



DIVISION 3 - CONCRETE
Section 03300 - Cast-in-Place Concrete
Bonding Agents for Concrete

Part 1 - General

1.01 Summary

- A. This specification describes the use of a bonding bridge between new portland-cement mortar or concrete and hardened portland-cement mortar or concrete.

1.02 Quality Assurance

- A. Manufacturing qualifications: The manufacturer of the specified product shall be ISO 9001 certified and have in existence a recognized ongoing quality assurance program independently audited on a regular basis.
- B. Contractor qualifications: Contractor shall be qualified in the field of concrete repair and protection with a successful track record of 5 years or more. Contractor shall maintain qualified personnel who have received product training by a manufacturer's representative.
- C. Install materials in accordance with all safety and weather conditions required by manufacturer, or as modified by applicable rules and regulations of local, state and federal authorities having jurisdiction. Consult Material Safety Data Sheets for complete handling recommendations.

1.03 Delivery, Storage, and Handling

- A. All materials must be delivered in original, unopened containers with the manufacturer's name, labels, product identification, and batch numbers. Damaged material must be removed from the site immediately.
- B. Store all materials off the ground and protect from rain, freezing or excessive heat until ready for use.
- C. Condition the specified product as recommended by the manufacturer.

1.04 Job Conditions

- A. Environmental Conditions: Do not apply material if it is raining or snowing or if such conditions appear to be imminent. Minimum application temperature 40°F (5°C) and rising.
- B. Protection: Precautions should be taken to avoid damage to any surface near the work zone due to mixing and handling of the specified coating.

1.05 Submittals

- A. Submit two copies of manufacturer's literature, to include: Product Data Sheets, and appropriate Material Safety Data Sheets (MSDS).

1.06 Warranty

- A. Provide a written warranty from the manufacturer against defects of materials for a period of one (1) year, beginning with date of substantial completion of the project.

Part 2 - Products

2.01 Manufacturers

- A. **Sika Armatec 110 EpoCem**, as manufactured by Sika Corporation, is considered to conform to the requirements of this specification.

2.02 Materials

- A. Epoxy resin/portland cement adhesive shall be **Sika Armatec 110 EpoCem**
1. Component "A" shall be an epoxy resin/water emulsion containing suitable viscosity control agents. It shall not contain butyl glycidyl ether.
 2. Component "B" shall be primarily a water solution of a polyamine.
 3. Component "C" shall be a blend of selected portland cements and sands.
 4. The material shall not contain asbestos.

2.03 Performance Criteria

- A. Properties of the mixed epoxy resin/portland cement adhesive.
1. Pot Life: 90 minutes @ 73° F
 2. Contact Time: 95°F (35°C) 6 hours
80-95F (26-35C) 6 Hours
65-79F (18-26C) 12 Hours
50-64F (10-17C) 16 Hours
40-49F (4-9C) wet on wet
 3. Color: dark gray
- B. Properties of the cured epoxy resin/portland cement adhesive.
1. Compressive Strength (ASTM C-109)
 - a. 3 day: 4500 psi (31.0 MPa)
 - b. 7 day: 6500 psi (44.8 MPa)
 - c. 28 day: 8500 psi (58.6 MPa)
 2. Splitting Tensile Strength (ASTM C-496)
 - a. 28 days: 600 psi (4.1 MPa)
 3. Flexural Strength (ASTM C-348)
 - a. 1250 psi (8.6 MPa)
 4. Bond Strength ASTM C-882 at 14 days
 - a. Wet on Wet, 0-hr. open time: 2800 psi (19.3 MPa)
 - b. 24-hr. open time: 2600 psi (17.9 MPa)
 5. Bond of Steel Reinforcement to Concrete (Pullout Test)
 - a. Sika Armatec 110 coated 625-psi (4.3 MPa)
 - b. Epoxy coated 508 psi (3.5 MPa)
 - c. Plain Reinforcement 573 psi (3.95 MPa)
 6. The epoxy resin/portland cement adhesive shall not produce a vapor barrier.
 7. Material must be proven to prevent corrosion of reinforcing steel when tested under the procedures as set forth by the Federal Highway Administration Program Report No. FHWA/RD86/193. Proof shall be in the form of an independent testing laboratory corrosion report showing prevention of corrosion of the reinforcing steel.

Note: Tests above were performed with material and curing conditions at 73°F and 45-55% relative humidity.

Part 3 - Execution

3.01 Mixing and Application

- A. Mixing the epoxy resin: Shake contents of Components “A” and Component “B”. Completely empty both components into a clean, dry mixing pail. Mix thoroughly for 30 seconds using a jiffy paddle with a low-speed (400-600 rpm) drill. Slowly add the entire contents of Component “C” while continuing to mix for 3 minutes until uniform with no lumps. Mix only that quantity that can be applied within its pot life.
- B. Placement procedure:
 - 1. Apply to prepared surface with a stiff-bristle brush, broom or “hopper type” spray equipment.
 - a. For hand-applied mortars - Place fresh, plastic concrete/mortar while the bonding bridge adhesive is “wet” or within open times indicated in section 2.03.A.2.
 - b. For machine-applied mortars - Apply while the bonding bridge adhesive is “wet” or within the open times indicated in section 2.03.A.2.
- C. Adhere to all limitations and cautions for the epoxy resin/portland cement adhesive in the manufacturers current printed literature.

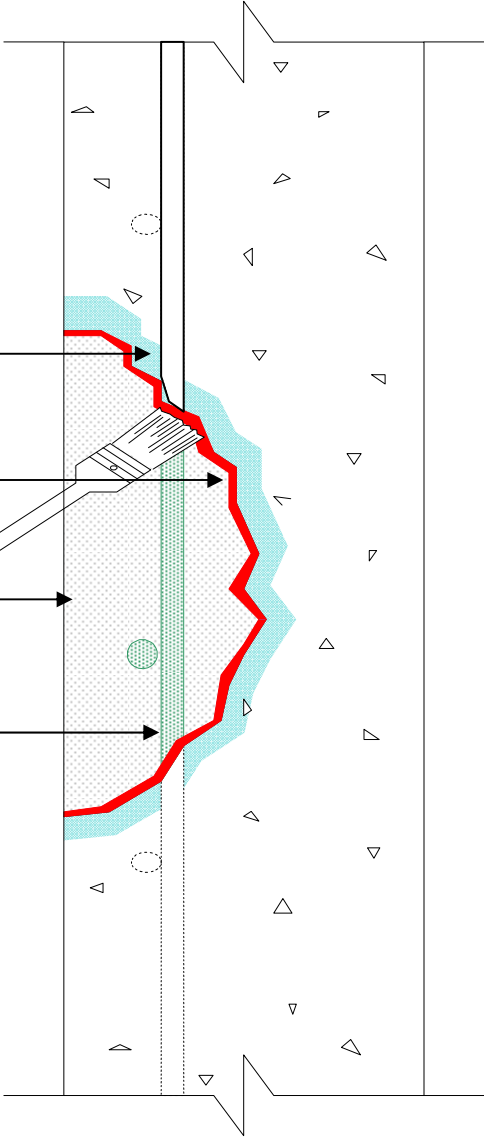
3.02 Cleaning

- A. The uncured epoxy resin/portland cement adhesive can be cleaned from tools with water. The cured epoxy resin/portland cement adhesive can only be removed mechanically.
- B. Leave finished work and work area in a neat, clean condition without evidence of spillovers onto adjacent areas.

SC-200

Sika® Armatec 110 EpoCem Bonding Bridge

- 1. Pre-wet surface to saturated surface dry (SSD).
- 2. Apply by stiff bristle brush or spray apply with "hopper type" or equal equipment.
- 3. Place repair material while **Sika Armatec 110 EpoCem** is still wet or within indicated open times.
- 4. Indicates Sika Armatec 110 EpoCem applied to reinforcing steel per Spec Component SC-201



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