

PRODUCT DATA SHEET

SikaFlow®-690

Very High Strength, High Flow, Epoxy Grout

PRODUCT DESCRIPTION

SikaFlow®-690 is an epoxy resin based, precision grout used for wind turbine grouting applications, as well as industrial and petrochemical applications, where very high strength and/or quick turnaround is required. With carefully balanced physical properties and excellent resistance to chemical attack, elevated service temperatures, vibration and torque, SikaFlow®-690 is formulated for low dust generation, easy installation and good flow characteristics suitable for pouring or pumping.

USES

SikaFlow®-690 may only be used by experienced professionals.

- Wind turbine applications
- Precision alignment of compressors, generators, turbines, pumps and electrical equipment
- Crane rail grouting
- Baseplates and soleplates
- Grouting of crusher ball mills, slab tables and other equipment subject to high torque, impact and vibration
- To embed steel reinforcement; to set anchor rods and dowels in oversized anchor holes for concrete posts, precast construction columns, etc.

CHARACTERISTICS / ADVANTAGES

- Very high early and ultimate strengths with low creep for rapid turnaround
- Superior physical properties at high temperatures;

- increased upper range of in-service temperatures
- Excellent bearing area of greater than 90% achievable (for even load distribution) when following proper grouting procedures
- Excellent chemical resistance
- Resists impact and dampens the effects of torque
- Durable bond to concrete and steel to optimize load transfer

APPROVALS / STANDARDS

- Meets the requirements for typical American Petroleum Institute (API) epoxy grout applications:
 - Reference API Standard 610, "Centrifugal Pumps for Petroleum, Petrochemical, and Natural Gas Industries"
 - Reference API Standard 618, "Reciprocating Compressors for Petroleum, Chemical, and Gas Industry"
 - Reference API Recommended Practice 686, "Recommended Practice for Machinery Installation and Installation Design"
- Manufactured per ISO 9001:2015 Certified Processes

PRODUCT INFORMATION

Packaging	Part 'A' Component - 33.3 lb. (15 kg) pail Part 'B' Component * - 5.5 lb. (2.5 kg) jug Part 'C' Components - 47 lb. (21.3 kg) bags * 'B' Components are packaged in a carton containing (4) jugs each.
Shelf Life	2 years from date of production if stored in original, unopened and undamaged, sealed packaging
Storage Conditions	Store dry between 40 - 90 °F (5 - 32 °C). Protect Part 'C' Component bags from moisture. If permitted to become damp, discard material.
Density	Approximately 139 lbs./ft ³ (2.2 g/cm ³)

TECHNICAL INFORMATION

Compressive Strength	16 hours	18,000 psi (124.1 MPa)	(ASTM C579, Method B) Air Cured 2" Cubes 73 °F (23 °C) 50% R.H.
	1 day	19,000 psi (131,0 MPa)	
	2 days	20,000 psi (137.9 MPa)	
	3 days	21,000 psi (144.8 MPa)	
	Post cured *	26,000 psi (179,3 MPa)	
	* Cured 24 hours at 73 °F (23 °C), then for 16 hours at 140 °F (60 °C)		
Flexural Strength	7 days	5,700 psi (39.3 MPa)	(ASTM C580) 1" x 1" x 11" Air Cured Prisms 73 °F (23 °C) 50% R.H.
Modulus of Elasticity in Flexure	7 days	3.2 x 10 ⁶ psi (22.1 GPa)	(ASTM C580) 1" x 1" x 11" Air Cured Prisms 73 °F (23 °C) 50% R.H.
Tensile Strength	7 days	2,225 psi (15.3 MPa)	(ASTM C307) 1" x 3" Briquettes Air Cured 73 °F (23 °C) 50% R.H.
Shrinkage		Length Change	(ASTM C531) 1" x 1" x 10" Air Cured Prisms 73 °F (23 °C) 50% R.H.
	28 days	- 0.007%	
Coefficient of Thermal Expansion	7 days	1.1 x 10 ⁻⁵ inch / inch / °F (2.0 x 10 ⁻⁵ mm / mm / °C)	(ASTM C531) 1" x 1" x 10" Air Cured Prisms
Slant Shear Strength		Bond Strength	(ASTM C882) Air Cured 73 °F (23 °C) 50% R.H.
	1 day	3,200 psi (22.1 MPa)	
	7 days	3,500 psi (24.1 MPa)	
Water Absorption	7 days	0.1%	(ASTM C413) 2" Cubes 73 °F (23 °C) 50% R.H.

APPLICATION INFORMATION

Mixing Ratio	One unit of SikaFlow®-690 is comprised of: ▪ One (1) pail of Part 'A' Component ▪ One (1) jug of Part 'B' Component ▪ Five (5) bags of Part 'C' Component	
Coverage	One mixed unit of SikaFlow®-690 (i.e. one pail Part 'A', one jug Part 'B' and five bags of Part 'C') yields approximately 2.0 cubic feet (0.057 cubic meters)	
Layer Thickness	Minimum	Maximum per Lift
	1 inch (25 mm)	9 inches (229 mm)
	For application thickness > 9" (229 mm), consult Technical Services.	
Product Temperature	Condition components to approximately 65 - 75 °F (18 - 24 °C) before mixing.	
Ambient Air Temperature	Minimum: 40 °F (4 °C) Maximum: 95 °F (35 °C)	
Substrate Temperature	Minimum: 40 °F (4 °C) Maximum: 95 °F (35 °C)	
Substrates	Concrete, Steel	
Application Time	Place SikaFlow®-690 into forms within 60 - 75 minutes after mixing procedure is complete.	
Set Time	4 - 7 hours	

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.
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ENVIRONMENTAL, HEALTH AND SAFETY

For further information and advice regarding transportation, handling, storage and disposal of chemical products, user should refer to the current actual Safety Data Sheets for each component 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

- Protect the foundation and equipment from rain, frost and moisture.
- Seal off and protect areas that will not be grouted.

- Place forms no greater than 6" (152 mm) away from the edge of the individual base rail or soleplate on the sides where the grout is not being poured. Excessive edge thickness creates thermal stress and may result in excessive cracking. Formwork edges should allow enough room to accommodate pouring of the grout and accommodate a headbox if used. Shoulders should be a maximum of 6" (152 mm) in width. Consult your local Sika Project Representative or Sika Technical Services for specific recommendations.
- Before erecting the forms, cover interior form surfaces with a bond breaking release agent. Keep bond breaker off concrete and steel surfaces that SikaFlow®-690 must adhere to. A polyethylene or other nonbondable film may be used as a release agent.
- The top of the form should extend at least 3/4" (19 mm) above the bottom of the rail or plate.
- Forms must be liquid tight. If necessary, seal forms to clean, dry concrete surfaces by applying a bead of Sikaflex sealant, then press form into place.
- Baseplate assemblies should be well vented to prevent air entrapment during installation.
- For placements requiring long travel lengths, strapping across the underside of the baseplate may be necessary. Strapping is placed under the baseplates to help move grout due to restrictions and to minimize air entrapment.
- Use of expansion joints on large placements is recommended. Please consult with the qualified engineer of record (EOR) for specific joint design

parameters, or contact Sika Technical Services for further details. To minimize the potential for cracking in the epoxy grout [maximum 3 to 6 foot (1 to 1.8 meter) spacing in each direction] is typical. Expansion joint locations should not interfere with anchor bolts.

- Field visits by Sika personnel are for the purpose of making technical recommendations only, and are not for supervising or providing quality control on the jobsite.

SURFACE PREPARATION

- Cure the foundation until design strength of the concrete is achieved and foundation is dry. Use the recommended procedure according to ACI 351.1R, "Report on Grouting Between Foundations and Bases for Support of Equipment and Machinery."
- To permit proper bond, surfaces to be grouted must be clean, sound, dry, dust free, contaminant free and roughened to a CSP of 5 - 10, following ICRI Technical Guideline No. 310.2R.
- Do not use a bushing hammer. Avoid causing microcracks in the substrate
- Chamfer the edge of the concrete 45 degrees to about a 2" (51 mm) width.
- If an anchor bolt sleeve is to be filled, be sure all water is removed. Use a siphon, vacuum pump, or rubber hose and bulb. Remove the residual moisture by either forced air or evaporation.
- Seal the anchor bolt hole to prevent SikaFlow®-690 from flowing in with felt, foam rubber or other means.
- Cover all shims and leveling screws with bond breaker to keep the epoxy grout from adhering. Use PTFE tape or other suitable bond breaker. Shims or jack pockets may be formed with wood, and forms filled with damp sand.
- Remove shims or jack screws after the grout cures.
- Shade the foundation from direct sunlight for at least 24 hours before, and 48 hours after grouting.
- Steel surfaces should be mechanically prepared to a rust free, contaminant free, bright and dry finish (per typical SSPC-SP6 / NACE 2 "Commercial Blast Cleaning" industry standards).

MIXING

- **Do not batch down.** Mix complete units.
- Precondition all components to approximately 70 °F (21 °C) for 24 hours before using.
- Part 'C' Component aggregate must be completely dry.
- Pour the hardener (Part 'B' Component) into a pail of grout resin (Part 'A' Component) and stir by hand using a spatula or paint stirring paddle, or briefly with a low speed rotary drill (400 - 600 rpm) and jiffy mixing paddle, until well mixed to a uniform amber color. Do not overmix the liquid components.
- Pour the mixed liquids into a horizontal shaft mortar mixer or a 'KOL'-type mixer without delay.
- Add the Part 'C' Component grout aggregate, one bag at a time, and mix only until aggregate is completely

wetted out to avoid air entrapment. Start the mixer just prior to adding the last bag of aggregate. Caution: Always add aggregate to the mixer after the premixed liquids have already been added.

- Mix thoroughly until a homogeneous, uniform blend of epoxy grout is achieved. **DO NOT OVERMIX!**

APPLICATION

- Pour the grout into wheelbarrows or buckets for transporting to the pour site and/or pump into the forms.
- Remove mixed epoxy grout from transporting vessels and deliver into forms without delay, within 15 minutes after mixing.

CLEANING OF TOOLS

Immediately after mixing operations have ceased and after the grout placement is complete, remove uncured epoxy grout from the mixer, wheelbarrows, pumps, tools and surfaces with a locally approved solvent (e.g. Acetone, MEK, Xylene). Cured material can only be removed by mechanical means.

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.

SIKA warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current Product Data Sheet if used as directed within the product's shelf life. User determines suitability of product for intended use and assumes all risks. User's and/or buyer's sole remedy shall be limited to the purchase price or replacement of this product exclusive of any labor costs.

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