PRODUCT DATA SHEET

# PU 410

Version Penetron® Romania,rev.1

## HIGH-QUALITY HIGHLY PHOTOSTABLE TWO COMPONENT POLYURETHANE COATING

### DESCRIPTION

PU 410 is a high-quality, free-flow coating based upon a liquid, 2-component polyurethane resin. PU 410 is used for flexible coatings especially for interior areas with impact sound insulation and decorative features. PU 410 is used for areas which require good usage, comfort, and an appealing appearance like show-rooms, office and sale rooms, hospitals, and so on. PU 410 is certified according to the "Indoor Air Comfort Gold" and meets the requirements for a sustainable construction certification according to DGNB (Germany), LEED (United States) or BREEAM (Great Britain). "Indoor Comfort Gold" fulfills the highest requirements in regards to the emission of Volatile Organic Compounds and respects not only the German limits of AgBB or ABG, but also of the emissions regulations of many other European Countries. The product is DIBt®-accredited for recreation rooms in combination with EP 55 and PU 805 E. On the contrary to other known polyurethane industrial coatings PU 410 is made of photo-stable raw materials. Because the coating is photo stable even pale, bright, and decorative colour tints are available. The coating has good free-flow and smoothing properties and cures with almost no shrinkage. The cured coating shows good flexibility and is crack-bridging starting at layers of 2 mm. PU 410 is used for interior areas requiring more flexibility due to the substrate, e.g. mastic asphalt, flake boards, metallic substrates, and reconstruction areas. To increase the walking comfort and to increase the impact sound insulation PU 410 may be combined with the flexible interlayer PU 430 Silent. The material offers good resistance to water, salt solutions, diluted alkalis, and acids. PU 410 is available in standard colours and may also be produced in pale and brilliant special colours. The coating is very suitable for partiColor®-Chips (flakes) scattering.PU 410 offers good abrasion resistance qualities. Sealing is generally recommended with suitable top sealers like PU 805 E, PU 880, or PU 882.

### RECOMMENDED FOR

Typical areas of application are:

- High-quality, comfortable, jointless floor coating for areas with light or medium mechanical load.
- High-quality, decorative flooring for areas with especially high demand to photostability and resistance to yellowing.
- As low emission coating with recreation room accreditation, like e.g. sales areas, offices, exhibition areas, kindergarten, doctor's offices, schools, and many more.
- Suitable for exterior areas like patios, balconies, and winter gardens when the correct product system will be used.
- Suitable for deformable substrate like mastic asphalt, metallic, wooden or mixed substrate, as well as substrate susceptible to cracks.

### ADVANTAGES

- Highly photostable
- Smooth, pigmented surface
- Flexible, crack-bridging
- Impact sound insulation
- Solvent-free
- Tested low emission
- For reconstruction
- Free of deleterious substances against varnish

### TECHNICAL CHARACTERISTICS

| Characteristic | Test Result | Test Method |
|---|---|---|
| *Viscosity (Components A+B)* | 3600 mPa s | EN ISO 3219 at 73.4 oF (23 oC) |
| *Density (Components A+B)* | 1.30 kg/lt | EN ISO 2811-2 at 68 oF (20 oC) |
| *Color* | See relevant color chart | |
| *Solid content* | > 99 % KLB-Method | |
| *Breaking elongation* | 55 % | DIN EN ISO 527-3 |
| *Abrasion (Taber Abraser)* | 25 mg | ASTM D4060 |
| *Max. tear growth resistance* | 48 kN/m | DIN ISO 34-1 |
| *Shore-hardness D* | 62 | DIN 53505 (28 days) |
| *Processing time at 50 oF (10 oC)* | 45-50 minutes | |

| | | |
|---|---|---|
| *Processing time at 68 oF (20 oC)* | 25-30 minutes | |
| *Processing time at 86 oF (30 oC)* | 15-20 minutes | |
| *Processing temperature* | Minimum 50 oF (10 oC) room and floor temperature | |
| *Curing time at 50 oF (10 oC )* | 24-36 hrs (Accessibility) | |
| *Curing time at 68 oF (20 oC)* | 18-24 hrs (Accessibility) | |
| *Curing time at 86 oF (30 oC)* | 12-15 hrs (Accessibility) | |
| *Curing* | 2-3 days for mechanical load at 68 oF (20 oC)<br>7 days for chemical resistance at 68 °F (20 oC) | |
| *Further coatings* | After curing, but not longer than 48 hours at 68 Of (20 oC) | |
| *Recommended thickness of layers* | 2 mm | |

The aforementioned results are related to average laboratory test results. In reality the climate changes, such as temperature,moisture and surface porosity may change these results.

## VOC – CONTENCTS

The product complies with the high requirements to low VOC – Contents, as required for sustainable construction. Therefore these values exceed by far the European Union directive 2004/42/EG (decopaint-directive).

| Characteristic | Max. Value | Actual Content |
|---|---|---|
| *Directive 2004/42/EG Decopaint-directive(Component A)* | ≤ 500 g/l | 21 g/l |
| *Directive 2004/42/EG Decopaint-directive (Component B)* | ≤ 500 g/l | 0 g/l |
| *DGNB German sustainable Building Council (Components A+B)* | < 3 % | 0.9 % |
| *Climate:active Climate protection Initiative of the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water (Components A+B)* | < 3 % | 0.9 % |
| *LEED Leadership in Energy and Environmental Design (Components A+B)* | < 100 g/l | 12 g/l |
| *Minergie Eco® Quality standard of the "Minergie society", Switzerland (Components A+B)* | < 1 (<2) % | 0.9 % |

According to the decopaint-directive single components are used for the calculation. For the quality rating system for sustainable construction the mixture of both components in the correct mixing ratio is the determining factor

## DIRECTIONS FOR USE

**Surface Preparation:** The substrate to be coated has to be levelled, dry, free of dust, has to have adequate tensile and compressive strength, and be free from weakly-bonded components or surfaces. Materials impairing adhesion, such as grease, oil, and paint residues must be removed using suitable methods. For concrete, moisture content must not exceed 4.5 CM-%, remaining residual humidity. The possibility of moisture ingress from the rear must be permanently excluded. Please refer to the advice issued by the trade associations, e.g. the current edition of BEB-worksheets KH-0/U and KH-0/S, as well as the product information of the recommended KLB-Base Coats like EP 50, EP 51RAPID S, EP 52 Spezialgrund, and EP 55. The surface to be coated should be prepared mechanically. The prepared area has to be primed accurately, saturated, and free of pores. If the substrate hasn't been sealed completely bubbles and pores may appear because of rising air. Conduct a trial if in doubt. To improve adhesion scatter the surface with approx. 0.5 - 1.0 kg/m2 quartz sand, grain size 0.3/0.8 mm.

**Mixing:** Combi-trading will be supplied in the correctly measured mixing ratio. Component A has sufficient volume for the entire trading unit. Decant the hardener component B into the resin completely. Blend with a slow speed mixer (200 - 400r/pm) for at least 2-3 minutes, for a homogeneous mixture, free of streaks. To avoid mixing errors, it is recommended to principally empty the resin/hardener--mixture into a clean container and mix briefly once again

***Mixing ratios:*** A:B = 2:1 parts by weight
A:B = 100:63 parts by volume

**Processing/Handling:**

Process the material immediately after mixing with a coating knife or trowel by applying an even layer on the prepared substrate. The product is adjusted with an optimum of air venting. To upgrade the moistening of the substrate, optimizing the flow-properties and removing any air blows, it is recommended to roll with a spiked roller. Roll time delayed after 10 - 15 minutes. To avoid any shoulders always work “fresh-in-fresh” and divide the working areas. It is mandatory to wear clean overshoes when sealing the coat PU 410. Nail shoes are not permissible. Fresh polyurethane coatings are very sensitive to moisture. It is essential to keep the moisture conditions.
Coating dewy substrate, using moist sand, as well as sweat lead to foaming of the material and has to be avoided. Conduct measurements before starting to work.Floor and air temperature must not fall below 50 °F (10 °C)and humidity must not exceed 75 %. The material to be processed has to be tempered according to the room temperature. The floor temperature may be 37.4 °F (3 °C) at the max. less than the surrounding temperature to exclude a dew-point situation on the surface and on the fresh coating. If a dew-point situation occurs curing may be disturbed and foaming may occur. Technical properties may be affected. Do not process at increased insolation or on strongly heated surfaces because processing time will decrease and blisters
may appear. Special remark: For a slightly thickened PU 410 use only our STELLMITTEL 5 FT. Other thixotropic agents may disturb the curing. If the products to be applied onto the same surface are pigmented, these preferably have to belong to the same lot. Indeed, by using products taken from different lots, slight color variations depending on the raw material cannot be excluded. The lot number is indicated on the container label. With certain colors particularly white, yellow and orange or with light pastel colors the recommended coating thickness must be observed, in order to guarantee hiding power. In specific light and weather conditions and after long and intensive use, color variations, loss of gloss and yellowing may occur. If the use of swivel chairs or other wheeled pieces of furniture is expected, suitable caster chairs or special floor protection mats are recommended to avoid wearing and abrading the floor.

**Build-up of Coats:**

**Substrate preparation – mineral substrate**
- Prepare the substrate, like e.g. concrete, cement screed or others mechanically, e.g. by shot-blasting. Substrate preparation without in-between sanding
- Prime with the recommended KLB-Base Coats: EP 50, EP 55, EP 51 RAPID S, consumption: 0.3 - 0.4 kg/m². Use EP 55 for low emission coatings.
- Scratch coat application with EP 50, EP 55, EP 51 RAPID S and KLB-Mischsand 2/1 (alternatively QUARTZ SAND MIX 0.10 – 0.45 MM), mixing ratio 1 : 0.8 parts by weight, consumption approx. 0.8 - 1.2 kg/m² of the mixture, if needed.
- Alternatively a scratch coat with PU 421 or PU 410 in addition of approx. 20 - 30 % of quartz sand 0.1/0.3 mm, consumption approx. 0.8 - 1.0 kg/m² may be applied right after the base coat application without scattering. Important note: Only when using the base coat EP 50 or EP 55, PU 410 may be applied right away without any in-between sanding on a free of pore substrate. Note for a curing time of at least 14 hours up to a max. of 48 hours at 68 °F (20 °C). When using EP 51 RAPID S, PU 410 may be applied after at least 4 hours up to a max. of 24 hours at 68 °F (20 °C). For all other base coats or changed time cycles an in-between sanding is mandatory.
- Apply PU 410 with a rake, e.g. with a toothed trowel KLBRS4 or Pajarito 48, consumption 2.3 - 2.6 kg/m². Vent with a spiked roller after 10 to 20 minutes. Substrate preparation – mastic asphalt
- Prepare substrate mechanically by shot blasting.
- Apply a scratch coat with PU 421 or PU 410 in addition of 20 - 30 % quartz sand, grain size 0.1/0.3 mm, consumption approx. 0.8 - 1.0 kg/m². For subsequent coatings the surface has to be free of pores.
- Apply PU 410 with a coating knife, e.g. toothed trowel KLBRS4 or Pajarito 48, consumption 2.3 - 2.6 kg/m². Vent after 10 to 20 minutes with a spiked roller.

**Decorative, low-emission top sealer**

- For decorative coatings apply a non-pigmented or covering sealer with PU 805 E or PU 806 E, low- emission within the system, consumption 0.140 - 0.160 kg/m². By adding Strukturmittel RHX to PU 805 E or PU 806 E or by using PU 805 E R10 or PU 806 E R10 a slip resistance grade up to R11 can be achieved.

• Scattering with partiColor®-Chips (flakes) is possible in combination with a non-pigmented sealer.
Substrate preparation with in-between sanding for exterior areas

• Prime with EP 52 SPEZIAL. Consumption approx. 0.3 - 0.5 kg/m².
• Scatter the fresh surface with quartz sand 0.3/0.8 mm,consumption approx. 0.5 - 1.0 kg/m².
• Apply a scratch coat using PU 421 or PU 410 right on top.
Add approx. 20 - 30 % quartz sand 0.1/0.3 mm, consumption approx. 0.8 - 1.0 kg/m². The surface has to be

free of pores before applying any subsequent coatings.
• Apply PU 410 with a rake, e.g. with a toothed trowel KLBRS4 or Pajarito 48, consumption 2.3 - 2.6 kg/m². Vent with a spiked roller after 10 to 20 minutes.
• For exterior areas use the non-pigmented or covering sealer PU 882 or PU 883, consumption 0.150 - 0.180 kg/m². By the addition of Strukturmittel-RHX a slip resistance grade up to R11 can be achieved. Scattering with partiColor®-Chips (flakes) and subsequently sealing with a non-pigmented sealer is recommended.
• If necessary apply a fleece-reinforced sealer in combination with PU 426.

## COVERAGE

Approx.1.3 kg/m2 for each mm of layer.

## SPECIAL CONSIDERATIONS

To remove fresh contamination and to clean tools, use thinner VR 28 or VR 33 immediately. Hardened material can only be removed mechanically.The product is subject to the hazardous material-, operational safety-, and transport-regulations for hazardous goods. Refer to the DIN-Safety Data Sheet and the information on the labelled containers!
GISCODE: PU 40
Indication of VOC-Content: (EG-Regulation 2004/42),
Maximum Permissible Value 500 g/l (2010,II,j/lb): Ready-foruse
product contains < 500 g/l VOC.
Contact PENETRON ROMANIA for additional information, regarding your project.

## PACKAGING

PU 410 is available in 6.6+3.4 kg and 20+10 kg. containers.

## STORAGE / SHELF LIFE

Store in dry and frost-free conditions. Ideal storage temperature is between 50 - 68 °F (10 - 20 °C). Bring to a suitable working temperature before application. Tightly reseal opened containers and use the content as soon as possible. When properly stored in a dry place in unopened and undamaged original packaging, shelf life is 12 months

## SAFE HANDLING INFORMATION

Avoid skin and eye contact. If contact is made, flush areas with lots of water and seek medical advice. Protective gloves, mask and goggles should be worn. For further information please refer to Safety Data Sheet.
KEEP OUT OF REACH OF CHILDREN.

## CERTIFICATION

Classification of the fire behaviour according DIN EN 13501- 01:2010-01: $C_{fl}$-s1.
Static load limit test (test of the recovery properties of resilient floor covering after static loading) in combination with PU 430 Silent according to DIN EN 1991-2-1:2010-12.
Slip resistance producible according to DIN 51130 and BGR 181 in R9 and R10.
Reduction of subsonic noise in combination with PU 430 Silent according to DIN EN ISO 717-2: 9 Db

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KLB Kötztal Lacke + Beschichtungen GmbH
Günztalstraße 25
FRG-89335 Ichenhausen
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PU410-V1-022013
DIN EN 13813:2003-01
Synthetic resin screed mortar
DIN EN 13813: SR-B1.5-AR0.5-IR20
Fire behavior: Cfl-s1
Emission of corrosive substances: SR
Wear resistance BCA: AR 0.5
Adhesive tensile strength B 1.5
Impact resistance: IR 20
1119
KLB Kötztal Lacke + Beschichtungen GmbH
Günztalstraße 25
FRG-89335 Ichenhausen
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PU410-V1-022013
DIN EN 1504-2:2004
Surface protection products coating
DIN EN 1504-2:ZA.1d, ZA.1f, ZA.1g
Abrasion resistance: Complied with
CO2-permeability: SD > 50 m
Water vapour permeability: Class III
Capillary water absorption and water permeability: < 0.1 kg/m²*h0.5
Resistance to increased chemical excavation: Complied with
Resistance to impact: Class II.
Tear-test for adhesive strength evaluation: > 1.5 N/mm²
Fire behavior: Cfl-s1