



**Division 3 – Concrete**  
**Section – 03930 Concrete Rehabilitation**

**Part 1 - General**

**1.01 Summary**

- A. This specification describes the grouting of cavities, voids, key ways, baseplates, etc. with a 100% solids, moisture tolerant, non-shrink, epoxy grout.

**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 the 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) years, beginning with date of substantial completion of the project.

## Part 2 – Products

### 2.01 Manufacturer

- A. Sikadur 42, Grout-Pak, 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 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 epoxy resin of the epichlorohydrin bisphenol A type containing suitable viscosity control agents and accelerators.
  - 3. Component “C” shall be a blend of silica sands and pigments.
- B.. The material shall be supplied in factory proportioned kits of 0.5 cu ft. and 1.0 cu ft. The system shall not contain asbestos.

### 2.03 Performance Criteria

- A. Typical properties of the mixed epoxy resin grout:
  - 1. Working Life: 90 minutes
  - 2. Effective Bearing Area: > 95%
  - 3. Consistency: Flowable
  - 4. Color: Concrete gray
- B. Typical properties of the cured epoxy resin grout (material and curing conditions at 73° F and 50% Relative Humidity):
  - 1. Compressive Properties (ASTM C 579, Method B), min.
    - a. Compressive Strength at 16 hours: 9,600 psi (66.2 MPa)
    - b. Compressive Strength at 28 days: 15,200 psi (104.8 MPa)
    - d. Compressive Creep (ASTM C-1181, 600 psi @ 140°F)
      - 1 day 0.0108 in/in
      - 28 day 0.0133 in/in
  - 2. Tensile Properties (ASTM C-307) at 7 days, min.
    - a. Tensile Strength: 2,300 psi (15.8 MPa)
  - 3. Flexural Properties (ASTM C-580) at 7 days, min.
    - a. Flexural Strength (Modulus of Rupture): 4,000 psi (27.6 MPa)
    - b. Tangent Modulus of Elasticity in Bending: 1,300,000 psi (8,963 MPa)
  - 4. Shear Strength (ASTM D-732) at 14 days: 4,100 psi (28.2 MPa)
  - 5. Water Absorption (ASTM C-413), 7 day (2-hour boil) 0.04%
  - 6. Bond Strength (ASTM C-882, Modified), 7 day, min.
    - Bond Strength to Concrete: 4,200 psi (29.0 MPa)
    - Bond Strength to Steel: 3,800 psi (26.2 MPa)
  - 7. Coefficient of Thermal Expansion (ASTM C-531)  $24.5 \times 10^{-6}$  in/in/°F
  - 8. Thermal Compatability (ASTM C-884), passes test

9. Peak Exotherm (ASTM D2471), cu ft./mass 118°F
10. The epoxy resin grout may be certified to meet the requirements of the United States Department of Agriculture.

### **Part 3 - Execution**

#### **3.01 Surface Preparation**

- A. Substrate and baseplate contact area must be clean sound and free of standing water. Remove dust, laitance, oils, grease, curing compounds, waxes, impregnations, foreign particles, coatings and disintegrated materials by mechanical means (i.e. sandblasting, bush hammering). Sandblast metal baseplates to a commercial white finish for maximum adhesion. Apply grout immediately to prevent re-oxidizing. Concrete substrate shall have reached its desired strength (minimum, 3,000 psi) and must be dimensionally stable.
- B. Where reinforcing steel with active corrosion is encountered, sandblast the steel to a white metal finish to remove all contaminants and rust.

#### **3.02 Mixing and Application**

- A. Mixing the epoxy resin grout: Pour the entire contents of Components 'A' and 'B' into an appropriate mixing vessel (e.g 5-gal bucket) and mix for 30 seconds with a 1/2 in. Jiffy mixing paddle (5 in. blade diameter) on a slow-speed (400-600 rpm) 3/4 in. drive drill, taking care not to entrain air during mixing. It is critical to the performance of the grout that there be no appreciable air bubbles in the resin. Slowly add the entire contents of Component 'C' and mix until uniformly blended (approx. 5 minutes).
- B. Forming: The flowable consistency of the epoxy grout system requires the use of forms to contain the material around the baseplates. In order to prevent leakage, completely seal all forms. Apply polyethylene film or wax to all forms to prevent adhesion of the grout. Prepare form work to maintain a 2 inch (50mm) liquid head to facilitate placement. A grout box that can be attached to the form will enhance the flowability. Projected anchor bolts should be wrapped with neoprene foam rubber (or similar) to prevent the grout from adhering to the bolts. The use of expansion joints is recommended on large pours to minimize the potential for cracking in the epoxy grout (minimum 3-4 ft. spacing in each direction).
- C. Pour the mixed grout into the prepared forms from one side only to eliminate air entrapment. Baseplate should have vent hole around periphery to prevent air pockets from developing. Maintain the liquid head to ensure intimate contact with the baseplate. Plungers may be used to ease placement. Place sufficient epoxy grout into the forms to rise slightly above the underside of the baseplate. Grout depth of 1 inch (25 mm) minimum required.
- D. Adhere to all limitations and cautions for the epoxy resin grout in the manufacturer's current printed literature.

#### **3.03 Cleaning**

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

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

The preceding specifications are provided by Sika Corporation as a guide for informational purposes only and are not intended to replace sound engineering practice and judgment and should not be relied upon for that purpose. **SIKA CORPORATION MAKES NO WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, AS TO THE ACCURACY, COMPLETENESS OR THE CONTENTS OF THESE GUIDE**

**SPECIFICATIONS.** Sika Corporation assumes no liability with respect to the provision or use of these guide specifications, nor shall any legal relationship be created by, or arise from, the provision of such specifications **SIKA SHALL NOT BE RESPONSIBLE UNDER ANY LEGAL THEORY TO ANY THIRD PARTY FOR ANY DIRECT OR CONSEQUENTIAL DAMAGES OF ANY KIND ARISING FROM THE USE OF THESE GUIDE SPECIFICATIONS.** The specifier, architect, engineer or design professional or contractor for a particular project bears the sole responsibility for the preparation and approval of the specifications and determining their suitability for a particular project or application.

Prior to each use of any Sika product, the user must always read and follow the warnings and instructions on the product's most current Technical Data Sheet, product label and Material Safety Data Sheet which are available at [www.sikaconstruction.com](http://www.sikaconstruction.com) or by calling (201) 933-7452. Nothing contained in any Sika materials relieves the user of the obligation to read and follow the warnings and instructions for each Sika product as set forth in the current Technical Data Sheet, product label and Material Safety Data Sheet prior to product use.