



Purtop 1000



Two-component, solvent-free pure polyurea membrane applied by spray with a high-pressure, bi-mixer type pump, to form waterproof coatings for hydraulic works, roofs and bridge decks directly on site



WHERE TO USE

Thanks to its high chemical resistance, exceptional flexibility and tear strength, **Purtop 1000** is suitable for waterproofing membranes on storage tanks, basins and hydraulic works in general as well as for the type of structure that requires a high-performance waterproofing membrane. The special properties of **Purtop 1000** also makes it suitable for waterproofing both new and old structures.

Purtop 1000 is one of the waterproofing membranes used in **Purtop System Deck**, a dedicated system for flat roofs suitable for vehicles, bridge decks and viaducts, and in **Purtop System Tank**, a dedicated system for hydraulic structures.

Some application examples

- Waterproofing roof gardens and inverted roofs.
- Waterproofing sheet metal flat roofs.
- Waterproofing bridge and viaduct decks.
- Waterproofing basins, storage tanks and hydraulic structures in general.

Advantages

Purtop 1000 forms an excellent bond and may be applied on various surfaces (concrete, metals, etc.) to create a strong, flexible, continuous membrane.

Purtop 1000 has the following advantages:

- solvent-free;
- immediate waterproofing (after 1 minute) and set to light foot traffic (after 5-10 minutes);
- excellent tensile strength (25 N/mm² according to DIN 53504);
- excellent tear strength (96 N/mm according to ISO 34-1);

- high static and dynamic crack-bridging ability, including at low temperatures;
- elongation capacity more than 350% (DIN 53504);
- excellent resistance to alkalis and diluted acids;
- rapid reaction times when sprayed: gel time at +70°C < 4 seconds;
- no reinforcement required;
- does not generate overloads on load-bearing structures.
- after reticulation, the product is completely inert;
- resistant to root penetration as certified by the UAS (University of Applied Sciences in Weihenstephan - Triesdorf (Germany)).

TECHNICAL CHARACTERISTICS

Purtop 1000 is a two-component, solvent-free, pure polyurea resin formulate with fillers according to a formula developed in MAPEI R&D laboratories.

The product is grey in colour and is applied using a high-pressure, bi-mixer spray with flow and temperature control, with a self-cleaning spray gun.

Purtop 1000 must be applied in layers at least 2 mm thick and its very short reaction time means it may also be applied on vertical surfaces.

After reticulation, thanks to its high tensile strength, tear strength and crack-bridging capacity (even at low temperatures), **Purtop 1000** forms a continuous waterproof coating which adapts to substrates with any geometric form.

Purtop 1000 responds to the principles defined in EN 1504-9 (*"Products and systems for protecting and repairing concrete structures: definitions, requirements, quality control and conformity assessment. General principles for the use of products and systems"*) and

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the requirements of EN 1504-2 coating (C) according to principles PI, MC, PR, RC and IR ("Concrete surface protection systems").

RECOMMENDATIONS

- Do not apply **Purtop 1000** on substrates which have not been cleaned and primed beforehand.
- Do not apply **Purtop 1000** on substrates with rising damp.
- A primer for damp substrates must be used whenever the level of residual humidity in the substrate is higher than 4%, such as **Triblock P**.
- Do not dilute **Purtop 1000** with solvent or water.

Colour stability and protection from UV rays

After exposing **Purtop 1000** for 2,000 hours to UV rays and condensation according to UNI EN 1062-11 standards, there is no variation in its tensile strength but just a slight variation in colour.

To increase its resistance to UV rays and wear, apply a coat of **Mapefloor Finish 55** two-component, aliphatic polyurethane finish.

APPLICATION PROCEDURE

Preparation of the substrate

1. Application on concrete substrates and cementitious screeds

Prepare the surface with a sanding machine or by shot-blasting to remove all traces of oil, grease, dirt and any other material which could compromise the bond of the waterproofing system. The compressive strength and tear strength of the surface must be ≥ 25 MPa and ≥ 1.5 MPa respectively. Remove all dust and any loose or detached parts from the substrate to leave a dry, porous, slightly rough surface with no contaminants.

As an alternative, repair any hollows, cavities and detached portions in the substrate with products from the **Mapegrout** and **Planitop** ranges. Choose the most suitable product according to the thickness to be repaired, the time available and the operating conditions on site.

After preparing the surface as described, spray on **Mapefloor I 914** two-component epoxy primer with an airless spray gun and dust the surface with **Quartz 0.5** or **Quartz 1.2**.

The waterproofing membrane must be applied within 12-24 hours of applying the primer (at a temperature of between +15°C and +25°C).

When applying with a trowel or spreader, we suggest applying a coat of **Primer SN** two-component epoxy primer with fillers beforehand and dusting the surface of the primer with **Quartz 0.5**.

The waterproofing membrane must be applied within 12-24 hours of applying the primer (at a temperature of between +15°C and +25°C).

If the level of residual humidity in the substrate is higher than 4% and it is not possible to wait until it drops to a lower value, apply a number of coats of **Triblock P** (instead of **Mapefloor I 914**) three-component

epoxy-cementitious primer according to the condition of the substrate, until the system is completely sealed.

The waterproofing membrane must be laid within 2-7 days of applying the primer (at a temperature of between +15°C and +25°C).

2. Application on metal surfaces

In the case of metal surfaces or if there are metallic elements, apply a coat of **Primer EP Rustop** two-component epoxy primer with a brush, roller or by spray after cleaning and treating them accordingly. The waterproofing membrane must be applied within 6-24 hours of applying the primer (at a temperature of between +15°C and +25°C). For any other type of substrate, contact the MAPEI Technical Services Department to define the most suitable preparation treatment.

Application of the membrane

Purtop 1000 must be applied at a temperature between +5°C and +40°C. Before applying **Purtop 1000**, remove all traces of dust from the surface with an industrial vacuum cleaner. The temperature of the substrate must be at least +3°C higher than the dew-point temperature and the level of residual humidity must be no higher than 4%. Component A must be mixed carefully before use until it has an even colour.

To apply **Purtop 1000** membrane, use a high-pressure, bi-mixer industrial spray gun with flow and temperature control, fitted with a self-cleaning spray gun.

Purtop 1000 must be applied continuously on all the horizontal and vertical surfaces. If application of **Purtop 1000** is interrupted and then taken up again after the maximum covering time (2 hours), an overlap at least 30 cm wide must be made after applying a coat of **Primer M** (the maximum covering time of this primer is 2 hours).

Please note that although **Purtop 1000** is suitable for surfaces that are completely immersed and is resistant to numerous chemical agents, we recommend that the compatibility of the membrane and the substances it will come into contact with is always checked beforehand.

Finishing off the membrane

If **Purtop 1000** is exposed to UV rays, its mechanical properties are not affected but it gradually yellows.

If the membrane remains exposed to UV rays, to guarantee it maintains its attractive finish for many years, we recommend applying **Mapefloor Finish 55**, a two-component, aliphatic, polyurethane coating product with excellent elasticity and resistance to wear and UV rays. Apply **Mapefloor Finish 55** with a roller or by spray.

Apply the finish within 24 hours of applying **Purtop 1000** waterproofing membrane. For further information, please refer to the **Mapefloor Finish 55** technical data sheet. Please note that the compatibility of the finish and the substances it will come into contact with must always be checked beforehand.

If **Purtop 1000** is to be covered by asphalt



Particulars of a Purtop 1000 waterproof coating applied on various substrates (cementitious and metallic)



Waterproof coating on a dam

Purtop 1000: two-component, solvent-free, pure polyurea membrane applied by spray with a high-pressure bi-mixer type pump, to form waterproofing coatings for hydraulic works, roofs and bridge decks directly on site in compliance with the requirements of EN 1504-2 coating (C) principles PI, MC, PR, RC and IR

TECHNICAL DATA (typical values)

PRODUCT IDENTITY

	component A	component B
Colour:	grey	amber yellow
Consistency:	fluid	liquid
Density (g/cm ³):	1.08 ± 0.03	1.11 ± 0.03
Brookfield viscosity at +23°C (mPa-s):	530 ± 100 (rotor 3 - 50 RPM)	975 ± 175 (rotor 3 - 50 RPM)

APPLICATION DATA OF PRODUCT (A+B) (at +23°C - 50% R.H.)

A/B ratio (by weight):	100/103
A/B ratio (by volume):	100/100
Gel time at +70°C (seconds):	< 4
Ambient application temperature:	from +5°C to +40°C

PERFORMANCE ON FREE FILM (thickness 2 mm)

Mechanical characteristics after 7 days at +23°C: – tensile strength (DIN 53504) (N/mm ²): – elongation at failure (DIN 53504) (%): – tear strength (ISO 34-1) (N/mm):	25 350 96
Modulus at 100% (DIN 53504) (MPa):	10
Hardness (DIN 53505):	Shore A = 90 Shore D = 45
Glass transition temperature (°C):	-46

PERFORMANCE CHARACTERISTICS FOR CE CERTIFICATION ACCORDING TO EN 1504-2 - Tables: ZA.1d,e,f and g (thickness 2 mm)

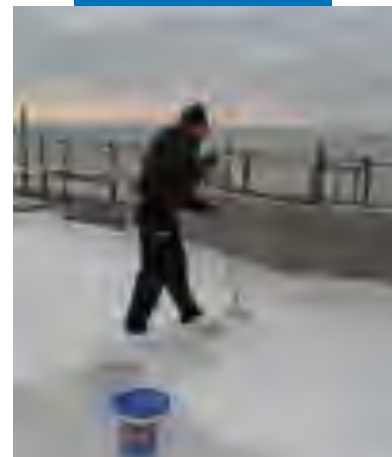
Performance characteristics	Test method according to UNI EN 1504-2	Requirements	Performance of product
Permeability to water vapour:	EN ISO 7783-2	Class I $s_D < 5$ m Class II $5 \text{ m} \leq s_D \leq 50$ m Class III $s_D > 50$ m	Class I (average $s_D = 2.9$ m)
Capillary absorption and permeability to water:	EN 1062-3	$w < 0.1 \text{ kg/m}^2 \cdot \text{h}^{0.5}$	average $w = 0.01 \text{ kg/m}^2 \cdot \text{h}^{0.5}$
Permeability to CO ₂ :	EN 1062-6	$s_D > 50$ m	$s_D = 285$ m
Direct traction adherence test Reference substrate: MC (0.40) as specified in EN 1766, curing time 7 days:	EN 1542	Average (N/mm ²) Cracking or flexible systems with no traffic: ≥ 0.8 (0.5) ^(a) with traffic: ≥ 1.5 (1.0) ^(a) Rigid systems^(c) with no traffic: ≥ 1.0 (0.7) ^(a) with traffic: ≥ 2.0 (1.0) ^(a)	4.7 N/mm ² flexible system with traffic (shore D = 45)
Cracking ability After conditioning as per EN 1062-11:2002, 4.1-7 days at +70°C for active resin systems:	EN 1062-7	Classes required and test conditions indicated in tables 6 and 7. Required crack resistance must be selected by design engineer according to local conditions (climate, width of cracks and movement of cracks). No failure permitted after testing the requested class	static at -10°C: exceeds class A5 dynamic at +23°C: exceeds class B4.1
Impact strength measured on MC (0.40) coated concrete samples according to EN 1766. Note: The expected thickness and impact load influence which class is chosen:	EN ISO 6272-1	No cracks or delamination after loading Class I: ≥ 4 Nm Class II: ≥ 10 Nm Class III: ≥ 20 Nm	Class III
Resistance to thermal shock (1x):	EN 13687-5	After thermal cycles a) no swelling, cracking or delamination b) average direct traction adherence test (N/mm ²) cracking or flexible systems with no traffic: ≥ 0.8 (0.5) ^(a) with traffic: ≥ 1.5 (1.0) ^(a) Rigid systems^(c) with no traffic: ≥ 1.0 (0.7) ^(a) with traffic: ≥ 2.0 (1.0) ^(a)	3.6 N/mm ² flexible system with traffic
Abrasion resistance (Taber test) Note: Testing methods according to EN 13813 for flooring systems are also acceptable:	EN ISO 5470-1	Loss in weight less than 3000 mg with an H22 abrasive disk/1,000 cycles/1,000 g load	loss by weight < 200 mg
Exposure to artificial atmospheric agents according to EN 1062-11:2002, 4.2 (radiation, UV rays and humidity) for external applications only. Only white and RAL 7030 require testing:	EN 1062-11	After 2,000 hours of artificial inclement weather: no swelling according to EN ISO 4628-2 no cracking according to EN ISO 4628-4 no flaking according to EN ISO 4628-5. Slight colour variations, loss of brightness and crumbling may be acceptable	no swelling, cracking or flaking (colour change)
Resistance to severe chemical attack Class I: 3 days with no pressure Class II: 28 days with no pressure Class III: 28 days with pressure We recommend using test liquids for the 20 classes indicated in EN 13529, which cover all the most common chemical agents. Other test liquids may be agreed upon between those interested in the tests:	EN 13529	Reduction of hardness less than 50% when measured according to the Buchholz method, EN ISO 2815 or the Shore method (EN ISO 868), 24 hours after removing the coating material from immersion in the test liquid	NaCl 20%: class II CH ₃ COOH 10%: class II H ₂ SO ₄ 20%: class II KOH 20%: class II CH ₃ OH: class II mixture (60% toluene, 30% xylene, 10% methylnaphthalene): class II
Reaction to fire:	EN 13501-1	Euroclass	E

OTHER PERFORMANCE CHARACTERISTICS

Resistance to root penetration (CEN/TS 14416):	no penetration or perforation
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Application of Purtop 1000 onto industrial storage tanks



Application by roller of Triblock P on a concrete surface



Storage tanks waterproofed with Purtop 1000

Purtop 1000



Application of Purtop Primer Black

TYPE OF PRIMER ACCORDING TO TYPE OF SUBSTRATE			
SUBSTRATE	PRIMER	CONSUMPTION (g/m ²)	MIN-MAX COVERING TIMES (approximate)
Concrete	Mapefloor I 914 surface-dusted with Quartz 0.5/Quartz 1.2	500-700	12-24 hours
	Primer SN surface-dusted with 0.5	300-600	12-24 hours
	Triblock P	600-1200	2-7 days
Metals	Primer EP Rustop	approx. 200	6-24 hours
Purtop 1000	no primer	-	30 mins.-2 hours
	Primer M	approx. 50	1-2 hours

Note: the covering times are for temperatures of from +15°C to +25°C.

flooring, apply a coat of **Purtop Primer Black** one-component solvent-based primer over the clean, dry membrane with a roller or airless spray beforehand. Dust the surface of the primer with **Quartz 1.2** while it is still fresh. Lastly, before applying the asphalt, spread on a hot bonding layer made generally from bitumen modified with styrene butadiene rubber (SBR).

Cleaning

Because of the high bond strength of **Purtop 1000**, we recommend cleaning tools with solvent naphtha before it starts to set. Once hardened, cleaning is much more difficult and must be carried out mechanically.

CONSUMPTION

Consumption of **Purtop 1000** depends on the roughness of the various substrates. The theoretical consumption on a smooth surface with a substrate temperature of between +15°C and +25°C is 2.2 kg/m² per 2.0 mm of thickness.

If the substrate is rougher consumption increases. On severely damaged substrates, we recommend that they are repaired with a suitable product beforehand.

PACKAGING

Purtop 1000 is supplied in metal drums. Component A: 220 kg drums. Component B: 225 kg drums.

STORAGE

Purtop 1000 may be stored for up to 12 months in its original packaging in a covered, dry area at a temperature of between +15°C and +25°C.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Purtop 1000 part A is corrosive and may cause burns. It is harmful when inhaled and may cause eye damage.

Purtop 1000 part B irritates the skin, the eyes and the respiratory tract. It may cause

sensitization when inhaled and allergic rushes with repeated contact with the skin to those who are sensitive to isocyanates. It is harmful when inhaled and may cause irreversible damages with prolonged use.

When applying the product, we recommend using protective clothing, gloves, safety goggles and to take the usual precautions for handling chemicals. It is recommended to work in well ventilated areas. In case of poor ventilation, use a mask with filters. If the product comes in contact with the eyes or skin, wash immediately with plenty of water and seek medical attention.

Purtop 1000 part A is hazardous for aquatic life - do not dispose of the product to the environment.

For further and complete information about the safe use of our product please refer to the latest version of our Material Safety Data Sheet.

PRODUCT ONLY FOR PROFESSIONAL USE.

WARNING

Although the technical details and recommendations contained in this product data sheet correspond to the best of our knowledge and experience, all the above information must, in every case, be taken as merely indicative and subject to confirmation after long-term practical application; for this reason, anyone who intends to use the product must ensure beforehand that it is suitable for the envisaged application. In every case, the user alone is fully responsible for any consequences deriving from the use of the product.

Please refer to the current version of the Technical Data Sheet, available from our website www.mapei.com

All relevant references for the product are available upon request and from www.mapei.com



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