



Standard Test Method for Measurement of Masonry Flexural Bond Strength¹

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

1. Scope *

1.1 This test method covers the determination of flexural bond strength of nonreinforced masonry by physical testing of each joint of masonry prisms.

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 67 Test Methods of Sampling and Testing Brick and Structural Clay Tile²

C 140 Test Methods of Sampling and Testing Concrete Masonry Units²

C 270 Specification for Mortar for Unit Masonry²

C 780 Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry²

C 1357 Test Methods for Evaluating Masonry Bond Strength²

3. Significance and Use

3.1 This test method is intended to provide a simple and economical means for the determination of comparative values of flexural bond strength. It may be used either on specimens especially fabricated for bond strength evaluation or on specimens cut from existing masonry.

3.2 The bond strengths determined from this test method can be used as a means of evaluating the compatibility of mortars and masonry units. It may also be used to determine the effect on flexural bond strength of such factors as masonry

unit and mortar properties, workmanship, curing conditions, coatings on masonry units, or any other factors that may be of concern.

3.3 Flexural bond strength determined by this test method should not be interpreted as the flexural bond strength of a wall constructed of the same material. However, results may be used to predict the flexural strength of a wall. Nor should it be interpreted as an indication of extent of bond for purposes of water permeance evaluation.

4. Apparatus

4.1 The test apparatus is shown in Figs. 1-4. The upper and lower clamping mechanisms shall be constructed as shown, except that the hex head bolts are permitted to be replaced by other tightening devices of equal, or greater, strength and stiffness. The support frame shall be constructed as shown or shall be constructed using configurations and materials of equal, or greater, strength and stiffness. The testing apparatus shall be constructed to apply the load vertically downward on the upper clamping system in such a manner that the upper and lower clamp do not come in contact during the tests. The prism support system shall be able to accommodate the size of the prism to be tested.

5. Sampling and Testing

5.1 *Brick Masonry Units*—Representative brick masonry units shall be sampled and tested in accordance with Test Methods C 67.

NOTE 1—Brick properties for which there are methods of test in Test Methods C 67 that may be of interest are cold-water absorption, boiling-water absorption, initial rate of absorption, and compressive strength.

5.2 *Concrete Masonry Units*—Representative concrete masonry units shall be sampled and tested in accordance with Test Methods C 140.

5.3 *Mortar*—When mortar property testing is specified, the compressive strength, air content, initial flow, cone penetration, and water retention shall be determined in accordance with the requirements of Specification C 270 or Test Method C 780.

¹ This test method is under the jurisdiction of ASTM Committee C15 on Manufactured Masonry Units and is the direct responsibility of Subcommittee C15.04 on Research.

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² *Annual Book of ASTM Standards*, Vol 04.05.

