KLB-SYSTEM EPOXID
EP 202 EL+

Low-emission, electrically conductive, coloured 2-component epoxy resin coating for producing jointless floors in EX areas and cleanrooms

Packaging units

Article no.	Packaging	Content (kg)	Units/pallet
AK1248-50	Bucket combo	12.00 kg	30
AK1248-30	Hobbock combo	30.00 kg	12

Product characteristics

Mixing ratio parts by weight	A : B = 5 : 1
Mixing ratio parts by volume	A : B = 100 : 35
Processing time	10 °C / 50 °F : 50 min. 20 °C / 68 °F : 30 min. 30 °C / 86 °F : 20 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 until mechanical load at 20 °C / 68 °F 7 days until 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	1.9 - 2.4 kg/m²
Layer thickness	Approx. 1.3 - 1.5 mm
Colours	KLB standard colours – see chart. Other colours upon request!
Shelf life	6 months (originally sealed) – **Protect from frost!**

Product description

KLB-SYSTEM EPOXID EP 202 EL+ is a low-emission, electrically conductive self-levelling coating, based on a 2-component epoxy resin. **KLB-SYSTEM EPOXID EP 202 EL+** belongs to the new generation of environmentally friendly and low-emission epoxy resin coatings, which are formulated without the use of solvents and volatile components.

KLB-SYSTEM EPOXID EP 202 EL + is certified according to the “Indoor Air Comfort Gold” and meets the requirements for a sustainable building certification according to DGNB, LEED or BREEAM. The “Indoor Air Comfort” product certification sets the highest requirements for the emission of volatile organic compounds and meets not only the German requirements of AgBB or ABG, but also the emissions regulations of many other European countries. The conductive coatings can be used in recreation and clean rooms with particular requirements on emissions.

KLB-SYSTEM EPOXID EP 202 Clean EL+ is an alternative 2-component epoxy resin coating which is designed to offer preventive protection against bacterial contamination. This assists the production of permanently hygienic surfaces, even between the necessary cleaning and disinfection cycles (e.g. in cleanrooms).

The coatings can be processed in the same way as existing conductive coatings. The self-levelling and smoothing capabilities are very good. Floating and streaking due to conductive components are minimized.

The cured coating is hard, wear-resistant, and suitable to be used in significant industries and commercial areas, where an electrically conductive floor is required.

KLB-SYSTEM EPOXID EP 202 EL+ can therefore be used in pharmaceutical, as well as in the biotechnology and biochemistry industry. In addition to easy cleanability, a good disinfection capability is also required there. The coating is also resistant to hydrogen peroxide fumigation, used for biological decontamination of surfaces.

KLB-SYSTEM EPOXID EP 202 EL+ has a good resistance to many chemicals, like water, salts, saline solutions, alkalis and bases, grease, oil as well as diluted mineral acids like salt and sulfuric acid. A conditional resistance is given for solvents, gasoline, etc; a moderate resistance exists for concentrated mineral acids, for organic acids and chlorinated hydrocarbons. For chemical resistance requirements, please ask for a separate consultation.

Note: slight colour alterations may be possible due to technical reasons.

Area of application

- Low-emission and electrically conductive coating for recreation rooms according to the principles of the AgBB-scheme.
- For areas with special requirements to the explosion protection, to prevent electrostatic discharge.
- In the pharmaceutical industry, biotechnology and biochemistry for surfaces decontaminated with hydrogen peroxide.
- For electrically conductive, commercially used areas with medium mechanical load, e.g. production or storage areas in many economic sectors.
- In the electronic and electro-technical industry also for ESD areas, when used in combination with special sealers **PU 813 EL+/ESD, PU 813 EL+/ESD-R10.**

Product features

- tested, low-emission quality
- Total Solid according to GISCODE (Test method "Deutsche Bauchemie")
- good processing properties
- electrically conductive
- even surface
- available in light colours
- resistant to abrasion and wear
- good resistance to water and chemicals

Technical data

Viscosity - Component A+B	1500 - 2000	mPas	DIN EN ISO 3219 (23 °C / 73.4 °F)
Density - Component A+B	1.60	kg/l	DIN EN ISO 2811-2 (23 °C / 73.4 °F)
Bending tensile strength	60	N/mm²	DIN EN 196/1
Compressive strength	78	N/mm²	DIN EN 196/1
Shore-hardness D	81	-	DIN 53505 (after 7 days)
Abrasion (Taber Abraser)	47	mg	ASTM D4060 (CS10/1000)
Electrical resistance	(in combination with EP 799 Ableitgrund) Approx. 10^6	Ohm	DIN IEC 61340-5-1/2 DIN EN 61340-4-1

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

Included in systems

- System F8 - KLB CONDUCTIVE CLEAN EP EX

Please visit our website to get more information about our KLB systems: www.klb-koetztal.com

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Tests

External test certificates are available:

- Classification of the fire behavior according to DIN EN 13501-01:2010-01: B_{fl}-s1.
- Suitable for use in foodstuffs according to § 31 para. 1, German Food and Feed Code (german law LFGB).
- Certified as low-emission according to Eurofins "Indoor Air Comfort Gold". Compliant with AgBB and suitable for recreation rooms.
- Slip-resistance grade R9 and R10 possible, according to DIN 51130 and BGR 181.
- Cleanroom-suitable materials according to ISO 14644-1; VDI 2083 Part 17: ISO 4.
- LABS-compliant according to PV 3.10.7. (VW test)
- Product is compliant with DIN EN 13813: 2003-01

Note:

Please ask for the tested system build-up!

Build-up of coats

- Test and prepare the substrate preferably by shot-blasting.
- Prime with **EP 57**, consumption approx. 0.3 - 0.4 kg/m². Apply with a rubber squeegee or a roller.
- Apply a scratch coat for an even surface, e.g. with **EP 57** and mixed sand **KLB-Mischsand 2/1**. Mixing ratio 1 : 0.5 - 0.8 parts by weight, consumption approx. 0.6 - 1.0 kg/m².
- Glue in copper bands for discharge in an imagined grid-pattern in place into the room - every 6 - 8 m, up to 1 - 2 m. Earth connection by an electrician based on VDE regulations.
- Apply a cross-conductible coat with **EP 799 Ableitgrund**, consumption approx. 0.100 - 0.140 kg/m².
- Apply the conductive coat **EP 202 EL+** with a trowel, e.g. **Toothed blade RS 4** or Pajarito 48, consumption approx. 1.9 - 2.4 kg/m².
- If required: blow the structuring agent **Strukturgranulat RQX 9** or **RQX 10** with an airspray gun, consumption approx. 15 - 20 g/m² to increase the slip-resistance grade to R9 or R10.
- Optional: sealing with **PU 813 EL+/ESD** respectively **PU 813 EL+/ESD-R10** for producing a colour-stable top layer or for special ESD requirements. Consumption approx. 0.180 - 0.22 kg/m².

Substrate

The substrate to be coated must be even, dry, free of dust, sufficiently resistant to tension and compression as well as be free from weakly-bonded components or surfaces. Materials impairing adhesion such as grease, oil and paint residues should be removed with suitable measures. Observe the information issued by the trade associations, e.g. the most recent versions of BEB worksheets KH-0/U and KH-0/S as well as the notes provided in the product information for the recommended base coats, like **EP 57**, **EP 58** or **EP 53 Spezialgrund AgBB**. The surface strength must then be at least 1,5 N/mm². For concrete, moisture content must not exceed 4.5 CM-%, remaining residual humidity. The possibility of moisture ingress from the rear must be permanently excluded. Base coats may not be left open for more than 48 hours or must be scattered with quartz sand. The substrates to be coated should be prepared mechanically, preferably by shot-blasting. The prepared area must be saturated, pore-free and primed carefully. It is often difficult to judge the necessary pore-free condition of substrates. It is therefore recommended that a scratch coat be applied to smooth the surface. If the substrate has not been primed to be pore-free, bubbles and pores can develop in the coating due to air

rising from the substrate. Old substrates must be cleaned before any mechanical preparation. If old synthetic resin surfaces are being sealed, it is necessary to check that sufficient adhesion is achieved. If in doubt, we recommend processing a sample area. Reconstruction beyond the regular requirements demands further substrate testing, e.g. by conducting a tensile bonding test.

Conductive coatings must be applied in the required thickness, it is thus mandatory to prepare the substrate thoroughly.

Mixing

Combo-packaging will be supplied in the correctly measured mixing ratio. the package of Component A has sufficient volume to contain the entire packaging unit. Empty all of the hardener compound B into the resin. Blend with a slow speed mixer (200 - 400 r/pm) for at least 2 - 3 minutes until a homogeneous, streak-free compound forms. To prevent mixing errors, empty ("repot") the resin/hardener mixture into a clean container and mix it once again briefly.

Processing

Process the material immediately after mixing with a squeegee or toothed trowel (e.g. **Toothed blade RS4** or Pajarito 48) by pulling out an even layer on the prepared substrate. The product is adjusted for optimum deaeration, however, for conductive coatings, rolling with a spiked roller is mandatory to optimise the conductivity. This should be carried out time-delayed after approx. 10 - 15 minutes. In order to work seamlessly, always work “fresh-in-fresh” and define work areas before starting.

Floor and air temperature must not fall below 10 °C / 50 °F and humidity should not exceed 75 %. The difference in floor and room temperature must remain less than 3 °C / 3 K / 5.4 °F so as not to impede the curing process. If a dew-point situation arises, regular curing will not be possible with hardening problems (carbatmat formation) and spotting to occur. Exposure to water should be avoided during the first 7 days. The specified hardening times apply for 20 °C / 68 °F; temperatures below this require longer processing and curing times, while higher temperatures require shorter times. If working conditions are not complied with, the technical properties of the end product may deviate from those specified (surface and load capacity).

Cleaning

To remove fresh contamination and to clean tools, use **VR 24** or **VR 33** immediately. Hardened material can only be removed mechanically.

Separate cleaning and care recommendations are available for cleaning floors produced with KLB coatings and sealers.

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 product is regulated by the German Ordinance on Hazardous Substances (GefStoffV), the German Ordinance on Industrial Safety and Health (BetrSichV), and transport regulations for hazardous goods. The necessary information is contained in the DIN Safety Data Sheet. Observe all identification 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

CE

KLB Kötztal Lacke + Beschichtungen GmbH Günztalstraße 25 FRG-89335 Ichenhausen	
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EP202EL+/EP202CleanEL+-V1-012017	
DIN EN 13813:2003-01	
Synthetic resin screed mortar DIN EN 13813: SR-B1.5-AR0.5-IR10	
Fire behaviour	B_{fl}-s1
Emission of corrosive substances	SR
Wear resistance BCA	AR 0.5
Adhesive tensile strength	B 1.5
Impact resistance	IR 10

VOC content

The product complies with the high requirements to low VOC contents, as required for sustainable construction. Therefore, these values exceed by far the European Union directive 2004/42/EG (decopaint directive).

	Limit value	Actual content	
Decopaint Directive 2004/42/EG - Component A	< 500	7,4	g/l
Decopaint Directive 2004/42/EG - Component B	< 500	19,2	g/l
DGNB - Components A + B	< 3	0,63	%
Klima:aktiv - Components A + B	< 3	0,63	%
LEED - Components A + B	< 100	10,7	g/l
Minergie ECO ® - Components A + B	< 1(< 2)	0,63	%

(According to the Decopaint directive, single components are used for calculation. In the sustainable building rating systems, the mixture of both components in the correct mixing ratio is the determining factor.)

Please consider the latest version of this product information on our website.

KLB KÖTZTAL Lacke+Beschichtungen GmbH
Günztalstraße 25
89335 Ichenhausen, GERMANY
Phone +49 (0) 8223-96 92-0
Fax +49 (0) 8223-96 92-100
www.klb-koetztal.com
info@klb-koetztal.com