KLB KÖTZTAL
Lacke + Beschichtungen GmbH

# KLB-SYSTEM EPOXID
## EP 99 EL+

Electrically conductive, pigmented and fillable 2-component epoxy resin for producing slip-resistant RX coatings scattered with coloured sand

**Packaging units**


| Article no. | Packaging | Content (kg) | Units/pallet |
|---|---|---|---|
| AK2163-50 | Bucket combo | 10.00 kg | 30 |
| AK2163-30 | Hobbock combo | 30.00 kg | 12 |

**Product characteristics**

| | |
|---|---|
| Mixing ratio parts by weight | A : B = 2 : 1 |
| Mixing ratio parts by volume | A : B = 100 : 55 |
| Processing time | 10 °C / 50 °F : 55 min.<br>20 °C / 68 °F : 30 min.<br>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 - 30 hrs.<br>20 °C / 68 °F : 12 - 16 hrs.<br>30 °C / 86 °F : 8 - 12 hrs. |
| Curing | 2 - 3 days until mechanical load at 20 °C / 68 °F<br>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 | 0.75 - 0.95 kg/m² resin + 0.45 - 0.55 kg/m² mixed sand KLB-Mischsand 3/1 |
| Packaging | Bucket combo 10 kg, Hobbock combo 30 kg |
| Colours | Follow the recommendations in our coloured sand colour chart. Due to the conductive adjustment and for technical reasons, colour tone irregularities may appear. |
| Shelf life | 12 months (originally sealed) |

**Product description**

**KLB-SYSTEM EPOXID EP 99 EL+** is a solvent-free 2-component epoxy resin binding agent for producing electrically conductive and slip-resistant RX coatings which are scattered with coloured sand mixtures.

**KLB-SYSTEM EPOXID EP 99 EL+** is mixed on site with mixed sand **KLB-Mischsand 3/1** and applied over grain, then scattered with coloured sand **KLB-Colorsand CQS-47xx AS** and sealed with **KLB-SYSTEM POLYURETHAN PU 484.**

The cured coating is especially suitable for commercially or industrially used areas where an aesthetically pleasing, electrically conductive floor coating is required with a defined slip-resistance. Due to the characteristic look of the scatter coating, the floor is robust and not very susceptible to stains.

The electrically conductive coating can be used in many sectors such as those where an explosion protection is required, but also with demands on personal and ESD protection. Typical areas of application are laboratories, production and storage areas, floors in microelectronics areas, with ESD requirements for e.g. development, assembly and storage surfaces, areas of the pharmaceutical industry and medical technology and much more.

The hardened coating is very resilient to mechanical wear and resistant to a wide range of chemicals.

**KLB-SYSTEM EPOXID EP 99 EL+** is resistant to water, salts, saline solutions, alkalis and bases as well as to diluted mineral acids such as hydrochloric and sulphuric acid. Also to solvents such as petrol, fuels, greases, oils, etc. A conditional resistance is given for concentrated mineral acids, for organic acids such as formic acid, acetic acid and concentrated lactic acid, etc. For chemical resistance requirements, please ask for a separate consultation.

**Important note:** the use of certain cleaning and disinfection agents (acid or alkaline) may result in a loss of conductivity due to their reaction with **NQS 4700 AS** or **CQS-47xx AS**. Please contact KLB for advice on resistance before any first contact on the surface with cleaning agents or disinfectants.

The coating resin can be delivered in selected colour tones. Due to the conductive adjustment, colour tone irregularities may appear. Follow the colour recommendations in our coloured sand colour chart.

## Area of application

- System binding agent for high-quality, dissipative coatings scattered with coloured sand (RX coatings) for industrial use.
- For electrically conductive floors for personal, explosion and ESD protection.
- In predefined slip-resistance grades suitable for laboratory, pharmaceutical, production and storage areas, etc.
- In areas with special requirements to ESD protection, manufacturing areas of the electronics industry and many more.

## Product features

- electrically conductive
- very economical
- good filling capacity
- good resistance range
- consistent to hydrolysis and saponification
- Total Solid according to GISCODE (Test method "Deutsche Bauchemie")
- resistant to abrasion and wear

## Technical data

| | | | |
|---|---|---|---|
| Viscosity - Component A+B | Approx. 750 - 850 | mPas | DIN EN ISO 3219 (23 °C / 73.4 °F) |
| Solid content | 100 | % | KLB method |
| Density - Component A+B | Approx. 1.10 | kg/l | DIN EN ISO 2811-2 (20 °C / 68 °F) |
| Weight loss | Approx. 0.25 | % w/ w | after 28 days |
| Water absorption | < 0.2 | % w/ w | DIN 53495 |
| Bending tensile strength | Approx. 35 | N/ mm² | DIN EN 196/1 |
| Compressive strength | Approx. 80 | N/ mm² | DIN EN 196/1 |
| Shore-hardness D | Ca. 78 | - | DIN 53505 (after 7 days) |
| Abrasion (Taber Abraser) | Approx. 55 | mg | ASTM D4060 (CS10/1000) |
| Electrical resistance | Tested in the system with EP 799 Ableitgrund/ CQS-47xx AS/PU 484 | - | |
| Electrical resistance to ground | <10^6 | Ohm | DIN EN 61340-5-1 |
| Walking Body Model | < 100 | V | DIN EN 61340-5-1 |
| Person/footwear/flooring system | < 10^9 | Ohm | DIN EN 61340-5-1 |

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

## Included in systems

- System F4 - KLB CONDUCTIVE EP ESD RX

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

## Tests

The following external test certificates are available:

- Classification of the fire behavior according to DIN EN 13501-01:2010-01: $B_{fl}$-s1.
- Slip-resistant scattered coating in R12 V4 possible, according to DIN EN 16165 and DIN 51130.
- Product is compliant with DIN EN 13813: 2003-01.

**Note:**

Please ask for the tested system build-up!

## Build-up of coats

RX coating in R10/R11 slip-resistance

- Prepare the substrate, preferably by shot blasting.
- Optionally: prime with the recommended KLB base coats, like **EP 50, EP 51 RAPID S, EP 52 Spezialgrund**, consumption approx. 0.3 - 0.4 kg/m², depending on the substrate.
- Apply a levelling base layer for reducing the roughness depths using a primer, e.g. **EP 50** and mixed sand **KLB-Mischsand 3/1**. Mixing ratio: approx. 1.0 : 1.2 to 1.5 parts by weight, consumption of the mixture approx. 1.2 to 1.5 kg/m², then re-roll with a velours roller (8 mm). For increased roughness depths, it is possible to add 0.3 - 0.5% of reinforcement fibre **Armierungsfaser VA 1004** (based on **EP 50**). If required, increase the consumption of the mixture. Scatter the entire surface with quartz sand 0.3/0.8 mm, consumption approx. 2.5 - 3.5 kg. When using **EP 52 Spezialgrund**, the base layer must be adapted to a mixing ratio of binding agent : mixed sand **Mischsand 3/1** of 1 : 1 with the same consumption.

- If necessary, apply further levelling base layers. Each of them must be scattered with quartz sand.
- After hardening, proceed with an intermediate grinding based on the instructions, then vacuum the surface. Grinding can be done using a single disc machine and diamond paper grit 16, further grinding with diamond paper grit 24. This method is less abrasive, but requires repeated grinding in crosswise motion. Alternatively, a suitable concrete grinding machine (e.g. MKS Funke - PDG 5000) with an aggressive diamond tool (XC Wing Blue K2.5 or Titan Dry Hybrid K60 or K120) can be used. Care must be taken to ensure rapid and even removal so that the substrate remains free of grooves.
- Apply the KLB-Kupferbänder copper strips for discharge every 6-8 m in a grid pattern, approx. 1-2 m from the earthing points into the room. Approx. every 80 to 100 m² into the room. If necessary, the surface must be grinded and vacuumed off beforehand.
- Apply the conductive coat **EP 799 Ableitgrund** with a nylon roller (pile height 8 mm), consumption approx. 0.210 - 0.250 kg/m².
- Apply the base layer with **EP 99 EL+** and mixed sand **KLB-Mischsand 3/1** in a mixing ratio of 1.0 : 0.6 parts by weight, consumption of the mixture approx. 1.2 to 1.5 kg/m², for subsequent scattering with dissipative coloured sand **CQS-47xx AS**. The compound is pulled over grain with the smoothing trowel under light pressure.
- After approx. 10 to 20 minutes, scatter in excess with the antistatic coloured sand **CQS-47xx AS**, consumption approx. 2.5 - 3.5 kg/m². After curing (normally within the next day), sweep off the excess carefully until no more grains of sand come loose.
- After hardening follows an optional fine grinding with a single disc machine and grit 16 and grit 24. The slip resistance can be reduced from R11 (**CQS 4701 - 4707 AS**) to R10 by repeated grinding in crosswise motion. Here, it is important to ensure that the grain is not completely grinded off and the binder matrix not exposed. After vacuuming, the surface can be sealed.
- **Important note:** it is essential to work carefully, with special care being taken to remove and vacuum off all excess sand and abrasive dust. Clean and light-coloured shoes must be worn on the area. Work clothes must be clean as well. Aesthetically pleasing surfaces can only be produced with the utmost care.
- Apply the top sealer onto the completely cleaned surface with **PU 484** using a **hard rubber squeegee of 23 cm**, then distribute evenly in a consumption of approx. 0.5 to 0.7 kg/m². If necessary, reduce the application quantity for obtaining a higher slip resistance! Seek advice if in doubt.
- If **NQS 4700 AS** is used for scattering instead of **CQS-47xx AS**, please proceed in the same way. Apply a coloured top sealer with **EP 296 Kopfsiegel** or **PU 5580**, consumption approx. 0.5 - 0.65 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 reducing adhesion, such as grease, oil and paint residues, must first 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 KLB base coats. 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. If in doubt, we recommend processing a sample area.

**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 package. 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 entire resin/ hardener mixture into a clean container and mix it once again briefly or blend the

additions in a compulsory mixer. Partial quantities need to be weighed out in the right mixing ratio after having stirred up the single components.

Addition of quartz sand

The addition is done after mixing components A and B. Only mixed sand **KLB-Mischsand 3/1** is recommended for the production of RX coverings.
Mixing ratio:

**EP 99 EL+** : mixed sand **Mischsand 3/1** = 1 : 0.6 parts by weight

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**Processing**

Process the material immediately after mixing with the standing squeegee or smoothing trowel by pulling out an even layer over grain. In order to work seamlessly, always work “fresh-in-fresh” and define work areas before starting. Do not scatter too early, the optimimum time is at 20 °C / 68 °F after 20 - 25 minutes so that the resin layer can level itself sufficiently. If necessary, a velours roller can be used for even distribution.

Floor and air temperature must not fall below 10 °C / 50 °F and humidity must not exceed 75 %. The material must be at room temperature during processing. The difference between the dew-point and the substrate temperature must be greater than 3 °C / 3 K / 5.4 °F during processing and hardening. If a dew-point situation arises, regular curing will not be possible with hardening problems and spotting to occur.

Exposure to water and chemicals should be avoided during the first 7 days. The specified curing 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.

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**Cleaning**

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

**Important note:** separate cleaning and care recommendations are available for cleaning floors produced with KLB coatings and sealers. We recommend to not use any acidic or alkaline cleaners for cleaning **system F4**.

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**Storage**

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

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**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: RE90

**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.

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**CE marking**

| CE |
|---|
| **KLB Kötztal Lacke + Beschichtungen GmbH<br>Günztalstraße 25<br>FRG-89335 Ichenhausen** |
| **20** |
| EP99EL+-V1-092020 |
| **DIN EN 13813:2003-01** |
| Synthetic resin screed mortar<br>DIN EN 13813: SR-B1.5-AR0.5-IR5 |

| | |
|---|---|
| Fire behaviour | $E_{fl}$-s1 |
| Emission of corrosive substances | SR |
| Wear resistance BCA | AR 0.5 |
| Adhesive tensile strength | B 1.5 |
| Impact resistance | IR 5 |

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



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Colour chart

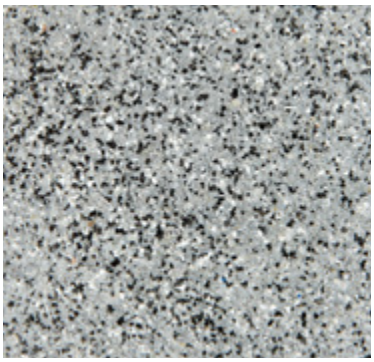
KLB KÖTZTAL

# KLB-Colorsand antistatic CQS-47xx AS

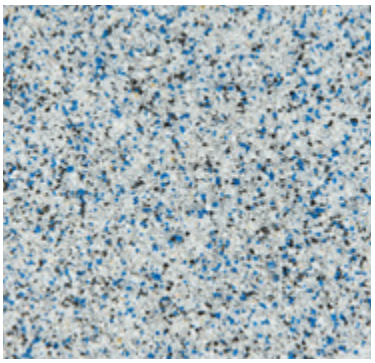
Standard colours antistatic sand mixtures for anti skid broadcast RX flooring

Colour stable antistatic sand mixtures for decorative broadcast RX flooring. Easy to use sand mixtures with controlled consumption, grindable for floorings with slip resistance levels R11 and R10.

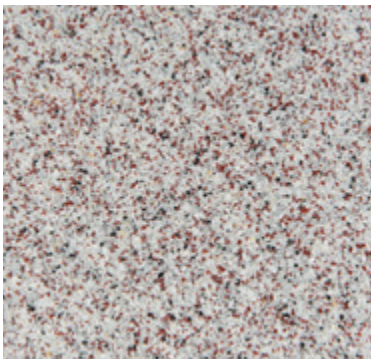
CQS-4701 AS I 0,3/0,8 mm Base* light grey



CQS-4702 I 0,3/0,8 mm Base* middle grey



CQS-4703 I 0,3/0,8 mm Base* light grey



CQS-4704 I 0,3/0,8 mm Base* light grey

*** Base:**
Colour of the base coat EP 99 EL+

| | |
|---|---|
| Utilization | Anti skid RX flooring. Please consider our product information! |
| Standard colours | The colour chart shows available standard colours. Available from stock, in minimum quantities of 25 kg. |
| Special colours | Available in minimum quantities of 1.000 kg net. Please note the extended delivery time! |
| Packaging | Bag of 25 kg, 40 Bags/euro pallet 1.000 kg |



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