

CHEMORESIN PU-BETON 4009



Trowelable 3-component polyurethane concrete coating that can be applied in a layer thickness of approx. 9 mm on surfaces in the food or chemical industries that are exposed to chemicals and humidity. Can be accelerated and is rapid-curing.

Packaging units



Article no.	Packaging	Content (kg)
AK6180-30	Combo packaging	30.00 kg
AK6180-17	Combo packaging	60.00 kg

Product characteristics

Mixing ratio parts by weight	A : B : C = 13.57 : 13.57 : 100
Processing time	5 °C / 41 °F : 20 - 30 min. 10 °C / 50 °F : 15 - 20 min. 20 °C / 68 °F : 12 - 15 min. 25 °C / 77 °F : 10 - 12 min. The addition of accelerator CHEMORESIN PU-BETON 4094 KAT can reduce the processing time.
Processing temperature	Minimum 5 °C / 41 °F – Maximum 25 °C / 77 °F (room and floor temperature; at lower temperatures, accelerator CHEMORESIN PU-BETON 4094 KAT can be added)
Curing time (accessibility)	5 °C / 41 °F : 22 - 25 hrs. 10 °C / 50 °F : 15 - 18 hrs. 20 °C / 68 °F : 8 - 10 hrs. 25 °C / 77 °F : 6 - 8 hrs. The addition of accelerator CHEMORESIN PU-BETON 4094 KAT can reduce the hardening time.
Curing	1 - 2 days until mechanical load at 20 °C / 68 °F 2 days until chemical load at 20 °C / 68 °F
Further coatings	After 8 - 10 hours, but after 36 hours at the latest at 20 °C / 68 °F
Consumption	17.0 - 19.0 kg/m ² at approx. 9 mm layer thickness
Layer thickness	approx. 9 mm
Packaging	Combo packaging 30.0 kg, double unit 60 kg
Colours	Beige, red, green, grey
Shelf life	12 months (originally sealed) – Store dry and frost-free!

Product description

CHEMORESIN PU-BETON 4009 is a high-quality, trowelable 3-component polyurethane mortar coating that can be applied in a layer thickness of 9 mm. It is suitable for chemical exposure to water, chemical substances and cleaning or disinfecting agents on heavy-duty floor surfaces. **CHEMORESIN PU-BETON 4009** is therefore primarily used in food processing, such as beverages, meat or dairy as well as other areas of the food sector or the chemical and technical industries.

Coatings made of **CHEMORESIN PU-BETON** are available in several layer thicknesses, which are generally characterised by different classes of mechanical and thermal resistance.

CHEMORESIN PU-BETON 4009 consists of 3 reactive components, which are carefully aligned and result in a very hard, robust and resistant covering. By adding catalyst **CHEMORESIN PU-BETON 4094 KAT**, the coating's chemical reaction,

accessability and time until usability can be significantly accelerated. This is particularly advantageous for repair works or renovations with tight time windows.

The product is available in standard colours and consists of the liquid components **CHEMORESIN PU-BETON 4000** Components A and B, and the mineral component C **CHEMORESIN PU-BETON 4009**.

The mortar mixture is self-levelling, offers sufficient processing time and may be applied with a trowel. The application is carried out on the prepared, sufficiently stable substrate in a layer thickness of approx. 9 mm.

For lower demands on thermal stability, **CHEMORESIN PU-BETON 4006** (up to 90 °C / 194 °F) or **CHEMORESIN PU-BETON 4004** (up to 70 °C / 158 °F) are available for layers of 6 respectively 4 mm. **CHEMORESIN PU-BETON 4045** may be used as a pore-filler on very uneven substrates.

CHEMORESIN PU-BETON 4009 is certified by EMICODE® EC 1^{PLUS}; thus meets the requirements for a sustainable building certification according to DGNB, LEED or BREEAM; not only the German requirements of AgBB or ABG, but also the emissions regulations of many other European countries.

The coating offers high resistance to mechanical loads and temperatures as well as very good stability to many chemicals, especially to aqueous saline solutions, acids, alkalis or solvents.

Compared to conventional synthetic resin coatings, **CHEMORESIN PU-BETON 4009** offers an increased glass transition temperature. This is why it provides an excellent temperature resistance with moist heat up to 130 °C / 266 °F, with dry heat up to 150 °C / 302 °F. Due to its composition, yellowing may occur when exposed to UV rays, which may be more or less visible depending on the colour tone. However, this will not affect any of the material's chemical, mechanical or thermal properties.

As far as a slip-resistant floor is required for the area of use, the coverings must be scattered (e.g. with fire-dried quartz sand 0.3/0.8 mm or 0.7/1.2 mm respectively with corundum 0.5/1.0 mm), then sealed with **CHEMORESIN PU-BETON 4080**. The use of corundum makes it possible to produce coatings that are significantly more robust and impact-resistant, with better retention of slip resistance.

CHEMORESIN PU-BETON 4009 may only be applied on suitable substrates, as it shrinks and creates tensions when curing. End edges must be fastened with an anchoring groove to absorb any tension on the coating. Polyurethane mortar coverings are functional and their optical appearance may not always be consistent. Differences in texture and traces of work areas or anchoring grooves may become visible, especially on smooth coatings.

Area of application

- Highly resistant, trowelable, self-levelling mortar coatings in layer thicknesses of approx. 9 mm. Offers good resistance to thermal, chemical, and mechanical loads. Suitable even for fork lift traffic.
- Highly durable, slip-resistant coatings with permanent or frequent exposure to water. Finished with scattering and top sealing.
- Suitable for food production and processing areas with high cleaning requirements (wet coatings), such as dairy farms, slaughterhouses and breweries.
- For coatings with high exposure to chemicals.

Product features

- low-emission formulation
- EMICODE® EC 1PLUS certified
- compliant with AgBB and suitable for recreation rooms
- applicable with a scraper
- resistant to impacts
- self-levelling
- resistant to hot water

- high chemical resistance
- extremely resistant to mechanical loading
- available in several colours
- hygienic
- jointless coating
- resistant to permanently wet conditions
- can be accelerated
- rapid-setting
- can be used from 5 °C with accelerator

Technical data

Density - Component A+B+C	2.02	kg/l	DIN EN ISO 2811-2 (20 °C / 68 °F)
Weight loss	< 1.0	weight-%	after 28 days
Water absorption	< 0.2	weight-%	DIN 53495
Flexural strength	14	N/mm ²	DIN EN 196/1
Compressive strength	45	N/mm ²	DIN EN 196/1
Shore-hardness D	85	-	DIN 53505 (after 7 days)
Gloss level	< 10 (85°)	-	DIN 67530

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

Included in systems

- System I1 - KLB CHEMORESIN PU-BETON Standard
- System I2 - KLB CHEMORESIN PU-BETON RX

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

Tests

The following external and internal test certificates are available:

- Certified as low-emission according to EMICODE with the EC 1^{PLUS} label. Compliant with AgBB for recreation rooms.
- Slip resistance grade R9 and R10 possible, according to DIN EN 16165 and DIN 51130.
- Scattered coatings with slip resistance grade R11/V4, R12/V4, R12/V6, R13/V6 possible, according to DIN EN 16165 and DIN 51130.
- Classification of the fire behaviour 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).
- Product is compliant with DIN EN 13813: 2003-01.

Note:

Please ask for the tested system build-up!

Build-up of coats

Slightly non-slip, smooth coating R9

- Saturated base coat with primer **PU-BETON 4051**, consumption approx. 0.4 - 0.5 kg/m².
- Use the specially stable **PU-BETON 4012** for triangular or concave covings. For a side length or radius of 5 cm: consumption approx. 2.2 - 2.8 kg per running meter.
- If necessary: larger uneven areas may be filled respectively levelled with **PU-BETON 4045** or **PU-BETON 4004** and scattered with fire-dried quartz sand 0.7/1.2 mm.

- Apply the **PU-BETON 4009** mortar coating with a pin screed scraper in a layer thickness of approx. 9 mm, consumption approx. 17 - 19 kg/m². Work fast and seamless. Vent with a spiked roller.

Coating with slip resistance grade R11/12/13

- Saturated base coat with primer **PU-BETON 4051**, consumption approx. 0.4 - 0.5 kg/m².
- Use the specially stable **PU-BETON 4012** for triangular or concave coverings. For a side length or radius of 5 cm: consumption approx. 2.2 - 2.8 kg per running meter.
- If necessary: larger uneven areas may be filled respectively levelled with **PU-BETON 4045** or **PU-BETON 4004** and scattered with fire-dried quartz sand 0.7/1.2 mm.
- Apply the coating **PU-BETON 4009** with a pin screed scraper in a layer thickness of approx. 9 mm, consumption approx. 17 - 19 kg/m². Work fast and seamless. Vent with a spiked roller.
- Scatter the entire surface with fire-dried quartz sand of grain size 0.3/0.8 mm or 0.7/1.2 mm respectively white corundum 0.5/1.0 mm, consumption approx. 2.0 - 2.5 kg/m². After curing, sweep off the excess sand and vacuum thoroughly until no more sand is being released.
- Apply **PU-BETON 4080** with a rubber squeegee and re-roll with a velour roller in crosswise motion. Consumption approx. 0.500 - 0.800 kg/m². Work fast and seamless.

It is mandatory to adhere to the consumption quantities for obtaining the required degree of slip-resistance.

Substrate

The substrate to be coated must be even, non-slip, sufficiently resistant to tension and compression, clean as well as be free from weakly-bonded and sandy components or any impurities. Materials impairing adhesion such as grease, oil and paint residues should be removed with suitable measures. The substrates must have a sufficiently high strength for the intended use as well as for the coating. Proper substrate preparation is a prerequisite here. Suitable substrates are concrete with a minimum quality of C25/30 according to DIN EN 206, cement screed and polymer-modified cement screeds with at least CT-C30-F5 in composite with a minimum layer thickness of 60 or 30 mm, according to DIN 18560 part 3. Screeds as separating layer or insulation, polymer-modified, CT-C40-F5 at least with a layer thickness > 65 mm, according to DIN 18560 part 4. Other substrates are not or not generally suitable. The substrates to be coated must be prepared mechanically, preferably by shot-blasting. The surface strength must then be at least 1.5 N/mm². For anchoring the coating, anchoring grooves are to be provided at the end edges, passages, etc. These should be approx. 6 to 10 mm deep and wide. For concrete, the moisture content must not exceed 6 CM-%. The possibility of moisture ingress from the rear must be permanently excluded. 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 of the recommended base coat **CHEMORESIN PU-BETON 4051**. On areas with increased thermal exposure, it is recommended to only use **PU-BETON 4051**. The prepared area must be saturated, pore-free and primed carefully. 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. In case of doubt, we recommend testing on a trial surface. If necessary, ask for a consultation.

Product components

CHEMORESIN PU-BETON 4009 consists of the following components:

Standard unit:

1 packaging unit **PU 4000** Component A: 3.00 kg
1 packaging unit **PU 4000** Component B: 3.00 kg
1 bag **PU 4009** Component C: 24.00 kg

Total quantity from one mixture: 30.00 kg

Double unit:

1 packaging unit **PU 4000 DB** Component A: 6.00 kg
1 packaging unit **PU 4000 DB** Component B: 6.00 kg
2 bags **PU 4009** Component C: 48.00 kg

Total quantity from one mixture: 60.00 kg

The hardening times can be reduced by adding **CHEMORESIN PU-BETON 4094 KAT**. Please observe the product data sheet of the catalyst.

Mixing

Combo-packaging will be supplied in the correctly measured mixing ratio. Only in the present mixture of the three components can the described processing and material properties be achieved. At first, empty all of the liquid binding agent components (Components A + B) into a proper container and blend with a slow speed mixer (200 - 400 r/pm) for at least 1 minute, until a homogeneous, streak-free compound forms. Mixing in Component C should be carried out with a compulsory mixer for a consistent mortar quality. Add the premixed binding agent into the compulsory mixer, then mix in Component C homogeneously for 3 minutes (at 20 °C / 68 °F). Lower temperatures may increase, higher temperatures may decrease the mixing time.

At lower temperatures, the addition of **CHEMORESIN PU-BETON 4094 KAT** can accelerate the hardening. Please observe the product data sheet of the catalyst.

Note: pay attention to consistent mixing times. Process complete packaging units only! Inaccurate mixing ratios will lead to useless results. For double units, the mixing ratio (see above) must be observed!

Processing

Distribute the mortar mixture evenly and without any delay from the recipient onto the substrate that has been prepared and if necessary, primed. Then pull off with a pin screed scraper. Before installation, adjust the length of the spikes according to the thickness of the material. Subsequently, after a short waiting time of about 3 - 5 minutes, vent with a spiked roller in crosswise motion. As the processing times are short due to the system, it is particularly important to adhere to the specified working rhythm in order to achieve the desired result. For producing slip-resistant coatings, scatter the entire surface with fire-dried quartz sand 0.3/0.8 mm or 0.7/1.2 mm, respectively with white corundum 0.5/1.0 mm. Seal with **PU-BETON 4080** after the flow mortar has cured. Always work "fresh-in-fresh" to avoid any shoulders. Before starting work, divide up the work areas to be covered according to the laying capacity. Do not coat surfaces that are too wide. Avoid draughts, otherwise pore-free floors cannot be achieved.

Mortar installation requires an experienced and trained staff.

Floor and air temperature must not fall below 5 °C / 41 °F and humidity should be between 40 and 85%. 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 hardening times apply for 20 °C / 68 °F. Lower temperature may increase; higher temperature may decrease the curing and processing times. If working conditions are not complied with, the technical properties of the end product may deviate from the description.

Cleaning

To remove fresh contamination and to clean tools or equipment, use **VR 28** 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 at frost-free conditions. Ideal storage temperature is between 10 - 20 °C / 50 - 68 °F. Bring to a suitable working temperature before application. Process complete packaging units only!

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: PU40

Indication of VOC-content:

(EG-Regulation 2004/42) Maximum Permissible Value 140 g/l (2010,II,j/wb): Ready-for-use product contains < 140 g/l VOC.

CE marking

	
KLB Kötztal Lacke + Beschichtungen GmbH Günztalstraße 25 FRG-89335 Ichenhausen	
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CHEMORESINPU4009-V1-082023	
DIN EN 13813:2003-01	
Synthetic resin screed mortar DIN EN 13813: SR-B1.5-AR0.5-IR4	
Fire behaviour	B ₁ -s1
Emission of corrosive substances	SR
Wear resistance BCA	AR 0.5
Adhesive tensile strength	B 1.5
Impact resistance	IR 4



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

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.