

PRODUCT DATA SHEET

Sikafloor®-220 W Conductive

WATER- BASED CONDUCTIVE PRIMER FOR ANTI-STATIC SIKAFLOOR COATINGS

PRODUCT DESCRIPTION

Sikafloor®-220 W Conductive is a two-component water based epoxy primer with high electrostatic conductivity. It is designed for use in combination with Sikafloor 200C ESD. when desiring resistance readings in the conductive range of $2.5 \times 10E4$ – $1.0 \times 10E6$ ohms. Sikafloor®-220 W Conductive is useful on a variety of substrates, including existing non-conductive coatings or resurfacers and epoxy primed concrete. Sikafloor 220W Conductive requires a concrete primer prior to application, such as Sikafloor 160, Sikafloor 161, Sikafloor 1610 or Sikafloor 2570.

USES

Sikafloor®-220 W Conductive may only be used by experienced professionals.

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

CHARACTERISTICS / ADVANTAGES

- Solvent free.
- Provides highly conductive ground plane.
- Easy application.
- Environmentally safe.
- Water based, solvent free and low odor
- Low VOC Content
- Consistent resistance measurements are obtained when testing in accordance with standard methods.
- Very low body voltage generation (BVG) values possible when used in conjunction with Sikafloor 200C ESD and when wearing heel straps C or SD footwear.

PRODUCT INFORMATION

| | | |
|---------------------------|-------------------------------|---|
| Packaging | Component A: | 0.26 gallon (0.97 L) fill in a 2 gallon pail |
| | Component B: | 1.23 gallon. (4.32 L) fill in a 2 gallon pail |
| | Components A+B: | 1.5 gallon. (5.3 L) |
| | (Ready to mix unit) | |
| Appearance / Color | Black | |
| Shelf Life | 1 years in unopened container | |

| | | |
|--|--------------------------------------|--------------|
| Storage Conditions | Store dry between 40–90 °F (4–32 °C) | |
| Solid Content | Approx. 40 % | |
| Volatile organic compound (VOC) content | 27 g/L | A+B Combined |

TECHNICAL INFORMATION

| | | |
|----------------------------------|--|---------------------------------------|
| Tensile Adhesion Strength | > 400 psi (2.76 MPa) (100 % concrete failure) | ASTM D4541 73 °F (23 °C) 50 % R.H. |
| Chemical Resistance | Please consult Sikafloor Technical Services. | |
| Electrostatic Behavior | < 10,000 ohms ANSI STM S7.1 @ 10 volts | |

APPLICATION INFORMATION

| | | | |
|--|---|----------------|----------------|
| Mixing Ratio | Part A : B = 17 : 83 (by volume) | | |
| Coverage | 4 to 6 mils wet film thickness per coat, at 401 ft ² to 267 ft ² (37 m ² to 25 m ²) per gallon (3.78 L). Product will not cure properly if applied at excessive thickness. | | |
| Pot Life | Material Temperature | Time | |
| | 68 °F (20 °C) | ~ 25 minutes | |
| Sikafloor®-220 W Conductive must be applied and distributed immediately after mixing. *Do not apply after indicated Pot Life is exceeded. End of Pot Life is not visible. | | | |
| Waiting / Recoat Times | Before applying Sikafloor ESD on Sikafloor®-220 W Conductive allow: | | |
| | Ambient & Substrate Temperature | Minimum | Maximum |
| | 50 °F (10 °C) | 24 hours | 6 days |
| | 68 °F (20 °C) | 12 hours | 3 days |
| | 86 °F (30 °C) | 8 hours | 2 days |

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

Notes on 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 1610 or Sikafloor 22NA 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 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.

Material Temperature: Precondition material for at least 24 hours between 65 °F to 75 °F (18 °C to 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: Maximum ambient humidity 80 % (during application and curing)

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.

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. Applied at 4-6 mils wet film thickness. Dry film thickness is 2 to 3.2 mils. Product will not cure properly if applied at excessive thickness and will result in incomplete cure and non-conductive surface.

Application: Apply the conductive primer to the prepared substrate which should be pore-free and pinhole-free. If necessary, apply an additional coat of a suitable material to ensure the substrate 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. Ensure there is no vapor drive at the time of application. Refer to ASTM D4263, may be used for a visual indication of vapor drive.
- In cases where the Sikafloor Primer coat is older than 2 days, the substrate must be abraded before application.
- Do not apply directly to concrete. Concrete must be primed with either Sikafloor 160, Sikafloor 161, Sikafloor 1610 and Sikafloor 2570 prior to application. Use of a Sikafloor primer and/or isolation layer prior to the application of Sikafloor 220W Conductive is required.
- Check electrical resistance of Sikafloor®-220 W Conductive after the required earth connection points have been installed and prior to the application of conductive/anti-static top coat.
- Avoid puddles on surface or depressions in substrate where material may accumulate.
- Always ensure good ventilation when using Sikafloor®-220 W Conductive in a confined space.
- Do not broadcast underlying layers with silica sand.
- Polymer concrete reinforcement fibers may interfere with conductive properties of Sikafloor ESD products. Consult Sikafloor Technical Services before applying to fiber reinforced substrates.

- Beware of sanding or screening cured Sikafloor 220 W ESD primer. Dust is highly conductive and may damage sensitive electrical/electronic equipment and computers.
- 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.

APPLICATION INSTRUCTIONS

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.

Apply Sikafloor®-220 W Conductive only on primed smooth concrete and screed surfaces. Priming coat must be thoroughly cleaned. In cases where the maximum permissible waiting time between priming and Sikafloor®-220 W Conductive has exceeded 48 hours / 68 °F (20 °C), the surface must be roughened mechanically, e.g. abrading to a dull finish, before applying the conductive coat.

Do not broadcast quartz sand or other aggregate into primer coat with because this will interfere with the performance of subsequent conductive coat.

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 or 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. Sikafloor 220W Conductive requires a smooth, defect free, surface. Any pockets, dips, or other defect where the Sikafloor®-220 W Conductive may accumulate in excess of the recommended wet film thickness must be repaired prior to application.

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 seal 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 (especially the conductive primer if a conductive system is being installed) 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®-220 W Conductive 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®-220 W Conductive or Sikafloor 200 ESD and Sikafloor 340 ESD. 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 220W Conductive). 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 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. Empty Component B into Component A container. Mix both components thoroughly for 3 min using a low-speed drill (300–400 rpm) to minimize entrapping air. Use an Exomixer or Jiffy type mixing paddle (recommended models). During the mixing operation scrape down the sides and bottom of the pail with a flat or straight edge trowel at least once to ensure thorough mixing. Upon completion of mixing, Sikafloor 220W Conductive should be a uniform color.

Do not mix more material than can be applied within the working time limits (i.e. Pot Life) at the actual field temperature. Sikafloor®-220 W Conductive must be placed and distributed on the application surface immediately after mixing.

Note: Only start application of Sikafloor®-220 W Conductive after the overall priming coat has dried tack-free. Otherwise there is a risk of wrinkling or impairing of the conductive properties. Electrodes must be installed before the application of Sikafloor®-220 W Conductive.

APPLICATION

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The floor should be divided into sections (at expansion joints or doorways when possible) that can be completed without stopping. When ending a section, tape it off to form a clean edge for an adjacent section. The Sikafloor®-220 W Conductive must be applied with a 3/8" nap roller and roller trays. 18 inch roller assemblies and trays are preferred. The roller should be wet in the tray and then the excess coating is removed by lightly rolling in the tray so as to avoid drips. Then apply 3 pairs of 6 - 8 foot long paths on to the floor. Then spread the material with roller passes perpendicular to the paths of coating. It is extremely important to apply the coating at a rate of 4 - 6 mils to achieve proper appearance, texture, and color development, and consistent ESD properties. If areas are too thick, the coating may be 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 color variations.

When Sikafloor®-220 W Conductive primer is used in conjunction with Sikafloor 200C ESD/Sikafloor 700C ESD, test the primed surface for conductivity prior to the application of Sikafloor 200C ESD. A value of $< 10 \times 10^3$ ohms per ANSI/ESD S7.1/ASTM F-150 must be achieved.

CAUTION: Excessive application thickness will result in "skinning over" which will result in soft, uncured product on the floor and unacceptable conductivity readings. Do not exceed recommended application thickness. Beware of pockets, "bug holes" or other depressions in the concrete surface where Sikafloor 220W may accumulate during application. Examine cured Sikafloor 220W surface for non-uniform appearance which may indicate areas where the product was applied in excessive thickness. These must be removed, prepared again and recoated prior to application of the top coat. Properly applied Sikafloor 220W primer will exhibit a uniform dull black finish.

CLEANING OF TOOLS

Clean all tools and application equipment with water immediately after use. Hardened and/or cured material can only be removed mechanically.

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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