

DIVISION 3 – CONCRETE
Section - 03930 Concrete Rehabilitation
Gravity –Feed Crack Repair

Part 1 – General

1.01 Summary

- A. This specification describes the grouting of cracks by gravity flow with an epoxy resin adhesive.

1.02 Quality Assurance

- A. Manufacturing qualifications: The manufacturer of the specified product shall be ISO 9001/9002 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 material.

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 Manufacturer

- A. **Sikadur 52**, as manufactured by Sika Corporation, 1682 Marion Williamsport Road, Marion, Ohio 43302 is considered to conform to the requirements of this specification.

2.02 Materials

- A. Epoxy resin adhesive binder:
 - 1. Component "A" shall be a modified epoxy resin of the diglycidether 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 diglycidether bisphenol A Type containing suitable viscosity control agents, pigments, and accelerators.
 - 3. The ratio of Component "A": Component "B" shall be 2:1 by volume.

2.03 Performance Criteria

- A. Typical Properties of the mixed epoxy resin adhesive binder:
 - 1. Pot life: 25-30 minutes, (60 gram mass)
 - 2. Tack-free time to touch (3-5 mil thickness at 73F): 5 - 7 hours
 - 4. Color: clear, pale yellow
- B. Typical Properties of the mixed neat cured epoxy resin adhesive binder:
 - 1. Compressive Properties (ASTM D-695) at 28 days
 - a. Compressive Strength: 12,000 psi min (82.7 MPa)
 - b. Modulus of Elasticity: 350,000 psi (1,379.3 MPa)
 - 2. Tensile Properties: (ASTM D-638) at 14 days
 - a. Tensile Strength: 7,900 psi min (54 MPa)
 - b. Elongation at Break: 3.1%
 - c. Modulus of Elasticity: 200,000 psi (2551.7 MPa)
 - 3. Flexural Properties: (ASTM D-790) at 14 days
 - a. Flexural Strength (Modulus of Rupture): 5,400 psi min (37.2 MPa)
 - b. Tangent Modulus of Elasticity in Bending: 380,000 psi (2,620.6 MPa)
 - 4. Shear Strength (ASTM D-732) at 14 days: 4,300 psi min (29.6 MPa)
 - 5. Total water absorption (ASTM D-570) at 7 days: 1.5% (2 hour boil)
 - 6. Bond Strength (ASTM C-882) Hardened Concrete to Hardened Concrete
 - a. 2 days (dry cure): 3,000 psi min (20.6 MPa)
 - b. 14 days (moist cure): 2,200 psi min (15.1 MPa)
 - 7. Deflection Temperature (ASTM D-648) at 14 days: 122F (50C) min. (fiber stress loading = 264 psi)

Note: Tests above were performed with the material and curing conditions @ 71°F – 75°F and 45-55% relative humidity.

Part 3 – Execution

3.01 Surface Preparation

- A. Vee notch the surface of the crack with mechanical router or hand chipping tool to a maximum width of ¼". Remove loose debris. The substrate may be dry or damp prior to product application. Where accessibility to the underside of the slab is available, seal all visible cracks with an epoxy resin adhesive paste or portland cement-based quicksetting compound to act as a dam to hold the liquid epoxy resin adhesive until cured.

3.02 Mixing and Application

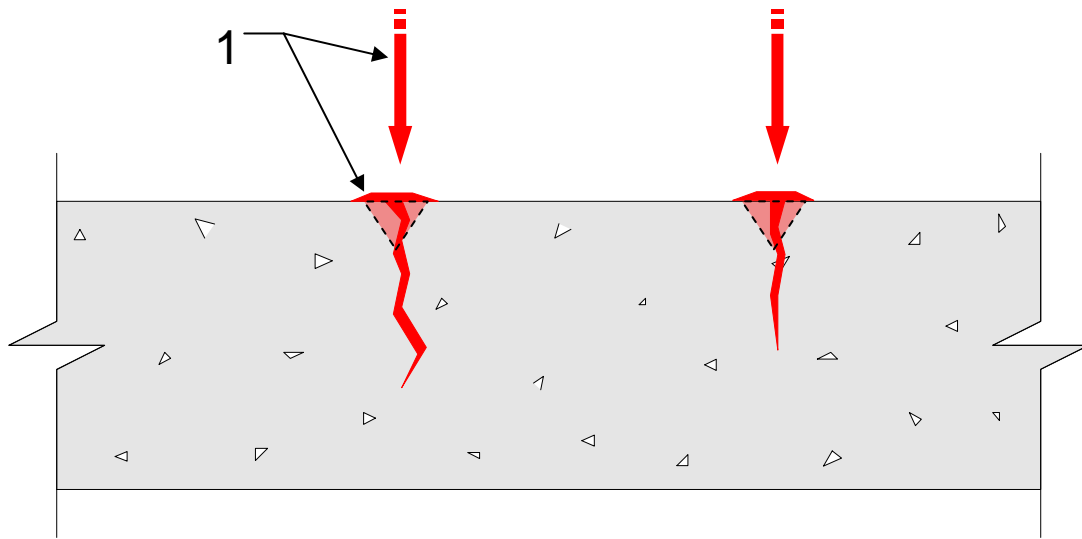
- A. Mixing the epoxy resin adhesive binder: Proportion 2 parts by volume of Component "A" and 1 part of Component "B" by volume into a clean, dry mixing pail. Mix thoroughly for 3 minutes min. with a jiffy paddle on a low-speed (400-600 rpm) drill. Mix only that quantity of material that can be used within its pot life (20-30 minutes at 73F).
- B. Placement Procedures: Place the mixed epoxy resin adhesive into the vee-notch crack. Replenish the reservoir with the mixed epoxy resin adhesive until the crack has been completely filled.
- B. If penetration of any crack is impossible, consult the Engineer before discontinuing the procedure. If modification of proposed procedure is required to fill the crack, submit modification in writing to the Engineer for acceptance prior to proceeding.
- C. Adhere to all limitations and cautions for the epoxy resin adhesive binder in the manufacturers current printed literature.

3.03 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-005

Sikadur 52 Crack Filler (Horizontal)



1. Pour neat Sikadur 52 epoxy resin adhesive into vee-notched cracks.
2. Continue placement until cracks are completely filled.

Note: Prior to filling, seal underside of slab if cracks reflect through.

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