BUILDING TRUST

PRODUCT DATA SHEET

SikaFlow®-647

(formerly MFlow 647)

LIQUID EPOXY GROUT FOR PRESSURE OR GRAVITY APPLICATION

PRODUCT DESCRIPTION

SikaFlow®-647 grout is a two-component, modified epoxy resin-based grout. It is a specially formulated injection or gravity feed. The material will penetrate and fill voids, cracks, and fissures. SikaFlow®-647 exhibits excellent adhesion to concrete or steel that is properly prepared whether wet, dry, or oil-contaminated concrete. It can be used to repair cracks in concrete that contain water. (Not for use in underwater repair.)

USES

- Grouted baseplates under compressors, generators, pumps, cement mills, and other vibrating and rotating machinery
- Thin bed repair grout applications
- Repair of cracked concrete
- Precast pile bonding
- Bonding post-tensioned beams
- Epoxy resin binder for epoxy mortar patching of voids

CHARACTERISTICS / ADVANTAGES

- Structural grade epoxy that can be used under sustained loads
- Bonds to damp and oil-contaminated concrete
- Chemical resistant for use in a wide range of application environments
- Low viscosity helps to penetrate fine cracks
- Simple mix ratio for ease of use in the field
- Can be extended for a wide range of options for crack repair and void filling
- Fast cure rate for rapid return to service
- Accelerator available for increased usage capabilities at low temperatures
- Solvent-free; VOC compliant
- Liquid resin can be stored at low temperature (20 °F) making it easy to transport and store
- SikaFlow®-647 can be used as an epoxy mortar when a full unit is mixed with 120 lbs. of oven-dried aggregate (Sikalastic®-941) or a half unit is mixed with 60 lbs. of Sikalastic®-941

APPROVALS / STANDARDS

ASTM C881, Type I, II, and IV, Grade 1 and 2.

PRODUCT INFORMATION

Chemical Base	SikaFlow®-647 is a two-component, modified epoxy resin-based grout.
Packaging	SikaFlow®-647 is available as a 2.5-gallon (9.43 liter) unit: ▪ PART A: 1.5 gallons (5.66 liters) in a 3.5-gallon steel pail. ▪ PART B: 1.0 gallon (3.77 liters) in a 1-gallon steel can.
Shelf Life	2 years (for both part A and part B) when properly stored
Storage Conditions	Store in unopened containers at temperatures at or below 80 °F (27 °C) in clean, dry conditions. Freezing temperatures during storage will not harm the product. However, the components should be conditioned to temperatures between 70° and 80 °F (21°–27 °C) prior to use.
Density	68.7lbs./ft³ (1100kg/m³) (ASTM C 905)

TECHNICAL INFORMATION

Compressive Strength

Neat Epoxy

10,000 psi (70 MPa) (ASTM D 695)

Epoxy Mortar*

*Test results are averages obtained under laboratory conditions using a full unit of SikaFlow®-647 mixed with 120 lbs. (54 kg) of Sikalastic®-941 aggregate. Expect reasonable variations. (ASTM C 579) 2"x2" cubes)

1 day	700 psi (4.8 MPa)
3 days	3,250 psi (22 MPa)
7 days	12,000 psi (83 MPa)
28 days	15,000 psi (103 MPa)

Flexural Strength

Neat Epoxy

9800 psi (68 MPa) (ASTM D 790)

Epoxy Mortar

7 day	4450 psi (30 MPa)
14 day	4500 psi (31 MPa)

(ASTM C 348)

Tensile Strength

Epoxy Mortar

7 day	2,100 psi (14 MPa)
14 day	2,150 psi (15 MPa)

(ASTM C 307)

Elongation at break

4.7% (ASTM D 790)

Shrinkage

Epoxy Mortar

2 day	-0.0015
3 day	-0.0022
7 day	-0.0063
14 day	-0.0063
21 day	-0.0063
28 day	-0.0064

(ASTM C 157 (1x1x10" Bars))

Coefficient of Thermal Expansion

33–74 °F in/in °F (0.6–23 °C cm/cm °C)	46 x 10^{-6} (83 x 10^{-6})
74–110 °F (23–43 °C)	47 x 10^{-6} (85 x 10^{-6})

(ASTM C 531)

Water Absorption

+0.4% (ASTM C 413)

Reaction to Fire

Flash Point

	Resin: 230 ˚F (110 ˚C) Hardener: 230 ˚F (110 ˚C)	(Pensky-Martens Closed Cup)

Design Considerations

Adsorption of Epoxy Mortar

0.06%	(7 Day I 24 Hour Soak)

APPLICATION INFORMATION

Coverage

2.5 gallons yields 575 in^3 (0.33 ft^3 or 0.009 m^3) of mixed product. When estimating project requirements, be sure to account for application variables. 1.15 ft^3 (0.03 m^3) per full kit of SikaFlow®-647 mixed with 120 lbs. of Sikalastic®-941 aggregate.

Cure Time

Temperature affects the working time and cure time of epoxy grouts. The foundation or concrete being grouted may be cooler than room temperature unless the temperature has been constant for significant periods. Field judgment and professional experience must be used when anticipating working time. Curing time will vary with the temperature of the environment, the surfaces being grouted, and the temperature of the mixed grout. SikaFlow®-647 can be used with an accelerator. Contact Sika Technical Support for additional information.

Working Time

Temperature	Time
90°F (32°C)	10-20min
75°F (24°C)	20-30min
55°F (13°C)	30-40min

The above working times assume product has been properly conditioned for cold or hot weather use.

Curing Rate

Compressive Strength Cure Rate

Time(hrs)	psi at 55 °F	MPa at 13 °C
8	-	-
16	-	-
24	500	3
48	5300	37
72	6400	44
96	8800	61
120	9800	68
144	10500	72

Time(hrs)	psi at 75 °F	MPa at 24 °C
8	800	6
16	3000	23
24	4900	34
48	7800	54
72	9700	67

Time(hrs)	psi at 90 °F	MPa at 32 °C
8	1100	8
16	7100	49
24	7800	54
48	9800	68

BASIS OF PRODUCT DATA

Results may differ based upon statistical variations depending upon mixing methods and equipment, temperature, application methods, test methods, actual site conditions and curing conditions.

ENVIRONMENTAL, HEALTH AND SAFETY

For further information and advice regarding transportation, handling, storage and disposal of chemical products, user should refer to the actual Safety Data Sheets containing physical, environmental, toxicological and other safety related data. User must read the current actual Safety Data Sheets before using any products. In case of an emergency, call CHEMTREC at 1-800-424-9300, International 703-527-3887.

APPLICATION INSTRUCTIONS

NOTES ON INSTALLATION

- Do not add solvent, water, or any other material to the grout.
- Do not alter the resin or hardener proportions
- Contact your local representative for a pre-job conference to plan the installation.
- The application temperature range is from 50 to 105 °F (10 to 41 °C). Please note that above 90 ºF (32 ºC), working time will be significantly reduced.
- Neat epoxy binder should not be applied greater than ¼" (6 mm) in thickness. If greater thickness is required, contact Sika Technical Service.
- For professional use only; not for sale to or use by the general public.
- Make certain the most current versions of the product data sheet and SDS are being used.
- Proper application is the responsibility of the user. Field visits by Sika personnel are for the purpose of making technical recommendations only and not for supervising or providing quality control on the jobsite.

EQUIPMENT

SikaFlow®-647 has a volume mixing ratio of 1.5 parts A to 1 part B and is compatible with plural component equipment. Note that some plural component equipment may create fluctuations in the mixing ratio. If using a two-component, side-by-side injection pump, in which the two components are mixed at the point of discharge, pre-test the mix ratio at the pump hose inlets.

SURFACE PREPARATION

CONCRETE

1. Concrete surfaces should be clean, sound, and as oil- and water-free as possible. Excessively damaged concrete should be removed.
2. When repairing cracks in oil, water, or oil-water conditions, the bond strength will be less than for clean, dry surfaces, and will depend upon the conditions and methods employed. Field tests should be performed to determine properties for specific applications.

MIXING

1. To preserve product properties, do not mix partial units.
2. Precondition all components to 70–80 ºF(21–27 ºC) for 24 hours prior to use.
3. Inspect containers prior to opening. Do not use material if containers have been punctured in transportation and storage, or show evidence of leakage.
4. Do not add thinners, solvents, or water to the product.
5. Pour the hardener (Part B) into a pail of grout resin (Part A) and stir by hand, using a spatula or paint stirring paddle, until well mixed to a uniform gray color.
6. Alternatively, a slow-speed drill and mixing paddle may be used, provided that the mixing does not produce a vortex in the material. Excessive mixing will pull air into the product, which may compromise the finished installation.

Mixing Epoxy Mortar

To prepare an epoxy mortar, slowly add the recommended amount of oven-dried aggregate (Sikalastic®-941) to the already mixed SikaFlow®-647 and mix until uniform in consistency.

APPLICATION

Pressure Grouting Of Base Plates At Edges

This method is used to fill voids under machinery base plates.

1. If the crack or seam at the edge of the base plate is open more than 0.010" (0.25 mm), seal the edge with SikaEmaco® ADH 327.
2. Drill holes in the exposed edges of the structural member or sole plate.
3. If using an injection pump (preferred), install the pump manufacturer's preferred ports.
4. If using a grease gun, ream out the holes to accommodate 1⁄8" or ¼" pipe taps and install grease fittings (zerks).
5. Inject SikaFlow®-647 through the fittings/ports into the void until any water or oil has been flushed out and the grout is discharged from the crack.
6. Remove the grease fittings before the grout has set to bleed off any remaining pressure.
7. If grout is not visible or does not flow out of the open fitting hole, repeat the process.
8. If this process does not result in bonding the steel and in-place grout, it is possible that the steel surface was not adequately prepared for grouting prior to the original grout placement.

Pressure Grouting Of Hollow Base Plates

1. If sounding reveals the presence of voids between the baseplate and installed machinery grout (polymer or cementitious), use this method to grout the voids.
2. Drill holes for ports or zerk fittings and as vents. Typical tapped hole sizes are 1⁄8" or ¼". Locate holes within 12 inches of one another, on center.
3. Start injection at one end of void and pump until grout is discharged from adjacent holes.
4. Move to the nearest hole where grout has appeared. Continue to inject grout using the new location. Continue this process until all air is vented and all voids filled.
5. Remove ports or fittings and check to ensure that no settlement or seepage occurred.
6. If settlement or seepage has occurred, repeat previous steps.

Small Repairs

1. Small repairs (i.e. < 10 ft² / 1 m²) should be prepared according to ICRI Guideline no. 310.2R to permit proper bond.
2. Ensure the substrate appears dry
3. Apply mixed mortar into the area to be repaired. Trowel to the desired finish with a steel trowel.
4. Allow the repair to air cure.

CLEANING OF TOOLS

Uncured epoxy may be removed from tools and equipment using soap and water or a citrus degreaser. Cured material must be removed mechanically.

LEGAL DISCLAIMER

- **KEEP CONTAINER TIGHTLY CLOSED**
- **KEEP OUT OF REACH OF CHILDREN**
- **NOT FOR INTERNAL CONSUMPTION**
- **FOR INDUSTRIAL USE ONLY**
- **FOR PROFESSIONAL USE ONLY**

Prior to each use of any product of Sika Corporation, its subsidiaries or affiliates ("SIKA"), the user must always read and follow the warnings and instructions on the product's most current product label, Product Data Sheet and Safety Data Sheet which are available at usa.sika.com or by calling SIKA's Technical Service Department at 1-800-933-7452. Nothing contained in any SIKA literature or 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 product label, Product Data Sheet and Safety Data Sheet prior to use of the SIKA product.

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