



Standard Test Methods for Testing Bond Performance of Bonded Anchors¹

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1. Scope

1.1 These test methods cover instructions for making a variety of tests for the strength of the adhesive bond developed between a steel anchor and the surface of a hole in concrete or masonry (including masonry units and mortar joints) and for assessing the effects on such bond of a variety of factors including elevated temperature, fire, moisture, and freezing and thawing action. The specifier or manufacturer shall select those tests that are appropriate for the given anchoring system and intended application.

1.2 The adhesive-bonded anchor system refers to a smooth or deformed steel bar or threaded rod, set in a predrilled hole containing chemical bonding compounds. Loads are transferred mainly by the bond of the adhesive both to the anchor and the surrounding elements along the sides of the hole. For anchoring systems made of significantly different materials, these test methods shall be taken as a guideline.

1.3 This standard applies to all adhesives used to bond steel anchors or steel reinforcement bars (rebar) to concrete or masonry. These test methods apply to anchorages used in uncracked concrete or masonry. They do not apply to the use of the anchor in the concrete tension zone. The usual forces applied during the tests are in tension, shear, and under a combination of both tension and shear.

1.4 The values stated in inch-pound units are to be regarded as the standard. The SI units given in parentheses are for information only.

1.5 *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 to determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

C 666 Test Method for Resistance of Concrete to Rapid

Freezing and Thawing²

E 119 Test Methods for Fire Tests of Building Construction and Materials³

E 488 Test Method for Strength of Anchors in Concrete and Masonry Elements⁴

E 575 Practice for Reporting Data from Structural Tests of Building Constructions, Elements, Connections, and Assemblies⁴

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *baseline test*—restrained test conducted on anchors installed in the same test member and under the same installation method as a required environmental test for comparison purposes.

3.1.2 *bonded anchor*—a fastener placed in hardened concrete or masonry that derives its holding strength from a chemical compound placed between the wall of the hole and the embedded portion of the anchor.

4. Significance and Use

4.1 These test methods are intended to provide information from which applicable design data and specifications are derived for a given anchorage device and for qualifying anchors or anchorage devices.

4.2 These test methods shall be followed to ensure reproducibility of the test data.

5. General Requirements

5.1 The adhesive bonded anchors to be tested shall be representative of the product made available for typical field installations. The manufacturer shall provide information on physical, mechanical, and chemical properties of the anchor system. If required by a customer or approval agency, the testing laboratory shall verify, or have a specialized laboratory verify, the physical, mechanical, and chemical properties of the adhesive.

5.2 The installation equipment, instructions, and procedures shall be as specified by the manufacturer. If there are any

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² *Annual Book of ASTM Standards*, Vol 04.02.

³ *Annual Book of ASTM Standards*, Vol 04.07.

⁴ *Annual Book of ASTM Standards*, Vol 04.11.

