



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

Part 1 - General

1.01 Summary

- A. This specification describes the bonding bridge between new portland-cement mortar or concrete and hardened portland-cement mortar or concrete with an epoxy adhesive.

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 product.

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. **Sikadur 32 Hi-Mod**, as manufactured by Sika Corporation, is considered to conform to the requirements of this specification.

2.02 Materials

- A. Epoxy resin adhesive shall be **Sikadur 32 Hi-Mod**:
1. Component "A" shall be a modified epoxy resin of the epichlorohydrin bisphenol A type containing suitable viscosity control agents. It shall not contain butyl glycidyl ether.
 2. Component "B" shall be primarily a reaction product of a selected amine blend with an epoxy resin of the epichlorohydrin bisphenol A type containing suitable viscosity control agents, pigments, and accelerators.
 3. The material shall not contain asbestos.

2.03 Performance Criteria

- A. Properties of the mixed epoxy resin adhesive:
1. Pot Life: min. 30 minutes (60 gram mass) @ 73° F
 2. Contact Time: 90°F (32°C) 1.5 to 2 hours
75°F (24°C) 3 to 4.5 hours
40°F (5°C) 12 hours
 3. Color: Concrete Gray
- B. Properties of the cured epoxy resin adhesive:
1. Compressive Strength (ASTM D-695) .min.
 - a. 3 day: 11300 psi (31.0 MPa)
 - b. 7 day: 11800 psi (44.8 MPa)
 - c. 28 day: 12200 psi (58.6 MPa)Compressive Modulus, PSI : .min.
 - a. 7 day 2.6 x 10⁵ psi (1800 Mpa)
 2. Shear Strength (ASTM D-732)
 - a. 14 days: 6200 psi (43 MPa)
 3. Flexural Strength (ASTM D-790) min.
 - a. 14 days: 10700 psi (74 MPa)Tangent Modulus of Elasticity in Bending .min.
 - b. 14 days: 6.9 x 10⁵ psi (4800 Mpa)
 4. Bond Strength ASTM C-882
14 days (moist cure) .min.
 - a. Plastic Concrete to Hardened Concrete 2200 psi (13.8 Mpa)
 - b. Plastic Concrete to Steel 2000 psi (13.8Mpa)
 5. Water Absorption (ASTM D-570) .max.
 - a. 24 hour 0.27%
 6. Tensile properties (ASTM D-638) .min.
 - a. 7 day Tensile Strength 6900 psi (48 Mpa)
Elongation at Break 1.9%
 - b. 14 day Modulus of Elasticity 5.4 x 10⁵ psi (3723.3 Mpa)

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

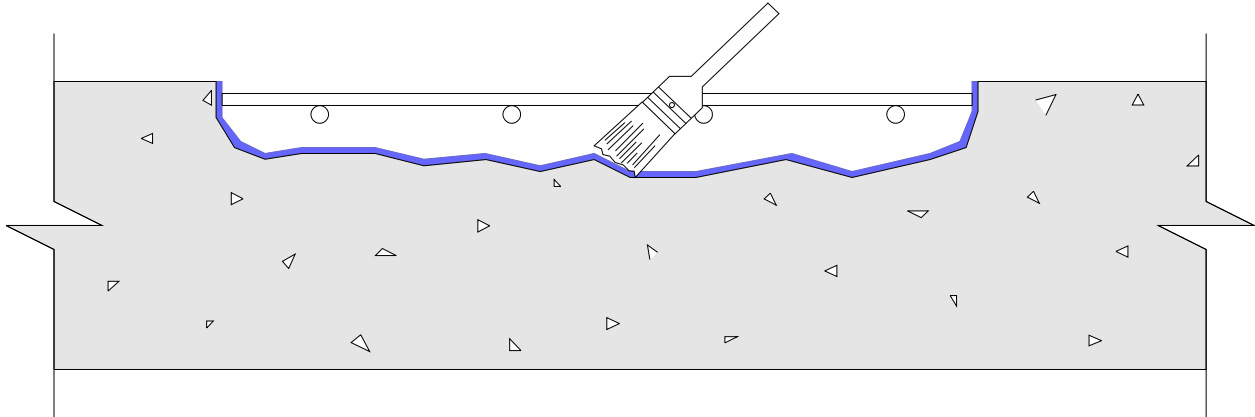
- A. Mixing the epoxy resin: Premix each component. Proportion equal parts by volume of Component "A" & Component "B" into a clean, dry mixing pail. Mix thoroughly for 3 minutes with a jiffy paddle on a low-speed (400-600 rpm) drill. Mix only that quantity of material that can be used within its potlife (25-35 minutes 73F).
- B. Placement procedure:
 - 1. Manually apply the mixed epoxy resin to the prepared surface at a approximate rate of 80 sq ft/gal. Use of rollers, brushes, or brooms. Always place the portland cement mortar or concrete before the epoxy adhesive becomes tack-free to touch.
 - 2. To spray apply, the mixed epoxy resin adhesive should be placed in a paint-type pressure pot or applied with a positive displacement pump. The spray gun should be atomized at the nozzle. Spray uniform coat at a approximately rate of 80 sq ft/gal. Always place the portland cement mortar or concrete before the epoxy adhesive becomes tack-free to the touch.
- B. Should circumstances prevent the placement of the cement mortar or concrete before the epoxy resin becomes tack-free to touch, within a 48 hour period clean the cured epoxy adhesive to remove any surface contaminants and re-apply the epoxy resin adhesive.
- C. Adhere to all limitations and cautions for the epoxy resin adhesive in the manufacturer's current printed literature.

3.02 Cleaning

- A. The uncured epoxy resin adhesive can be cleaned from tools with approved solvent. The cured epoxy resin 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-042

Sikadur® 32, Hi-Mod Bonding Bridge



1. Apply Sikadur 32, Hi-Mod by brush, roller or spray.
2. Place repair material while Sikadur 32, Hi-Mod is still tacky.

Note: Sikadur 32 Hi-Mod is not recommended as a bonding bridge for machine-applied repairs.

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