

Specification for Crack Repair by Epoxy Injection

An ACI Standard

Reported by ACI Committee 503

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This Specification gives requirements for repairing cracks in concrete by injection of two-component epoxy-resin adhesive.

Keywords: adhesive; concrete; crack; epoxy; repair injection; sealer.

NOTES TO SPECIFIER

This Specification is incorporated by reference in the Project Specification using the wording in Section P3 of the Preface and including information from the Mandatory Requirements, Optional Requirements, and Submittals Checklists following this Specification.

PREFACE

P1. ACI Specification 503.7 is intended to be used by reference or incorporation in its entirety in the Project Specification. Do not copy individual Sections, Parts, Articles, or Paragraphs into the Project Specification, because taking them out of context may change their meaning.

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Reference to this document shall not be made in contract documents. If items found in this document are desired by the Architect/Engineer to be a part of the contract documents, they shall be restated in mandatory language for incorporation by the Architect/Engineer.

P2. If Sections or Parts of ACI Specification 503.7 are copied into the Project Specification or any other document, do not refer to them as an ACI Specification, because the Specification has been altered.

P3. A statement such as the following will serve to make ACI Specification 503.7 a part of the Project Specification:

“Work on (Project Title) shall conform to all requirements of ACI Specification 503.7-07, “Specification for Crack Repair by Epoxy Injection,” published by the American Concrete Institute, Farmington Hills, Michigan, except as modified by these Contract Documents.”

P4. Each technical Section of ACI Specification 503.7 is written in the three-part Section format of the Construction Specifications Institute, as adapted for ACI requirements. The language is imperative and terse.

P5. The Specification is written to the Contractor. When a provision of this Specification requires action by the Contractor, the verb “shall” is used. If the Contractor is allowed to exercise an option when limited alternatives are available, the phrasing “either...or...” is used. Statements provided in the Specification as information to the Contractor use the verbs “may” or “will.” Informational statements typically identify activities or options that “will be taken” or “may be taken” by the Owner or Architect/Engineer.

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SECTION 1—GENERAL

1.1—Scope

This Specification covers the repair of cracks in concrete by pressure-injecting epoxy into cracks that intersect at least one accessible surface of the concrete or masonry member. It does not cover the repair of delaminations where the intersection of the cracked concrete with the surface of the concrete member is not accessible nor can be made accessible.

1.2—Definitions

accepted—determined to be satisfactory by the Architect/Engineer.

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

bond line—the layer of adhesive that attaches two opposing faces of a crack.

continuous metering and mixing—the process in which two adhesive components are continuously metered into and discharged from a mixing chamber.

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

crack face—the exposed intersection of a crack and the surface of the concrete member.

crack repair—the work performed to permit the transfer of tensile stress across the crack.

injection adhesive—the material that is injected into a crack for the purpose of repair.

injection port—a device or passageway in the surface seal through which the injection adhesive is introduced into a crack.

Project Specification—the written document that details requirements for the Work in accordance with service parameters and other specific criteria.

surface seal—the material that is applied to the crack face to contain the adhesive during the injection process.

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

1.3—Reference standards

- C 42/C 42M-04 Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
- C 496/C 496M-04 Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens
- C 881/C 881M-02 Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete
- D 695-02a Standard Test Method for Compressive Properties of Rigid Plastics

These standards may be obtained from the following organization:

ASTM International
100 Barr Harbor Drive
West Conshohocken, PA 19428-2959
www.astm.org

1.4—Submittals

1.4.1 Injection adhesives

1.4.1.1 Qualification testing—Submit an independent laboratory test report, including all test results, certifying that the injection adhesive meets all the requirements specified in Section 2.2.

1.4.1.2 Manufacturer's certification—Submit the manufacturer's certification verifying conformance to the requirements of Section 2.2 of each lot of injection adhesive to be used in the Work.

1.4.1.3 Additional testing—Submit additional test results when required.

1.5—Quality assurance

1.5.1 Metering accuracy—Use equipment or tools for continuous (metering) or batch proportioning for the two components of the injection adhesive that are able to establish and maintain a ratio of the components within the tolerance specified by the manufacturer of the injection adhesive over the full range of operating pressures and temperatures. If the manufacturer of the adhesive does not specify a tolerance for the mixture ratio, maintain a mixture ratio within $\pm 3\%$ of the nominal mixture ratio specified by the manufacturer of the adhesive.

1.5.2 Qualification test for metering accuracy

1.5.2.1 When a continuous metering and mixing pump is required, test the metering accuracy of equipment before the start of the Work to demonstrate that the pump is capable of