BUILDING TRUST
CONSTRUIRE LA CONFIANCE

PRODUCT DATA SHEET

Sikafloor®-220 W Conductive

WATER-BASE EPOXY, INTERMEDIATE CONDUCTIVE PRIMER FOR SIKAFLOOR® ESD SYSTEMS

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, Sikafloor®-260 ESD and Sikafloor®-270 ESD electrostatic conductive coating systems. Sikafloor®-220 W Conductive will impart static conductive resistance readings when applied over new or existing concrete substrates or existing epoxy floors that have been primed with an adhesion and isolation layer of Sikafloor®-156CA, Sikafloor®-1610 or Sikafloor®-261CA.

WHERE TO USE

Industries currently using these coatings are:
- Electronics
- Data Processing
- Military/Aerospace
- Photographic, graphic arts
- Hazardous industries (dust or explosion hazards)

CHARACTERISTICS / ADVANTAGES

- Consistent resistance measurements are obtained when testing in accordance with standard methods.
- Provides a highly conductive ground plane.
- Does not depend on relative humidity for conductive properties.
- Maintains electrical conductivity throughout the entire thickness of the system.
- Water-based, solvent-free, very low VOC content.
- Low odour formulation suitable for application in occupied facilities.

ENVIRONMENTAL INFORMATION

- 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

Packaging	Component A	0.98 L (0.26 US gal.)
	Component B	4.31 L (1.14 US gal.)
	Components A+B (mixed unit)	**5.29 L (1.4 US gal.) unit**
Appearance / Colour	Black	
Shelf Life	Part A: 12 months when stored in original, unopened packaging. Part B: 6 months when stored in original, unopened packaging.	

Storage Conditions	Store dry at temperatures between 5 °C to 32 °C (41 °F to 89 °F). Protect from freezing. If frozen, discard.
Solid content	~40 %
Volatile organic compound (VOC) content	~27 g/L
CSC MasterFormat®	**09 67 13.33 CONDUCTIVE ELASTOMERIC LIQUID FLOORING**

TECHNICAL INFORMATION

Pull-Off Strength	> 2.76 MPa (> 400 psi) concrete failure	(ASTM D7234)
Chemical Resistance	Consult Sikafloor Technical Services.	
Electrostatic Behaviour	< 3,000 ohms (< 3.0 x 10^3 ohms)	(ANSI/ESD STM S7.1 / ASTM F150 @ 10 volts)

APPLICATION INFORMATION

Mixing Ratio	A:B= 1:4.57 by volume (mix full units only)
Consumption	~6.6 m^2/L to ~9.8 m^2/L (~267 ft^2/US gal. to ~401 ft^2/ US gal.) 4 mil to 6 mil w.f.t. **NOTE:** Do not exceed 6 mil. Product will not cure properly 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.
Product Temperature	Minimum 18 °C (65 °F) Maximum 30 °C (86 °F)
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 workabitity and slower cure rates.
Relative Air Humidity	Maximum 75 % (during application and curing). High humidity will result in extended cure time and water will be retained in the film reducing ultimate coating performance.
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 (86 °F)
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 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. 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®. 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. **IMPORTANT:** Do not apply Sikafloor®-220 W Conductive directly onto concrete substrates. Use of a Sikafloor® adhesion and isolation layer primer are required prior to the application of Sikafloor®-220 W Conductive.
Pot Life	~25 minutes at 20 °C (68 °F) **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.
Waiting Time / Overcoating	Before applying Sikafloor® ESD body coat over Sikafloor®-220 W Conductive.

Ambient & Substrate Temperature	Minimum	Maximum
10 °C (50 °F)	~24 hours	~6 days
20 °C (68 °F)	~12 hours	~3 days
30 °C (86 °F)	~8 hours	~2 days

Curing times will vary according to air and substrate temperature and relative humidity.
Water-borne products require moisture to evaporate from the film to cure to full properties. Provide adequate fresh air ventilation to remove the excess moisture from the curing product.
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.

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.

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 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 Sika Canada before applying to fibre-reinforced substrates.
- Do not broadcast underlying layers with silica sand.
- Typically not recommended for exterior slabs on grade where freeze/thaw conditions may exist.
- Do not apply to substrates exposed to extreme thermal shock.
- 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. that may result in surface imperfections and other defects.
- Beware that dust containment is required when sanding or screening cured Sikafloor®-220 W Conductive conductive primer. The dust is highly conductive and may damage sensitive electrical/electronic equipment and computers.
- Do not broadcast underlying layers with silica sand.

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.

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'' marks as they 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 contaminates 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 test patch 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 = 1:4.57 by volume (mix full units only)
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.

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 at low speed (300 - 400 rpm), to minimize air entrapment, using a drill fitted with an Exomixer® or Jiffy type mixing paddle (recommended model) suited to the volume of the mixing vessel. 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 a Sikafloor® epoxy adhesion and isolation layer primer on concrete substrates and on existing ESD or epoxy coatings is required. Prime with either Sikafloor®-156CA, Sikafloor®-1610 or Sikafloor® -261CA. 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® 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®-220 W Conductive conductive primer .
Sikafloor®-220 W Conductive 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 m^2 (1,000 ft^2) of flooring should be established, with a minimum of two (2) ground connections for any isolated area less than 93 m^2 (1,000 ft^2) 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®-220 W Conductive cannot be expected to maintain integrity over 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 100 mm (4 in) portion of the copper tape is adhered to the cured adhesion and isolation layer primer directly beneath the first coat of Sikafloor®-220 W Conductive 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®-220 W Conductive after the selected adhesion and isolation layer epoxy 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®-220 W Conductive. The floor should be divided into sections (at expansion joints or doorways when possible) that can be completed without interruption. When ending a section, tape it off to form a uniform, straight and clean edge for an adjacent section.

Mix and apply Sikafloor®-220 W Conductive by brush and 10 mm (3/8 in) nap roller and roller trays; 450 mm (18 in) roller assemblies and trays are preferred. The roller should be wet in the tray well, then remove excess coating by lightly rolling in the upper tray slope area to spread coating evenly on the roller to avoid drips. Apply 3 pairs of 1.80-2.40 m (6-8 ft) 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 mil to achieve proper appearance, texture, and color development, and consistent ESD properties. Properly applied Sikafloor®-220 W Conductive will exhibit a uniform dull black finish.

NOTE: Avoid puddling and excessive thickness. Areas applied too thick will “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®-220 W Conductive may accumulate during application. When applied too thin the coating will appear very flat in sheen and may exhibit poor electrical properties. Examine the cured Sikafloor®-220 W Conductive surface for non-uniform appearance which may indicate areas where the product was applied in excessive thickness or too thin. These areas must be removed, prepared again and recoated prior to application of the selected Sikafloor® ESD body coat. Test the applied Sikafloor®-220 W Conductive for conductivity prior to the application of the selected Sikafloor® ESD body coat. A value of < 3.0 X 10^3 ohms should be achieved as per ANSI/ESD S7.1 or ASTM F-150. Deficient areas must be removed, prepared again and recoated prior to application of the selected Sikafloor® ESD body coat.

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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