



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 existing structures.

Purtop 1000 is one of the waterproofing membranes used in **Purtop System Roof**, a dedicated system for roofs, in **Purtop System Deck**, a dedicated system for 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 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 and set to light foot traffic;

- excellent tensile strength (> 20 N/mm² according to ISO 37);
- excellent tear strength (> 80 N/mm according to ISO 34-1);
- high crack-bridging capacity, both static and dynamic, even at low temperatures;
- elongation capacity higher than 300% (ISO 37);
- excellent resistance to alkalis and diluted acids;
- quick reaction times by spray: gel time at +23°C takes approx. 6 seconds;
- no reinforcement required;
- does not form 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 the protection and repair of concrete structures: definitions, requirements, quality control and evaluation of conformity. General principles for use of products and systems*”) and the requirements of the EN 1504-2 coating (C) according to principles PI, MC, PR, RC and IR (“*Surface protection systems for concrete*”).
- Resistant to root penetration according to CEN/TS 14416 and to EN 13948;
- Suitable for contact with drinking water according to Italian Ministerial Decree DM 174/04.

TECHNICAL CHARACTERISTICS

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

Purtop 1000



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



Waterproof coating on a dam

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.

Due to its exceptional tensile and tear strength and crack bridging capacity (even at low temperatures) **Purtop 1000** forms a continuous waterproof layer which adapts to any shape of substrate without cracking.

RECOMMENDATIONS

- Do not apply **Purtop 1000** to substrates polluted with oil, grease or dirt in general.
- Do not apply **Purtop 1000** on substrates which have not been thoroughly cleaned and primed.
- 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 water or solvent.

APPLICATION PROCEDURE

Preparation of the substrate

Surfaces must be prepared accordingly depending on the type of substrate, for example by sand-blasting, shot-blasting, scarifying, bush-hammering or other methods. The substrate must then be treated with a suitable primer as described below.

1. Application on concrete substrates and cementitious screeds

Prepare the surface by sanding or shot-blasting to remove all traces of oil, grease, dirt and any other material or substances 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 crumbling 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 parts in the substrate with suitable 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 above, apply a coat of **Primer SN**, two-component epoxy primer with fillers, with a smooth spatula or rake and sprinkle the surface with **Quartz 0.5**. The waterproofing membrane must be applied within 12-24 hours from the application of the primer (at a temperature of between $+15^{\circ}\text{C}$ and $+25^{\circ}\text{C}$). If the level of humidity in the substrate is higher than 4% and it is not possible to wait until it drops to a lower value, apply two or more 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 bituminous membranes

Clean the bitumen membrane to remove all traces of oil, grease, dirt in general and any other substances or material which could affect adhesion of the following coat of primer. Remove all dust with a vacuum cleaner or 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 **Primer BI** ready-to-use, synthetic resin-based impregnator in solvent on the horizontal surface and vertical overlaps or alternatively **Primer 3**, two-component solvent-based polyurethane primer. Apply the waterproofing membrane within 2 to 4 hours from the application of the primer (at a temperature of between $+15^{\circ}\text{C}$ and $+25^{\circ}\text{C}$).

3. Application on metal surfaces

In case of metal surfaces or if there are any metallic elements, apply **Primer EP Rustop** two-component epoxy primer with a brush, roller or by airless spray after cleaning and treating them accordingly. The waterproofing membrane must be applied within 6-24 hours from the application of 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 to treat these joints. Apply a coat of **Primer SN** two-component epoxy primer with fillers on the clean, dry substrate and sprinkle the surface with **0.5 Quartz**. Apply the waterproofing membrane within 12 to 24 hours from the application of the primer (at a temperature of 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 of between $+5^{\circ}\text{C}$ and $+40^{\circ}\text{C}$. Before applying **Purtop 1000**, remove all 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, while 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, industrial, bi-mixer pump with flow and temperature control, preferably with a self-cleaning gun.

The application temperature of the two components must be between $+65^{\circ}\text{C}$ and

Purtop 1000: two-component, solvent-free, pure polyurea membrane applied by spray with a high-pressure bi-mixer type pump, to form waterproofing coatings directly on site for hydraulic works, roofs and bridge decks 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 +23°C (seconds): | approx. 6 |
| 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 ²): – elongation at failure (ISO 37) (%): – tear strength (ISO 34-1) (N/mm): | > 20 > 300 > 80 |
| 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 ₂ : | EN 1062-6 | $s_D > 50$ m | $s_D = 285$ m |
| Direct traction adherence test: | EN 1542 | Flexible systems with no traffic: $\geq 0.8 \text{ N/mm}^2$ with traffic: $\geq 1.5 \text{ N/mm}^2$ | 4.7 N/mm ² |
| 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 B4.2 |
| 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 ²) Flexible systems with no traffic: $\geq 0.8 \text{ N/mm}^2$ with traffic: $\geq 1.5 \text{ N/mm}^2$ | 3.6 N/mm ² |
| 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 ₃ COOH 10%: class II H ₂ SO ₄ 20%: class II KOH 20%: class II CH ₃ OH: class I mixture (60% toluene, 30% xylene, 10% methylnaphthalene): class I |
| Reaction to fire: | EN 13501-1 | Euroclass Fire reaction class for floorings | E D _{fl-s1} |

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 |
| Electrical resistance (EN 61340-1): | > 200 GΩ |
| Exposure to ozone (168h, 220 pphm, +40°C 65% R.H.) (EN 1844): | no visible flakes at 7x |



Application of Purtop 1000 onto industrial storage tanks



Application by roller of Triblock P on a concrete surface



Storage tanks waterproofed with Purtop 1000

+85°C 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 30 cm 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

Purtop 1000 gradually turns yellow if exposed to UV rays.

If the membrane is exposed to UV rays, apply a coat of **Mapecoat PU 15** two-component, aliphatic polyurethane finish to guarantee durability, 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 at least 1 kg/m² of hot bonding layer made from modified bitumen.

When **Purtop 1000** is used in swimming pools or ornamental ponds, the following finishing cycle must be applied. Within 24 hours from the application of **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 55** two-component, aliphatic polyurethane finish. Then apply **Mapecoat Finish TS**, protective transparent film.

Please note that the compatibility between the finish and substances it will become in contact with must be always checked beforehand in case it will be in continuous immersion.

For further information, please refer to the Technical Data Sheets of these products.

For further information about the different application cycles, please refer to the **Purtop System Roof, Deck and Tank** System Data Sheets.

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 may be carried out must be carried out only mechanically.

CONSUMPTION

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

If the substrate is rougher, consumption increases. If the substrate is damaged, we recommend applying a suitable repairing product.

PACKAGING

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

STORAGE

When stored in its original packaging, in a dry, covered area, at a temperature of between +15°C and +25°C, the shelf life of **Purtop 1000** is 12 months.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Purtop 1000 part component A is corrosive and may cause burns. It is harmful when swallowed.

Purtop 1000 component B is irritant for the skin, the eyes and the respiratory tract. It may cause sensitization when inhaled and frequent contact with the skin may cause allergic reactions to those sensitive to isocyanates. It is harmful when inhaled and may cause irreversible damages if it is used for lengthy periods. During use wear protective clothing, gloves, safety goggles and take the usual precautions for handling chemicals. If the product comes in contact with the eyes or skin, wash immediately with plenty of water and seek medical attention. Use suitable equipment to protect the respiratory tract.

Purtop 1000 component A is hazardous for aquatic life, do not dispose of the product in 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



Application of Purtop Primer Black

TYPE OF PRIMER ACCORDING TO TYPE OF SUBSTRATE

| SUBSTRATE | PRIMER | CONSUMPTION (g/m ²) | MIN-MAX COVERING TIMES (estimated values) |
|----------------------|--|---------------------------------|---|
| 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 |
| Wood and OSB panels | Primer SN surface-dusted with Quartz 0.5 | 300-600 | 12-24 hours |
| Bituminous 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: covering times refer to temperatures of between +15°C and +25°C and the 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 ₂ O/sugar | | + | + |
| H ₂ 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



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

LEGAL NOTICE

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per the TDS in force at the time of the MAPEI product installation. The most up-to-date TDS can be downloaded from our website www.mapei.com.

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

