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Standard Test Methods for Flexure Testing of Structural and Roofing Slate[1]

This standard is issued under the fixed designation C120/C120M; 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 (ε) indicates an editorial change since the last revision or reapproval.

INTRODUCTION

Breaking load test results of roofing slate under this test method are only valid for the commercial supply of slates of that thickness or greater. For the commercial supply of thinner roofing slates, testing on samples of the minimum specified thickness must be conducted.

When comparing roofing slates of equal thickness, but from various sources, slates which meet the required breaking load at the lowest specimen thickness will yield the best performance on the roof in terms of resistance to impact damage.

The reliability of the data produced under this test method is largely influenced by the care and protocol used in obtaining and preparing the test specimens.

1. Scope

1.1 These test methods cover determination of the breaking load of roofing slate and modulus of rupture of structural slate by use of simple three-point loading.

1.2 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system are not necessarily exact equivalents; therefore, to ensure conformance with the standard, each system shall be used independently of the other, and values from the two systems shall not be combined.

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~~ safety, health, and ~~health~~environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

C119 Terminology Relating to Dimension Stone
C406 Specification for Roofing Slate
C629 Specification for Slate Dimension Stone
E4 Practices for Force Verification of Testing Machines
E145 Specification for Gravity-Convection and Forced-Ventilation Ovens

3. Terminology

3.1 *Definitions*—All definitions are in accordance with Terminology C119.

4. Summary of Test Method

4.1 Prepared and conditioned test specimens are placed on two support blocks in a test stand and loaded vertically at their center point by a third block.

[1] These test methods are under the jurisdiction of ASTM Committee C18 on Dimension Stone and are the direct responsibility of Subcommittee C18.01 on Test Methods.
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[2] 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.

5. Significance and Use

5.1 These test methods are useful in indicating the differences in flexure (breaking load, modulus of rupture) between various slates. These test methods also provide one element in the comparison of roofing slates under Specification C406 and structural slates under Specification C629.

6. Apparatus

6.1 *Ventilated Oven*—Conforming to the requirements of the applicable sections of Specification E145, and capable of maintaining a temperature of 140 ± 4°F (60 ± 2°C) and large enough to accommodate the test specimens.

6.2 *Testing Machine*—(see Fig. 1), conforming to the requirements of the applicable sections of Practices E4. The three-point loading method shall be used in conducting flexure tests employing support and loading blocks that will ensure that forces applied to the beam sill be vertical only and applied without eccentricity. The apparatus should be capable of maintaining the span length and distances between the loading block and support blocks within ±0.05 in. (±1 mm). The load should be capable of being applied at a uniform rate and in such a manner as to avoid shock. The accuracy of the testing machine shall be within 1 % for the range from 10 to 1000 lbf [50 to 5000 N] and capable of being read to the nearest 5 lbf (20 N).

6.3 *Load Application and Support Blocks*—The supports for the specimens shall be of the rocker type (Fig. 1) with the edges at least as long as the width of the specimen. The load application block may be of either the rocker or rigid type. The portions of the load application and support blocks contacting the specimen shall be rounded, with a nominal radius of ½ in. [13 mm].

7. Conditioning

7.1 Dry the specimens for 48 h in a ventilated oven (meeting the requirements of E145) at a temperature of 140 ± 4°F (60 ± 2°C). At the 46th, 47th and 48th hour, weigh the specimens to ensure that the weight is the same. If the weight continues to drop,

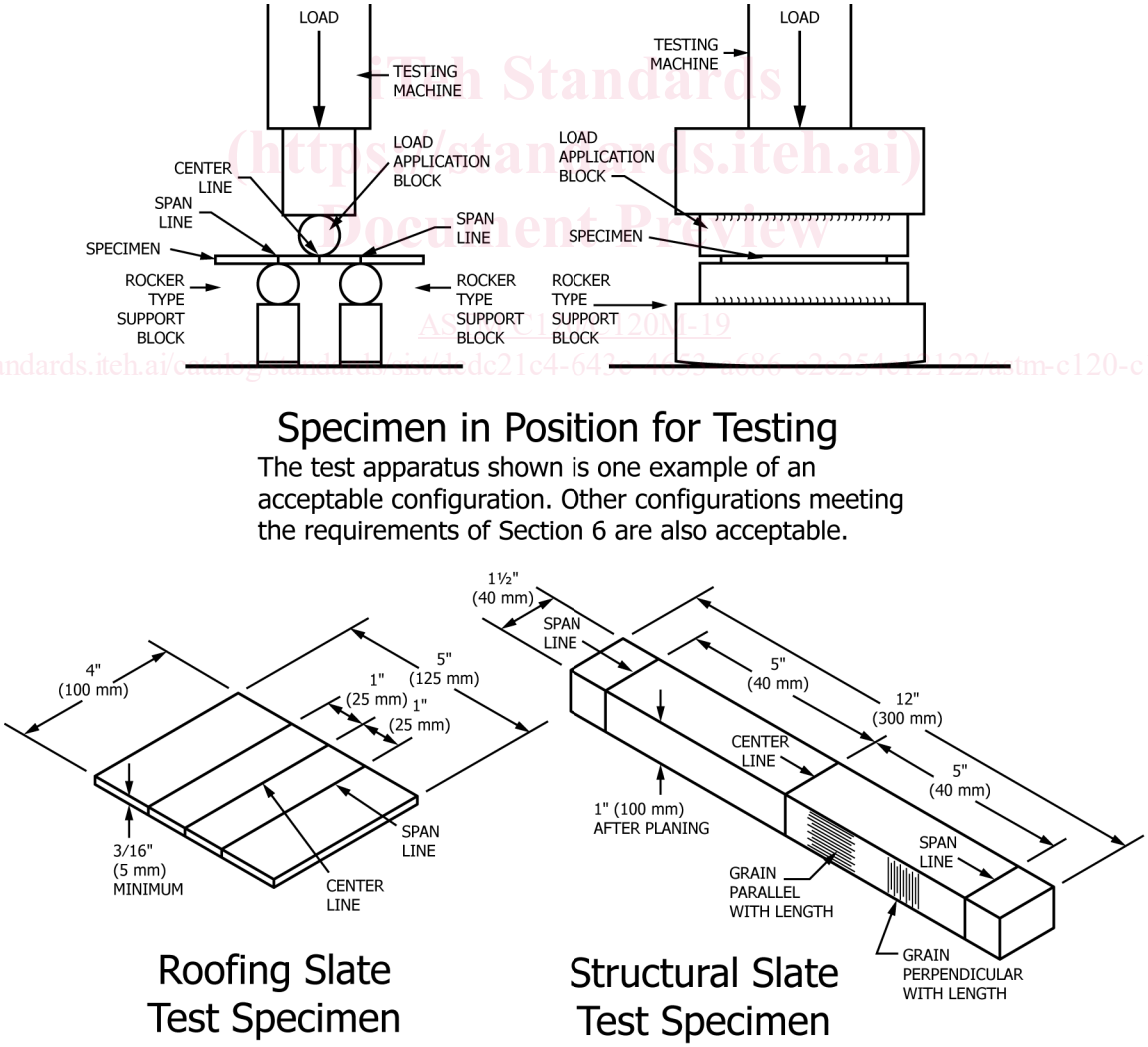

FIG. 1 Specimens and Preferred Type of Loading Application and Support Blocks for Determining the Breaking Load and Modulus of Rupture of Slate