (19.05 mm). The end of the blade shall be ground to a plane surface perpendicular to the length of the tool to form a sharp edge with either side of the blade. These sharp edges will be referred to as the “cutting edges.”

6. Sampling

6.1 The samples shall be selected by the purchaser or his authorized representative so as to be truly representative of the consignment under consideration. Six shingles of roofing from each carload or fraction thereof or similar quantities from other kinds of slate shall constitute a sample.

NOTE 2—Six shingles 10 in. (254 mm) or more in length and of any standard width are sufficient for this test and also for modulus of rupture and absorption tests.

7. Test Specimens

7.1 Prepare at least three specimens, each 2 by 4 in. (50.8 by 101.6 mm) measured along the cleavage faces, for determining the depth of softening in a 1 % solution of sulfuric acid. The 2 by 4-in. faces shall be ground smooth and finished with No. 80 abrasive. Specimens cut from sheared or punched slate shall have no saw cut nearer than 1 in. (25.4 mm) from the edges or nail holes.

8. Procedure with Shear/Scratch Tester

8.1 In this procedure determine the depth of softening in acid with the shear/scratch tester (described in 5.1.1). The test involves measuring the depth of a groove made by the shearing tool in fresh specimens and also in the same specimens after soaking 7 days in 1 % sulfuric acid.

8.2 Draw with a pencil compass, on at least three of the 2 by 4-in. (50.8 by 101.6-mm) specimens, an arc of a circle of the same radius as that made by the shearing tool. Mark each arc at four points for thickness measurements, as indicated in Fig. 1. Measure the thickness at each point to the nearest 0.0001 in. (0.0025 mm). With a 2.2-lbf (9.8-N) load on the shearing tool, groove each specimen along the penciled arc by rotating the turntable slowly and steadily by hand in a counter clockwise direction. Then repeat the thickness measurements at the same

¹ 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 Dec. 15, 1994. Published February 1995. Originally published as C 217 – 48 T. Last previous edition C 217 – 85 (1990).

² *Annual Book of ASTM Standards*, Vol 04.07.

³ Described in the 1962 Bulletin 62203–502 of the Taber Instrument Co., North Tonawanda, NY.