



Designation: C 120 – 05

Standard Test Methods of Flexure Testing of Slate (Breaking Load, Modulus of Rupture, Modulus of Elasticity)¹

This standard is issued under the fixed designation C 120; 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.

This standard has been approved for use by agencies of the Department of Defense.

INTRODUCTION

Due to the unique properties of slate, the flexure test is better adapted to use for strength and elasticity determinations than either compression or tension tests. Furthermore, several uses of slates are such that these determinations are of special interest and value, besides furnishing comparative data.

The property of slate termed “grain” causes a slab of the material to break transversely in one direction somewhat more readily than at right angles to this direction. For this reason it is desirable to test the strength and elasticity both parallel and perpendicular to the grain.

In the quarrying of slate, blasting is frequently resorted to, and for this reason certain portions of the material may have been unduly strained. Low or erratic strength results on some of the test specimens should be regarded in the light of defective material.

1. Scope

1.1 These test methods cover determination of the modulus of rupture and modulus of elasticity of slate by means of flexure tests.

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:*²

C 99 Test Method for Modulus of Rupture of Dimension Stone

C 119 Terminology Relating to Dimension Stone

3. Terminology

3.1 *Definitions*—All definitions are in accordance with Terminology **C 119**.

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.

Current edition approved April 1, 2005. Published May 2005. Originally approved in 1925. Last previous edition approved in 2000 as C 120 – 00.

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.

4. Significance and Use

4.1 These test methods are useful in indicating the differences in flexure (modulus of rupture, modulus of elasticity) between various slates. These test methods also provide one element in the comparison of slates.

MODULUS OF RUPTURE

5. Test Specimens

5.1 *Structural or Electrical Slate*—Six representative specimens, 12 by 1½ by 1 in. (305 by 38.1 by 25.4 mm) in size, of the particular slate under consideration shall be tested.

5.2 *Roofing Slate*—At least six specimens 4 in. (101.6 mm) in width, 4 in. or more in length, and of thickness ¾ to 1 in. (4.8 to 6.4 mm).

6. Preparation of Specimens

6.1 *Structural or Electrical Slate*—Split the slate for the test to a thickness of approximately 1¼ in. (31.8 mm) and then saw into strips 12 in. (304.8 mm) in length by 1½ in. (38.1 mm) in width. Cut half of these with the length parallel to the grain and half with the length perpendicular to the grain. Plane or rub down the 12 by 1½-in. (304.8 by 38.1-mm) faces to a thickness of approximately 1 in. (25.4 mm), taking care to have the finished surfaces as nearly parallel as practicable.

6.2 *Roofing Slate*—Cut one 4 by 4-in. (101.6 by 101.6-mm) specimen, of the thickness of the slate, from each of ten shingles. The saw should be a wet cut saw capable of making