desmopol·dw
DRINKING WATER

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DRINKING WATER
WATERPROOFING SYSTEM

TECHNICAL GUIDELINE



Tecnopol®
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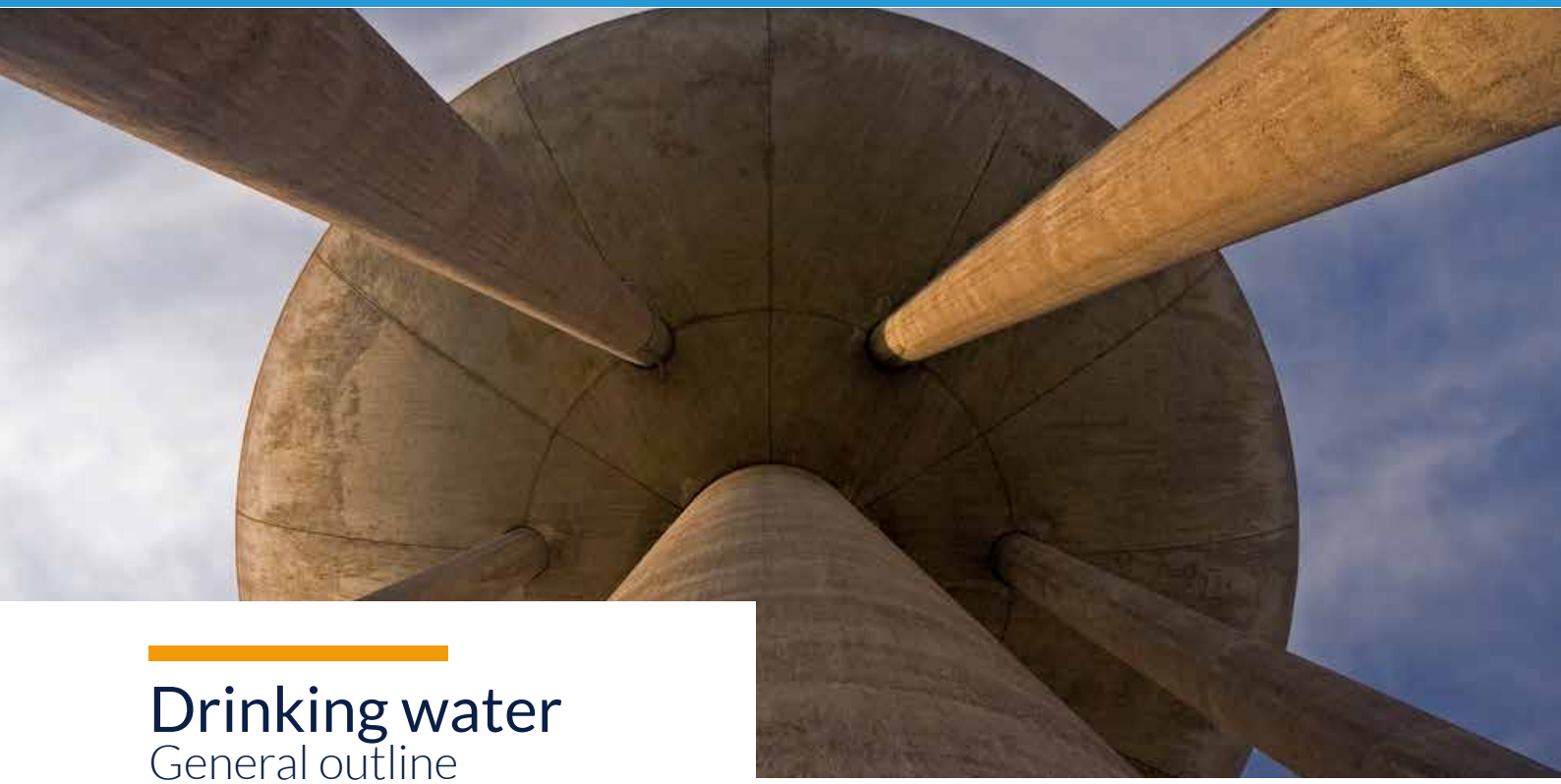




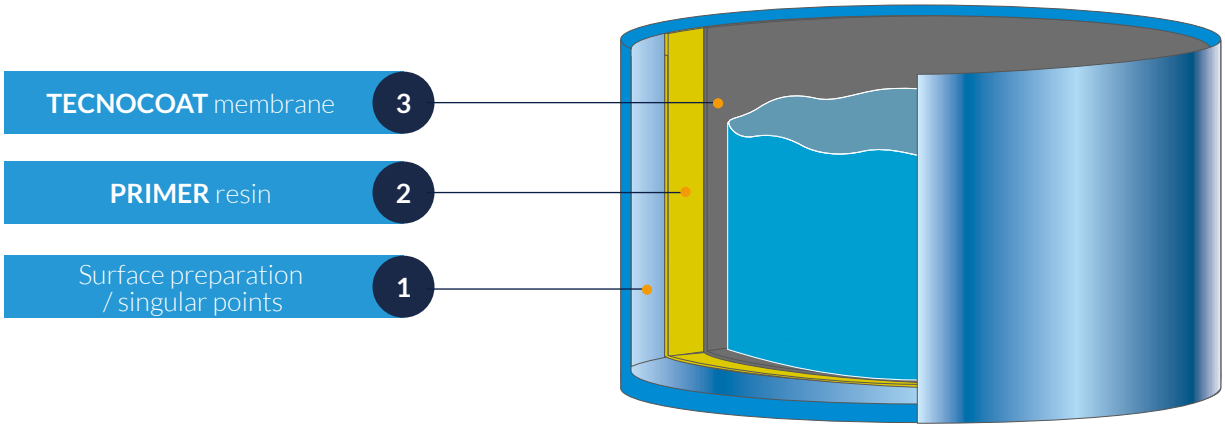
DRINKING WATER
WATERPROOFING SYSTEM

Tecnocoat P-2049 pure polyurea system is indented to be used as a waterproofing for a reservoirs and tanks with a potable water contact. This specific industrial area to use Tecnocoat P-2049 as a waterproof and protection coating thanks to our most internationally recognized polyurea is made possible by its certification under the British BS 6920 standard "for a suitability of non metallic products for use in contact with water intended for human consumption".

Find inside this guideline, all the methodology to have a great success.



Drinking water
General outline



BENEFITS

1. **Certified by NFS** labs for contact with water intented for **human consumption (under BS 6920)**
1. **Full adhered systems:** protection of the structural support element
2. **Complete and absolute protection** of the construction element
3. **Zero slope application,** it works under ponding water
4. **Direct application to the existing substrate:** waste generations limited, which contributes to an improvement in the construction sustainability
5. **Faster setting:** labor time reduction, cost optimization
6. **Cost reduction:** not need to apply mortar coats to protect it
7. **High resistance to the temperature:** no collapse of the membrane due to environmental causes

Application parameters
Preliminary considerations

For optimum application of the TECNOCOAT system (adherence, required use, decorative finish and/or applicable regulations) conditioning aspects, such as weather and physical properties of the substrate, need to be identified.

SURFACE HUMIDITY/WATER

Humidity on the substrate can affect the membrane's adherence. Humidity or the presence of water in/on the substrate hampers adherence, which will have a negative effect on the final result of the system. It is recommended that they system is not applied before the concrete curing process has finalized (28 days)

It is essential the application of the product is aware of and takes into consideration this aspect, carrying out the corresponding verifications in all areas of the substrate in order to decide on the type of primer to be used, or whether or not other treatment is required. (vapor barrier)

The different types of humidity or presence of water in/or the substrate or their characteristics may be as follows:

- **Liquid water/moisture:** There must not be any water present, whatever the type of substrate, as the will completely annul the membrane's adherence (in some cases, use PRIMER WET, please, check our technical department)
- **Hydrostatic water:** The existence of rising damp, (water coming up through the element), is not compatible with continuous membrane WATERPROOFING SYSTEM and, therefore, this situation will have to be resolved via onsite application of water-vapor permeable hydraulic materials or the installation of floating floors, etc.
- **Dew point:** This is a factor to take into consideration at the start of applying systems such as ours, which for the most part are used outside and depend, as mentioned, on a level of control of the substrate humidity. The appearance of humidity from dew depends on the air and substrate temperature and the relative ambient humidity. To prevent this, the substrate's temperature should be 3 degrees Celsius above that corresponding to the dew point (see the universal dew point charts).

SUBSTRATE AND AMBIENCE TEMPERATURES

These are two conditioning aspects that could affect the membrane curing process, along with that of ambient temperature.

- Ambience range of temperatures: 3ºC to 45ºC
- Substrate range of temperatures: 5ºC to 40ºC

Although, based on our experience and due to the chemical nature of some of the products that make up the system, we do not recommend working at ambience temperatures below 3ºC.

SUPPORT'S PHYSICAL CONDITIONS

Coating performance is dependent on adequate surface preparation and application.

The optimal surface preparation will increase the bonding on the surface, and this is essential for three reasons:

- Good bond allows the structure and coating to work as one and maintain stability.
- Prevents salt and contaminated water from leaking through the concrete (extremely important in steel, to protect from rust and corrosion).
- Avoid the formation of pinholes on membrane in the moment of the application.

1a. Surface Preparation

CONCRETE

The concrete surface on which the system is to be applied needs to be prepared, as follows:

- Special purpose admixtures, such as water-immiscible (capable of being mixed) chemicals intended to retard evaporation of water during curing, may create adhesion problems.
- Is necessary to remove oils, greases, silicones and other such contaminants. This is generally a first step in the whole preparation process. Other methods of preparation should follow detergent washing. Scrubbing in a detergent solution is required to force solution as deeply as possible into concrete pour structure. Complete removal of the detergent solution is required. Detergent residue may create a bond breaker to application of sealers and coatings to follow. Disposal of detergent wash residue should follow environmental guidelines.
- Any depressions on the surface caused during pouring of the slabs need to be eliminated as they produce small pinholes caused by the escaping air trapped during application. The depressions are filled using high resistance cement or our special Epoxy mortar mixing PRIMER EP-1020 Epoxy resin with calcium carbonate CO3Ca (ratio ±1:2), or SILICA SAND (ratio ±1:4). This achieves an extremely hard, retraction free infill volume that is also quick drying. Use Mastic PU depending on the size of the infill.
- In general, concrete must be structurally sound, dry and clean for successful applications of polyurea systems. Coating systems require a uniformly roughened surface for proper application. Use of preparation specialists may be required. The processes listed below also eliminate the laitance on the surface area of the concrete, thus achieving a flat surface with a minimum continuous roughness (recommended CSP 3 to 6), following the ICRI recommendations:

PROCESSES TO ELIMINATE THE LAITANCE ON THE CONCRETE

Grinding/Milling:
Using a rotary machine with specialty grinding wheels with tungsten carbide; this method is suitable for removing concrete paste and other hard substances. It causes surface erosion by rubbing with stones or hard sanding discs. This removes the softest parts of the surface, for example surface laitance, which sometimes occurs during concrete pouring or curing. But is not suitable for soft existing coatings or when the friction caused heat meets this product.

Sandblasting:
Generally employs sand or a sand type of abrasive shot by compressed air through a nozzle. Sandblasting is recommended for horizontal, vertical, and overhead use. This method is recommended for removal of the surface of concrete, existing sealers, and hard coatings. Creation of dust may be prohibited by environmental regulation. Vacuum mechanisms are available to remove dust from the air. Wet sandblasting is available that complies with environmental regulations. Remove shot material, dust, and mud residues according to environmental regulations. This method of surface preparation, while highly effective, has lost utility where environmental regulation has restricted its use.

Scarifying:
Generally employs a rotary or drum machine. This method utilizes specialty blades or impact devices to break the surface of concrete or coatings. Several passes over the same area may be required to remove existing surface completely. In the case of elastomeric surface coatings, blade shaving may be the only effective method of removal where water use is a problem. Most sealers and coatings will not allow removal by acid etching. Most elastomeric coatings have a tendency to “bounce” shot blasting.

Shot blasting:
It involves the projection or direct impact of steel grit of different sizes on the concrete’s surface. This process produces very little dust. Shot is generally recoverable. Some water cleaning or vacuuming may be required after use of this method. This is effective for removal of concrete surface paste, sealers, and hard coatings. Speed over an area and number of passes over an area determine depth of removal. Edging and small spaces are not susceptible to this type of removal without small specially designed equipment.

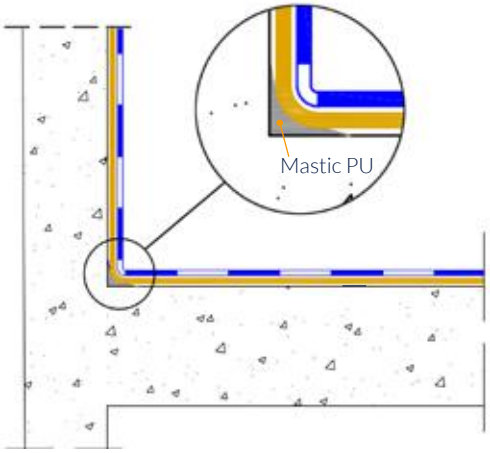
People applying the system must decide in each case the most suitable method, depending on the conditions of the substrate or surface or the desired result (always in combination with the primer to be used).

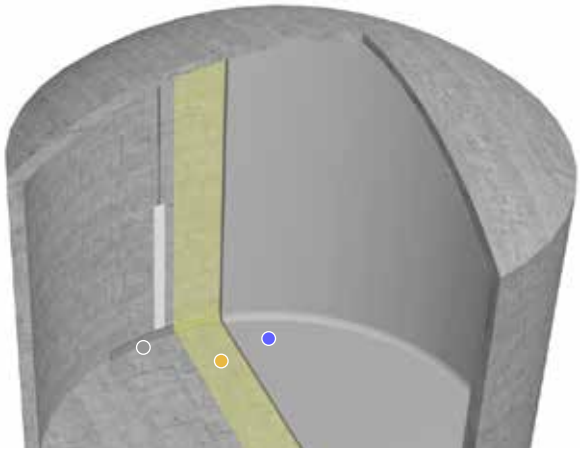
- To complete these processes prior to application, the substrate must be cleaned using aspiration equipment, thus avoiding the need to use water as this could hamper adherence of the membrane

Ensure that there isn't presence of contaminants such as oils, greases, silicones... (additives used in the pouring of concrete or in coatings after the latter)



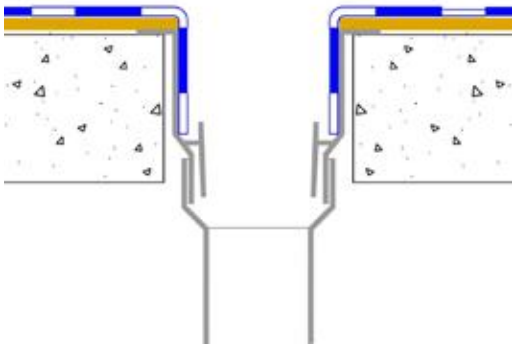
1b. Singular points





VERTICAL SURFACES
(FLASHING, UPSTANDS, SHARP EDGES)

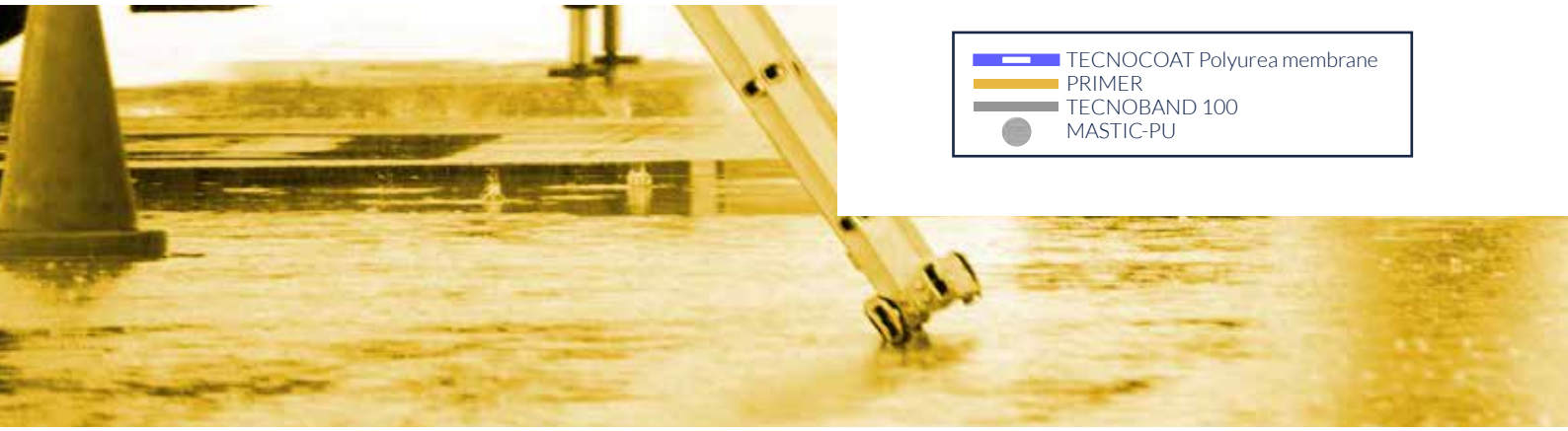
Coving at the point of contact, to provide a good surface for the vertical rotation of the membrane, using MASTIC PU, or common mortar.



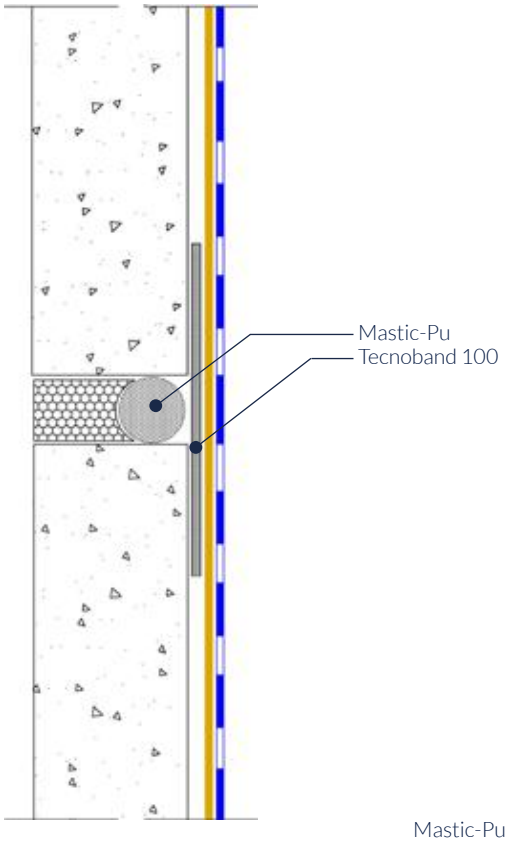
DRAINS

Drains and vertical water drainage should be given a generous coating of the membrane over their entire surface up to the mouth of the drainpipe. To aid in this operation, our MASTIC PU may be used to fill in the edges of the drainpipe at its point of contact with the slab.

In the case of metal drainpipes, the membrane will be applied in a continuous layer extended inside the drainpipe.



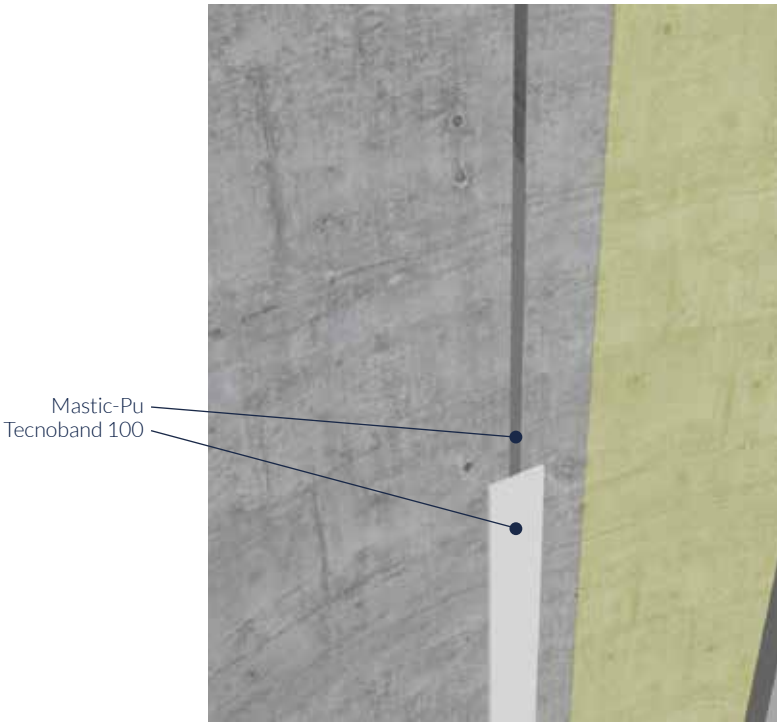
TECNOCOAT Polyurea membrane
PRIMER
TECNOBAND 100
MASTIC-PU



JOINTS

Width size: ≤ 20mm, the gap should be opened up sufficiently, cleaned and filled in with MASTIC PU (never use silicones) elastic polyurethane Mastic.

Width size: >20mm, cleaned and filled in with MASTIC PU (never use silicones) elastic polyurethane as well as applying a top seal with TECNOBAND 100 butyl self-adhesive perimeter band and an upper protection of a geotextile layer in order absorb movements in the event there are expansion joints in the substrate.



TECNOCOAT Polyurea membrane
PRIMER
TECNOBAND 100
MASTIC-PU



2. Primer resin

The use of primers when applying the complete TECNOCOAT membrane system is important and essential and it is indicated in the approval and certification documentation available of TECNOCOAT P-2049 (ETA and BBA).

MAIN PERFORMANCES

- Increase bonding
- Fill irregularities to the existing surface
- Surface moisture absorption, present in the surface during the application process



APPLICATION METHODOLOGY

- Check expiry time and stir each one
- Open the buckets
- Mix both components
- Stir using a low speed electrical mixer.
- Apply by roller or brush. The number of coats depends on the physical surface conditions; in most of cases is necessary to apply 2 crossed coats. Wait for the tack free time between coats. You can use airless equipment too, but the pot-life time must be checked in order to clean the equipment within the indicated time.



This process requires a flat, clean and dry substrate and as hard as possible.

In the table below you can see the main properties of available primers to use in this system. Pay attention at the "accepted surfaces" and "maximum surface dampness" to do the best choice of primer resin.

	primer EPw-1070	primer PU-1050	primer PUc-1050	primer WET
Main use	Surfaces in medium-damp conditions	The best option for concrete	For concrete in cold environments	Concrete subject to maximum damp
Accepted surface	Concrete, asphalt	Concrete	Concrete	Concrete
Components No.	2	2	2	2
Product base	Epoxy water based	Polyurethane 100% solids	Polyurethane 100% solids	Epoxy 100% solids
Density	1.000 kg/m^3	1.110 kg/m^3	1.110 kg/m^3	1.540 kg/m^3
Solids content	> 60 %	100 %	100 %	100 %
Concrete adherence	> 2 MPa	> 2 MPa	> 2 MPa	> 2 MPa
Viscosity	3350-A / 800-B cps	450-A / 900-B cps	450-A / 900-B cps	680-A / 620-B cps
Yield per coat	± 100 g/sqm	± 150 g/sqm	± 150 g/sqm	± 450 g/sqm
Initial drying time	5 ~ 6 hours	60 minutes	60 minutes*	3 hours
Recoat time	6 ~ 48 hours	3 ~ 24 hours	3 ~ 24 hours*	3 ~ 6 hours
Temperature of use	3 ~ 35 °C	5 ~ 35 °C	5 ~ 15 °C	5 ~ 35 °C
Maximum surface dampness	± 10 %	± 5 %	± 5 %	± 98 %
Dilution on water	5 ~ 20 %	NO	NO	NO

3. Tecnocoat membrane

TECNOCOAT P-2049 is an extremely durable, solid and hard-wearing product that, once applied, offers great stability and long-life. Thanks to its versatility and its drying time of between 3 and 5 seconds TECNOCOAT P-2049 adapts to any surface, making it in the ideal product for application in uneven areas of any shape, whether curved or square.

APPLICATION METHODOLOGY

Spray gun application should be carried out applying the product always perpendicularly to the substrate, regardless of whether the surface is horizontal or vertical. This is extremely important as, otherwise, it will not be possible to apply the product completely and continuously, thus causing gaps in the layer and, therefore, incomplete seal.

Apply coat continuously as needed to achieve the desired thickness according to the final use or technical requirements.

The membrane is applied using spray equipment that takes the two components and it will form the final solid membrane (isocyanates and amines).

After applying TECNOCOAT P-2049, do a soft wash using neutral soap after 2 days and wait a minimum of 7 days before filling the tank.

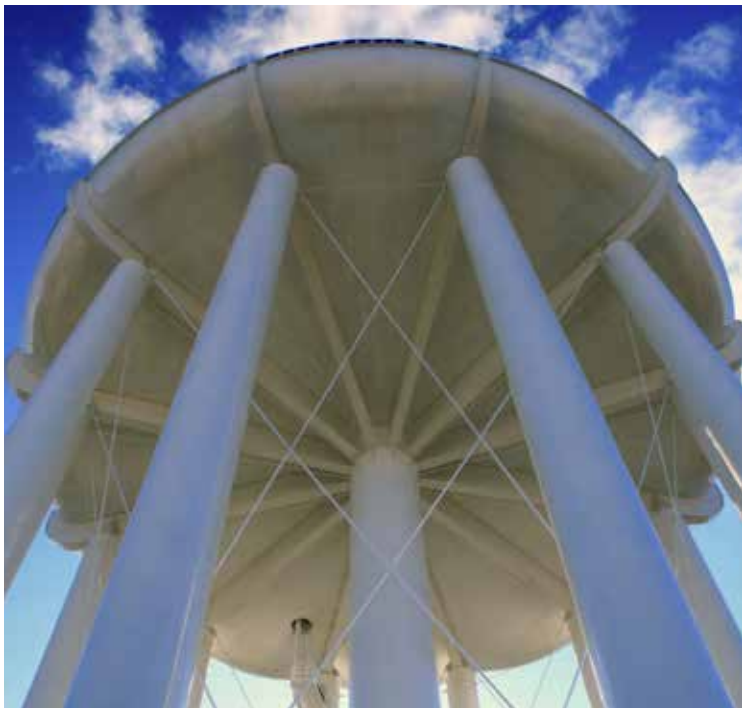
Heater isocyanate temperature	±75 °C
Heater amines temperature	±70ºC
Hose temperature	±70ºC
Pressure	2.900 psi (200 bar)
Recommended mixing chamber	GU-07008-1 or GU-07008-2



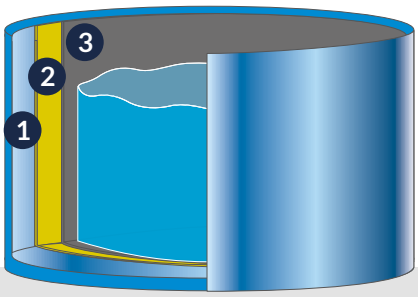
Tecnocoat P-2049 has W3 certification (ETA 11/0357 and a BBA 16/5340) **including anti-roots penetration**, at 25 years working life, minimum thickness of 1,4 mm (recommended thickness of 2 mm, consumption ±2,1 kg/m²)

tecnocoat P-2049

Component No.	2
Density	± 1.100 kg/m³
Elongation	> 350%
Tensile strength	> 20 MPa
Concrete adherence	> 2 MPa
Hardness (shore A)	> 95
Hardness (shore D)	> 55
Initial drying time	3 ~ 5 seconds
Recoat time	max. 12 hours
Thickness (Yield)	2 mm (± 2.1 kg/sqm)
Fire reaction	Euroclass E
External fire behavior	Broof (t1) (t2) (t4)
Anti-root	Yes (EN13948)
Solids content	100%
Ponding water works	YES



Application summary



TNK1 · TECNOCOAT P-2049

	PRODUCT	TYPE OF SURFACE	EXISTING SURFACE HUMIDITY	APPLICATION METHOD	YIELD	THICKNESS
1	**Surface preparation**					
2*	**PRIMER EPw-1070**	Concrete	± 4 %	• Apply by roller or electrical equipment.	100 ~ 200 g/sqm	55 ~ 110 µ
	PRIMER EP-1040	Ceramic / Metal	± 10 %	• Apply by roller.	100 ~ 150 g/sqm	95 ~ 140 µ
	PRIMER PU-1050	Concrete	± 4 %	• Apply by roller.	150 ~ 300 g/sqm	135 ~170 µ
	PRIMER PUc-1050	Concrete cold weather	± 4 %	• Apply by roller.	150 ~ 300 g/sqm	135 ~170 µ
	PRIMER WET	Concrete / Ceramic	± 98%	• One coat application by trowel.	450 ~ 500 g/sqm	290 ~325 µ
3	**TECNOCOAT P-2049**	-		• Apply using TC-2049 spray equipment. • Do a soft wash using neutral soap after 2 days and wait a minimum of 7 days before filling the tank.	2,1 kg/sqm	2 mm

*Choose primer according surface type and humidity.





Approved by official certification agencies

- **EOTA CERTIFICATES**
  European TECHNICAL ASSESSMENT (ETA 11/0357)
  TECNOCOAT P-2049 holds an ETA certificate (w3 25 working life years). This approval is based on a European technical approval guideline (ETAG) nº 005 which approves the suitability of the product for its specified use, based on compliance with the essential requirements as "Liquid Applied Roof Waterproofing Kit, based on pure Polyurea". Including plant roots penetration according EN-13948 for use in green-roofs.

  European TECHNICAL ASSESSMENT (ETA 16/0680)
  This approval is based on a European technical approval guideline (ETAG) nº 033 which approves the suitability of the product how "Liquid Applied Bridge Deck Waterproofing Kits" (under asphalt).

- **BBA CERTIFICATE**
  UK TECHNICAL ASSESSMENT (BBA 16/5340)
  TECNOCOAT P-2049 holds a BBA certificate for the British market (w3 25 working life years) and regulates aspects as weather resistance, reaction to fire, adherence to substrates, pedestrian and road traffic resistance, plant roots penetration and service life for over 25 years.

- **NSF INTERNATIONAL LABORATORIES APPROVAL**
  APPROVED FOR CONTACT WITH WATER INTENDED FOR HUMAN CONSUMPTION (BS6920)
  TECNOCOAT P-2049 passed all the tests conducted by the NSF laboratories and is now officially classified as safe and suitable for use in contact with water destined for human consumption.

- **EN 1504-2 APPROVAL**
  PROTECTION AND REPAIR OF CONCRETE STRUCTURES
  TECNOCOAT P-2049 holds an EN 1504-2 certificate, the official European approval for products and systems designed for the protection and repair of concrete structures.

- **CONTACT WITH FOOD PRODUCTS CERTIFICATE**
  NO MIGRATION IN CONTACT WITH ETHANOL (UE REGULATION No. 10/2011 based on EN 1186.1:2002 and EN 1186.3:2002)
  The TECNOCOAT P-2049 membrane holds a certificate issued by Applus declaring that migration in contact with ETHANOL is lower than the global limit permitted thereby allowing its use in the storage of wine, beer and liquors.





Legal Notes

- Check TDS and MSDS of all the materials before use.
- Technical data and any other information are true and accurate to the best of our knowledge.
- The use of these products is beyond the control of Tecnopol
- Consumptions can vary due surfaces, machine maintenance status or weather conditions
- This is a technical document, without legal value
- Proper application is the responsibility of the buyer
- The product properties may be changed without notice
- No liability, warranty of product performance is created by this document
- It's buyer's responsibility to determine what Tecnopol products are appropriate for each use
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