BUILDING TRUST

SYSTEM DATA SHEET

Sikafloor® MultiDur ES-46 ESD

Smooth, Low-VOC Epoxy and Polyurethane ESD Flooring System

PRODUCT DESCRIPTION

Sikafloor® MultiDur ES-46 ESD is an epoxy and polyurethane combination ESD Flooring System. The System is designed to dissipate electrostatic charges (ESD) and protect personnel and sensitive equipment in electrostatically protected areas (EPA).

USES

Sikafloor® MultiDur ES-46 ESD may only be used by experienced professionals.

Sikafloor® MultiDur ES-46 ESD is used in industrial buildings such as:

- Pharmaceutical institutions
- Automotive factories and assembly lines
- Electronic facilities and data centres
- Microbiology and microchemistry production areas

NOTE: The System may only be used for interior applications.

CHARACTERISTICS / ADVANTAGES

- Low VOC emissions.
- Good resistance to UV exposure.
- Good yellowing resistance.
- Easy to apply.
- Low maintenance.
- Good resistance to specific chemicals.
- Conforms to the requirements of ANSI/ESD S20.20 and IEC 61340-5-1.
- Easy to refurbish, top coat can be recoated.

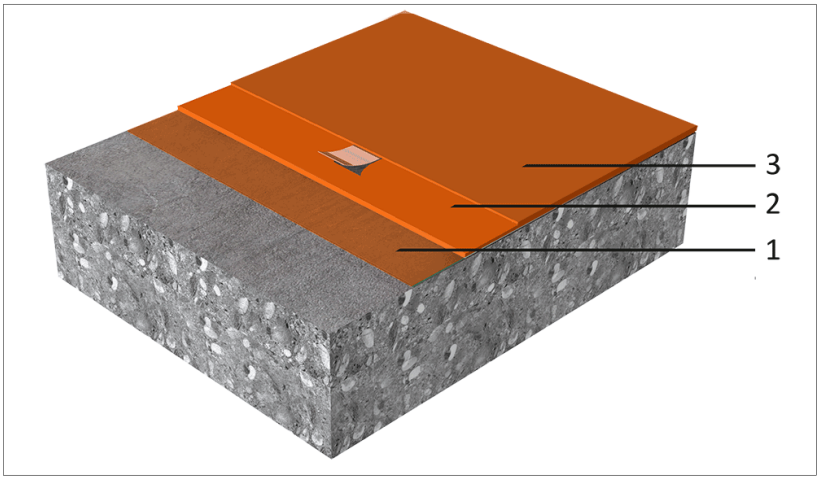
APPROVALS / STANDARDS

- Fire classification report, EN 13501-1, Ghent University, Report No. CR 20-1151.

SYSTEM INFORMATION

System Structure

Sikafloor® MultiDur ES-46 ESD



Layer	Product
1. Primer	Sikafloor®-150/-151/1590
2. Base Coat + Earthing Connection	Sikafloor®-263 SL N/-264 N + Sika® Earthing Kit
3. ESD Top Coat	Sikafloor®-305 W ESD

NOTE: The System structure layers as described in the table must not be changed.

Composition	Base Coat	Epoxy
	ESD Top Coat	Water-based polyurethane
Appearance	Smooth matt finish	
Nominal thickness	~1,5 to 2,0 mm	

TECHNICAL INFORMATION

Tensile adhesion strength	> 1,5 N/mm²	(ISO 4624)
Reaction to Fire	Reaction to Fire Class Bfl-s1	(EN 13501-1)

Electrostatic Behaviour

Resistance to Ground	$R_G < 10^9\ \Omega$	(IEC 61340-4-1)
Typical Average Resistance to Ground	$R_G < 10^5$–$10^6\ \Omega$	
Body Voltage Generation	< 100 V	(IEC 61340-4-5)
System Resistance	$R_G < 10^9\ \Omega$	

ESD MEASUREMENT CONDITIONS AND SPECIFICATIONS
All measurement values for the System stated in the System Data Sheet (except those referring to proof statements) were measured using the following equipment and ambient conditions:

Condition or Equipment	Specification
Size of ESD-footwear	42 (EU) (UK: 8; US: 8.5)
Test person weight	90 kg
Ambient conditions	+23 °C and 50 % relative humidity
Measuring device for measuring resistance to ground	Metriso 2000 or 3000 (Warmbier) or comparable
Surface resistance probe	Carbon Rubber Electrode. Weight: 2.50 kg
Rubber pad hardness	Shore A (60 ±10)
Measuring device for measuring body voltage generation	Walking Test Kit WT 5000 (Warmbier) or comparable

IMPORTANT
ESD footwear requirements
The ESD shoes used in the EPA must have a resistance of < 5 MOhm according to IEC 61340-4-3 at climate class 1 (12 % relative humidity and +23 °C). In order to achieve charges of < 30 volts of human body charge during the walking test (at 12 % relative humidity and +23 °C), we recommend using the following ESD shoes: Weeger ESD clog, art. 48512-30 (www.schuh-weeger.de).
NOTE: Measurement results can be affected by ESD clothing, ambient conditions, measurement equipment, cleanliness of the floor and the test personnel.

APPLICATION INFORMATION

Consumption

Layer	Product	Consumption
1. Primer	Sikafloor®-150/-151/1590	1 to 2 × ~ 0,3 to 0,5 kg/m²
2. Levelling (if required)	Sikafloor®-150/-151 levelling mortar	Refer to PDS of Sikafloor®-150/-151
3. Base Coat	Sikafloor®-263 SL N /-264 N filled with quartz sand F34	~1,9 to 2,7 kg/m² Binder + quartz sand F 34: 1:0,6 to 1:1 pbw (depending on the air temperature the filling grade varies)
4. Earthing Connection	Sika® Earthing Kit	1 earthing point per ~200 to 300 m². 2 per room minimum
5. ESD Coating	Sikafloor®-305 W ESD	1 to 2 × 0,18 to 0,2 kg/m²/layer

NOTE: These figures are theoretical and do not allow for any additional material due to surface porosity, surface profile, variations in level and wastage, etc.
NOTE: When used in high wear conditions (e.g. with castor chairs), a second layer of Sikafloor®-305 W ESD improves the mechanical properties of the final coating.

Product Temperature

+10 °C minimum / +30 °C maximum

Ambient Air Temperature	+10 °C minimum / +30 °C maximum
Relative Air Humidity	During curing the humidity must not exceed 75 %. There must be a sufficient supply of fresh air or a dehumidifier to remove excess moisture from cured water based products.
Dew Point	Beware of condensation. The substrate and uncured applied floor material must be at least +3 °C above dew point to reduce the risk of condensation or blooming on the surface of the applied product.
Substrate Temperature	+10 °C minimum / +30 °C maximum
Substrate Moisture Content	≤ 4 % parts by weight. The following test methods can be used: Sika®-Tramex meter, CM-measurement or oven-dry-method. No rising moisture according to ASTM (polyethylene-sheet).
Waiting Time / Overcoating	When using Sikafloor®-1590, refer to the individual Product Data Sheet for specific information on waiting time to overcoating. Before applying Sikafloor®-263 SL N /-264 N on Sikafloor®-150/-151 allow:

Substrate Temperature	Minimum	Maximum
+10 °C	24 hours	4 days
+20 °C	12 hours	2 days
+30 °C	8 hours	1 days

Before applying Sikafloor®-305 W ESD on Sikafloor®-263 SL N /-264 N allow:

Substrate Temperature	Minimum	Maximum
+10 °C	36 hours	7 days
+20 °C	24 hours	5 days
+30 °C	16 hours	3 days

Before applying Sikafloor®-305 W ESD on Sikafloor®-305 W ESD allow:

Substrate Temperature	Minimum	Maximum
+10 °C	48 hours	10 days
+20 °C	24 hours	8 days
+30 °C	16 hours	7 days

Times are approximate and will be affected by changing ambient conditions particularly temperature and relative humidity.

Applied Product Ready for Use

Temperature	Foot Traffic	Light Traffic	Full Cure
+10 °C	~48 hours	~5 days	~10 days
+20 °C	~24 hours	~3 days	~8 days
+30 °C	~16 hours	~2 days	~7 days

NOTE: Times apply when the last layer of the System has been applied. Times are affected by changing ambient conditions, particularly temperature and relative humidity.

VALUE BASE

All technical data stated in this Product Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

FURTHER DOCUMENTS

- Sika® Method Statement: Sikafloor®-Cleaning Regime.
- Sika® Method Statement: Mixing and Applications of Flooring Systems.
- Sika® Method Statement: Evaluation and Preparation of Surfaces for Flooring Systems.
- Sika® Method Statement: Sikafloor®-305 W ESD.
- Individual Product Data Sheets within the Flooring System.

LIMITATIONS

- Epoxy surfaces must be abraded (e.g. with a 3M™ Brown Stripper Pad) in combination with low speed automatic scrubbers or rotary floor machines (175–600 rpm) to ensure a optimum adhesion of Sikafloor®-305 W ESD.
- Do not apply Sikafloor® MultiDur ES-46 ESD on substrates with rising moisture.
- After application, all the products must be protected from damp, condensation and water for at least 24 hours.
- Uncured material reacts in contact with water (foaming).
- During application care must be taken that no sweat falls onto the fresh Sikafloor® products. Wear head and wrist bands.

- The incorrect assessment and treatment of cracks may lead to a reduced service life and reflective cracking.
- Sikafloor®-305 W ESD must be diluted with 10 % water.
- Apply Sikafloor®-305 W ESD only to the tack-free surface of Sikafloor®-263 SL N/-264 N resin.
- Ensure adequate ventilation during application and drying especially at temperatures less than +13 °C, otherwise the reaction and drying processes may be affected.
- When applying Sikafloor®-305 W ESD, lower consumption can cause roller marks, gloss differences and irregular surface structure. Higher consumption results in water retention and can cause pigment floatation as well as unsatisfactory conductivity.
- If the floor is exposed to chemical and / or mechanical loads, the conductivity must be checked regularly. If necessary to maintain the specified conductivity, Sikafloor®-305 W ESD must be refreshed. This must be coordinated with the authorised ESD-representative or equivalent.
- For exact colour matching, ensure the Sikafloor® MultiDur ES-46 ESD in each area is applied from the same control batch numbers.
- Do not apply on substrates with a slope more than 1 %.
- Under certain conditions, underfloor heating or high ambient temperatures combined with high point loading, may lead to indentations in the resin.
- If temporary heating is required, do not use gas, oil, paraffin or other fossil fuel heaters, these produce large quantities of both CO_2 and H_2O water vapour, which may adversely affect the finish. For heating use only electric powered warm air blower systems.
- Sika® does not assume any liability for possible changes in the composition of the recommended cleaning and maintenance agents and their effects on the floor characteristics.
- Measurement results can be affected by ESD clothing, ambient conditions, measurement equipment, cleanliness of the floor and test personnel.

ECOLOGY, HEALTH AND 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.

DIRECTIVE 2004/42/CE - LIMITATION OF EMISSIONS OF VOC

According to the EU-Directive 2004/42, the maximum allowed content of VOC (Product category IIA / j type wb) is 140 g/l (Limit 2010) for the ready to use product.
The maximum content of Sikafloor-305 W ESD is < 140 g/l VOC for the ready to use product.

APPLICATION

The number of conductivity measurements is recommended in the table below:

Ready Applied Area	Number of Measurements
<10 m²	6 measurements
<100 m²	10 to 20 measurements
<1000 m²	50 measurements
< 5000 m²	100 measurements

NOTE: If values are lower / higher than required, additional measurements must be carried out, ~30 cm around the point where the faulty readings are located. If the re-measured values are in accordance with the requirements, the total area is acceptable.
NOTE: Installation of earthing points: Refer to Sika® Method Statement: Mixing and Applications of Flooring Systems.
NOTE: Numbers of earth connections per room: Minimum of 2 earthing points. The optimum number of earth connections depends on the local conditions and must be specified on available drawings or other contract documentation.

MAINTENANCE

CLEANING

Refer to Method Statement: Sikafloor®-Cleaning Regime.

LOCAL RESTRICTIONS

Please note that as a result of specific local regulations the performance of this product may vary from country to country. Please consult the local Product Data Sheet for the exact description of the application fields.

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 written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. 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.

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