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Standard Test Method for Compressive Strength of Laboratory Constructed Masonry Prisms¹

This standard is issued under the fixed designation E 447; 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. Consult the DoD Index of Specifications and Standards for the specific year of issue which has been adopted by the Department of Defense.

1. Scope

1.1 This test method covers compression tests of masonry prisms for determining comparative data on the compressive strength of masonry built in the laboratory with either different masonry units or mortar types, or both.

NOTE 1—This test method is not intended for use in establishing the compressive strength of a particular set of materials by a preconstruction evaluation or to evaluate quality of materials and workmanship during construction. Nor is this test method intended for use in determining the compressive strength of masonry built at the job site with the same material and workmanship to be used, or being used, in a particular structure (see Test Method C 1314).

1.2 Test specimens are short compression prisms; the influence of slenderness ratio is taken into account either by proportions of the fabricated specimens or by the application of a correction factor.

1.3 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.4 *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 39 Test Method for Compressive Strength of Cylindrical Concrete Specimens²
- C 67 Test Method of Sampling and Testing Brick and Structural Clay Tile³
- C 140 Test Methods of Sampling and Testing Concrete Masonry Units³
- C 143 Test Method for Slump of Hydraulic Cement Concrete²
- C 144 Specification for Aggregate for Masonry Mortar³
- C 270 Specification for Mortar for Unit Masonry³
- C 476 Specification for Grout for Masonry³

¹ This test method is under the jurisdiction of ASTM Committee C-15 on Manufactured Masonry Units and is the direct responsibility of Subcommittee C 15.04 on Research.

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² Annual Book of ASTM Standards, Vol 04.02.

³ Annual Book of ASTM Standards, Vol 04.05.

- C 780 Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry³
- C 1019 Test Method of Sampling and Testing Grout³
- C 1314 Test Method for Constructing and Testing Masonry Prisms Used to Determine Compliance with Specified Compressive Strength of Masonry³
- E 4 Practices for Force Verification of Testing Machines⁴
- E 6 Terminology Relating to Methods of Mechanical Testing⁴
- E 105 Practice for Probability Sampling of Materials⁵
- E 111 Test Method for Young's Modulus, Tangent Modulus, and Chord Modulus⁴
- E 575 Practice for Reporting Data from Structural Tests of Building Constructions, Elements, Connections, and Assemblies⁶
- E 631 Terminology of Building Constructions⁶

3. Terminology

3.1 *Definitions*—For definitions and terminology used in these test methods, refer to Terminology E 6 and E 631.

4. Apparatus

4.1 The testing machine shall conform to the requirements given in Practices E 4.

4.2 The upper bearing shall be a spherically seated, hardened metal block firmly attached at the center of the upper head of the machine. The center of the sphere shall lie at the center of the surface held in its spherical seat, but shall be free to turn in any direction, and its perimeter shall have at least 6-mm (1/4-in.) clearance from the head to allow for specimens whose bearing surfaces are not exactly parallel. The diameter of the bearing surface shall be at least 125 mm (5 in.). A hardened metal bearing block shall be used beneath the specimen to minimize wear of the lower platen of the machine. The bearing block surfaces intended for contact with the specimen should have a hardness not less than 60 HRC (620 HB). These surfaces shall not depart from plane surfaces by more than 0.003 mm (0.0001 in.) in any 150-mm (6-in.) dimension. When the bearing area of the spherical bearing block is not sufficient to cover the area of the specimen, a steel plate with surfaces machined to true planes within ± 0.003 mm (0.0001 in.), and with a thickness equal

⁴ Annual Book of ASTM Standards, Vol 03.01.

⁵ Annual Book of ASTM Standards, Vol 14.02.

⁶ Annual Book of ASTM Standards, Vol 04.07.