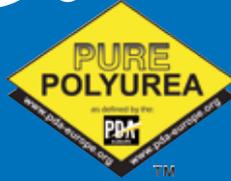




# Purtop 1000



**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 Roof**, a dedicated system for roofing, 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.
- Waterproofing storage tanks and cisterns for drinking water.

## 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 and "no VOC" (volatile organic compounds);
- immediate waterproofing (after 1 minute) and set to light foot traffic (after 5-10 minutes);
- excellent tensile strength (25 N/mm<sup>2</sup> according to ISO 37);

- 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% (ISO 37);
- 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.

## CERTIFICATIONS

- **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 the requirements of the EN 1504-2 coating (C) according to principles PI, MC, PR, RC and IR ("Concrete surface protection systems").
- Resistant to root penetration according to CEN/TS 14416 and to EN 13948;
- Suitable for contact with drinking water according to Ministerial Decree DM 174/04.

## 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.

**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.

# Purtop 1000



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



Waterproof coating on a dam

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.

## RECOMMENDATIONS

- Do not apply **Purtop 1000** on substrates polluted with oil, grease or dirt in general.
- 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.

## APPLICATION PROCEDURE

### Preparation of the substrate

Surfaces must be prepared according to specification by sand-blasting, shot-blasting, scarifying, bush-hammering or other methods, depending on which type of substrate the product is to be applied. Then treat the substrate with a suitable primer as follows.

### 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  $\geq 25$  MPa and  $\geq 1.5$  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.

On the surface prepared as described, apply with a trowel or spreader **Primer SN** two-component, fillerized epoxy primer, and dust the surface with **Quartz 0.5**. The waterproofing membrane must be applied within 12-24 hours of applying the primer (at a temperature of between  $+15^{\circ}\text{C}$  and  $+25^{\circ}\text{C}$ ). 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** three-component epoxy-cementitious primer according to the condition of the substrate, until the system is completely sealed.

When the primer has cured sufficiently (3-7 days) apply a coat of epoxy primer (such as **Primer SN** or **Mapecoat I 600 W**); contact MAPEI Technical Services for further details.

### 2. Application on bitumen membranes

Clean the bitumen membrane to remove all traces of oil, grease, dirt in general and any other material which could affect adhesion of the primer and remove all traces of dust with compressed air. The membrane must be perfectly dry before inspecting the surface and any damage in the membrane, such as blistering, tears or detached areas, must be repaired before applying the primer. Apply a coat of **Primer BI** ready-to-use, synthetic resin-based impregnator in solvent or **Primer P3** two-component solvent-based polyurethane primer on all the vertical hems and overlaps. Apply the waterproofing membrane within 2 to 4 hours of applying the primer (for temperatures between  $+15^{\circ}\text{C}$  and  $+25^{\circ}\text{C}$ ).

### 3. 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  $+15^{\circ}\text{C}$  and  $+25^{\circ}\text{C}$ ).

### 4. Application on wooden substrates and OSB panels

Clean the substrate to remove all traces of dust, dirt and other deposits. Calculate the width and pitch of the joints between the panels in order to select the most suitable product for the surface. Apply a coat of **Primer SN** two-component fillerized epoxy primer on the clean, dry substrate and broadcast the surface with **0.5 Quartz**. Apply the waterproofing membrane within 12 to 24 hours of applying the primer (for temperatures between  $+15^{\circ}\text{C}$  and  $+25^{\circ}\text{C}$ ).

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  $+5^{\circ}\text{C}$  and  $+40^{\circ}\text{C}$ . 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  $+3^{\circ}\text{C}$  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 pump with flow and temperature control, fitted with a self-cleaning spray gun.

The application temperature of the two components must be between  $65^{\circ}$  and  $85^{\circ}$  and the pressure must be between 160 and 200 bar.

**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

**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 <sup>3</sup> ):	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 (ISO 37) (N/mm <sup>2</sup> ):	25
– elongation at failure (ISO 37) (%):	350
– tear strength (ISO 34-1) (N/mm):	96
Modulus at 100% (ISO 37) (MPa):	10
Hardness (DIN 53505):	Shore A = 90 Shore D = 45
Glass transition temperature (°C):	-46

### FINAL PERFORMANCE DATA (2 mm thickness)

Performance characteristics	Test method	Requirements according to EN 1504-2	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 <sub>2</sub> :	EN 1062-6	$s_D > 50$ m	$s_D = 285$ m
Direct traction adherence test:	EN 1542	<b>Flexible systems</b> with no traffic: $\geq 0.8 \text{ N/mm}^2$ with traffic: $\geq 1.5 \text{ N/mm}^2$	4.7 N/mm <sup>2</sup>
Static crack-bridging at -10°C expressed as maximum width of cracking:	EN 1062-7	from class A1 (> 0.1 mm) to class A5 (> 2.5 mm)	Class A5 (> 2.5 mm)
Dynamic crack-bridging at +23°C:	EN 1062-7	from class B1 to class B4.2	Class B4.1 (no failure of test sample after 10000 cracking cycles with movements in the crack of 0.2 to 0.5 mm)
Impact strength:	EN ISO 6272-1	No cracks or delamination after loading Class I: $\geq 4 \text{ Nm}$ Class II: $\geq 10 \text{ Nm}$ Class III: $\geq 20 \text{ Nm}$	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 <sup>2</sup> ) <b>Flexible systems</b> with no traffic: $\geq 0.8 \text{ N/mm}^2$ with traffic: $\geq 1.5 \text{ N/mm}^2$	3.6 N/mm <sup>2</sup>
Abrasion resistance (Taber test):	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:	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:	EN 13529	Reduction of hardness less than 50% when measured according to the Shore method (EN ISO 868), 24 hours after removing the coating material from immersion in the test liquid Class I: 3 days with no pressure Class II: 28 days with no pressure Class III: 28 days with pressure	NaCl 20%: class II CH <sub>3</sub> COOH 10%: class II H <sub>2</sub> SO <sub>4</sub> 20%: class II KOH 20%: class II CH <sub>3</sub> 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
Resistance to root penetration (EN 13498):	no penetration or perforation
Suitable for contact with drinking water (DM 174/04):	global migration rate at 40°C = 11 mg/kg



Application of Purtop 1000 onto industrial storage tanks



Application by roller of Triblock P on a concrete surface



Storage tanks waterproofed with Purtop 1000

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, it gradually yellows.

If the membrane remains exposed to UV rays, to guarantee the durability of the membrane protect the surface with **Mapecoat PU 15** two-component, aliphatic polyurethane coating applied with a roller or by spray.

Apply the finish within 24 hours of applying **Purtop 1000** waterproofing membrane.

If **Purtop 1000** is to be covered by asphalt 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 from at least 1 kg/m<sup>2</sup> modified bitumen.

When **Purtop 1000** is used in swimming pools or ornamental ponds, the following finishing cycle must be applied. Within 24 hours of applying **Purtop 1000** apply a coat of **Primer P3** two-component solvent-based polyurethane primer.

When the primer is dry to the touch apply **Mapefloor Finish 451** two-component, aliphatic polyurethane finish.

Please note that the compatibility of the finish, when in continuous immersion and the substances it will come into contact with must always be checked beforehand.

For further information, please refer to the technical data sheets of these products.

#### 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/m<sup>2</sup> 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](http://www.mapei.com)



Application of Purtop Primer Black

**All relevant references for the product are available upon request and from [www.mapei.com](http://www.mapei.com)**

## TYPE OF PRIMER ACCORDING TO TYPE OF SUBSTRATE

SUBSTRATE	PRIMER	CONSUMPTION (g/m <sup>2</sup> )	MIN-MAX COVERING TIMES (approximate)
Concrete	Primer SN surface-dusted with Quartz 0.5	300-600	12-24 hours
	Triblock P	600-1200	2-7 days
Metals	Primer EP Rustop	approx. 200	6-24 hours
Wooden substrates and OSB panels	Primer SN surface-dusted with Quartz 0.5	300-600	12-24 hours
Bitumen membranes	Primer BI	approx. 200	2-4 hours
	Primer P3	150-200	2-4 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 and consumption may vary according to the roughness of the substrate.

## CHEMICAL RESISTANCE OF PURTOP 1000

CHEMICAL PRODUCTS	CONCENTRATION %	USE	
		PERMANENTLY	SPORADICALLY
Water		+	+
2, 2, 4 Trimethylpentane		(+)	+
Ethyl acetate		-	(+)
Acetone		-	(+)
Acetic acid	10	-	(+)
Citric acid	10	(+)	+
Hydrochloric acid	10	(+)	+
Phosphoric acid	50	-	+
Lactic acid	10	(+)	+
Sulphuric acid	10	+	+
Stearic acid	50	+	+
Hydrogen peroxide	5,1	-	+
Ethyl alcohol	99	-	(+)
Isopropyl alcohol		-	(+)
Petrol		-	(+)
Bleach		-	+
Sodium carbonate	20	+	+
Sodium chloride	10	+	+
Heptane		-	+
Hexane		-	+
Fertilizer		+	+
Diesel fuel		+	+
H <sub>2</sub> O/sugar		+	+
H <sub>2</sub> O/ acetum 95/5		+	+
Ammonium hydroxide	30	+	+
Brake fluid		-	-
Methanol		-	(+)
Butanone		-	(+)
NaOH	40	+	+
Olive oil		+	+
Propylene carbonate		-	-
Solid bicarbonate of soda		+	+
Sodium triphosphate		+	+
Anionic surfactant		+	+
Toluene		-	(+)
Xylene		-	(+)

+ Excellent resistance    (+) good resistance    - poor resistance



**Purtop 1000**



**BUILDING THE FUTURE**

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