VELOSIT® PU 400

2-Component Hotspray Polyurea Coating- and Waterproofing Membrane

CE
EN1504-2

PURE POLYUREA

Application fields

VELOSIT PU 400 is a universal instant setting protective coating with extraordinary properties. VELOSIT PU 400 shows an enormous flexibility paired with exceptional tensile strength, mechanical and chemical durability make it the ideal coating system for applications with demanding requirements, especially on larger areas. VELOSIT PU 400 is applied with a hotspray coating machine. VELOSIT PU 400 is innocuous once cured and is hence suitable for applications where contact with potable water are required. Typical application fields include but are not limited to:

- Potable water structures
- Waterproofing of basements and below grade parking structures
- Coating of bridges and park decks
- Roof coating, especially on corrugated sheet metal
- Waterproofing of green roofs
- Protective coating on secondary containment tanks
- Coating of biogas tanks
- Corrosion protection of pipelines

Properties

VELOSIT PU 400 is a solvent-free, 2-component pure polyurea system applied at a volume ratio of 1 : 1 with a high pressure airless hot-spray machine.

VELOSIT PU 400 surpasses the requirements of EN 1504-2 for coatings (C) and can be used according to the principles 1, 2, 5, 6 and 8 acc. to EN 1504-9.

Because of its very short reaction time it can be used on horizontal and vertical surfaces (incl. overhead).

- Extreme flexibility with an elongation at break exceeding 500%
- Enormous tensile strength (> 20 MPa)
- High tear strength and extreme impact resistance
- Waterproof in 2 min.
- Open to light foot traffic after 15 min.
- Fully cured in 48 hours

- Innocuous once cured (surface washing required prior to contact with potable water)
- Very good adhesion to metal and typical construction substrates like concrete, wood and masonry (with primer)
- Good resistance against many chemicals such as alkalis and diluted acids
- Wide application spectrum even under extreme temperatures
- Excellent crack bridging under static and dynamic loads
- Good weathering resistance (except color stability)

Application

1.) Substrate preparation

a.) Steel must be prepared to a purity of SA 2.5 acc. SIS 05 5900. No priming is required if the coating is applied immediately after the preparation.
b.) Concrete and masonry must be prepared with sand blasting, shot blasting or high pressure water blasting (> 100 bar/1450 psi) to remove all bond breaking substances. Substrate must be open porous and load bearing. Minimum requirement for adhesive strength is 1 MPa (145 psi) and 20 MPa (2900 psi) for compressive strength. Depending on project requirements lower values may be tolerated. Active water leaks on the negative side effecting the waterprooofing must be treated and fully stopped. Substrates with a humidity of max. 4% and a water vapor emission rate of less than 0.6 g/m²h (3 lbs./ 24h x 1000 ft²) can be primed with VELOSIT PU 411 (1K Polyurethane-Primer). VELOSIT PU 411 is ready to receive the coating after 3 h curing. At higher moisture levels or in case the moisture levels in the substrate are expected to increase, priming must be done with VELOSIT PR 303 including a full broadcast with suitable quartz sand 0.7 mm – 1.25 mm. The coating can be applied as early as 6 h after the primer application. If application of VELOSIT PU 400 is executed within 24 h of primer application the broadcast with suitable quartz sand 0.7 mm – 1.25 mm can be omitted.
c.) Wooden substrates can be primed with VELOSIT PU 412, when free from bond breaking substances. Otherwise the surface must be sanded before priming. Wood substrates swell with water. A waterproofing is only permitted if the surfaces are completely dry before the application and no negative side water source will impact the waterproofing layer in the future. Wood is generally not a sufficiently load bearing substrate to achieve high adhesive strengths. Mechanical fasteners with washer heads can increase the bond to the wood substrate.
d.) Polyurethane insulating foams or insulation boards based on polystyrene must be free from bond breaking substances and fully adhered to the substrate. These can be coated with VELOSIT PU 400 immediately after installation without the need for priming.

2.) Processing

VELOSIT PU 400 can only be applied with suitable machinery. A two component airless spray machine with heated hoses is required. Suitable machines include:

- Graco Reactor E- or H-series
- Gama Evolution series
- WIWA Doumix PU 460

Depending on the type of machine both components are either metered directly from the supply packaging or filled into product hoppers of the machine. The machine must supply an exact 1 : 1 volume ratio at the spray gun. VELOSIT PU 400 is preferably sprayed at a temperature of 70°C (158°F). The pressure setting of the machine should be chosen between 100 and 200 bar (1450 – 2900 psi). Substrates prepared according to section 1.) must be free from dust or any other bond breaking material at the time of application.
Please carefully observe the dew point. There must be no condensation on the substrate.
Apply VELOSIT PU 400 with the specified application rate without long interruptions. Ensure to work in a crossing pattern. Connected areas (like wall and slab areas) must be coated in one working step to ensure a fully uniform coat. Spray interruptions of 90 min. or more may lead to reduced adhesion between the first and second coating layer.

3.) Curing

VELOSIT PU 400 does not require curing and can be over-coated within 2 h after application.
VELOSIT PU 400 may yellow slightly under UV light with no reduction in physical or chemical properties. For decorative applications it is advisable to topcoat VELOSIT PU 400 with a UV stable polyurethane or polyaspartic coating.

Estimating

Waterproofing concrete < 4 % moisture:
VELOSIT PU 412: 0.3 kg/m²
VELOSIT PU 400: 2.0 kg/m²

Waterproofing concrete > 4 % moisture:
VELOSIT PR 303: 0.5 kg/m²
suitable quartz sand
0.7 mm – 1.25 mm: 0.8 kg/m²
VELOSIT PU 400: 2.0 kg/m²

Wear protection on steel:
VELOSIT PU 400: 3.0 – 5.0 kg/m²

Other thickness requirements: 1.1 kg/m² for 1 mm dry film thickness on smooth and level substrates. Rougher and/or undulated surfaces will lead to higher consumption.

Cleaning

VELOSIT PU 400 can be removed in the fresh state with solvents like naphta. Once cured VELOSIT PU 400 can only mechanical cleaning is possible.

Quality features

	Komp. A	Komp. B
Color:	gray	yellow
Viscosity 23°C, mPas:	600	700
Mixing ratio by weight:	100 A + 104 B	
Mixing ratio by volume:	100 A + 100 B	
Gel time:	< 7 s	
Tack-free time:	< 30 s	
Substrate temperature:	5 – 50 °C* (40-120°F)	
	* observe dew point!	
Elongation at break, 23°C:	520 %	
Tensile strength, 23°C: (3045 psi)	21 MPa	
Abrasion, Taber wheel H22:	120 mg	
CO_2-diffusion:	S_D = 250 m	
Water vapor diffusion:	S_D = 3 m, class I	
Capillary water absorption:	0.01 kg/m² x $h^{0,5}$	
Impact resistance:	Class III	
Adhesive strength on		
- Steel:	6.0 MPa (870 psi)	
- Concrete with primer:	2.8 MPa (406 psi) (concrete failure)	
- Wood (OSB):	0.2 MPa (29 psi) 2418(failure OSB)	
Shore A hardness, 7d:	> 90	
Shore D hardness, 7d:	45	
Chemical resistance acc. EN ISO 868:		
- NaCl:	28 d, class II	
- Caustic potash 20 %:	28 d, class II	
- Sulfuric acid, 5 %:	28 d, class II	
- Hydrochloric acid, 32 %:	3 d, class I	
- Diesel fuel:	28 d, class II	
Service temperature:		
- constant/immersed:	+120 °C (248 °F)	
- temporary:	+175 °C (347 °F)	
Fire rating EN13501-1:	Class E	

Packaging

VELOSIT PU 400 is available 60 kg: 29.4 kg A + 30.6 kg B in 30 l pails

Storage

VELOSIT PU 400 can be stored in unopened original packs for 12 months at 15 – 25 °C (59-77°F) in a dry storage place protected against sunlight. The product is supplied in sealed containers under a nitrogen blanket to ensure protection against reaction with humidity. Open containers must be consumed quickly.

Safety

Please observe the actual valid material safety data sheet and follow the described safety measures for handling of the product.

Recommendations

VELOSIT PU 400 is only available for professional applicators.

VELOSIT PU 400 may yellow under UV load. Physical and chemical features will not be affected by the color change.

All described product features are determined under controlled laboratory conditions according to the relevant international standards. Values determined under job site conditions may deviate from the stated values.

Please always use the latest version of this data sheet available from our website www.velosit.de.

Manufacturer

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