KLB KÖTZTAL
Lacke+Beschichtungen GmbH

KLB-SYSTEM
PU-BETON 4009

3-Component Polyurethane Mortar Coating with increased Temperature Capacity

Mixing Ratio	parts by weight	A:B:C =	13.57 : 13.57 : 100	
Application	temperature	15°C	20°C	25°C
	time	35 mins.	25 mins.	20 mins.
Working Temperature		15 – 25 °C (room and floor temperature)		
Setting	temperature	15°C	20°C	25°C
(to accept foot traffic)	time	12-16 hrs.	8-10 hrs.	6-8 hrs.
Hardening	mechanical	1 – 2 days for exposure to mechanical forces at 20°C		
	chemical	2 days for exposure to chemicals at 20°C		
Further Coatings		after 8-10 hrs., but not later than 36 hours at 20°C		
Thickness		8 – 10 mm		
Consumption		16 – 20 kg/m^2 at 8 – 10 mm thickness		
Colours		natural colours, beige, red, green, grey (as additional components)		
Packaging		combi-can 30.55 kg		
Shelf Life		12 months (in original sealed containers) – STORE FROST-FREE!		

Description and Properties

KLB-SYSTEM PU-BETON 4009 is a high-quality, 3-component, polyurethane mortar coating that can be applied by rake and is for heavy-duty coatings that are exposed to hot water and chemicals. Therefore, **KLB-SYSTEM PU-BETON 4009** is primarily used in the food industry, e.g. production areas in breweries, dairies, abattoirs, butchery departments, etc. and also in areas where chemicals are used.

KLB-SYSTEM PU-BETON 4009 consists of reaction resin components and a mineral component that are carefully balanced to produce a very tough, hard and robust coating. The coating is supplied in natural colours and comprises the binding agent **KLB-SYSTEM PU-BETON 4000** Component A and B and the aggregate mix **KLB-SYSTEM PU-BETON 4009** Component C.

To colour the product, special pigments must be added as extra components. The mortar mix can be distributed using a screeding rake, is self-levelling and has a good and sufficient working time. Installation using normal methods is to a thickness of 9 mm (8 – 10 mm) onto the carefully prepared and adequately sound subfloor.

If the usage does not require the highest (thermal and mechanical) classification, **KLB-SYSTEM PU-BETON 4006** is available with a 6 mm thickness.
KLB-SYSTEM PUBETON 4009 offers a very high mechanical and thermal capacity and very good resistance to many chemicals, especially to liquid salt solutions, acids and alkalis as well as various other chemicals.

Compared with the classic synthetic resin coatings, **KLB-SYSTEM PU-BETON 4009** has a significantly higher glass transition temperature which is why it provides an excellent temperature resistance in damp heat up to 130°C and in dry heat up to 150°C. As the coating is produced in one pouring, it demonstrates especially good impact strength with a good resistance to impact load. Where the area of use requires a slip-resistant surface, the coating is grit-coated (e.g. with fire-dried quartz sand 0.7/1.2 mm) and is then sealed with **KLB-SYSTEM PU-BETON 4080 Kopfsiegel**.

Because, during setting, **KLB-SYSTEM PU-BETON 4009** shrinks slightly, it can only be installed on suitable surfaces such as, e.g. concrete of at least C20/25 classification. Edges should have anchoring grooves cut in so that any stress in the coating is contained.

Due to its composition, on expose to UV light, some yellowing will occur but this does not affect the technical properties of the material. Polyurethane mortar coatings are functional products and their visual appearance is not always completely uniform. Differences in the composition and at the bay-joints may be visible.

Properties

- can be applied by rake
- seamless
- highly impact resistant
- chemical resistant
- hygienic
- self-levelling
- high load capacity
- resistant to hot water
- high durability

Areas of Use

- Heavy wear, self-levelling mortar coatings that can be applied by rake – for thickness of approx. 9 mm, for high **thermal, chemical** and **mechanical wear resistance.** Also suitable for fork-lift truck traffic.
- High durability, slip-resistant coatings with **permanent or frequent exposure to wetting** when finished with grit-coating and a top-coat seal.
- In areas of **food production and processing with high cleaning demands** (wet coatings), e.g. in dairies, abattoirs, breweries.
- For coatings with high exposure to chemicals

Construction

Lightly keyed, smooth coatings

- Apply a full-coat of system primer **KLBSYSTEM PU-BETON 4050 Grundierung**, consumption 0.4 – 0.5 kg/m², or alternatively **EP 52**, consumption 0.3 – 0.4 kg/m², followed by full grit-coating with fire-dried quartz sand 0.7/1.2 mm, consumption approx. 1 kg/m²
- Form the skirting or coving with special low-slump **KLB-SYSTEM PU-BETON 4012 Standfest**, consumption for a skirting height or radius of 5 mm: approx. 2.2 – 2.8 kg/m .
- If required: smooth or fill large uneven areas with **KLBSYSTEM PU-BETON 4006** and grit-coat with fire-dried quartz sand 0.7/1.2 mm
- Rake application of the mortar coating **KLBSYSTEM PU-BETON 4009** using a pin-rake to a thickness of approx. 9 mm, consumption approx. 17 – 19 kg/m². Work fast with no joints and remove air using a spike roller

Covering with R11/12 Slip-Resistance

- Apply a full-coat of system primer **KLBSYSTEM PU-BETON 4050 Grundierung**, consumption 0.4 – 0.5 kg/m², or alternatively **EP 52**, consumption 0.3 – 0.4 kg/m², followed by full grit-coating with fire-dried quartz sand 0.7/1.2 mm, consumption approx. 1 kg/m²
- Form the skirting or coving with special low-slump **KLB-SYSTEM PU-BETON 4012 Standfest**, consumption for a skirting height or radius of 5 mm: approx. 2.2 – 2.8 kg/m
- If required: smooth or fill large uneven areas with **KLBSYSTEM PU-BETON 4006** and grit-coat with fire-dried quartz sand 0.7/1.2 mm
- Rake application of the mortar coating **KLBSYSTEM PU-BETON 4009** using a pin-rake to a thickness of approx. 9 mm, consumption approx. 17 – 19 kg/m². Work fast with no joints and remove air using a spike roller
- Fully grit-coat with fire-dried quartz sand 0.3/0.8 or 0.7/1.2 mm. When set, brush off excess sand and carefully vacuum until no more sand is released.
- Apply **KLBSYSTEM PU-BETON 4080 Kopfsiegel** using a rubber squeegee and roll out using a velour roller or a textured roller (coarse) using cross-strokes. Consumption: 0.5 – 0.7 kg/m². **Use the exact consumption recommendations for slip-resistance.**

Subfloor

The surface to be coated must be level, well keyed, have adequate tensile and compressive strength, be clean and free from laitance and dusting areas as well as any contamination. Materials that would impair adhesion, such as e.g. grease, oil or paint residues must be removed using suitable methods.
Floors suitable for coating are C20/25 concrete or ZE 30 bonded cement screeds. Other substrate types are not, or not generally suitable – if necessary, obtain advice. The substrate must have adequately high strength for the proposed type of use. The surfaces to be coated must be mechanically prepared, preferably by shot-blasting. The surface strength must then be at least 1.5 N/mm². To stabilise the coating, anchoring grooves should be formed at edges, around conduits, etc. These should be 6 – 10 mm deep and wide.
The moisture content for concrete must not exceed 4.5 CM%. Any possibility of future moisture ingress must be permanently excluded. Refer to the recommendations issued by the trade associations, e.g. the current editions of BEB worksheets KH-0/U and KH-0/S, as well as the notes in the Product Information Sheets for the recommended KLB primers, e.g. **KLB-SYSTEM PU-BETON 4050 Grundierung** or **EP 52**.
The prepared substrate must be carefully and fully primed to provide a non-porous surface. If the surface is not non-porous, bubbles and holes may appear in the coating as a result of air rising from the substrate below. Finally, grit-coat as required with fire-dried quartz sand 0.7/1.2 mm. If in doubt, it is recommend to prepare a test area.

Composition / System Components

KLB-SYSTEM PU-BETON 4009 is produced by mixing the following components:

1 packaging unit of PU 4000 component A:	3.25 kg
1 packaging unit of PU 4000 component B:	3.25 kg
1 sack PU 4009 component C:	24.00 kg
1 packaging unit of pigment:	0.05 kg
Total quantity from one mix	**30.55 kg**

Mixing

In combi-cans, the factory prepared materials are supplied in one package in the correct mixing ratio. Only by mixing the 3 components supplied can the prescribed application and material properties be achieved. First, the binder components (components A + B) are fully emptied into a clean mixing bucket and are carefully, mechanically mixed using a slow-running mixing machine (200 – 400 u/min). The mixing time should be approx. 1 minute until a homogeneous and steak-free mixture is produced.

Mixing in of component C and the pigment should be carried out in a forced action mixer in order to produce a consistent and stable mortar quality. For this, the pre-mixed binder is put into the mixer and, after adding the component C and pigment, is mixed until homogeneous – approx. 3 mins. (20 °C). At lower temperatures, the mixing time should be extended and, at higher temperatures it should be shortened.

Important: ensure a consistent mixing time. Use only complete packaging units! Incorrect mixing ratios will lead to unusable product. Do not mix more than 2 packaging units at a time.

Application

The mortar mix must be taken immediately without absolutely no delays from the mixer, distributed over the floor surface and pulled out with a pin-rake. The pin-length must be set according to the coating thickness required before the installation. Subsequent to this, after a short waiting time of approx. 3 5 minutes, air must be removed with a spike roller using cross-strokes. As, due to the system, the working time is short, maintaining the prescribed working rhythm is especially important to the end result.

For producing slip-resistant surfaces, the whole area must be grit-coated using fire-dried quartz sand 0.3/0.8 or 0.7/1.2 mm. After the coating mortar is set, it is sealed with **KLB-SYSTEM PU-BETON 4080 Kopfsiegel.**

Always apply “fresh-on-fresh” so as to avoid visible joints. The working bays should be divided before work commences according to the rate of installation – set bay barriers as required. Do not make bay-widths too wide. Avoid draughts, otherwise a non-porous surface cannot be achieved.

Installation of the mortar requires an experienced, co-ordinated installation team.

The temperature of floor and air must not be below 15°C and/or the air humidity should be 40 – 80%. The temperature difference between floor and air should be less than 3°C so that setting is not disturbed. In the event of a dew-point situation, proper setting cannot take place, setting will be disturbed and spots will form. Avoid contact from water in the first 24 hours.
The stated setting times apply at 20°C. At lower temperatures, the working and setting times are longer and, at higher temperatures, they are shorter.
If the required application conditions are not maintained, there will be variations in the prescribed technical properties of the end product.

Cleaning

To remove fresh contamination and to clean tools and equipment, use **VR 28** or **VR 33** immediately after application. Hardened material can only be removed by mechanical means.

Storage

Store in dry and frost-free conditions. Ideal storage temperature is 15 – 20 °C. Bring to working temperature before application. Only use complete container quantities!

Special Notes

The product falls outside the hazardous materials-, operational safety- and transport- regulations for hazardous goods. The relevant notes are in the DIN Safety Data Sheet. Refer to the label notes on the container!

GISCODE: PU 40

Designation of VOC Content
(EU Regulation 2004/42)
Maximum Permissible Value 140g/l (2010,II, j/wb) :
Fresh product at the time of application contains < 140 g/l VOC

CE	
KLB Kötztal Lacke und Beschichtungen GmbH Günztalstraße 25 • 89335 Ichenhausen	
07	
EN 13813-SR-B1,5-AR0,5-IR4	
Synthetic resin screed mortar / coating for interior use, construction according to Product Information	
Flammability:	NPD
Emission of corrosive substances:	SR
Water permeability:	NPD
Wear resistance to BCA:	AR 0.5
Adhesive tensile strength:	B 1.5
Impact resistance:	IR 4
Impact sound insulation:	NPD
Acoustical absorption:	NPD
Thermal insulation:	NPD
Chemical resistance:	NPD

NPD = No Performance Determined

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Technical Data*

Density	**Components A+B+C**	2.02	kg/litre	DIN EN ISO 2811 – 2 (23 °C)
Weight Loss		< 1.00	% by weight	after 28 days
Water Absorption		< 0.2	% by weight	DIN 53495
Bending Tensile Strength		14	N/mm^2	DIN EN 196/ 1
Compressive Strength		45	N/mm^2	DIN EN 196/ 1
Shore Hardness		85	-	DIN 53505 (after 7 days)

(* values achieved in sampling are average values. Variations from the product specification are possible).

Details are based on our experience and practical testing. We guarantee the perfect quality of our products, but cannot accept responsibility for the success of your completed work as we have no influence on the application and application conditions. It is recommended, in individual cases, to prepare a test surface. In addition, our "General Conditions of Trade" apply. The publication of this, new Data Sheet invalidates all preceded information.