

PRODUCT DATA SHEET

Sikafloor®-270 ESD

CHEMICAL RESISTANT NOVOLAC HIGH BUILD ELECTROSTATIC CONTROL EPOXY COATING



PRODUCT DESCRIPTION

Sikafloor®-270 ESD is a two-component, highly chemical resistant, low VOC, solid colour novolac epoxy coating system used in combination with Sikafloor®-222W ESD or Sikafloor®-220W ESD intermediate conductive primer to impart electrostatic control properties to a variety of substrates in conjunction with ESD footwear. It is ANSI S20.20 - 2014 compliant and has a customizable conductive resistance range to meet specific industry and department of defence standards.

WHERE TO USE

Sikafloor®-270 ESD may only be used by experienced professionals.

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
- Data Processing
- Military/Aerospace
- Photographic, graphic arts
- Hazardous industries (dust or explosion hazards)

CHARACTERISTICS / ADVANTAGES

- Can be applied over new or existing concrete substrates or existing epoxy floors when primed with an isolation layer.
- Consistent resistance measurements are obtained

- when testing in accordance with standard methods.
- Very low body voltage generation values when wearing ESD compliant footwear.
- Conforms to ANSI S20.20- 2014 Table 2 Product Qualification when tested in accordance with ANSI/ESD STM 97.1 and ANSI/ESD STM 97.2 when wearing ESD compliant footwear.
- Available in a resistance range (2.5×10^4 to 1.0×10^9 ohms) when tested in accordance with ESD TR53 - ANSI/ESD S7.1 or ASTM F-150 (*modified: "point-to-ground" only*).
- Passes static decay test in accordance with MIL-STD-3010C Method 4046.
- 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.
- Excellent corrosion resistance especially against inorganic acids.
- Low VOC, low odour formulation suitable for application in occupied facilities.

ENVIRONMENTAL INFORMATION

- Conformity with LEED®v4 MR Credit (Option 1): Building Product Disclosure and Optimization – Environmental Product Declarations
- Conformity with LEED®v4 MR Credit (Option 1): Building Product Disclosure and Optimization - Sourcing of Raw Materials

APPROVALS / CERTIFICATES

- Meets the requirements of CFIA and USDA for use in food plants.

PRODUCT INFORMATION

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|---|--|---|
| CSC MasterFormat® | 09 67 13.33 CONDUCTIVE ELASTOMERIC LIQUID FLOORING | |
| Packaging | Component A | 11.3 L (3.0 US gal.) packaged in one 18.9 L (5 US gal.) pail |
| | Component B | 5.7 L (1.50 US gal.) packaged in one 7.6 L (2 US gal.) pail; |
| | Components A+B (mixed unit) | 17 L (4.50 US gal.) unit. |
| Appearance / Colour | Refer to standard colour chart. Custom colours require lead time, or may not be possible due to pigment limitations, contact Sika Canada for further details. | |
| Shelf Life | 12 months when stored in original, unopened packaging. | |
| Storage Conditions | Store dry at temperatures between +5 °C and +32 °C (41 °F and 89 °F). | |
| Volatile organic compound (VOC) content | ≤ 25 g/L | |

TECHNICAL INFORMATION

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|-----------------------------|---|---|
| Shore D Hardness | ~84 | (ASTM D2240) |
| Abrasion Resistance | ~113 mg loss | (ASTM D4060) CS-17 /1000 g (2,2 lb)/1000 cycles |
| Compressive Strength | ~79 MPa (~11,458 psi) | (ASTM D790) |
| Tensile Strength in Flexure | ~73 MPa (~10,587 psi) | (ASTM D790) |
| Tensile Strength | ~42.7 MPa (~6,193 psi) | (ASTM D638) |
| Pull-Off Strength | > 2.4 MPa (350 psi) concrete failure | ASTM D7234 |
| Indentation | ~1.16 % | (MIL-PRF-24613) |
| Chemical Resistance | Consult Sika Canada | |
| Water Absorption | ~0.19 % (24 h) | (ASTM D570) |
| Electrostatic Behaviour | 2.5 X10 ⁴ to 1.0 X10 ⁹ ohms | (TR-53 - ANSI/ESD S7.1 / ASTM F-150 modified: "point-to-ground" only) |
| | Full electrical properties reached within 10 days of application. | |

APPLICATION INFORMATION

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| Mixing Ratio | A:B= 2:1 by volume | |
| Consumption | 42 m ² (~ 452 ft ²) per 17 L (4.50 US gal.) unit at 16 mil w.f.t. NOTE: Do not exceed 20 mil. Product will lose some ESD properties if applied at excessive thickness. Actual coverage rates and material consumption will depend upon surface porosity, substrate profile and wastage. Test sections are recommended to establish correct coverage. Thinning Solvent: Sika® Epoxy Cleaner - maximum 5 % by volume (if required). 50 ml/L (6.4 oz/US gal.) contact Sika Canada for additional information. | |
| Product Temperature | Condition product between +18 °C and +30 °C (65 °F to 86 °F) before using. | |

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|-----------------------------------|---|-------------------------|-------------------------|------------------|
| Ambient Air Temperature | Minimum: +10 °C (50 °F) / Maximum: +30 °C (85 °F) Mixing and application attempted at material, ambient and/or substrate temperature conditions less than +18 °C (65 °F) will result in a decrease in product workability and slower cure rates. | | | |
| Relative Air Humidity | Maximum 85 % (during application and curing). | | | |
| Dew Point | Substrate must be at least 3 °C (5 °F) 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. | | | |
| Substrate Temperature | Minimum: +10 °C (50 °F) / Maximum: +30 °C (85 °F) | | | |
| Substrate Moisture Content | <p>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 ICRI / CSP 3 - 4). Do not apply to concrete substrate with moisture levels exceeding 4 % mass (pbw – part by weight) as measured with Tramex® CME / CMExpert type concrete moisture meter.</p> <p>If moisture content of concrete substrate exceeds 4 % by mass (pbw – part by weight) as measured with Tramex® CME / CMExpert type concrete moisture meter, use Sikafloor®-1610 or Sikafloor®-81 EpoCem®CA or Sikafloor® 22NA or 24NA PurCem®.</p> <p>When relative humidity tests for concrete substrate are conducted per ASTM F2170 for project specific requirements, values must be ≤ 85 %. If values exceed 85 % according to ASTM F2170, use Sikafloor®-1610 or Sikafloor®-81 EpoCem®CA or Sikafloor® 22NA or 24NA PurCem®. ASTM F2170 testing is not a substitute for measuring substrate moisture content with a Tramex® CME / CMExpert type concrete moisture meter as described above.</p> <p>IMPORTANT: Do not apply Sikafloor®-270 ESD directly onto concrete substrates. Use of a Sikafloor® adhesion and isolation layer primer and Sikafloor®-222W ESD or Sikafloor®-220W ESD- intermediate conductive primer coat are required prior to the application of Sikafloor®-270 ESD.</p> | | | |
| Pot Life | <p>~20 minutes at +23 °C (73 °F) and 50 % R.H.</p> <p>Note: Care must be taken not to use product beyond its recommended pot life. Material will appear liquid, but is unusable and will result in poor adhesion and or reduced conductivity.</p> | | | |
| Curing Time | Temperature | Foot traffic | Light traffic | Full cure |
| | +23 °C (73 °F) | 12 hours to 16 hours | 16 hours to 20 hours | 7 days |
| | <ul style="list-style-type: none"> ▪ Curing times will vary according to air and substrate temperature and relative humidity. ▪ Protect from dampness, condensation and water contact during the initial 72 hour cure period. ▪ Mechanical, chemical and physical properties will be fully achieved at full cure. ▪ Full electrical properties are reached within approximately 10 days of application at +23 °C (73 °F). | | | |

BASIS OF PRODUCT DATA

Product properties are typically averages, obtained under laboratory conditions. Reasonable variations can be expected on-site due to local factors, including environment, preparation, application, curing and test methods.

Properties tested at +23 °C (73 °F) and 50 % R.H. unless stated otherwise.

LIMITATIONS

- Prior to application, always 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 three (3) hours, or more frequently whenever conditions change (e.g. Ambient Temperature rise/fall, Relative Humidity increase/decrease, etc.)
- 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.
- Polymer, fibreglass and steel concrete reinforcement fibres may interfere with conductive properties of Sikafloor® ESD products. Consult Technical Service before applying to fibre reinforced substrates.
- Any aggregate used with Sikafloor® systems must be non-reactive and oven-dried.
- This product is not designed for negative side waterproofing.
- Typically not recommended for exterior slabs on grade where freeze/thaw conditions may exist.
- Do not apply to substrates exposed to extreme thermal shock.
- Will discolour over time when exposed to sunlight (UV) and under certain artificial lighting conditions.
- Direct-fired gas or kerosene heaters produce byproducts that can have adverse effects on the curing resin. To avoid this occurrence, heaters must be exhausted to exterior of the building to avoid defects such as amine blush, whitening, loss of adhesion or other surface deficiencies.
- Beware of air flow and changes in air flow. Introduction of dust, debris, and particles, etc. may result in surface imperfections and other defects.

ENVIRONMENT, HEALTH & SAFETY

User must read the most recent corresponding Safety Data Sheets (SDS) before using any products. The SDS provides information and advice on the safe handling, storage and disposal of chemical products and contains physical, ecological, toxicological and other safety-related data.

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APPLICATION INSTRUCTIONS

SURFACE PREPARATION

New or Existing Concrete Substrates: Surfaces must be clean, sound and dry. Remove all dust, dirt, existing paint films, efflorescence, exudates, laitance, form oils, hydraulic or fuel oils, brake fluid, grease, fungus, mildew, biological residues or any other contaminants which may prohibit good bond. Prepare the surface by any appropriate mechanical means, in order to achieve an open textured profile equivalent to ICRI / CSP 3 - 4.

The compressive strength of the concrete substrate should be at least 25 MPa (3625 psi) at 28 days and a minimum of 1.5 MPa (218 psi) in tension at the time of application of the selected Sikafloor® adhesion and isolation layer primer.

Whenever shot-blasting is utilized, be careful to leave concrete with a uniform texture and not create tracking as this will be visible through coatings and in some cases thin section mortars. Over blasting will also result in reduced coverage rates and increased consumption of the primer. Sweep and vacuum any remaining dirt and dust with a wet/dry vacuum. Removing residual dust will help ensure a tenacious bond between the Sikafloor® adhesion and isolation layer primer and the substrate. All projections, rough spots, etc. should be dressed off to achieve a level surface prior to the application. Repairs to cementitious substrates, filling of blowholes, levelling of irregularities, etc. should be carried out using an appropriate moisture tolerant, structural Sika® profiling mortar. Contact Sika Canada for recommendations.

Previously Coated Surfaces: Existing coated surfaces must be intact and tightly bonded to the substrate. Completely remove all traces of waxes or sealers, dust, dirt, oil, grease or other contaminants that may inhibit bonding. Hard or glossy surfaces must be abraded and solvent wiped clean to improve performance.

Note: Sika® strongly recommends that a trial application be carried out to determine compatibility and acceptable adhesion with the existing surface, prior to general over-coating works being undertaken. Contact Sika Canada for recommendations.

MIXING

Mixing Ratio - A:B = 2:1 by volume

Do not hand mix Sikafloor® materials. Mechanically mix only.

Pre-mix the two components separately to ensure product uniformity. The Part A (resin) container is partly filled and sized to allow use as the mixing vessel for a single unit. Start mixing the resin using a low speed drill (300-400 rpm) to minimize air entrapment with an *Exomixer®* or *Jiffy* type mixing paddle (recommended model) suited to the volume of the mixing vessel.

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Add the Part B (hardener) to the Part A (resin) and mix for three (3) minutes until a uniform colour and consistency is achieved. During the mixing operations, scrape down the sides and bottom of the container 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.

Note: Mixing attempted at material and ambient temperatures below +18 °C (65 °F) will result in a decrease in product workability.

APPLICATION

Adhesion and Isolation Layer Primer:

Use of Sikafloor® epoxy primer on concrete substrates and/or as an isolation layer on existing ESD or epoxy coatings is required. Prime with either Sikafloor®-156^{CA}, Sikafloor®-1610 or Sikafloor®-261^{CA}. Allow the primer to cure (varies with temperature and humidity) until tack-free before applying subsequent coats. Ensure that the primer is pore- and pinhole-free and provides uniform and complete coverage over the entire substrate. Please refer to the individual most current and respective selected Sikafloor® primer Product Data Sheet for specific and detailed information.

Electrical Grounding: The installation of an adhesion and isolation layer primer to seal the substrate is required. Embedded grounding points, such as copper tape, grounding snaps, etc, must be placed on top of the cured adhesion and isolation layer primer prior to installation of Sikafloor®-222W ESD or Sikafloor®-220W ESD conductive primer. Sikafloor®-222W ESD or Sikafloor®-220W ESD conductive primer coating must 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. A minimum of one (1) grounding point per every 93 m² (1,000 ft²) of flooring should be established, with a minimum of two (2) ground connections for any isolated area less than 93 m² (1,000 ft²) in order to achieve proper dissipation of static electricity. Adhesive backed copper grounding tape can be used as a grounding point. Copper tape can also be used to bridge non moving contraction joints, isolation joints around columns or construction joints between different concrete slabs. Copper tape and Sikafloor®-270 ESD coating cannot be expected to maintain integrity

over cracks and expansion joints that experience wide movement.

Methods of Grounding:

Installation methods include, but are not limited to, the following techniques:

1. Use copper tape to make an electrical connection with the green wire or grounding portion of an electrical outlet. A 10.2 cm (4 in) portion of the copper tape is adhered to the cured adhesion and isolation layer primer directly beneath the first coat of Sikafloor®-222W ESD or Sikafloor®-220W ESD 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. 10 or 12 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 100 mm (4 in) is then adhered to the primed floor.
2. The copper tape can be used to make ground connections with steel columns. A 100 mm (4 in) portion of copper tape is adhered to the cured adhesion and isolation layer primer with remaining tape run up onto a 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.

IMPORTANT: All electrical grounding and associated electrical work should be undertaken and assessed by suitable trained, qualified and certified electrical personnel.

Intermediate Conductive Primer Coat:

Only start application of Sikafloor®-222W ESD or Sikafloor®-220W ESD conductive primer after the adhesion and isolation layer primer coat has dried tack-free, otherwise there is a risk of wrinkling or impairing conductive properties. Grounding points must be installed before the application of Sikafloor®-222W ESD or Sikafloor®-220W ESD conductive primer. Mix and apply Sikafloor®-222W or Sikafloor®-220W ESD conductive primer coating by brush and 10 mm (3/8 in) nap roller at a uniform coverage rate of 6.6 m²/L to 9.8 m²/L (267 ft² US gal. to 401 ft² US gal.) at 4 mil to 6 mil w.f.t.

Avoid puddling; areas too thick, may cure too soft, if too thin, the coating will appear very flat in sheen and may exhibit poor electrical properties. Work evenly to avoid late "tie-in" and re-rolling to adjacent previously applied material; doing so may result in colour variations. Consult the most current Sikafloor®-222W ESD or Sikafloor®-220W ESD Product Data Sheet for additional detailed installation instructions.

NOTE: Once cured, test the applied Sikafloor®-222W ESD or Sikafloor®-220W ESD intermediate conductive primer coating for conductivity prior to the application of Sikafloor®-270 ESD.

ESD Body Coat:

Sikafloor®-270 ESD should be applied with a notched squeegee over a uniform, smooth Sikafloor®-222W ESD or Sikafloor®-220W ESD conductive primer substrate. The notched squeegee should be 450 mm to 600 mm (18 in to 24 in) long with 1.6 mm to 3.2 mm (1/16 in to 1/8 in) notches at 6.4 mm (1/4 in) intervals. Typically this type of squeegee used by an experienced applicator will apply sufficient material to achieve 15 wet mil to 18 wet mil thickness when back rolled. Back rolling is typically done with a 22.8 cm (9 in) or 450 mm (18 in) wide, 10 mm (3/8 in) 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, straight edge for an adjacent section.

Recommended application sequence:

- 1.) Take one 17 L (4.50 US gal.) unit 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 300 mm (1 ft) 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 typically roll apply a 4.6 m to 6.1 m (15 ft to 20 ft) wide section. Do this as quickly as possible.
- 3.) Pour another line of Sikafloor®-270 ESD approximately 300 mm (1 ft) 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.

CLEAN UP

Clean tools and equipment immediately with Sika® Epoxy Cleaner. Once hardened, product can only be removed manually or mechanically.

LOCAL RESTRICTIONS

Note that as a result of specific local regulations the declared data and recommended uses for this product may vary from country to country. Consult the local Product Data Sheet for exact product data and uses.

LEGAL NOTES

The information, and in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any recommendations, or from any other advice offered. The information contained herein does not relieve the user of the products from testing them for the intended application and purpose. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request or may be downloaded from our website at: www.sika.ca

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