tecnocoat CP-2049

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ROOFTOP GARDENS
WATERPROOFING SYSTEM

TECHNICAL GUIDELINE



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ETA 20/0253

ROOFTOP GARDENS
WATERPROOFING SYSTEM

Rooftop systems are a very useful systems that wear the top of the buildings and provide multiple actions such as absorbing rainwater, providing insulation, creating an habitat for wildlife and decreasing stress of the people, providing a more aesthetically pleasing landscape, and helping to lower urban air temperatures and mitigate the heat island effect.

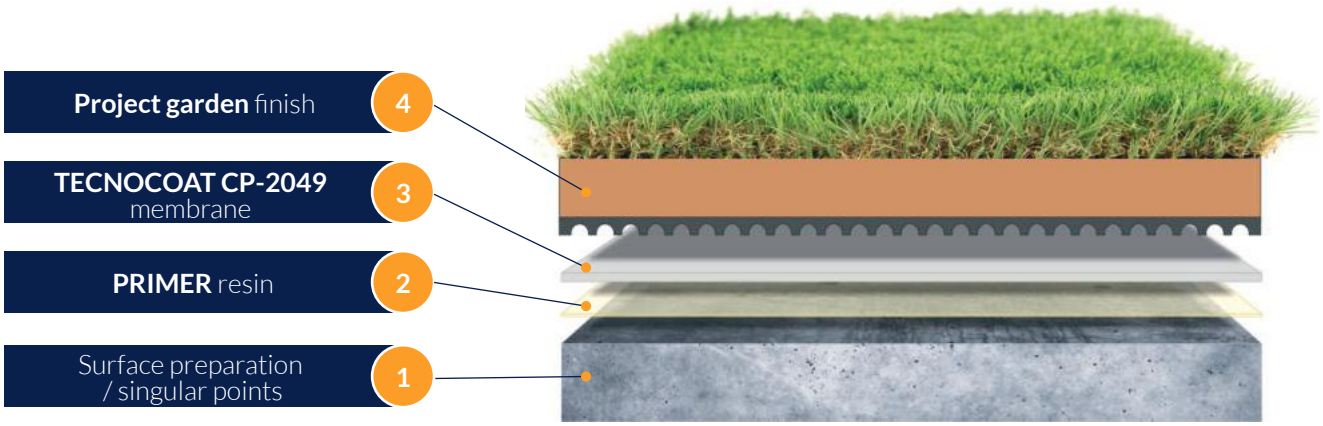
All the concrete structures need to be protected from the rainwater, of course. In this case, using vegetation as a " green natural finishing", its need to be protected from the irrigation water too.

TECNOCOAT CP-2049, creates a seamless, continuous skin all over the concrete element protecting it and avoiding the risk of leaks or roots penetration. Furthermore, this PUA membrane, is perfectly water highness, waterproof, ponding water work and supporting the weight of the plantation soil. This system is approved by EOTA according European norms (ETA 20/0253)

CE



Rooftop gardens
General outline



BENEFITS

1. **Plant root penetration approval** (ETA 20/0253)
2. **Fully adhered systems:** protection of the structural support element
3. **Complete and absolute protection** of the construction element
4. **Zero slope application**
5. **Direct application to the existing substrate:** waste generations limited, which contributes to an improvement in the construction sustainability
6. **Faster setting:** labor time reduction, cost optimization
7. **No extra weight on existing structure** (only ±2-3 kg/sqm)
8. **Cost reduction:** not need to apply mortar coats to protect it
9. **Several finishing** (colors and surface textures), according to the existing slippery international approvals and regulations
10. **High resistance to the temperature:** no collapse of the membrane due to environmental causes
11. **Working life (W3:25 years):** high quality of the applied system+ maximum durability warranties

Application parameters
Preliminary considerations

For optimum application of the **TECNOCOAT CP-2049** 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 hamper adherence, which will have a negative effect on their 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 essentially 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.
- **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 on-site 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 deepended, 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

This is a conditioning factor that can influence the speed of hardening of the membrane, together with the ambient temperature. At the same time that we control the humidity of the substrate at the time of application, it is convenient to know the existing temperature.
For this reason, and due to our experience and the chemical nature of some of the products that make up the system, it is not advisable to work with them below a temperature of 3°C.

SUPPORT'S PHYSICAL CONDITIONS

Coating performance depends on proper surface preparation and application. Optimal surface preparation will increase surface adhesion and this is essential for three reasons:

- Good adhesion to the surface protects the existing structure.
- It prevents salt and contaminated water from seeping through the concrete (so important in steel, to protect against rust and corrosion).



The system does not allow the presence of water on the back of the substrate.

1a. Surface preparation

CONCRETE

The concrete surface, where we go to apply our waterproofing system, 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-1010** epoxy mortar.
- Fill fissures and cracks using **MASTIC PU**.





In general, the concrete must be structurally sound, dry and clean for successful application of the system.

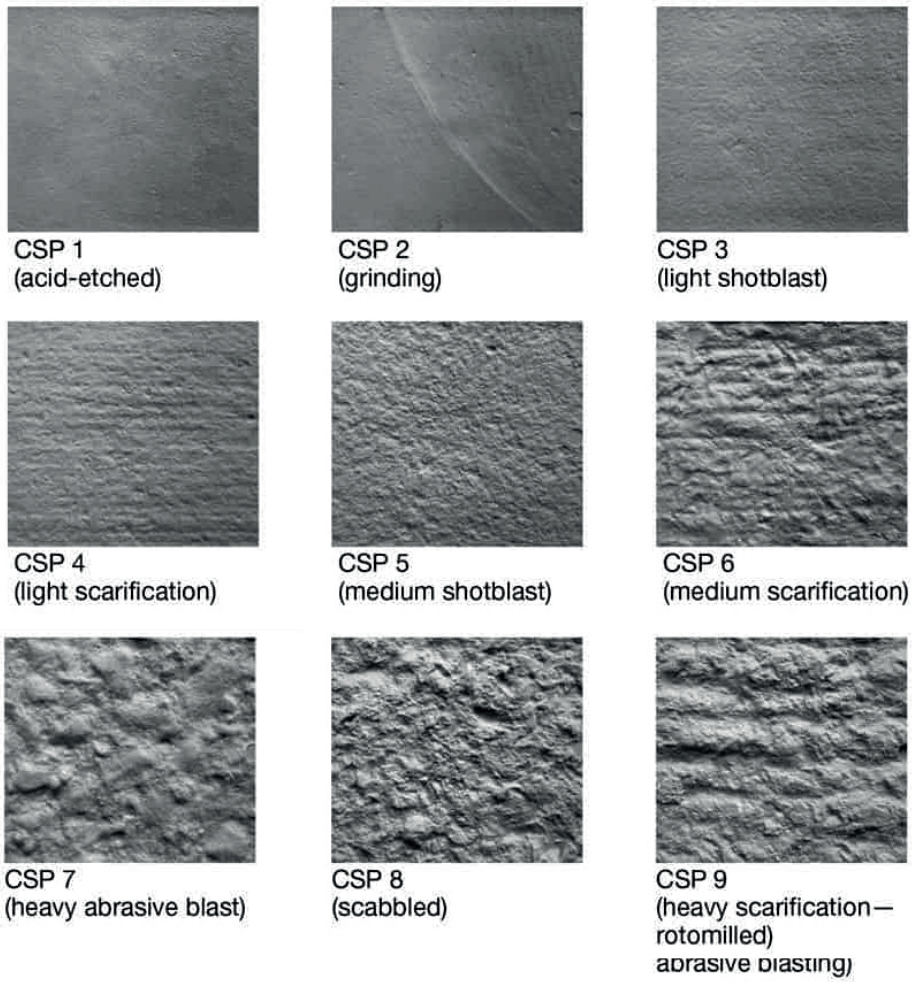
The coating systems require a uniform rough surface for proper application and specialist services may be required in their preparation.

The processes listed below also remove the laitance on the surface of the concrete, thus achieving a flat surface with minimal continuous roughness (CSP 4 to 6), following ICRI recommendations, with the following finish surface profiles:

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 a type of abrasive sand shot by compressed air through a nozzle. Sandblasting is recommended for horizontal, vertical and overhead use. This method is recommended for removing the surface of concrete, existing sealants and hard coatings. The creation of dust may be prohibited by environmental regulations. Vacuum mechanisms are available to remove dust from the air. Wet blasting complies with environmental regulations in most countries. Remove shot material, dust and sludge residues in accordance with environmental regulations. This method of surface preparation, although highly effective, has become less useful due to its environmental restriction.

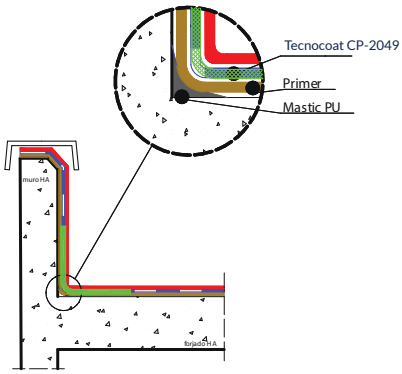


Finishing profiles according to ICRI

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



1b. Singular points

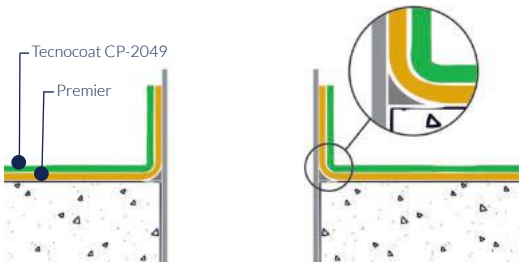


VERTICAL SURFACES
(FLASHING, UPSTANDS, SHARP EDGES)

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 the wall.

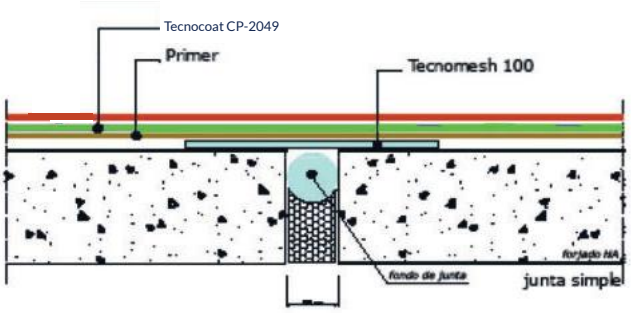
3. In turns or sharp edges on the top of the wall, it should cut them about 45 ° to avoid breakage due to an internal punching.



INTERNAL OUTLETS

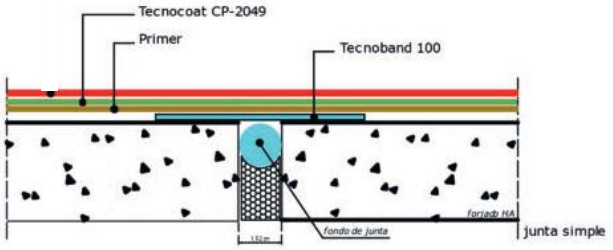
Smooth any encounter with pipes or any other element that crosses the support with **MASTIC PU**. This provides a good surface for vertical rotation of the membrane.





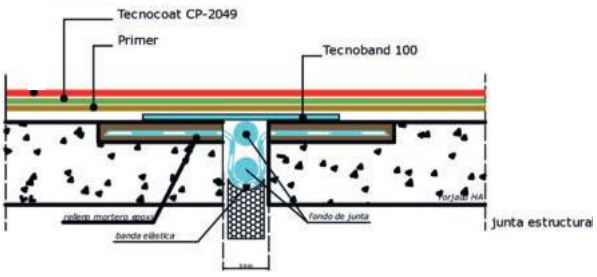
JOINTS

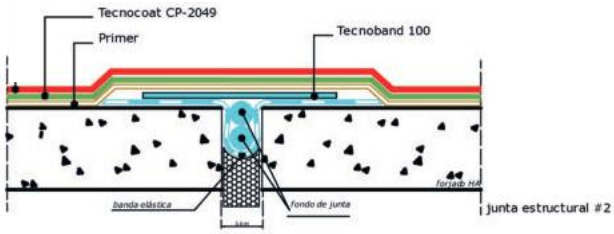
Cleaned and filled with **MASTIC PU** elastic polyurethane filler (never use silicone), apply the **TECNOCOAT CP-2049** system with **TECNOMESH 100** intermediate mesh and a top protection with a geotextile layer to absorb the movements of the joint.



EXPANSION JOINTS

In the case of expansion joints, the stress to be absorbed is higher and therefore this element must be treated as a structural element and using expansion bands. They must be applied and installed in areas subject to structural movement according to the technical data sheet.







2. Primer resin

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

MAIN PERFORMANCES

- Increase adhesion.
- Filling irregularities in the existing surface.
- Absorption of surface moisture, present on 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 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 to clean the equipment within the indicated time.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 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 make the best choice of primer resin.

	primer EP-1010	primer EP-1020	primer EP-1040	primer EPw-1070
Main use	Surfaces in low-damp conditions	Surfaces in low-damp conditions	Metal surfaces	Superficies en condiciones de humedad media
Accepted surface	Concrete / Ceramic Tiles	Concrete / Ceramic Tiles	Metal / Ceramic tiles / Concrete	Hormigón, asfalto
Components No.	2	2	2	2
Product base	Epoxy 100% solids	Epoxy 100% solids	Epoxy 100% solids	Epoxy water based
Density	± 1.50g/cm^3	± 1.05 g/cm^3	± 1,05 g/cm^3	± 1,00 g/cm^3
Solids content	100 %	100 %	100 %	> 60 %
Concrete adherence	> 2 MPa	> 2 MPa	> 2 MPa	> 2 MPa
Yield per coat	± 250 g/sqm	± 150 g/sqm	± 150 g/sqm	± 100 g/sqm
Initial drying time	50 minutes	60 minutes	60 minutes	5 ~ 6 hours
Recoat time	3 ~ 24 hours	3 ~ 24 hours	4 ~ 48 hours	6 ~ 48 hours
Temperature of use	5 ~ 35 °C	5 ~ 35°C	5 ~ 35°C	5 ~ 35°C
Maximum surface dampness	4%	4 %	4 %	± 10 %
Dilution on water	NO	NO	NO	5 ~ 20 %

	primer PU-1000	primer PU-1050	primer PUc-1050	primer WET
Main use	Surfaces in low-damp conditions	La mejor opción sobre hormigón	For concrete in cold environments	Surfaces in high-damp conditions
Accepted surface	Repair and overlaps membranes	Concrete	Concrete	Concrete
Components No.	1	2	2	2
Product base	Polyurethane solvent based	Polyurethane 100% solids	Polyurethane 100% solids	Epoxy 100% solids
Density	± 1,11 g/cm^3	± 1,11 g/cm^3	± 1,11 g/cm^3	± 1,50 g/cm^3
Solids content	> 80 %	100 %	100 %	100 %
Concrete adherence	> 2 MPa	> 2 MPa	> 2 MPa	> 2 MPa
Yield per coat	± 100 g/sqm	± 150 g/sqm	± 150 g/sqm	± 450 g/sqm
Initial drying time	60 minutes	60 minutes	60 minutes*	3 hours
Recoat time	3 ~ 24 hours	3 ~ 24 hours	3 ~ 24 hours*	3 ~ 6 hours
Temperature of use	5 ~ 35 °C	5 ~ 35 °C	5 ~ 15°C	5 ~ 35°C
Maximum surface dampness	4 %	± 4 %	± 4 %	± 98 %
Dilution on water	NO	NO	NO	NO

*Yield can vary depending on the substrate condition.

3. Tecnocoat CP-2049 membrane

TECNOCOAT CP-2049 is a cold-applied polyurea resin that, once cured, forms a solid, continuous membrane without joints or overlaps that perfectly waterproofs the applied surface. It is a product that achieves a solid state through contact with ambient humidity, although it is also possible to add additives to control its drying time, increasing its mechanical characteristics, forming a 100% solid section membrane.

The system is completely watertight, making it suitable for pedestrian traffic.

The waterproofing system has the European Technical Evaluation ETA with the n. 20/0253, for roof waterproofing systems and resistance to root penetration for a minimum thickness of 1.2 mm of membrane, consumption approx. 2.00 kg/sqm (recommended 1.5 mm/2.4 kg/sqm), useful life of 25 years (W3). This thickness is the one used to obtain the evaluation and can be increased according to end uses or substrate situations.



TECNOCOAT CP-2049 has certification ETA 20/0253 including anti-roots penetration, at 25 years working life, a minimum thickness of 12 mm (recommended thickness around 1.5 mm, consumption ±2.4 kg/sqm).

TECNOCOAT CP-2049 is presented in kit packaging in the following formats: 20kg.

The shelf life of the product is 12 months at temperatures between 5°C and 35°C (41°F and 95°F), provided it is stored in a dry place, away from direct sunlight, extreme heat, cold or moisture. Once opened, it is advisable to use completely.

For repairs and overlaps, please refer to the technical data sheet.



APPLICATION METHODOLOGY

Once the substrate has been prepared and the primer has been applied, depending on the conditions, the polyurea membrane shall be applied according to the following method:

Aplicación de una sola capa

- Pour component B into the drum of component A, in the fixed proportion provided by the manufacturer.
- Continuous mixing with medium speed mechanical equipment (working time: ±25 min).
- Pouring of the formed material onto the substrate and spreading on the surface. This operation is carried out with the help of a notched trowel or rubber lip (a roller can also be used).
- This is a unique process, through which the desired thickness is obtained in a single operation, eliminating intermediate waiting times, ensuring the formation of the membrane without interior bubbles.

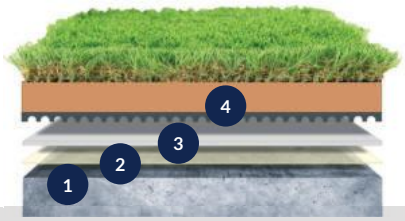








Application summary



GARDEN1 · TECNOCOAT CP-2049

	PRODUCT	TYPE OF SURFACE	EXISTING SURFACE HUMIDITY	APPLICATION METHOD	YIELD	THICKNESS
1	**Surface preparation**					
2*	**PRIMER EPw-1070**	Concrete	± 10 %	• Apply by roller or electrical equipment.	150 ~ 250 g/sqm	90 µ ~ 150 µ
	PRIMER EP-1020	Concrete/ Ceramic	± 4%	• Apply by roller.	200 g/sqm	190 µ
	PRIMER EP-1010	Concrete/ Ceramic	± 4%	• One coat application by squeegee.	± 300 g/sqm	200 µ
	PRIMER PU-1050	Concrete	± 4%	• Apply by roller.	150 ~ 300 g/ sqm	135 ~270 µ
	PRIMER PUc-1050	Concrete cold weather	± 4%	• Apply by roller.	150 ~ 300 g/sqm	135 ~270 µ
	PRIMER WET	Concrete/ Ceramic	± 98%	• One coat application by trowel.	450 ~ 500 g/ sqm	290 ~325 µ
3	**TECNOCOAT CP-2049**	-		• One coat application by trowel or squeegee.	2.4 kg/ sqm	1.5 mm
4	**Garden project**					

*Choose primer according surface type and humidity.



Approved by official certification agencies

- **EOTA CERTIFICATES**
  EUROPEAN TECHNICAL ASSESSMENT (ETA 20/0253)
  TECNOCOAT CP-2049 holds an ETA certificate (W3 25 working life years). This approval is based on a European technical approval guideline (EAD 030350-00-0402) 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.





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
- Consumptions can vary due surfaces, machine maintenance status or weather conditions
- This is a technical document, without legal value
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