

KLB-SYSTEM EPOXID

EP 238 ESD

ESD-conductive, resilient 2-component epoxy resin coating for stressed industrial areas for higher layer thicknesses of 4 to 5 mm

Packaging units

Article no.	Packaging	Content (kg)	Units/pallet
AK1444-30	Hobbock combo	30.00 kg	12



Product characteristics

Mixing ratio parts by weight	A : B = 4 : 1
Processing time	10 °C / 50 °F : 40 min. 20 °C / 68 °F : 20 min. 25 °C / 77 °F : 10 min.
Processing temperature	Minimum 10 °C / 50 °F (room and floor temperature)
Curing time (accessibility)	10 °C / 50 °F : 24 - 36 hrs. 20 °C / 68 °F : 14 - 18 hrs. 30 °C / 86 °F : 10 - 14 hrs.
Curing	2 - 3 days for mechanical load at 20 °C / 68 °F 7 days for chemical load at 20 °C / 68 °F
Further coatings	After 14 - 18 hours, but after 48 hours at the latest at 20 °C / 68 °F
Consumption	Approx. 6.5 – 8.0 kg/m² – Observe consumption quantities!
Layer thickness	4 - 5 mm
Packaging	Hobbock 30 kg (combo-packaging)
Addition of filling material	Not recommended
Colours	Approx. RAL 3009 (oxide red), approx. RAL 6011 (reseda green), approx. RAL 7030 (stone grey), approx. RAL 7035 (light grey) Due to the conductive setting, colour variations may occur for technical reasons!
Shelf life	12 months (originally sealed)

Product description

KLB-SYSTEM EPOXID EP 238 ESD is an electrically conductive, coloured self-levelling coating based on 2-component epoxy resin for use in production and storage areas with special ESD protection requirements. The coating is designed for higher layer thicknesses of 4 to 5 mm. This allows the creation of highly resilient coatings with good ESD conductivity. The coating is suitable for use in commercial and industrial areas, particularly in the fields of electronics, electrical engineering and mechanical engineering, but also in other areas with special ESD requirements, as well as in areas where EPA zones (= Electronic Protected Areas) are required. Applications extend to all areas where the prevention of static charges on equipment and persons is required.

KLB-SYSTEM EPOXID EP 238 ESD meets the ESD requirements of DIN EN 61340-5-1 in combination with suitable footwear. This includes compliance with the limit value for resistance to ground $\leq 10^9 \Omega$, the system resistance between person, shoe and floor $\leq 10^9 \Omega$, and the walking test $\leq 100 \text{ V}$.

KLB-SYSTEM EPOXID EP 238 ESD has good chemical resistance, e.g. to oils, greases, water, salt solutions and various diluted acids and diluted alkalis. Important information: Due to the conductive properties, there is only a limited selection of colours available for technical reasons. Please refer to the "Colours" in the table above.

Area of application

- Preferably in production and storage areas in the electrical/electronics industry for electrostatically dissipative coatings with increased ESD protection requirements (EPA zones).
- Electrically conductive, commercially used areas with increased load-bearing capacity, e.g. production areas, storage areas in many economic sectors.

Product features

- Total Solid according to GISCODE (Test method "Deutsche Bauchemie")
- extremely resistant to mechanical loading
- consistent to hydrolysis and saponification
- free of deleterious substances against varnish
- for increased demands on ESD protection
- good resistance to water and chemicals

Technical data

Viscosity - Component A+B	2500 - 3500	mPas	DIN EN ISO 3219 (23 °C / 73.4 °F)
Solid content	> 99	%	KLB method
Density - Component A+B	1,59	kg/l	DIN EN ISO 2811-2 (20 °C / 68 °F)
Water absorption	< 0,2	Gew.-%	DIN 53495
Shore-hardness D	70	N/mm ²	DIN 53505 (after 7 days)
Abrasion (Taber Abraser)	50	mg	ASTM D4060 (CS10/1000)
Resistance to ground	<10 ⁶	Ohm	DIN EN 61340-5-1
Walking Body Model	< 100	V	DIN EN 61340-5-1
Human-shoe-floor	< 10 ⁹	Ohm	DIN EN 61340-5-1

The values established in tests are average values. Deviations from the product specification may occur.

Tests

- Product is compliant with DIN EN 13813: 2003-01.

Build-up of coats

- Check and prepare the substrate in accordance with requirements, e.g. by shot blasting.
- Prime with, for example, **EP 50**, consumption approx. 0.300 to 0.400 kg/m², or other recommended primers.
- Apply scratch coat with, for example, **EP 50** and **KLB-Mischsand 2/1**. Mixing ratio: 1.0 : 0.5 to 0.8 parts by weight. It must be ensured that the scratch coat achieves a level surface free of roughness. Consumption approx. 0.8 to 1.2 kg/m² mixture, depending on surface roughness.
- Apply copper strips for discharge to the earthing point in the intended grid pattern every 6 to 8 m, approx. 1 to 2 m into the room. Earthing connection by an electrician in accordance with VDE regulations.
- Roll out a defined cross-conductive layer of **EP 799 Ableitgrund**, consumption approx. 0.100 to 0.140 kg/m².
- Apply **EP 238 ESD** with a pin squeegee (set to 4 to 5 mm) at a consumption of approx. 6.5 to 8.0 kg/m², check consumption!

Substrate

The substrate to be coated must be level, dry, dust-free, sufficiently resistant to tensile and compressive forces, and free of weakly adhering components and shells. Substances that reduce adhesion, such as grease, oil and paint residues, must be removed beforehand using suitable measures. The instructions of the professional associations, e.g. BEB worksheets KH-0/U and KH-0/S, in their current version, as well as the instructions in the product information for the recommended KLB primers, such as **EP 50**, **EP 51 RAPID S** and **EP 52 Spezialgrund**, must be observed. The substrates to be coated must be prepared mechanically, preferably by shot blasting. The prepared surface must be primed carefully, thoroughly and without pores. Substrates are often difficult to assess in terms of the necessary pore-free condition, therefore a scratch coat is recommended for this purpose and also to smooth the substrate. The conductive coating must be applied within the specified layer thickness range, therefore careful substrate preparation and a sufficiently even substrate after scratch coating is necessary. If the substrate has not been primed to be non-porous, bubbles and pores may form in the coating due to air rising from the substrate. Existing unevenness may become visible on the surface. In case of doubt, a test area is recommended.

Mixing

In the case of combo packaging, the factory-weighed material is available in a working pack in exactly the right mixing ratio. The container for component A has sufficient volume to hold the entire quantity. Empty the hardener B completely into the resin container. Mixing is carried out mechanically with a slow-running stirrer (200 to 400 rpm) and should take 3 minutes until a homogeneous, streak-free mass is formed. To avoid mixing errors, it is recommended to always transfer the resin/hardener mixture to a clean container and mix again briefly ("re-potting").

Processing

Processing takes place immediately after mixing with the pen squeegee by applying an evenly thick layer to the prepared substrate. The pen squeegee should be guided in such a way that an even surface coverage is achieved. The layer thicknesses must be checked. The product is designed for optimum ventilation, but it is still advisable to roll it with a spiked roller to improve wetting of the substrate, optimise flow and remove air bubbles. Rolling with the spiked roller should be done after 10 to 15 minutes. To avoid streaks, always work "fresh on fresh" and define the work areas before starting work.

The floor and air temperature must not fall below 10 °C and the humidity must not be below 30% or above 75%. The temperature difference between the floor and room temperature should be less than 3 °C so that curing is not impaired. If a dew point situation occurs, normal drying cannot take place and curing problems and staining will occur. Water exposure should be avoided during the first 7 days. The curing times specified refer to 20 °C. At lower temperatures, the processing and curing times are extended, while at higher temperatures they are shortened. If the processing conditions are not adhered to, deviations in the technical properties of the end product (surface, load-bearing capacity and conductivity) may occur.

Cleaning

Use **VR 33** or **VR 24 thinner** to remove fresh contaminants and to clean tools immediately after use. Cured material can only be removed mechanically.

Separate cleaning and care recommendations are available for cleaning floor surfaces treated with KLB coatings and sealants.

Storage

Store in dry and frost-free conditions. Ideal storage temperature is between 10 - 20 °C / 50 - 68 °F. Bring to a suitable processing temperature before application. Tightly re-seal opened packages and use up the content as soon as possible.

Special remarks

The special cleaning recommendations for conductive coatings must be observed. The product is subject to the Hazardous Substances Ordinance, the Industrial Safety Ordinance and the transport regulations for dangerous goods. The necessary information is contained in the DIN safety data sheet. Observe the labelling information on the container label!

GISCODE: RE30

Indication of VOC-content:

(EG-Regulation 2004/42) Maximum Permissible Value 500 g/l (2010,II,j/lb): Ready-for-use product contains < 500 g/l VOC.

CE marking

	
KLB Kötztal Lacke + Beschichtungen GmbH Günztalstraße 25 D-89335 Ichenhausen	
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EP238ESD-V1-100919	
DIN EN 13813:2003-01	
Kunstharzestrichmörtel DIN EN 13813: SR-B1,5-AR0,5-IR10	
Brandverhalten	E ₁ -s1
Freisetzung korrosiver Substanzen	SR
Verschleißwiderstand BCA	AR 0,5
Haftzugfestigkeit	B 1,5
Schlagfestigkeit	IR 10



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