

PRODUCT DATA SHEET

Sikafloor®-270 ESD

CHEMICAL RESISTANT NOVOLAC HIGH BUILD ELECTROSTATIC CONTROL EPOXY COATING

PRODUCT DESCRIPTION

Sikafloor®-270 ESD is a two-component ESD epoxy coating system designed to impart electrostatic control properties to a variety of substrates in conjunction with ESD footwear, including existing nonconductive substrates. Sikafloor 270 ESD complies with ANSI S20.20 - 2014 for product qualification and demonstrates conductive properties to meet other applicable ESD standards.

USES

Sikafloor®-270 ESD can be used in almost any environment where the damaging effects of electrostatic discharge (ESD) cannot be tolerated and the enhanced corrosion resistance properties of a novolac epoxy resin system are desired. Industries currently using these coatings are:

- Electronics Manufacturing
- Data Processing Facilities
- Military/Aerospace
- Printing Plants
- Photographic/Graphic
- Hazardous Industries (Dust or explosion hazards)
- Pharmaceutical/Clean Rooms

CHARACTERISTICS / ADVANTAGES

- Conforms to ANSI S20.20-2014 when tested in accordance with ANSI STM 97.1
- Conductive range 2.5×10^4 to 1.0×10^6 ohms per ANSI/ESD S7.1/ASTM F-150.
- Body voltage generation under 30V with ESD compliant footwear.
- Maintains electrical conductivity throughout the entire thickness of the system.
- Does not depend on relative humidity for conductive properties.
- Tough, smooth, non-porous surface is easy to clean and maintain.
- Good abrasion resistance.

PRODUCT INFORMATION

Packaging	Component A	3.0 US gal. (11.36 L) fill in a 5 gal.pail
	Component B	1.50 US gal. (5.7 L) fill in a 2 gal. pail
	Components A+B	4.50 US gal. (17.03 L)
(Ready to mix unit) Mix all units of all components according to the instructions herein.		
Appearance / Color	Sparrow Gray	Smoky Brown
	Richmond Gray	Cyan Blue
	Steel Gray	Tea Green
	Blackstone Black	Brickyard Red
	Brickyard Red	
Other colors require lead time, or may not be possible due to pigment limitations		
Shelf Life	12 months in original unopened container under proper storage	
Storage Conditions	Store dry between 40° - 90°F (4° - 32°C) Material must be preconditioned above 68°F/20°C for 72 hours prior to use.	
Volatile organic compound (VOC) content	22 g/L	

TECHNICAL INFORMATION

Shore D Hardness	84	ASTM D2240 at 73°F (23°C) and 50% R.H
Abrasion Resistance	CS-17/1000 cycles/1000g ~113 mg loss	ASTM D4060 at 73°F (23°C) and 50 % R.H
Compressive Strength	11,458 Psi (79 MPa)	ASTM D790 at 73°F (23°C) and 50% R.H
Flexural Strength	10,587 Psi (73 MPa)	ASTM D790 at 73°F (23°C) and 50% R.H
Tensile Strength	6,193 Psi (42.7 MPa)	ASTM D638 at 73°F (23°C) and 50% R.H
Tensile Adhesion Strength	>400 Psi (2.75 MPa)	ASTM D4541 at 73°F (23°C) and 50 % R.H
Impact Strength	26 ft.lbs	ASTM D2794 at 73°F (23°C) and 50% R.H
Indentation	1.16 %	MIL-PRF-24613 at 73°F (23°C) and 50% R.H
Water Absorption	0.19% (24 hr)	ASTM D570 at 73°F (23°C) and 50% R.H
Electrostatic Behavior	2.5 X10 ⁴ to 1.0 X10 ⁶ ohms	ANSI/ESD S7.1/ASTM F-150 at 73°F (23°C) and 50 % R.H
Full electrical properties reached within 10 days of application (With heel straps integral 1 megohm resistor)		

APPLICATION INFORMATION

Mixing Ratio	2:1 by volume (Mix full unit only)			
Coverage	4.50 mixed gallons (approximate coverage) at: 16 mils = 450 ft ² (42 m ²) Sikafloor 270 ESD should be applied at 15 - 18 mils. Product will lose ESD properties if applied at excessive thickness. Do not exceed the recommended thickness.			
Pot Life	Material Temperature	Time		
	+68°F (20°C)	~ 20 minutes*		
Sikafloor 270 ESD must be applied and distributed immediately after mixing. *Do not apply after indicated Pot Life is exceeded. End of Pot Life is not visible.				
Cure Time	Ambient & Substrate Temperature	Foot traffic	Light traffic	Full cure
	+ 73°F (23°C)	~12-16 hours	~12-16 hours	~5-7 days
Electrical Properties: Full electrical properties reached within 10 days of application at 73°F (23°C).				

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.

LIMITATIONS

Prior to application, measure and confirm Substrate Moisture Content, Ambient Relative Humidity, Ambient and Surface Temperature and Dew Point. During installation, confirm and record above values at least once every 3 hours, or more frequently whenever conditions change (e.g. Ambient Temperature rise/fall, Relative Humidity increase/decrease, etc.).

Substrate Moisture Content: Moisture content of concrete substrate must be ≤ 4 % by mass (pbw – part by weight) as measured with a Tramex® CME/CMExpert type concrete moisture meter on mechanically prepared surface according to this product data sheet (preparation to CSP-3 to CSP-4 as per ICRI guidelines). Do not apply to concrete substrate with moisture levels > 4 % mass (pbw – part by weight) as measured with Tramex® CME/CMExpert type concrete moisture meter. If moisture content of concrete substrate is > 4 % by mass (pbw – part by weight) as measured with Tramex® CME/CMExpert type concrete moisture meter, use Sikafloor® 1620 or Sikafloor® 22 NA or Sikafloor® 24 NA PurCem®. When relative humidity tests for concrete substrate are conducted per ASTM F2170 for project specific requirements, values must be ≤ 85 %. If values are > 85 % according to ASTM F2170 use Sikafloor® 1610 or Sikafloor® 22NA or 24NA PurCem®. ASTM F2170

testing is not a substitute for measuring substrate moisture content. Use a Tramex® CME/CMExpert type concrete moisture meter as described above.

Material Temperature: Precondition material for at least 24 hours between 65 °F and 75 °F (18–24 °C)

Ambient Temperature: Minimum/Maximum 50/85 °F (10/30 °C)

Substrate Temperature: Minimum/Maximum 50/85 °F (10/30 °C). Substrate temperature must be at least 5 °F (3 °C) above measured Dew Point. Mixing and Application must adhere to Material, Ambient and Substrate temperatures listed above or a decrease in product workability and slower cure rates will occur.

Relative Ambient Humidity: Minimum ambient humidity 30 %, Maximum ambient humidity 75% (during application and curing)

Note: Low Relative Ambient Humidity may result in slower cure.

Dew Point: Beware of condensation!

The substrate must be at least 5 °F (3 °C) above the Dew Point to reduce the risk of condensation, which may lead to adhesion failure or “blushing” on the floor finish. Be aware that the substrate temperature may be lower than the ambient temperature.

APPLICATION INSTRUCTIONS

Mixing: Do not hand mix Sikafloor® materials. Mechanically mix only. Do not thin this product. Addition of thinners (e.g. water, solvent, etc.) will slow cure and reduce ultimate properties of this product. Use of thinners will void any applicable Sika warranty.

Application: If Sikafloor®-270 ESD is used as a primer, apply the coating to the prepared substrate using a squeegee and back roll to provide uniform coverage. Ensure that the coating is pore-free and pinhole-free and provides uniform and complete coverage over the entire substrate. If necessary, apply an additional coat to ensure the coating is pore-free and pinhole-free and provides uniform and complete coverage over the entire substrate.

- Do not apply while ambient and substrate temperatures are rising, as pinholes may occur.
- Do not apply Sikafloor® to concrete substrate containing aggregates susceptible to ASR (Alkali Silica Reaction) due to risk of natural alkali redistribution below the Sikafloor product after application. If concrete substrate has or is suspected to have ASR (Alkali Silica Reaction) present, do not proceed. Consult with design professional prior to use.
- Any aggregate used with Sikafloor® systems must be non-reactive and oven-dried.
- This product is not designed for negative side waterproofing.
- Use of unvented heaters and certain heat sources may result in defects (e.g. blushing, whitening, debonding, etc.).
- Beware of air flow and changes in air flow. Introduction of dust, debris, and particles, etc. may result in surface imperfections and other defects.
- For professional use only by experienced applicators.

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.

SURFACE PREPARATION

Surface must be clean, sound and dry. Remove dust, laitance, grease, curing compounds, bond inhibiting impregnations, waxes and any other contaminants. All projections, rough spots, etc. should be dressed off to achieve a level surface prior to the application. Concrete - Should be cleaned and prepared to achieve a laitance-free and contaminant-free, open textured surface by shot blasting or equivalent mechanical means (CSP-3 to CSP-4 as per ICRI guidelines). Sweep and vacuum any remaining dirt and dust with a wet/dry vacuum. Removing residual dust will help ensure a tenacious bond between the primer and substrate. Whenever “shot-blasting” is utilized, be careful to leave concrete with a uniform texture. “Over-blasting” will result in reduced coverage rates of the primer and/or subsequent topcoats. The “shotblast” pattern may show through the last coat, known as “tracking”. The compressive strength of the concrete substrate should be at least 3,500 psi (24 MPa) at 28 days and at least 215 psi (1.5 MPa) in tension at the time of application. For other substrates, please contact Sikafloor Technical Services.

Priming

Use of Primer on concrete substrate and/or isolation layer on existing ESD or Epoxy coating is required. Prime with either Sikafloor 160, Sikafloor 161, Sikafloor 1610, Sikafloor 165 and Sikafloor 2570. Allow the primer to cure (varies with temperature and humidity) until tack free before applying subsequent coats. Ensure that the primer is pore-free, pinhole-free and provides uniform and complete coverage over the entire substrate.

Please refer to the individual most current and respective Product Data Sheet for specific and detailed information.

Electrical Grounding

The installation of an isolation layer/primer to seals the substrate is required. A high degree of ESD control may be achieved with ESD top coats without direct connection to an earth grounding point. For applications that are more critical or per project specifications, it is recommended that the various coatings be applied in direct, uninterrupted contact with properly prepared grounding points. Metal floor joints, metal equipment bases and steel columns or posts may be used if they have been electrically tested to confirm permanent continuity with an earth ground. Generally, a minimum of one grounding point per every 1,000 square feet of flooring is sufficient for proper dissipation of static electricity.

Adhesive backed copper grounding tape is used as a grounding point. Copper tape can also be used to bridge control joints around columns or different concrete slabs. Copper tape and the Sikafloor 270 ESD cannot be expected to maintain integrity over expansion joints that experience wide movement. Embedded grounding points, such as copper tape, grounding snaps, etc, must be placed on top of a primer/isolation layer prior to installation of Sikafloor 222W ESD conductive primer. Methods of installation include, but are not limited to, the following techniques:

1. Use the copper tape to make an electrical connection with the green wire or grounding portion of an electrical outlet. A 4 in. (10.2 cm.) portion of the copper tape is adhered to the floor (cured primer or directly beneath the first coat of Sikafloor 270 ESD). If using a conductive primer, the copper tape must be installed under the conductive primer. Run the remaining tape up the wall and attach it to the electrical outlet. A variation of this technique involves dropping a No. 16 or 18 copper wire, inside the wall from any convenient ground bus so that the wire emerges at the floor/wall junction. At this point, a small hole cut into the drywall or chipped out of the concrete to allow the copper wire to emerge. The copper grounding strip is intertwined with, or soldered to, the stranded copper wire. If intertwined, use a conductive adhesive tape to secure the copper tape with the copper wire. Insert the connection of the copper tape and wire into the wall. The balance of the grounding strip, typically 4 in. (10.2 cm.) is then adhered to the floor.

2. The copper tape can be used to make ground connections with steel columns. The copper tape is adhered to the floor and run up onto the lightly sanded steel column or base. Drill and tap a hole into the steel column or base secure the copper tape using a machine screw and washer.

MIXING

Mix full units only

Premix each component separately. Stir Component A container with a long margin tool to ensure contents are evenly distributed scraping the sides, corners and bottom of the pail. A jiffy-type mixing paddle with a variable speed mixing drill. Then add the Component B to the pigmented Component A and mix for 3 minutes at a moderate speed (300rpm), scraping the container sides, bottom, and corners with a flat or straight edge trowel at least once to ensure complete mixing.

Do not mix more material than can be applied within the working time limits (i.e. Pot Life) at the actual field temperature. Sikafloor 270 ESD must be placed and distributed on the application surface immediately after mixing.

APPLICATION

The Sikafloor 270 ESD should be applied with a notched squeegee over a smooth primed substrate. The notched squeegee should be 18 to 24 inches (45.6 to 60.1 cm) long with 1/16 to 1/8 inch (1.6 - 3.2 mm) notches at 1/4 inch (6.4 mm) intervals. This type of squeegee will apply sufficient material to achieve 15 - 18 wet mils when back rolled. Back rolling is typically done with a 9 inch (22.8 cm) or 18 in (45.6 cm) wide, 3/8 inch (9.5 mm) short nap, solvent resistant roller cover. Back roll the Sikafloor 270 ESD to level the material applied. Over-rolling and late back rolling may cause bubbling and leave roller marks. Divide the floor into sections that can be completed without stopping. When ending a section, tape it off to form a clean edge for an adjacent section.

Sikafloor 222W ESD conductive primer is used in conjunction with Sikafloor 270C ESD: test the primed surface for conductivity prior to the application of Sikafloor 270C ESD. A value of $< 5.0 \times 10^3$ ohms per ANSI/ESD S7.1/ASTM F-150 must be achieved. Do not use with Sikafloor 220W conductive primer. Use only Sikafloor 222W conductive primer.

The recommended application procedures are:

1. Take one 5 gallon (18.9 liter) pail of the mixed Sikafloor 270 ESD and start at one end of the section to be coated. Trim the walls and/or obstructions in the immediate area where the coating will be applied. Pour the Sikafloor 270 ESD in a line approximately 1 ft (0.3 m) from the wall or starting line along the entire width of the section to be coated.
2. The person using the squeegee can then make one pass along the wall or starting line, turn and come back making a second pass adjacent to the first pass. Next, use the rollers to level the Sikafloor 270 ESD squeegee applied material. One person can roll apply a 15 to 20 ft (4.6 - 6.1 m) wide section. Do this as quickly as possible.
3. Pour another line of Sikafloor 270 ESD approximately 1 ft (0.3 m) from the rolled area and repeat step 2. The rolling personnel should make sure they are not leaving puddles or thick sections of Sikafloor 270 ESD at the junction of the previously rolled and freshly applied Sikafloor 270 ESD
4. Follow these procedures until the section is completed. If the work must stop for any reason, use a tapeline as a breaking point.

OTHER RESTRICTIONS

See Legal Disclaimer.

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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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. **NO OTHER WARRANTIES EXPRESS OR IMPLIED SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SIKA SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES. SIKA SHALL NOT BE RESPONSIBLE FOR THE USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS.**

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