



Division 3 - Concrete
Section 03930 - Concrete Rehabilitation

Part 1 - General

1.01 Summary

- A. This specification describes the grouting of cracks with epoxy resin mortar for indoor use only.

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 – Manufacturers

A. Sikadur 32 Hi-Mod, as manufactured by Sika Corporation , 1682 Marion Williamsport Road, Marion, Ohio is considered to conform to the requirements of this specification.

2.02 Materials

- A. Epoxy resin adhesive: Sikadur 32 HiMod
 - 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 ratio of Component “A”: Component “B” shall be 1:1 by volume.
 - 4. The material shall not contain asbestos.

2.03 Performance Criteria

- A. Properties of the mixed epoxy resin adhesive:
 - 1. Pot Life: 30 minutes (60 gram mass) at 73F
 - 2. Tack-Free Time to Touch (3-5 mils): 3-5 hours
 - 3. Initial Viscosity (Brookfield Viscometer, Spindle #3; Speed 100) : 3,000 cps
 - 4. Color: Concrete gray
- B. Properties of the cured epoxy resin adhesive:
 - 1. Compressive Properties (ASTM D-695) at 28 days
 - a. Compressive Strength: 12,200 psi (84.1 MPa)
 - 2. Tensile Properties (ASTM D-638) at 7 days
 - a. Tensile Strength: 6,900 psi (48 MPa)
 - b. Elongation at Break: 1.9%
 - c. Modulus of Elasticity, 14 day : 540,000 psi (3,723.3 MPa)
 - 3. Flexural Properties (ASTM D-790) at 14 days
 - a. Flexural Strength: 7,00 psi (48.3 MPa)
 - b. Tangent Modulus of Elasticity in Bending: 690,000 psi (4,800 MPa)
 - 4. Shear Strength (ASTM D-732) at 14 days: 6,200 psi (43MPa)
 - 5. Total Water Absorption (ASTM D-570) at 7 days: 0.21% (2 hour boil, 24 hour)
 - 6. Bond Strength (ASTM C-882)
 - a. Hardened Concrete to Hardened Concrete
 - (1) 2 day (dry cure): 2,000 psi (13.8 MPa)
 - (2) 14 day (moist cure): 2,000 psi (13.8 MPa)
 - 7. Deflection Temperature (ASTM D-648) at 14 days: 122F (fiber stress loading = 264 psi)
 - 8. The epoxy resin adhesive shall be approved by the United States Department of Agriculture.

Note: Tests were performed with material and curing conditions at 71-75F and 45-55% relative humidity.

Part 3 - Execution

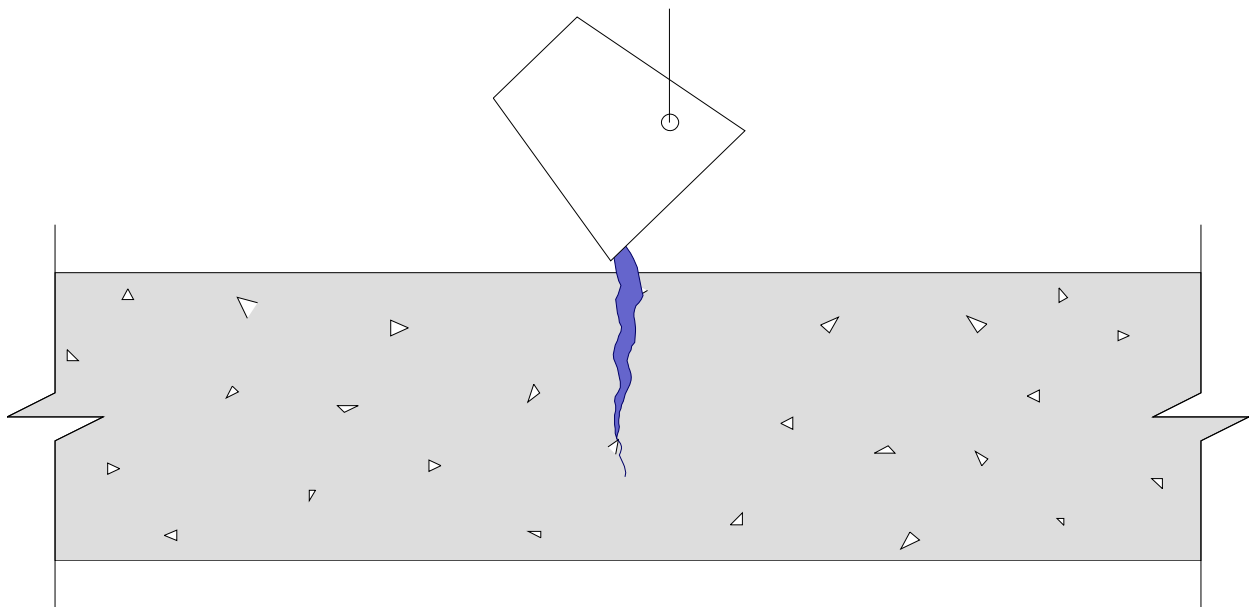
3.01 Mixing and Application

- A. Mixing the epoxy resin adhesive: Premix each component. Proportion equal parts by volume of Component A and Component B into a clean, dry mixing pail. Mix for 3 minutes min. with a jiffy paddle on a low speed (400-600 rpm) drill. Mix only that quantity of material that can be used within its pot life (25-35 minutes at 73F).
- B. Mixing the epoxy resin mortar: Slowly add 1-1½ parts by loose volume of an oven-dried sand to 1 part by volume of the mixed epoxy resin adhesive binder. Continue mixing with the drill and paddle until the sand is uniformly blended.
- C. Placement Procedure: Place the mixed epoxy resin mortar into the vee notch. Replenish the reservoir with the mixed epoxy mortar until the cracks have been completely filled.
- D. If penetration of any crack is impossible, consult the Engineer before discontinuing the procedure. If modification of the proposed procedure is required to fill the cracks, submit said modification in writing to the Engineer for acceptance prior to proceeding.
- E. 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 an 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-023 Sikadur[®] 32, Hi-Mod Crack Filler



1. Pour Sikadur 32, Hi-Mod epoxy resin mortar into crack.
2. Continue placement of epoxy resin mortar until crack is completely filled.

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