Designation: C1357 – 09

Standard Test Methods for Evaluating Masonry Bond Strength[1]

This standard is issued under the fixed designation C1357; 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

Bond strength between mortar and masonry units is an important physical property of masonry. Increased bond strength provides greater resistance to loads and to cracking. Bond strength therefore influences structural integrity and serviceability.

1. Scope*

1.1 These test methods cover the evaluation of flexural bond strength, normal to the bed joints, of masonry built of manufactured masonry units, as determined in accordance with Test Method C1072. Sampling and testing procedures are referenced, and terms are defined. Two different test methods are specified, each for a different purpose:

1.1.1 The first test method is the "Test Method for Laboratory-Prepared Specimens." Its purpose is to compare the bond strengths (under the given conditions) of masonry mortars. It could be used, for example, to check the quality of mortar products after production, or to indicate the bond strength (under the given conditions) of a mortar product without requiring the product to be tested in combination with many different units. It is not intended to represent field conditions. It uses standard concrete masonry units. Mortars are batched by weight equivalents of volume proportions and are mixed to a prescribed flow. Prisms are constructed using a jig and are bag-cured.

NOTE 1—Standard fired clay masonry units are under development but are not now available. When their development is complete, they will be incorporated into these test methods.

1.1.2 The second test method is the "Test Method for Field-Prepared Specimens." Its purpose is to evaluate the bond strength (under the given conditions) of a particular unit-mortar combination, either for preconstruction evaluation of materials or for quality control purposes during construction. Mortars are batched conventionally, and the flow is not prescribed. Prisms are constructed conventionally (no jig) and are bag-cured.

1.1.3 The two test methods are not consistent, nor are they intended to be. They are intended to be used for two different purposes. To make this clear, the two methods are presented separately.

1.1.4 Appendix X1 suggests two possible criteria for assessing the bond strength values obtained using these test methods. These possible evaluation criteria are given for illustration only and are not mandatory.

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

C67 Test Methods for Sampling and Testing Brick and Structural Clay Tile

C140 Test Methods for Sampling and Testing Concrete Masonry Units and Related Units

C230/C230M Specification for Flow Table for Use in Tests of Hydraulic Cement

C270 Specification for Mortar for Unit Masonry

C780 Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry

C1072 Test Methods for Measurement of Masonry Flexural Bond Strength

C1437 Test Method for Flow of Hydraulic Cement Mortar

[1] These test methods are under the jurisdiction of ASTM Committee C15 on Manufactured Masonry Units and are the direct responsibility of Subcommittee C15.04 on Research.

Current edition approved June 1, 2009. Published June 2009. Originally approved in 1996. Last previous edition approved in 2005 as C1357 – 05. DOI: 10.1520/C1357-09.

[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.

***A Summary of Changes section appears at the end of this standard**

Copyright © ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959. United States