KLB-SYSTEM EPOXID
EP 280 WHG

Electrically conductive, highly chemical-resistant 2-component epoxy resin coating for WHG applications

Packaging units



Article no.	Packaging	Content (kg)	Units/pallet
AK1400-50	Bucket combo	10.00 kg	30
AK1400-30	Hobbock combo	30.00 kg	12

Product characteristics

Mixing ratio parts by weight	A : B = 4 : 1
Mixing ratio parts by volume	A : B = 100 : 42
Processing time	10 °C / 50 °F : 40 min. 20 °C / 68 °F : 20 min. 30 °C / 86 °F : 10 min.
Processing temperature	Minimum 10 °C / 58 °F - Maximum 30 °C / 86 °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
Consumption	2.4 - 2.6 kg/m²
Addition of quartz sand	Not permissible
Packaging	Bucket combo 10 kg, Hobbock combo 30 kg
Colours	Approx. RAL 1001, 3009, 6011, 7015, 7023, 7030, 7032, 7035, 7038, 7042. Other colours upon request.
Shelf life	12 months (originally sealed)

Product description

KLB-SYSTEM EPOXID EP 280 WHG is an electrically conductive and crack-bridging 2-component epoxy resin self-levelling coating with very good chemical resistance.

KLB-SYSTEM EPOXID EP 280 WHG has been tested according to the Water Resources Act (WHG § 63) and is approved by the German Institute for Construction Technology in Berlin (DIBt®).

The coating is suitable for the application in collection drains and rooms such as HBV (production, treatment or processing facilities) or LAU installations (storage, filling and handling facilities), which have to be equipped with coating systems tested in accordance with the Water Resources Act. The conductive properties ensure protection against explosion. The material is thus especially suitable for production areas in the chemical and pharmaceutical industry, in laboratories, but also for other manufacturing floors with high exposure to chemicals. The coating is suitable for forklift traffic.

KLB-SYSTEM EPOXID EP 280 WHG shows good resistance to chemicals. The material is resistant to solvents, motor fuel, oil, mineral acids, alkalis, and salts

according to the principles of the DIBt®. Please refer to the following exposure classifications and the test report.

Due to the conductive setting, deviations in colour shade are possible for technical reasons. Age-related colour changes do not alter the technical properties. Chemical exposure may cause discolouration, which does not affect the function of the coating.

Area of application

- Coating for collection drains and rooms with requirements according to the Water Resources Act and building authority approval.
- Industrial flooring with vehicle traffic and WHG requirements.
- Electrically conductive and chemically resistant industrial flooring.

Product features

- building authority approval according to DIBt®
- tested and approved for storage/handling facilities (LAU)
- Total Solid according to GISCODE (Test method "Deutsche Bauchemie")
- electrically conductive
- high chemical resistance
- crack-bridging (0.3 mm)
- suitable for vehicle traffic
- impervious to fluids
- free of deleterious substances against varnish

Technical data

Viscosity - Component A+B	2600	mPas	DIN EN ISO 3219 (23 °C / 73.4 °F)
Solid content	> 99	%	KLB method
Density - Component A+B	1.60	kg/l	DIN EN ISO 2811-2 (20 °C / 68 °F)
Weight loss	0.3	weight-%	after 28 days
Water absorption	< 0.2	weight-%	DIN 53495
Shore-hardness D	65 - 70	-	DIN 53505 (after 7 days)
Abrasion (Taber Abraser)	50	mg	ASTM D4060 (CS10/1000)
Electrical resistance	Approx. 10^6	Ohm	DIN EN 61340-4-1

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

Included in systems

- System B2 - KLB PROTECT WHG CONDUCTIVE EP

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

Stabilities

Resistance to the following material groups has been proven by testing the liquids in combination with each other according to the principles of the DIBt®:

- Test Group 1a: Gasoline, super, normal (according to DIN 51600 and DIN EN 228) with a max. of 20% bioalcohol (including 1)
- Test Group 2: Aviation fuels
- Test Group 3: Heating oil (according to DIN 51603-1), unused combustion engine oils and motor vehicle transmission oils, etc.
- Test Group 3c: Diesel fuels (according to DIN EN 16709), etc. (including 3b)
- Test Group 4: Hydrocarbons, as well as mixtures containing a max. of 5% benzene by volume, except fuels (including 4b, 4c), etc.
- Test Group 4a: Benzene and mixtures containing benzene

- Test Group 5a: Alcohols, glycol ethers and their aqueous mixtures (including 5, 5b and 5c)
- Test Group 6b: Aromatic halogenated hydrocarbons
- Test Group 7: All organic esters and ketones (including 7a)
- Test Group 8a: Aliphatic aldehydes and their aqueous solutions (including 8)
- Test Group 9: Aqueous solutions of organic acids (carboxylic acids) up to 10% and their salts (in aqueous solution)
- Test Group 9a: Organic acids (carboxylic acids, excluding formic acid)
- Test Group 9b: All concentrations of organic acids (carboxylic acids) in aqueous solution and their acid-hydrolysable salts (in aqueous solution), except formic acid > 10 %
- Test Group 10: Mineral acids up to 20%, as well as acidic hydrolysing salts, excluding hydrofluoric acid and acids with oxidising effect and their salts (in aqueous solution)
- Test Group 11: Inorganic alkalis, as well as alkaline hydrolysing salts, excluding ammonia solutions and oxidising solutions of salts
- Test Group 12: Aqueous solutions of inorganic, non-oxidising salts with a pH-value of 6 - 8
- Test Group 13: Amines and their salts in aqueous solution
- Test Group 14: Aqueous solutions of organic tensides
- Test Group 15a: Acyclic esters

The designation of some testing liquids may be abbreviated in the above list, the correct wording can be found in the notifications of the DIBT.

Additionally, the resistance to the following materials has been tested:

- Dimethyl sulphoxide (DMSO)
- Hydrogen peroxide 30 %
- Lactic acid 50 %
- Phosphoric acid 60%
- Sulphuric acid 85 %
- Nitric acid 15%
- Ammonia solution 32 %
- hydrochloric acid 37 %
- Vanadium (V) electrolyte solution
- sodium hypochlorite solution 12 %
- chromic acid 50 %

Testing periods

The test periods to confirm the exposure levels according to the classes of the plant operating mode were determined as follows:

LAU 1: Low exposure in the plant mode – storage, filling and handling – test period 8 hours
LU 2/A 1: Medium exposure in the plant mode – storage, transshipment – test period 72 hours
LAU 2: Medium exposure in the plant mode – storage, filling, handling – test period 7 days
L 3/AU 2: High exposure in the plant mode – storage – test period 14 days
LA 3/U 2: High exposure in the plant mode – storage, filling – test period 28 days

The higher rated exposure groups include the lower rated groups.

The exposure classification is attributed to the following test groups:

- Exposure classification high / plant mode **LA 3/U2**: Test groups 2, 3, 3b, 3c, 4, 4a, 4b, 4c, 8, 8a, 9, 10, 11, 12, 13, 14, Ammonia solution (32 %), hydrochloric acid (37 %), vanadium (V) electrolyte solution, sodium hypochlorite solution (12 %), chromic acid (50 %)
- Exposure classification high / plant mode **L 3 /AU 2**: Test groups 1, 1a, nitric acid (15%)
- Exposure classification medium / plant mode **LAU 2**: Test group 7a, phosphoric acid (60%), sulphuric acid (85 %)
- Exposure classification medium / plant mode **LU 2/A 1**: Test groups 5, 5b, 5c, 6b, 7, 15a, Hydrogen peroxide (30%), lactic acid (50%)

- Exposure classification low / plant mode **LAU 1**: Test group 9a (Methanol), 9b, DMSO

Tests

External test certificates are available:

- Classification of the fire behaviour according to DIN EN 13501-01: B_{fl}-s1.
- Slip-resistant scattered coating grade R11/V4 according to DIN 51130 and BGR 181.
- Slip resistance grade R9 and R10, according to DIN 51130 and BGR 181.
- WHG coating with DIBt® site supervision accreditation.
- 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

- Substrate control and shot-blasting.
- Base coat application with **EP 55**, consumption approx. 0.3 - 0.4 kg/m².
- Apply an optional scratch coat using **EP 55** / and mixed sand **KLB-Mischsand 2/1** = 1 : 0.8 parts by weight. Consumption of the mixture approx. 0.5 - 1.0 kg/m².
- Glue copper bands **KLB-Kupferbänder** for discharge in an imagined grid-pattern (every 6 - 8 m, up to 1 - 2 m into the room) in place. Earth connection by an electrician according to VDE regulations.
- Apply the cross-conductive coat **EP 799 WHG** with a roller, consumption approx. 0.100 - 0.140 kg/m².
- Apply an electrically conductive layer with **EP 280 WHG** using a trowel (**Toothed blade RS4** or Pajarito 48), consumption approx. 2.5 kg/m². Vent with a spiked roller.

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 KLB base coat **EP 55**.

When adding up to 2% of suspending agent into the coating, it is possible to permanently bridge cracks up to a width of 0.2 mm in the reinforced concrete. Without using suspending agent, cracks in the reinforced concrete up to 0.3 mm width can be permanently bridged.

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 recommended that a scratch coat be applied to smooth the surface. Conductive coatings must be applied in the required layer thickness, it is thus mandatory to prepare the substrate thoroughly by priming and scratch coat application. 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. 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

The build-up of coats according to the Water Resources Act implicates the following steps:
1. Prepare the substrate according to chapter “Substrate”. In particular, surfaces must be prepared by shot-blasting.
2. Apply a base coat using **EP 55**. Apply the freshly mixed material with a roller, squegee or trowel. Then re-roll to form an even, non-porous layer. Consumption approx. 0.3 - 0.4 kg/m². Layer thickness: 0.3 - 0.4 mm.
3. For levelling, an optional scratch coat of **EP 55** and mixed sand **KLB-Mischsand 2/1** (mixing ratio: 1 : 0.8 parts by weight) is required. Application is done in a uniform layer with a smoothing trowel or squeegee after the base coat has cured, but not later than after 48 hours. Consumption approx. 0.5 - 1.0 kg/m². Mixture depending on roughness. Layer thickness: 0.3 - 0.7 mm.
4. If required, concave or triangular covings may now be inserted. Those can be produced with **EP 55** and mixed sand **KLB-Mischsand 2/1**. If necessary, add 1 - 2 % of suspending agent **KLB-Stellmittel 3 Super**. Mixing ratio **EP 55** : **KLB-Mischsand 2/1** is 1 : 7 - 9 parts by weight.
5. For earth connection, glue self-adhesive copper bands **KLB-Kupferbänder** in place and press on very well. Lay in a grid-pattern with a maximum distance of 8 - 10 m and at least up to 1 - 2 m into the area. Due to the cross-conductive coating, the copper band does not need to be placed continuously. Consumption approx. 6 - 10 running metres per 80 - 100 m². Press the copper band down on the substrate very well.
6. Apply the conductive layer **EP 799 WHG** with a velour roller. Consumption approx. 0.100 - 0.140 kg/m² in a layer of 0.050 - 0.100 mm. Apply after the previous coat has set – but not longer than after 48 hours.
7. Apply the coating **EP 280 WHG** after 18 hours but not longer than 48 hours. Process the material immediately after mixing with a squeegee or toothed trowel (**Toothed blade RS4** or Pajarito 48). Apply an even layer with approx. 1.6 mm thickness. Consumption approx. 2.4 - 2.6 kg/m². 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. To work seamlessly, always work “fresh-in-fresh” and define work areas before starting.
Check consumption during application, as it may be reduced by wear of the teeth on the toothed blade. If the blade is worn, it must be replaced by the applicator in order to maintain the recommended consumption quantities.
8. For vertical surfaces, mix **EP 280 WHG** coating material with 1 - 2% of suspending agent **KLB-Stellmittel 3 Super** so that the material will stay on when applied. Prior to this, prime the surfaces with **EP 55** adding 2 - 4% of suspending agent **KLB-Stellmittel 3 Super** and, if necessary, fill them with **EP 55** adding 2 to 4% of suspending agent **KLB-Stellmittel 3 Super**.
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 and spotting to occur. 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, especially the electrical conductivity.
Testing the conductivity is carried out according to DIN EN 61340-4-1, from the coating surface to an earthing point.

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 if possible, at 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.
Accessories	• Copper tape - Art. no. ZB3000-01

CE marking

CE

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EP280WHG-V1-102025

DIN EN 13813:2003-01

Synthetic resin screed mortar
DIN EN 13813: SR-B1,5-AR0,5-IR18

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 18

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All stated information is based on our experience and technical preparation. We guarantee the correct and proper quality of our products. We do not assume any responsibility for the work not carried out by us, since we have no influence on the processing or processing conditions. We recommend on-site trials to be conducted in individual cases. With the publication of this new KLB product information, all prior information loses validity. The latest version is available electronically on our website www.klb-koetztal.com. In addition, our "General Terms and Conditions“ apply.