

ACI 548.12-12

**Specification for Bonding Hardened
Concrete and Steel to Hardened
Concrete with an Epoxy Adhesive**

An ACI Standard

Reported by ACI Committee 548



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Specification for Bonding Hardened Concrete and Steel to Hardened Concrete with an Epoxy Adhesive

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This specification addresses bonding hardened concrete and steel to hardened concrete with an epoxy adhesive as defined for this purpose in ASTM C881. Included are controls for adhesive labeling, storage, handling, mixing and application, surface evaluation and preparation, as well as inspection and quality control.

The materials, processes, quality control measures, and inspections described in this document should be tested, monitored, or performed as applicable only by individuals holding the appropriate ACI certifications or equivalent.

Keywords: adhesive; bond; construction; epoxy; quality control; repair; safety; steel.

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(mandatory portion follows)

PART 1—GENERAL**1.1—Scope**

1.1.1 This specification covers the bonding of hardened concrete and steel to hardened concrete with an epoxy adhesive. This specification does not apply to anchoring dowels or anchors in concrete.

1.1.2 The provisions of this specification shall govern unless otherwise specified in Contract Documents. In case of conflicting requirements, Contract Documents shall govern.

1.1.3 Values in this specification are stated in inch-pound units. A companion specification in SI units is also available.

1.2—Definitions

ACI provides a comprehensive list of definitions through an online resource, “ACI Concrete Terminology,” <http://terminology.concrete.org>. Definitions provided herein complement that resource.

accepted—determined to be satisfactory by Architect/Engineer.

Architect/Engineer—architect, engineer, architectural firm, engineering firm, or architectural and engineering firm issuing Contract Documents, administering the Work under Contract Documents, or both.

Contract Documents—set of documents supplied by Owner to Contractor as the basis for construction; these documents contain contract forms, contract conditions, specifications, drawings, addenda, and contract changes.

Contractor—person, firm, or entity under contract for construction of Work.

epoxy—thermosetting polymer that is the reaction product of epoxy resin and hardener.

Owner—corporation, association, partnership, individual, public body, or authority for whom Work is constructed.

submittal—document or material provided to Architect/Engineer for review or acceptance.

submit—provide to Architect/Engineer for review.

Work—entire construction or separately identifiable parts thereof required to be furnished under Contract Documents.

1.3—Referenced standards

Standards of ASTM International, International Organization for Standardization, and The Society for Protective Coatings referred to in this standard are listed with serial designation, including year of adoption or revision.

ASTM International

ASTM C881/C881M-10—Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete

ASTM C1583/C1583M-04—Standard Test Method for Tensile Strength of Concrete Surfaces and the Bond Strength or Tensile Strength of Concrete Repair and Overlay Materials by Direct Tension (Pull-off Method)

ASTM D4263-83(2012)—Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method

The Society for Protective Coatings

VIS 1-2002—Guide and Reference Photographs for Steel Surfaces Prepared by Dry Abrasive Blast Cleaning

SP 1-1982(2004)—Surface Preparation Specification No. 1, Solvent Cleaning

SP 2-1982(2004)—Surface Preparation Specification No. 2, Hand Tool Cleaning

SP 3-1982(2004)—Surface Preparation Specification No. 3, Power Tool Cleaning

SP 6/NACE No. 3-2006—Surface Preparation Specification No. 6, Commercial Blast Cleaning

These publications may be obtained from:

ASTM International

100 Barr Harbor Drive

West Conshohocken, PA 19428

www.astm.org

The Society for Protective Coatings (SSPC)

40 24th Street, 6th Floor

Pittsburgh, PA 15222

www.sspc.org

1.4—Submittals

1.4.1 *Certifications*—Submit manufacturer’s certification verifying conformance to material specifications.

1.4.2 *Application control*—Submit mixing and application procedures for acceptance prior to use.

1.4.3 *Data*—Submit technical data sheets and material safety data sheets (MSDS).

1.5—Product delivery, storage, and handling

1.5.1 *Delivery of materials*—Deliver all materials in sealed containers with labels legible and intact.

1.5.2 *Labeling*—Clearly mark all containers with the following information:

- (a) Name of manufacturer;
- (b) Manufacturer’s product identification;
- (c) Manufacturer’s instructions for mixing;
- (d) Warning for handling and toxicity; and
- (e) Expiration date and lot number.

1.5.3 *Storage of materials*—Store materials at temperatures between 40 and 100°F (4.4 and 37.8°C), unless otherwise specified.

1.5.4 *Handling of materials*—Handle materials in a manner that complies with the MSDS and manufacturer’s recommendations.

1.6—Project conditions

1.6.1 *Environmental requirements*—Comply with manufacturer’s recommendations regarding environmental conditions under which the epoxy adhesive shall be applied, unless otherwise specified.