

An ACI Standard

Specification for Crack Repair by Epoxy Injection

Reported by ACI Committee 548

ACI 548.15-20



American Concrete Institute
Always advancing



Specification for Crack Repair by Epoxy Injection

Copyright by the American Concrete Institute, Farmington Hills, MI. All rights reserved. This material may not be reproduced or copied, in whole or part, in any printed, mechanical, electronic, film, or other distribution and storage media, without the written consent of ACI.

The technical committees responsible for ACI committee reports and standards strive to avoid ambiguities, omissions, and errors in these documents. In spite of these efforts, the users of ACI documents occasionally find information or requirements that may be subject to more than one interpretation or may be incomplete or incorrect. Users who have suggestions for the improvement of ACI documents are requested to contact ACI via the errata website at <http://concrete.org/Publications/DocumentErrata.aspx>. Proper use of this document includes periodically checking for errata for the most up-to-date revisions.

ACI committee documents are intended for the use of individuals who are competent to evaluate the significance and limitations of its content and recommendations and who will accept responsibility for the application of the material it contains. Individuals who use this publication in any way assume all risk and accept total responsibility for the application and use of this information.

All information in this publication is provided “as is” without warranty of any kind, either express or implied, including but not limited to, the implied warranties of merchantability, fitness for a particular purpose or non-infringement.

ACI and its members disclaim liability for damages of any kind, including any special, indirect, incidental, or consequential damages, including without limitation, lost revenues or lost profits, which may result from the use of this publication.

It is the responsibility of the user of this document to establish health and safety practices appropriate to the specific circumstances involved with its use. ACI does not make any representations with regard to health and safety issues and the use of this document. The user must determine the applicability of all regulatory limitations before applying the document and must comply with all applicable laws and regulations, including but not limited to, United States Occupational Safety and Health Administration (OSHA) health and safety standards.

Participation by governmental representatives in the work of the American Concrete Institute and in the development of Institute standards does not constitute governmental endorsement of ACI or the standards that it develops.

Order information: ACI documents are available in print, by download, through electronic subscription, or reprint, and may be obtained by contacting ACI.

ACI codes, specifications, and practices are made available in the ACI Collection of Concrete Codes, Specifications, and Practices. The online subscription to the ACI Collection is always updated, and includes current and historical versions of ACI’s codes and specifications (in both inch-pound and SI units) plus new titles as they are published. The ACI Collection is also available as an eight-volume set of books and a USB drive.

American Concrete Institute
38800 Country Club Drive
Farmington Hills, MI 48331
Phone: +1.248.848.3700
Fax: +1.248.848.3701

Specification for Crack Repair by Epoxy Injection

An ACI Standard

Reported by ACI Committee 548

Mahmoud M. Reda Taha, Chair

Ashraf I. Ahmed
Mohammad A. Alhassan
Jacques A. Bertrand
Constantin Bodea
Chris Davis
Don Edwards

David W. Fowler
Quentin L. Hibben
Albert O. Kaeding
Jay Lee
John R. Milliron
Bradley Nemunaitis

Joseph A. Nuciforo Jr.
John R. Robinson
Michael L. Schmidt
Joseph R. Solomon
Michael M. Sprinkel
Michael S. Stenko

Donald P. Tragianese
Wafeek S. Wahby
David White

CONSULTING MEMBERS

Milton D. Anderson
Lu Anqi
Craig A. Ballinger
John J. Bartholomew
Shashi P. Bhatnagar
Jerry D. Byrne
Zhi-Yuan Chen

Lech Czarnecki
Harold (Dan) R. Edwards
Larry J. Farrell
George Horeczko
David P. Hu
Bert Paul Kriekemans
Deon Kruger

William Lee
Troy D. Madeley
Henry N. Marsh Jr.
Peter Mendis
Peter J. Moss
Yoshihiko Ohama
Kelly M. Page

Hamid Saadatmanesh
Donald A. Schmidt
Meyer Steinberg
Harold H. Weber Jr.

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

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

CONTENTS

PART 1—GENERAL, p. 2

- 1.1—Scope, p. 2
- 1.2—Interpretation, p. 2
- 1.3—Definitions, p. 2
- 1.4—Reference standards, p. 3
- 1.5—Submittals, p. 3
- 1.6—Delivery, storage, and handling, p. 3
- 1.7—Quality assurance and quality control acceptance of work, p. 3

PART 2—PRODUCTS, p. 5

- 2.1—Surface seal, p. 5
- 2.2—Injection adhesives, p. 5

PART 3—EXECUTION, p. 5

- 3.1—Evaluation and preparation, p. 5

ACI Committee Reports, Guides, and Commentaries are intended for guidance in planning, designing, executing, and inspecting construction. This document is intended for the use of individuals who are competent to evaluate the significance and limitations of its content and recommendations and who will accept responsibility for the application of the material it contains. The American Concrete Institute disclaims any and all responsibility for the stated principles. The Institute shall not be liable for any loss or damage arising therefrom.

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.

ACI 548.15-20 (SI Units) supersedes ACI 503.7M-07, and was adopted and published October 2021.

Copyright © 2021, American Concrete Institute.

All rights reserved including rights of reproduction and use in any form or by any means, including the making of copies by any photo process, or by electronic or mechanical device, printed, written, or oral, or recording for sound or visual reproduction or for use in any knowledge or retrieval system or device, unless permission in writing is obtained from the copyright proprietors.

- 3.2—Test injection, p. 5
- 3.3—Injection, p. 5
- 3.4—Cleanup, p. 6
- 3.5—Safety, p. 6

NOTES TO SPECIFIER (NONMANDATORY), p. 6

- General notes, p. 6
- Foreword to Checklists, p. 6

PART 1—GENERAL

1.1—Scope

1.1.1 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 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.

1.1.2 This Specification is incorporated by Contract Documents and provides requirements for the Contractor.

1.1.3 This Specification governs for construction within its scope, except project-specific Contract Documents govern if there is a conflict.

1.1.4 This Specification governs if there is a conflict with reference material and testing standards.

1.1.5 Ignore provisions of this Specification that are not applicable to the Work.

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

1.1.7 The Notes to Specifier are not part of this Specification.

1.2—Interpretation

1.2.1 Unless otherwise explicitly stated, this Specification shall be interpreted using the following principles.

1.2.1.1 Interpret this Specification consistent with the plain meaning of the words and terms used.

1.2.1.2 Definitions provided in this Specification govern over the definitions of the same or similar words or terms found elsewhere.

1.2.1.3 Whenever possible, interpret this Specification so that its provisions are in harmony and do not conflict.

1.2.1.4 Headings are part of this Specification and are intended to identify the scope of the provisions or sections that follow. If there is a difference in meaning or implication between the text of a provision and a heading, the meaning in the text governs.

1.2.1.5 Where a provision of this Specification involves two or more items, conditions, requirements, or events connected by the conjunctions “and” or “or,” interpret the conjunction as follows:

“and” indicates that all the connected items, conditions, requirements, or events apply.

“or” indicates that the connected items, conditions, requirements, or events apply singularly.

1.2.1.6 The use of the verbs “may” or “will” indicates that the Specification provision is for information to the Contractor.

1.2.1.7 The phrase “as indicated in Contract Documents” means the specifier included the provision requirements in the Contract Documents.

1.2.1.8 The phrase “unless otherwise specified” means the specifier may have included an alternative to the default requirement in the Contract Documents.

1.2.1.9 The phrase “if specified” means the specifier may have included a requirement in the Contract Documents for which there is no default requirement in this Specification.

1.3—Definitions

accepted—determined by the Architect/Engineer to be in compliance with Contract Documents.

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

bond interface—the plane formed by an adhesive between two adjacent materials.

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

Contract Documents—set of documents that form the basis of a contractual relationship between an Owner and constructor or design-builder. These documents are defined by the contractual agreement, and can contain contract forms, contract conditions, specifications, drawings, addenda, and contract changes.

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

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 stress across the crack and provide a barrier to prevent the infiltration of aggressive solutions.

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.

permitted—accepted by or acceptable to Architect/Engineer, usually pertaining to a request by Contractor, or when specified in Contract Documents.

specification—the written document that details requirements for the Work.

specifier—person or entity preparing specifications for a material, product, system, or service.

submit—provide to Architect/Engineer for review.

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

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

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