



# KLB-SYSTEM POLYURETHAN PU 421

Low-emission 2-component polyurethane coating for scratch coats, top coats and as top sealer

## Packaging units



Article no.	Packaging	Content (kg)	Units/pallet
AK6069-47	Bucket combo	12.00 kg	30
AK6069-30	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 : 25
Processing time	10 °C / 50 °F : 45 min. 20 °C / 68 °F : 25 min. 30 °C / 86 °F : 15 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 : 18 - 24 hrs. 30 °C / 86 °F : 12 - 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 18 - 24 hours, but after 48 hours at the latest at 20 °C / 68 °F
Consumption	Coating: approx. 1.4 - 1.5 kg/m <sup>2</sup> for each mm of layer Top sealer: 0.6 - 1.2 kg/m <sup>2</sup>
Layer thickness	1 - 3 mm
Addition of quartz sand	Starting at layers of 2 mm up to 50% depending on usage and temperature
Packaging	Bucket combo 12 kg, Hobbock combo 30 kg
Colours	KLB standard colours – see chart. Other colours upon request!
Shelf life	12 months (originally sealed)

## Product description

**KLB-SYSTEM POLYURETHAN PU 421** is a self-levelling, low-emission 2-component polyurethane coating for smooth, energy-elastic coatings as well as for slip-resistant scattered coatings.

Due to its low viscosity, **KLB-SYSTEM POLYURETHAN PU 421** is especially suitable for scratch coats and depth of roughness levelling coats as well as for thin coatings and as top sealer for scattered surfaces.

The coating has good flow and smoothing properties and cures with almost no shrinkage. The cured surface is hard and tough, but also flexible and thus very resistant to mechanical load.

**KLB-SYSTEM POLYURETHAN PU 421** is certified according to EMICODE® EC 1<sup>PLUS</sup> and meets the requirements for a sustainable building certification according to DGNB, LEED or BREEAM. The EMICODE® EC 1<sup>PLUS</sup> 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.

**KLB-SYSTEM POLYURETHAN PU 421** also offers particular advantages where more flexibility is required due to the substrate. This can be the case with substrates susceptible to deformation, such as mastic asphalt, chipboard, metal and renovation surfaces.

The resistance to chemicals like water, saline solutions, diluted alkalis and acids, mineral oils and diesel is sufficient. Polyurethane coatings are particularly beneficial for organic acids.

**Note:** **KLB-SYSTEM POLYURETHAN PU 421** can be supplied in various colour shades, but is not resistant to yellowing due to its chemical structure which can lead to colour changes / deviations or yellowing, mainly with pale colours. Please note our indications on colour / colour tones.

Decorative areas may additionally be sealed with the opaque, colour stable **KLB-SYSTEM POLYURETHAN PU 806 E**. Sealers are suitable only to a limited extent for forklift traffic or abradant load. Please seek advice. Indentions cannot be excluded for concentrated point load.

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#### Area of application

- Low-emission coating for recreation rooms according to AgBB.
- Commercially used areas with mechanical load, minor exposure to chemicals and water.
- Smooth and slightly scattered wear layers (scattered with delustering agent or silicium carbide).
- Base and top coats for slip resistant scattered coatings on substrate susceptible to deformation.
- Used on substrates susceptible to deformation like mastic asphalt, metallic, wooden and mixed substrate.
- As levelling coat, scratch coat and top sealer in combination with other PU-coatings, e.g. with **PU 410**.

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#### Product features

- tested, low-emission quality
- EMICODE® EC 1PLUS certified
- lower viscosity
- filling and levelling coats
- elastic and deformable
- ready-to-use
- free of deleterious substances against varnish
- suitable for renovations
- Total Solid according to GISCODE (Test method "Deutsche Bauchemie")

**Technical data**

Viscosity - Component A+B	2400	mPas	DIN EN ISO 3219 (23 °C / 73.4 °F)
Solid content	100	%	KLB method
Density - Component A+B	1.50	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 53515
Flexural strength	> 40	N/mm <sup>2</sup>	DIN EN 196/1
Compressive strength	55	N/mm <sup>2</sup>	DIN EN 196/1
Tensile strength	25	N/mm <sup>2</sup>	DIN EN ISO 527
max. tear resistance	75	kN/m	DIN ISO 347-1
Elongation at break	47	%	DIN EN ISO 527-3
Shore-hardness D	65	-	DIN 53505 (after 7 days)
Abrasion (Taber Abraser)	55	mg	ASTM D4060 (CS10/1000)

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

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**Included in systems**

- [System G5 - KLB INDUSTRIAL PU RX](#)

Please visit our website to get more information about our KLB systems: [www.klb-koetztal.com](http://www.klb-koetztal.com)

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**Tests**

The following external and internal test certificates are available:

- Scattered coatings with slip resistance grade R11/V4, R11/V6, R11/V8, R12/V4, R12/V6 possible, according to DIN 51130 and BGR 181 and R13/V10, according to DIN EN 16165 and DIN 51130.
- Slip resistance grade R9 and R10 possible, according to DIN 51130 und BGR 181.
- Suitable for use in foodstuffs according § 31 para. 1, German Food and Feed Code (german law LFGB).
- Certified as low-emission according to EMICODE® EC 1<sup>PLUS</sup>. Compliant with AgBB for recreation rooms.

**Note:**

Please ask for the tested system build-up!

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**Build-up of coats**

**Preparation of mineral substrates**

- Prepare the substrate like concrete, cement screed, etc. mechanically, preferably by shot-blasting.

**Build-up without intermediate scattering**

- Prime with the recommended KLB priming resins: **EP 50, EP 51 RAPID S**, consumption approx. 0.3 - 0.4 kg/m<sup>2</sup>.
- If required: apply a scratch coat with **EP 50, EP 51 RAPID S** and mixed sand **KLB-Mischsand 2/1**. Mixing ratio 1 : 0.8 parts by weight, consumption approx. 0.8 - 1.2 kg/m<sup>2</sup> (mixture).
- Alternatively, already after priming, a scratch coat with **PU 429** or **PU 421** can be applied without scattering by adding approx. 20 - 30 % of quartz sand 0.1/0.3 mm, consumption approx. 0.8 - 1.0 kg/m<sup>2</sup>.

Important: it's only with the primer **EP 50**, that **PU 421** can be applied directly without scattering after a curing time of at least 14 to max. 48 hours (at 20 °C / 68 °F).

Using **EP 51 RAPID S**, the application of **PU 421** can take place without scattering after at least 4 to max. 24 hours (at 20 °C / 68 °F), provided the surface is pore-free.

- Apply **PU 421**, e.g. with a toothed trowel **Toothed Blade RS4** or Pajarito 48, consumption approx. 2.3 - 2.6 kg/m<sup>2</sup>. Ventilate with a spiked roller.

#### Substrate preparation of mastic asphalt

- Prepare the substrate mechanically, preferably by shot-blasting.
- This is followed directly by the application of a scratch coat with **PU 429** or **PU 421** and approx. 20 - 30 % of quartz sand 0.1/0.3 mm, consumption approx. 0.8 - 1.0 kg/m<sup>2</sup>. The surface must be pore-less for any subsequent coating.
- Apply **PU 421**, e.g. with a toothed trowel **Toothed Blade RS4** or Pajarito 48, consumption 2.3 - 2.6 kg/m<sup>2</sup>. After 10 to 20 minutes, roll out with a spiked roller.

#### Decorative top sealing

- For decorative floors, apply an opaque top sealer with **PU 806 E**, consumption approx. 0.150 - 0.180 kg/m<sup>2</sup>. By mixing with structuring agent **Strukturmittel RHX**, the slip resistance can be adjusted up to grade R11.

#### Build-up with intermediate scattering

- Prime with the low-emission primers **EP 57**, **EP 58**, **EP 54 RAPID U** or **EP 53 Spezialgrund AgBB** or others. Consumption approx. 0.3 - 0.4 kg/m<sup>2</sup>.
- Openly scattering the fresh surface with quartz sand 0.3/0.8 mm, consumption approx. 0.5 - 1.0 kg/m<sup>2</sup>.
- This is followed directly by the application of the sealing layer with **PU 429** or **PU 421** and approx. 20 - 30 % of quartz sand 0.1/0.3 mm, consumption approx. 0.8 - 1.0 kg/m<sup>2</sup>. The surface must be pore-less for any subsequent coating.
- Apply **PU 421**, e.g. with a toothed trowel **Toothed Blade RS4** or Pajarito 48, consumption 2.3 - 2.6 kg/m<sup>2</sup>. After 10 to 20 minutes, roll out with a spiked roller.

#### Scattered coating with slip-resistance grade R11/V4

- Prime rigid substrates with **EP 50**, **EP 51 RAPID S**, **EP 52 Spezialgrund** or **EP 57**, consumption 0.3 - 0.4 kg/m<sup>2</sup>.
- For optimum intercoat adhesion, sand the surfaces openly with quartz sand 0.3/0.8 mm, consumption approx. 0.5 to 1.0 kg/m<sup>2</sup>.
- If required depending on the roughness: apply a scratch coat with **PU 429** or **PU 421** and approx. 20 - 30 % of quartz sand (0.1/0.3 mm), consumption of the mixture approx. 0.8 - 1.3 kg/m<sup>2</sup>.
- Apply the base coat with **PU 421**, consumption approx. 1.8 - 2.3 kg/m<sup>2</sup> and scatter the whole surface with natural quartz sand (grain size 0.3/0.8 mm or 0.7/1.2 mm) until the surface is completely covered. Consumption approx. 5.5. - 6.5 kg/m<sup>2</sup>. After curing, sweep off the excess sand and vacuum thoroughly until no more grain or sand are being released.
- Apply **PU 421** with a rubber squeegee, then distribute evenly using a velours roller in a crosswise motion (Consumption approx. 0.6 - 1.0 kg/m<sup>2</sup>). It is mandatory to adhere to the consumption quantities for obtaining the required degree of slip-resistance.

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#### 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 50**, **EP 51 RAPID S** or **EP 52 Spezialgrund**. The substrates to be coated should be prepared mechanically. 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. In case of doubt, we recommend testing on a trial surface. The surface

can be scattered openly with approx. 0.5 - 1.0 kg/m<sup>2</sup> of quartz sand 0.3/0.8 mm in order to improve adhesion.

**Mastic asphalt:** After suitable substrate preparation, a scratch coat with **PU 429** or **PU 421** may be applied straight on top. Please ensure that the build-up is uniformly elastic or viscoplastic and not too thick. Before coating the quality grade has to be checked. Only quality grade IC 10 or IC 15 are suitable for coating. For indoor use only. No rolled asphalt!

Prime the steel substrate with **EP 52 Spezialgrund** and scatter with quartz sand 0.3/0.8 mm; flake boards with **EP 50**.

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#### 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. Partial quantities need to be weighed out in the right mixing ratio after having stirred up the single components.

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#### Processing

Process the material immediately after mixing with a squeegee or toothed trowel by applying an even layer on the prepared surface. The product is adjusted for optimum deaeration, however, rolling with a spiked roller is recommended to improve the wetting of the substrate, to optimise levelling and to remove remaining air bubbles. 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. Do not scatter too early, the optimum time is at 20 °C / 68 °F after 15 - 30 minutes.

Floor and air temperature must not fall below 10 °C / 50 °F and humidity must not exceed 75 %. The material to be processed must have room temperature. Within the recommended processing conditions, the floor temperature may be a maximum of 3 °C / 3K / 5.4 °F colder than the ambient room air temperature in order to exclude a dew point on the surface to be coated and the fresh coating. If a dew-point situation arises, regular curing will not be possible with hardening problems and foaming to occur. Do not work in strong sunlight or on strongly heated surfaces, as the working time will be greatly reduced and bubble formation is possible. Polyurethane coatings are sensitive to moisture when fresh, so the humidity specifications must be strictly observed.

**The coating of dew-damp substrates and the use of damp sand as well as sweat lead to foaming of the material and must be avoided.**

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. During curing, the recommended working conditions must be ensured. Otherwise, the technical properties of the end product may deviate from those specified.

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#### Cleaning

To clean tools, use thinner **VR 28**. Hardened material can only be removed mechanically.

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

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**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. Tightly re-seal opened containers and use 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: PU40

**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**

	
KLB Kötztal Lacke + Beschichtungen GmbH Günztalstraße 25 FRG-89335 Ichenhausen	
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PU421-V1-022013	
DIN EN 13813:2003-01	
Synthetic resin screed mortar DIN EN 13813: SR-B1.5-AR0.5-IR16	
Fire behaviour	E <sub>fl</sub> -s1
Emission of corrosive substances	SR
Wear resistance BCA	AR 0.5
Adhesive tensile strength	B 1.5
Impact resistance	IR 16

**VOC content**

The product complies with the high requirements to low VOC contents, as required for sustainable construction. Therefore, these values are well below the limits set by the European Union directive 2004/42/EG (Decopaint Directive).

	Limit value	Actual content	
Decopaint Directive 2004/42/EG - Component A	< 500	13,7	g/l
Decopaint Directive 2004/42/EG - Component B	< 500	0	g/l
DGNB - Components A + B	GISCODE	PU40, EC 1PLUS	
Klima:aktiv – Components A + B	<	0.68	%
LEED - Components A + B	< 100	11.4	g/l
Minergie ECO ® - Components A + B	< 1 (< 2)	0.68	%

(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.

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](http://www.klb-koetztal.com). In addition, our "General Terms and Conditions" apply.