

tecnocoat

ROOFING

AND WATERPROOFING SYSTEMS

 POLYUREATEC

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TECHNICAL GUIDELINE


we develop value.com



ETA
11/0357

DTA
19/2665

BBA
16/5340

ROOFING WATERPROOFING SYSTEM

The best system for the most difficult projects.

Tecnocoat P-2049 is a waterproofing system based on pure polyurea that forms a solid, continuous and seamless membrane of the highest quality in formulation and manufacture.

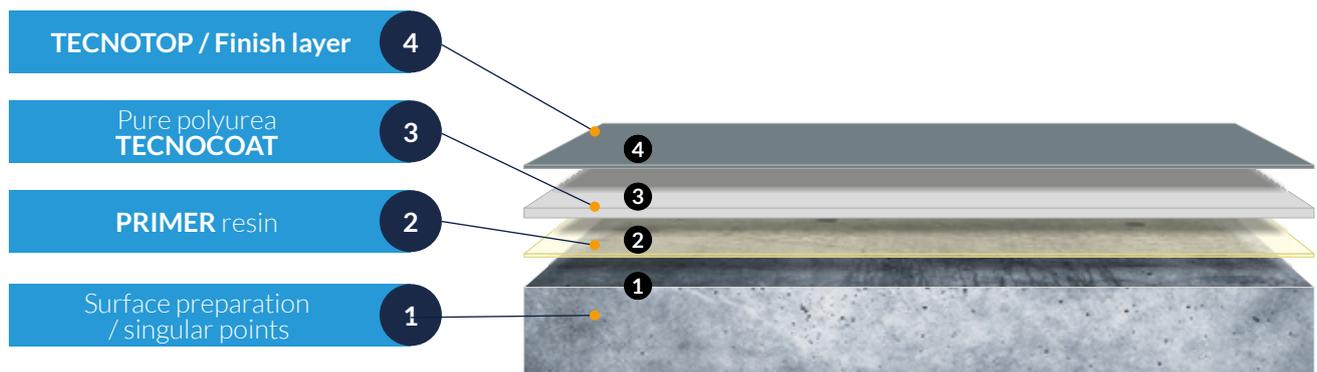
With this system, you can waterproof and protect any project, whatever its form, surface material or final needed.

The quality of the system applied is recognized worldwide with numerous certifications and approvals (EOTA, BBA, ASTM, EN, ISO...). Tecnopol' technical staff is very satisfied with the results that offers both designers, engineers, architects, or builders.

The experience of the leading manufacturer in Europe in PUA, puts in the hands of the application companies an efficient and optimal waterproofing system, offering in this areas of the civil engineering, or residential construction, practical solutions with which to achieve the required professional success.



Roofing General outline



BENEFITS

1. **Fully adhered systems:** protection of the structural support element
2. **Complete and absolute protection** of the construction element (CE Marking under EN 1504-2)
3. **Zero slope application,** it works under ponding water (ETAG 005)
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. **No extra weight on the existing structure** (only $\pm 2,5-3 \text{ kg/m}^2$)
7. **Cost reduction:** not need to apply mortar coats to protect it
8. **Several finishing** (colors and surface textures), according to the existing slippery international approvals and regulations
9. **High resistance to the temperature:** no collapse of the membrane due to environmental causes
10. **Working life (W3:25 years):** high quality of the applied system+ maximum durability warranties
11. **Plant root penetration resistance approval** (ETA 11/0357 and BBA 16/5340)

Application parameters

Preliminary considerations

For the 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 result of the system. It is recommended that the 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 another treatment is required. (vapor barrier)

The different types of humidity or the 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 this 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.

- Ambiance range of temperatures: 3°C to 45°C
- Substrate range of temperatures: 5°C to 40°C

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 3°C.

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 the membrane in the moment of the application.

1a. Surface Preparation

CONCRETE

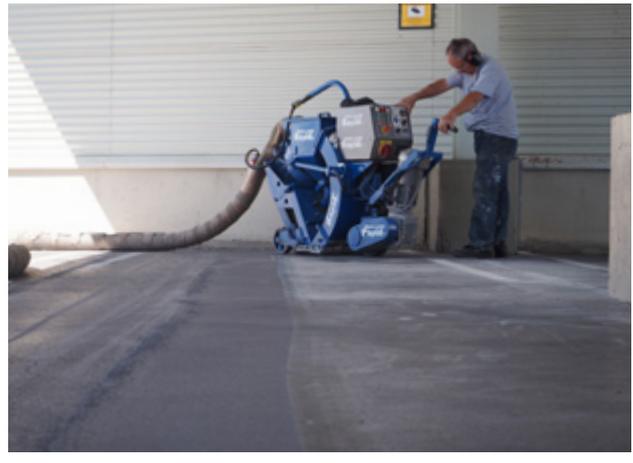
In general, concrete must be structurally sound, dry and clean for successful applications of polyurea systems. The concrete surface on which the system is to be applied needs to be prepared, as follows:

- Remove oils, greases, silicones or other contaminants
- Fill the depressions on the surface (caused during the concrete pouring process), using Primer EP-1020 epoxy mortar. (mixed with Silica Sand)
- Fill fissures and cracks using Mastic PU

Finally, a mechanical preparation is needed, to get a uniformly roughened surface and to remove the laitance, using one of these systems, thus achieving a flat surface with a continuous roughness (CSP 4 to 5), following the ICRI recommendations.

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.



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:

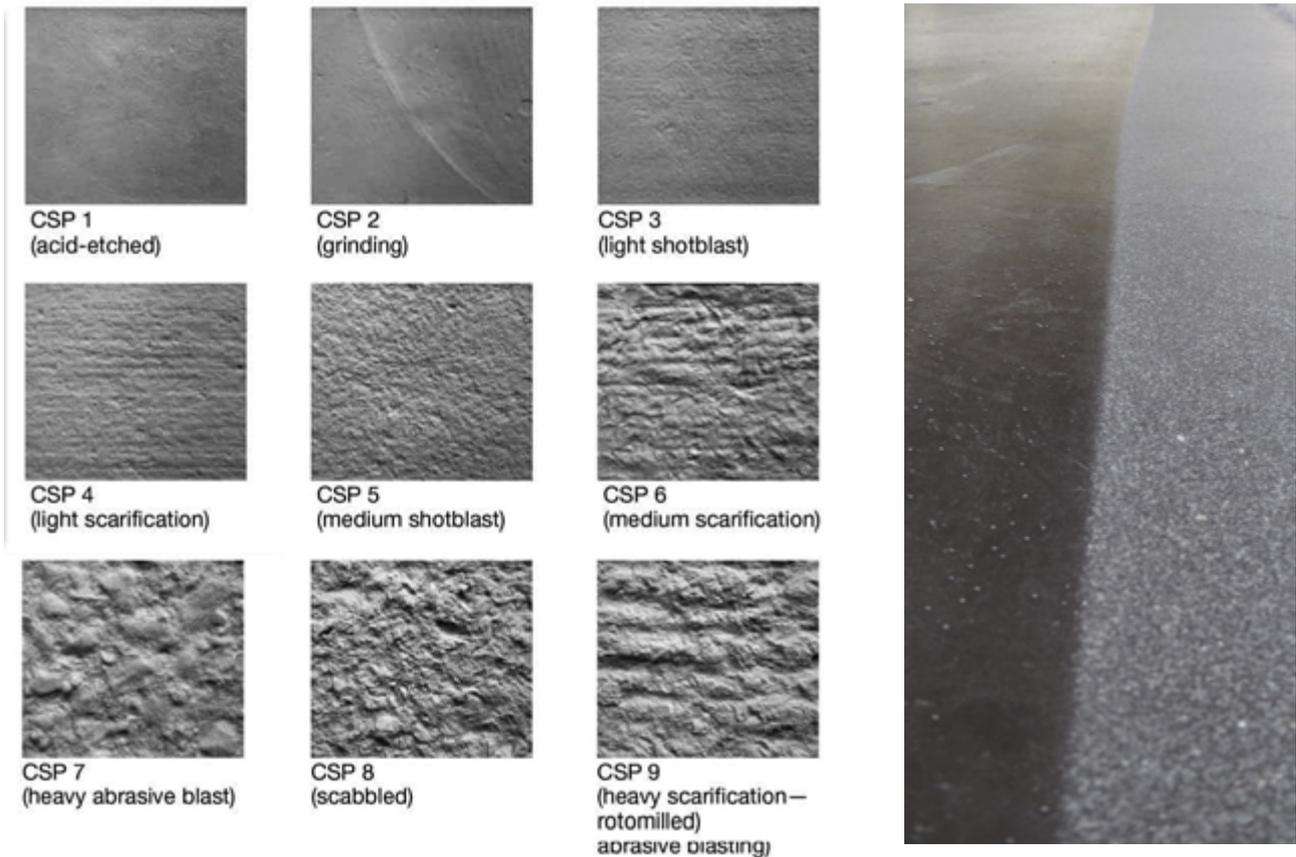
Generally employs sand or a sand type of abrasive shot by compressed air through a nozzle. Sandblasting is recommended for horizontal, vertical, and overhead use. This method is recommended for removal of the surface of concrete, existing sealers, and hard coatings. Creation of dust may be prohibited 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.



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

METAL

Most of these metallic surfaces (pre-lacquered metal sheets, copper, zinc, galvanized sheets, etc.) will require blast cleaning, particularly when the area to be treated is vertical or sloped. This process can be carried out using either a dry blast of silica sand or water. The method used will depend, to a large extent, on the metal and its fragility.

1.- BLAST CLEANING

The most usual methods used for this type of preparation are dry and wet blasting.

- Dry blasting is carried out using portable equipment that has a pressurized hose inside a larger evacuation hose. The external hose collects the blasting grit after blasting, taking it to the central unit for recovery and recycling, with which this equipment can be used for sizable projects outside with specialized means

without any problems.

- Wet blasting, abrasive particles are added to an aqueous medium to form a kind of slurry mixture. This aqueous mixture is continuously shaken to prevent its solidification and pumped using compressed air via one or several nozzles pointed at the surface to be treated. The liquids most commonly used to suspend the abrasive particles are water-based additives, such as oxide inhibitors, moistening agents and anti-clogging and anti-solidification compounds.

Note: the liquids most commonly used to suspend the abrasive particles are water-based additives, such as oxide inhibitors, moistening agents and anti-clogging and anti-solidification compounds.

In most of the cases (tanks or reservoirs) to prevent corrosion or rust, especially after an abrasion process is recommended passivate: applying oxidation inhibitors before to application of the primer's waterproofing system.

In some cases, if you did a special sandblasting achieving a SSPC SP-10 or similar, you could apply directly the membrane without using a primer before (always check the adhesion before).

2.- CLEANING

Subsequent cleaning of these types of surfaces can be carried out with pressurized water or, in most cases and when most suitable, using acetone-based solvents to simultaneously clean and remove any grease from the surface, with rapid evaporation of the cleaning product. In many cases, the surface passivation is required before application of the products.

After the abrasion process, and before the waterproofing system application, it is necessary to apply corrosion inhibitor products.

3.-DETAIL WORK

At the same time these substrates, usually made up of overlapping metal plates, should be encapsulated with MASTIC PU and TECNOBAND 100 (see technical specifications on TDS) applied on joints, screws, nuts and bolts and, in general, any building component that could shift due to expansion. Polyurethane foam may also be used to fill in areas between the plates to ensure a physical support surface for the membrane.

The water channel has to be sealed also because otherwise in cases of hard rainfall, it may not be able to absorb the entire water load. It is for this reason that the inner part of the channel match the roofline of the plates shall be completely sealed with the help of previous fill or MASTIC PU or TECNOFOAM, to apply after the membrane layer of polyurea. All joints will be treated according to the existing Section 6.3 of



this manual.

CERAMIC SUBSTRATE

With this kind of substrate, the most common problem is the existence of pieces not adhered to the slab, in which case it is important to remove these and fill in the area with cement made up of a mixture of our PRIMER EP-1020 epoxy resin (see technical specifications) and SILICA SAND (ratio of $\pm 1:4$), to even out the surface.

A dry cleaning method is best, avoiding those that use water as this penetrates inside the tiling, between the intermediate layers, with which evaporation is very slow. In this case, the floor surface is sanded to achieve, simultaneously, waste disposal, or fat powder, and increased mechanical anchoring system as the pore opens the ceramic surface.

If water is used for cleaning, always check the level of humidity or water retained inside the material's layers, to decide when to continue the application.

In any case, even when water is not used to clean, the humidity of the substrate should be checked.

You will need also the grouting the joints or sores of the ceramic pieces, and cleaned and repair the existing expansion joints by removing the existing material, cleaning, filling with MASTIC PU, and band placement TECNOBAND 100 (see technical specifications for these products) at the top.



LAMINATED SUBSTRATE (BITUMINOUS SHEETS, BUTYL)

The surface should be cleaned using medium pressurized water to remove any dirt, dust or contaminants.

Check the overlaps on different sheets: they must be well bonded.

The application will be made applying initially several thin coats of TECNOCOAT over existing material, to then start the regular application with the required performance.

Depending on the surface finishing of the bituminous asphalt sheet, we will do this:

- On sheet backing fine finish, general surface cleaning will be performed before applying the primer.
- In the case of asphalt with a protective film to reflect the sun's rays, this should be removed, if possible, as in many cases the heat and pressure generated by the application of the polyurea membrane tear this film away.
- In the case of asphalts with a protective finish (rough) or standard smooth finish, cleaning may be carried out directly.

Always check that no dampness or water has been retained within these laminates or between these and the substrate if there were any prior fractures.

PAINTED SUBSTRATES

In the case of roofs or surfaces with old acrylic paint from restoration or waterproofing, first, any peeling or unstuck material on the substrate must be removed by sanding(recommended). The use of a water pressure cleaning requires drying and verification of the humidity levels before applying the membrane. We highly recommend the dry sanding method.

In any case, check the level of humidity or water retained within these paints and the substrate due to either fractures or peeling or the cleaning process.

In any case, check the level of humidity or water retained within these paints and the substrate due to either fractures or peeling or the cleaning process.

Apply a thin coat of PRIMER EPw-1070 to improve the support adherence.

ASBESTOS SUBSTRATE

In many cases the overlaps of the plates that make up the substrate need to be resealed using TECNIFOAM sprayed polyurethane rigid foam (depending on the amount to be applied), as well as checking their overall condition. Likewise, any screws, nuts and bolts in bad condition need to be resealed using MASTIC PU polyurethane Mastic or TECNOBAND 100 (see technical specifications on TDS).

Roll of geotextile and butyl self-adhesive
TECNOBAND 100

Finally, clean the surface to remove any efflorescence and other elements that could prevent proper adherence of the system's products, using medium pressurized water.

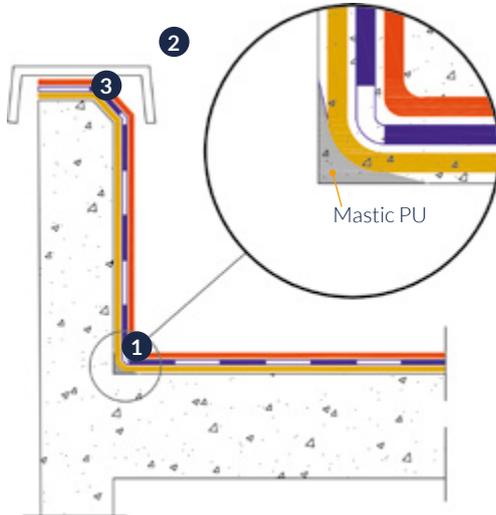
Check the level of water originating from this process before continuing with the application of the membrane. If considered desirable, depending on the situation and the sheet.

Another methodology of the preparation is to apply a continuous coat of Tecnofoam G-2060 HFO (2-3 cms thickness) before Tecnocoat P-2049 system.



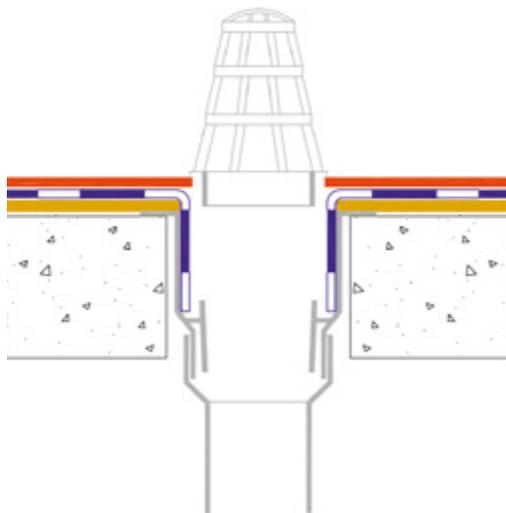
1b. Detail work

All architectural details in this section are generic, if you need any specific detail please contact our Technical Department.



VERTICAL SURFACES (FLASHING, UPSTANDS, SHARP EDGES)

1. Coving at the point of contact, to provide a good surface for the vertical rotation of the membrane, using MASTIC PU, or common mortar.
2. Final membrane's edge, to ensure that not water rain filter out within the membrane and wall.
3. In turns or sharp edges on the top of the wall, it should cut them about 45 ° to avoid breakage due to an internal punching.



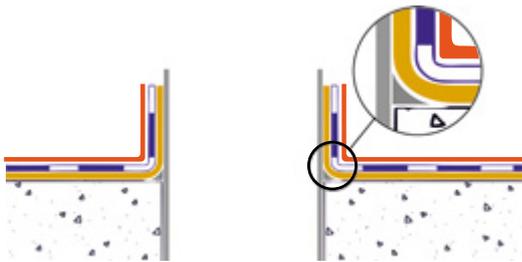
DRAINS

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.

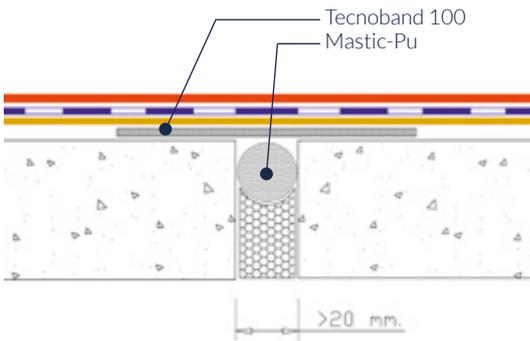
	TECNOTOP
	TECNOCOAT Polyurea membrane
	PRIMER
	TECNOBAND 100
	MASTIC-PU





INTERNAL OUTLETS

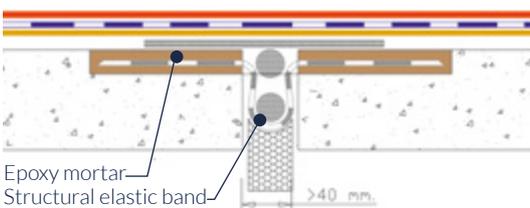
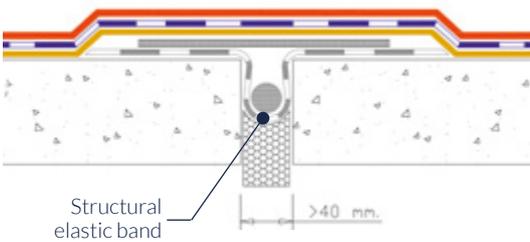
In any internal outlets coving at the point of contact, to provide a good surface for the vertical rotation of the membrane, using MASTIC PU.



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 joint.



EXPANSION JOINTS

In the case of expansion joints, the stress to be absorbed is greater and, therefore, this element should be treated as a structural element and using special seals. They should be applied and installed in the areas subject to structural movements according to the TDS.

	TECNOTOP
	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

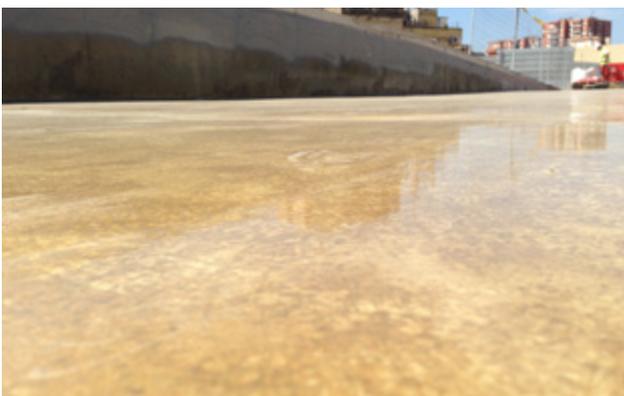
- Seal the Surface
- Increase bonding
- Fill irregularities to the existing surface
- Surface moisture absorption, present in the surface during the application process.

APPLICATION METHODOLOGY

1. Check expiry time (existing on the pail label)
2. Open the pails and check visually the product
3. Prior to mixing, stir component A separately to homogenize it
4. Add the component B into the component A pail (make sure the component B is fully emptied into the component A).
5. Mix both components using a low-speed electric mixer (300 to 400 r.p.m.)
6. Apply by short nap roller, brush or squeegee. The number of coats depends on the physical surface conditions; in most cases is necessary to apply 2 crossed coats. Wait for the tack-free time between coats. You can use airless equipment too.
7. Lifetime 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 tables below you can see the main properties of available primers to use in this system. Pay attention to the “accepted surfaces” and “maximum surface dampness” to do the best choice of primer resin.

	primer PU-1000	primer EP-1020	primer EP-1040	primer EPw-1070
Main use	Surfaces in low-damp conditions	Surfaces in low-damp conditions	Metal surfaces	Surfaces in medium-damp conditions
Accepted surface	Repair membranes / concrete	Concrete	Metal / Ceramic tiles	Concrete, asphalt
Components No.	1	2	2	2
Product base	Polyurethane solvent based	Epoxy 100% solids	Epoxy 100% solids	Epoxy water based
Density	1,11 g/m ³	1,05 g/m ³	1,05 g/m ³	1,00 g/m ³
Solids content	> 80 %	100 %	100 %	> 60 %
Concrete adherence	> 2 MPa	> 2 MPa	> 2 MPa	> 2 MPa
Viscosity	120 cps	250 cps	850 cps	3500 cps
Yield per coat	± 100 g/m ²	± 150 g/m ²	± 150 g/m ²	± 100 g/m ²
Initial drying time	60 minutes	60 minutes	60 minutes	5 ~ 6 hours
Recoat time	3 ~ 24 hours	3 ~ 48 hours	4 ~ 48 horas	6 ~ 48 hours
Temperature of use	5 ~ 35 °C	5 ~ 35°C	3 ~ 35 °C	3 ~ 35 °C
Maximum surface dampness	5 %	4 %	4 %	± 10 %
Dilution on water	± 5 % DESMOSOLVENT	NO	NO	5 ~ 20 %

	primer PU-1050	primer PUc-1050	primer WET
Main use	The best option for concrete	For concrete in cold environments	Concrete subject to maximum damp
Accepted surface	Concrete	Concrete	Concrete / Ceramic tiles
Components No.	2	2	2
Product base	Polyurethane 100% solids	Polyurethane 100% solids	Epoxy 100% solids
Density	1,11 kg/m ³	1,11 g/m ³	1,54 g/m ³
Solids content	100 %	100 %	100 %
Concrete adherence	> 2 MPa	> 2 MPa	> 2 MPa
Viscosity	450-A / 900-B cps	450-A / 900-B cps	680-A / 620-B cps
Yield per coat	± 150 g/m ²	± 150 g/m ²	± 450 g/m ²
Initial drying time	60 minutes	60 minutes*	3 hours
Recoat time	3 ~ 24 hours	3 ~ 24 hours*	3 ~ 6 hours
Temperature of use	5 ~ 35 °C	5 ~ 15 °C	5 ~ 35 °C
Maximum surface dampness	± 5 %	± 5 %	± 98 %
Dilution on water	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.

TECNOCOAT P-2049 has W3 certification (ETA 11/0357 and a BBA 16/5340) including anti-roots penetration, at 25 years working life, a minimum thickness of 1,4 mm (recommended thickness around 2 mm., consumption $\pm 2,1$ kg/m²). This thickness can vary depending on the final use of the waterproofing system. There are other certificates and tests (abrasion, tear...), you can ask for them to the Technical Department. It holds a DTA Avis Technique certification for the French market indented for walkable roofs.

The packaging of the two products of the pure polyurea TECNOCOAT is served through two drums:

- SIDE A (isocyanates): red drum
- SIDE B (amines): blue drum (pigmented liquid product)

TECNOCOAT P-2049 has W3 certification (ETA 11/0357 and a BBA 16/5340) including anti-roots penetration, at 25 years working life, a minimum thickness of 1,4 mm (recommended thickness around 2 mm., consumption $\pm 2,1$ kg/m²). It holds a DTA Avis Technique certification for the French market intended for walkable roofs.



Shelf life is 12 months at temperatures between 5°C to 35°C (41 to 95 °F), provided it is stored in a dry place, keep away from direct sunlight, extreme heat, cold or moisture. Once the tin has been opened, the product must be used immediately.



APPLICATION METHODOLOGY

1. Open both drums
2. Side B (blue drum, amines): stir/mix to homogenize the pigment inside because in most of the cases, the pigment has settled. If you don't do this previous action to mixing, it could happen color variances, foaming and sticky coating, so poor performance.
3. Side A (red drum, isocyanates): prevent exposing to moisture once opened
4. Put the pumps into the drums and connect the hoses to the equipment.
5. Start the equipment following the manufacturer's instructions.
6. Set up the hoses and machine temperatures (check the correct ones in the TDS)

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

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

tecnocoat P-2049 **tecnocoat P-2049 EL**

Recomended for...	 Concrete	 Metal
Component No.	2	2
Density	± 1,10 g/m ³	± 1,15 g/m ³
Elongation	> 350%	> 600%
Tensile strength	> 20 MPa	± 13 MPa
Concrete adherence	> 2 MPa	> 2 MPa
Hardness (shore A)	> 95	> 75
Hardness (shore D)	> 55	> 35
Initial drying time	3 ~ 5 seconds	13 ~ 25 seconds
Recoat time	max. 12 hours	máx. 12 hours
Thickness (Yield)	2 mm (± 2,1 kg/m ²)	1,5 mm (± 1,6 kg/m ²)
Fire reaction	Euroclass E	Euroclass F
External fire behavior	Broof (t1) (t2)(t3) (t4)	-
Anti-root	Yes (EN13948)	-
Solids content	100%	100%
VOC	0	0
Ponding water works	YES	YES

	MACHINE SETTINGS	
Heater isocyanate temperature	±75 °C	±78 °C
Heater amines temperature	±70°C	±72°C
Hose temperature	±70°C	±72°C
Pressure	2.700 psi (180 bar)	2.900 psi (200 bar)
Recommended mixing chamber	GU-07008-1 or GU-07008-2	GU-07008-1 or GU-07008-2



4. Finish coat with Tecnotop range

Due to the fact that it is an aromatic membrane it is essential to protect it, as indicated under ETA 11/0357, BBA 16/5340 and DTA, from the sun's UV rays. Therefore, TECNOCOAT must be protected using colored, opaque materials that form a barrier against the aggressive effects of UV rays, and in this specific use to protect against chlorine or salad water.

TECNOTOP can be applied with:

- airless spray gun
- short nap roller
- brush

When applied using an airless system, add max. 5% Desmosolvent to help it run more smoothly through the equipment.



These types of resins should be applied without any humidity or the presence of water on the substrate.

Likewise, re-application should be carried out once the first coat has dried and with a maximum use window of 24 horas at 23° C.



APPLICATION METHODOLOGY:

1. Check expiry time (existing on the pail label)
2. Open the pails and check visually the product
3. Prior to mixing, stir component A separately to homogenize it (pigment is inside)
4. Only if component A is neutral color: mix the pigment with component A
5. Add the component B into the component A pail (make sure the component B is fully emptied into the component A).
6. Mix both components using a low-speed electric mixer (300 to 400 r.p.m.)
7. Apply by short nap roller, brush. The number of coats depends on the physical surface conditions; in most cases is necessary to apply 2 crossed coats. Wait for the tack-free time between coats. You can use airless equipment too, but the lifetime must be checked to clean the equipment within the indicated time.

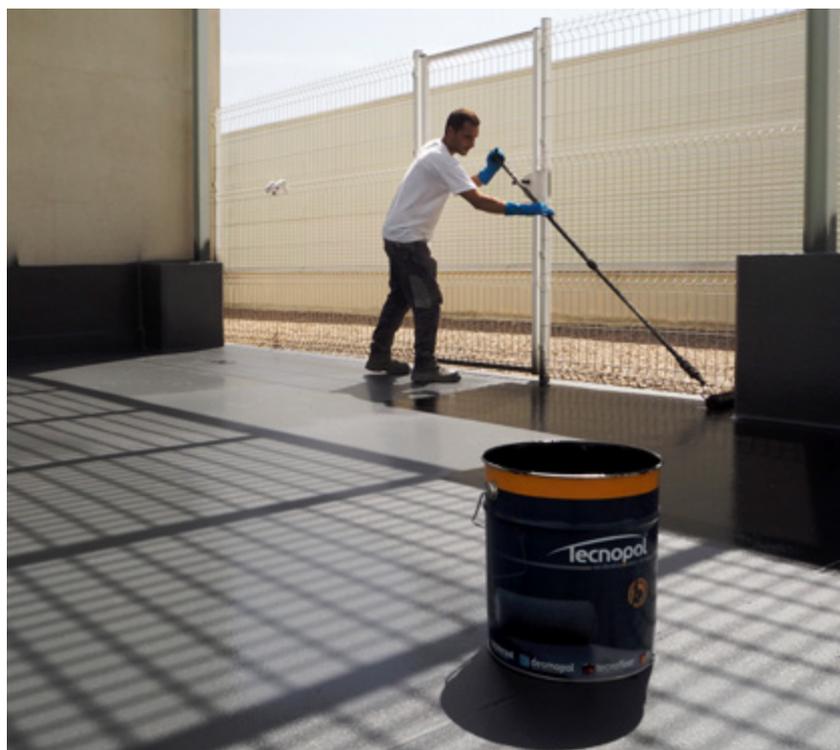
tecnotop 1C tecnotop 2C

Components No.	1	2
Density	±1,20 g/cm ³	±1,30 g/cm ³
Solids content	>63%	>71%
Pot Life	-	>1 hour
Tact free	±5 minutes	±2 hours
Recoat time	5 min ~ 48 hours	4 ~ 48 hours
Walkable / Passable	±3 hours	±24 hours
Hormigón adhesion	>1,3 MPa	>1,5 MPa
Yield	see next tables	see next tables
Service temperature	8 °C ~ 30 °C	8 °C ~ 30 °C

The consumption of **Tecnotop** can vary according to the final use or warranty given by the applicator.

There are two possibilities to have an anti-skid surface:

- Mixing **Tecnoplastic** range of particles on the Tecnotop resin
- Spreading **Silica Sand** on top to Tecnotop



Application summary (asphalt / concrete / ceramic tiles roof)

These previous procedures are common to all systems below, each system specifies the finishing procedure.

	PRODUCT	EXISTING SURFACE HUMIDITY	APPLICATION METHOD	YIELD	THICKNESS (DFT)
1	Surface preparation				
2	PRIMER EPw-1070 (asphalt, concrete, ceramic tiles)	± 10 %	Apply by roller or brush. The number of coats depends on the surface conditions.	100 ~ 200 g/m ²	55 μ ~ 110 μ
	PRIMER PU-1050 (concrete) PRIMER PUc-1050 (concrete, cold weather)	± 5%		150 ~ 300 g/m ²	135 ~ 170 μ
	PRIMER EP-1020 (concrete, ceramic tiles)	± 4%		200 g/m ²	190 μ
	PRIMER EP-1040 (ceramic tiles)	± 4%		100 ~ 150 g/m ²	95 ~ 140 μ
	PRIMER WET (concrete, ceramic tiles)	± 98%		450 ~ 500 g/m ²	290 ~ 325 μ
3	TECNOCOAT P-2049	-	Apply using TC-2049 spray equipment	1,6 ~ 2,1 kg/m ²	1,5 ~ 2 mm



RF1 - STANDARD NON-WALKABLE FLAT ROOF



4	TECNOTOP 1C	-	Apply 1 coat of Tecnotop 1C	150 g/m ²	85 μ
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RF2 - STANDARD WALKABLE FLAT ROOF (using Silica Sand)



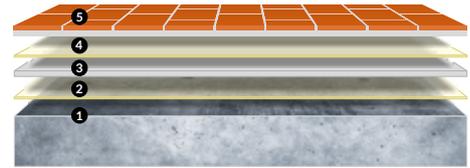
4	TECNOTOP 2C	-	Apply a first coat of Tecnotop 2C	150 g/m ²	85 μ
	SILICA SAND	-	Spread SILICA SAND on the wet surface. Once dried, remove the non bonded SILICA SAND (granulometry 0,3 ~ 0,8mm).	2 ~ 3 kg/m ²	-
	TECNOTOP 2C	-	Once dry, apply the second layer (sealing layer) of TECNOTOP 2C with a short nap roller or airless equipment, if it is necessary esthetically.	180 g/m ²	100 μ



RF3 - STANDARD WALKABLE FLAT ROOF (using TecnoPlastic)



4	TECNOTOP 2C + TECNOPLASTIC C / F / C plus	-	Apply a first coat of Tecnotop 2C mixed with TecnoPlastic C, F or C plus (7~8%)	150 g/m ²	85 μ
	TECNOTOP 2C	-	Once dry, apply the second layer (sealing layer) of Tecnotop 2C with a short nap roller or airless equipment, if it is necessary esthetically.	180 g/m ²	100 μ



RF4 · CERAMIC FINISH

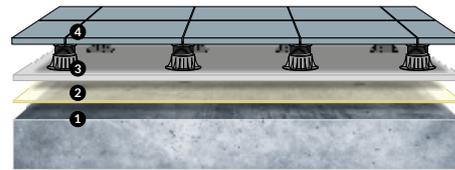
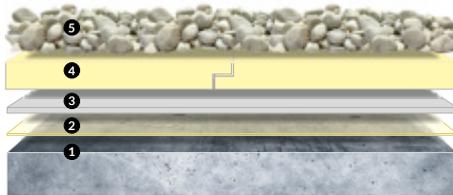


4	PRIMER PU-1000	± 5%	Apply by roller or brush. The number of coats depends on the surface conditions.	80 g/m ²	60 μ
	SILICA SAND	-	Spread SILICA SAND on the wet surface. Once dried, remove the non bonded SILICA SAND (granulometry 0,3 ~ 0,8mm).	1,5 ~ 2 kg/m ²	-
	CERAMIC TILES	-	Apply the ceramic floor using a specific adhesive/mortar	-	-

RF5 · OTHER FINISHES

Tecnocoat P-2049 accept other kind of finishes, like gravels, technical outside, pavements, etc.

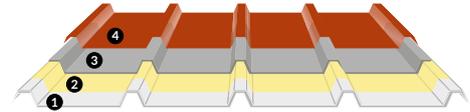
For more information ask to our technical department.



Application summary (metal roof)

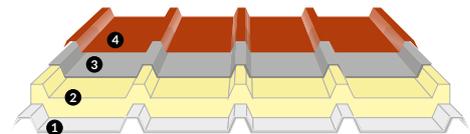
These previous procedures are common to all systems below, each system specifies the finishing procedure.

RFM1 · STANDARD METAL ROOF



	PRODUCT	EXISTING SURFACE HUMIDITY	APPLICATION METHOD	YIELD	THICKNESS (DFT)
1	Surface preparation				
2	PRIMER EP-1040	± 4%	Apply by roller or brush. The number of coats depends on the surface conditions.	100 ~ 150 g/m ²	95 ~ 140 μ
	PRIMER EPw-1070	± 10%		100 ~ 200 g/m ²	55 μ ~ 110 μ
3	TECNOCOAT P-2049 EL	-	Apply using TC-2049 spray equipment	1,6 kg/m ²	1,5 mm
4	TECNOTOP 1C	-	Apply 1 or 2 coats using a short nap roller or airless equipment, if it is necessary esthetically.	150 g/m ²	85 μ
	TECNOTOP 2C	-		180 g/m ²	100 μ

RFM2 · INSULATED METAL ROOF



	PRODUCT	EXISTING SURFACE HUMIDITY	APPLICATION METHOD	YIELD	THICKNESS (DFT)
1	Surface preparation				
2	TECNOFOAM G-2060 HFO	-	Apply using TC-2049 spray equipment	-	3 ~ 5 cm
3	TECNOCOAT P-2049	-	Apply using TC-2049 spray equipment	1,6 kg/m ²	1,5 mm
4	TECNOTOP 1C	-	Apply 1 or 2 coats using a short nap roller or airless equipment, if it is necessary esthetically.	150 g/m ²	85 μ
	TECNOTOP 2C	-		180 g/m ²	100 μ





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) n° 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 to EN-13948 for use in green-roofs.

European TECHNICAL ASSESSMENT (ETA 16/0680)

This approval is based on a European technical approval guideline (ETAG) n° 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.

- **DTA "Avis Technique" for roofing**

TECNOCOAT holds the AVIS TECHNIQUE, technical certification for in situ resin-based liquid waterproofing system for inaccessible roofs, technical roofs and roofs accessible to pedestrians.

- **ASTM approvals**

Tested under various ASTM standards according to US regulations.

- **NSF INTERNATIONAL LABORATORIES APPROVAL and WRAS 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, and holds the WRAS APPROVAL (Water Regulations Advisory Scheme) n° 1708543.

- **CE MARKING UNDER EN 1504-2 APPROVAL**

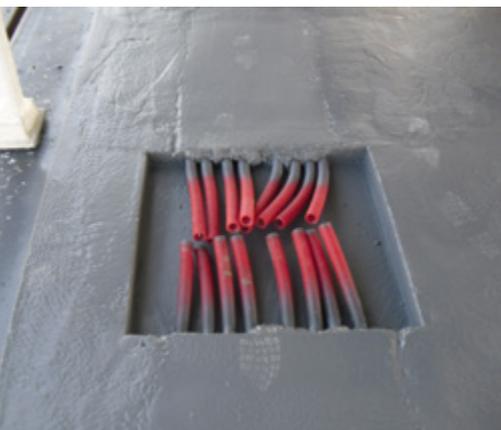
PROTECTION AND REPAIR OF CONCRETE STRUCTURES

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 to 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
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