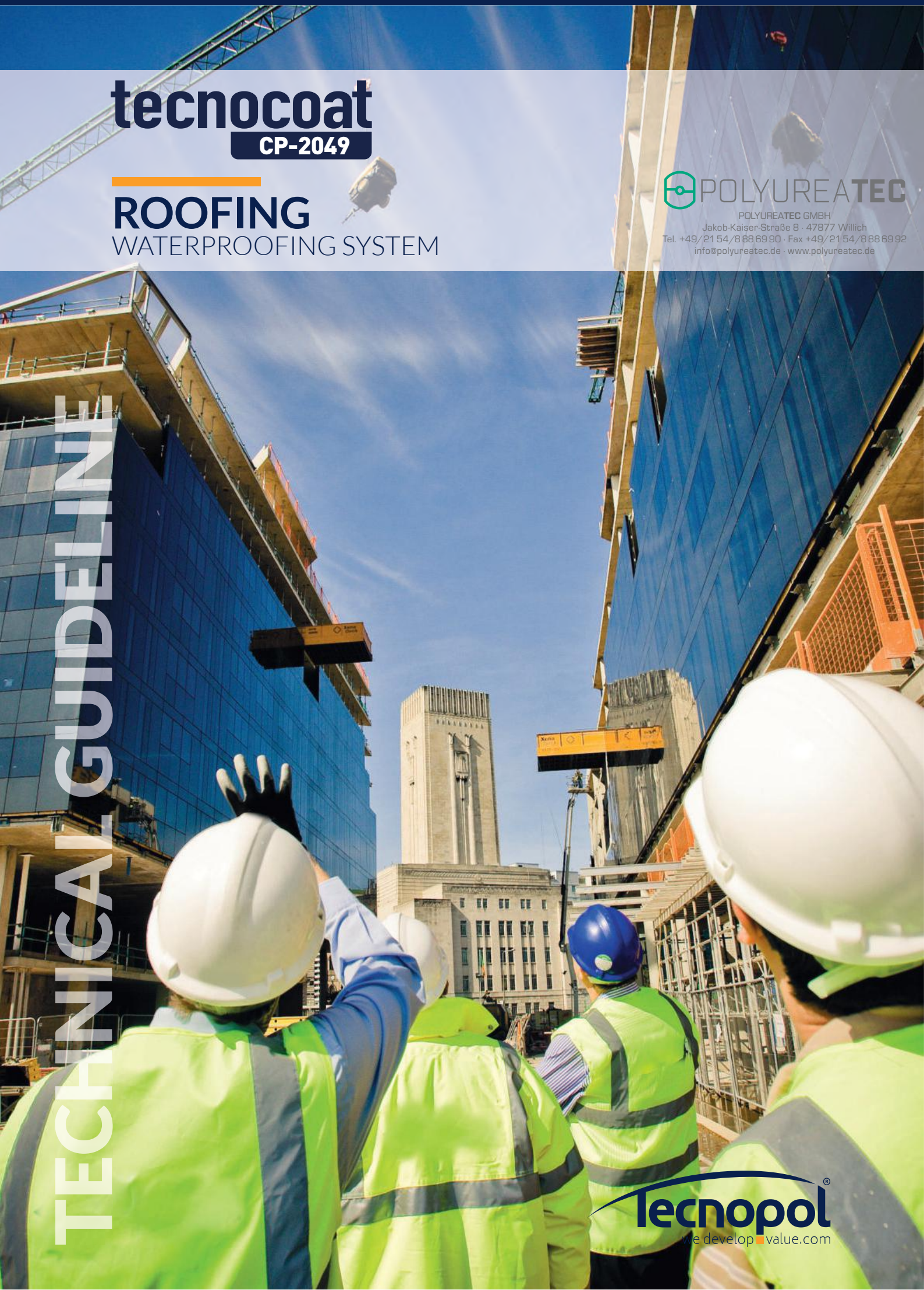
tecnocoat
CP-2049

ROOFING
WATERPROOFING SYSTEM

POLYUREATEC

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TECHNICAL GUIDELINE



Tecnopol®
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ETA 20/0253

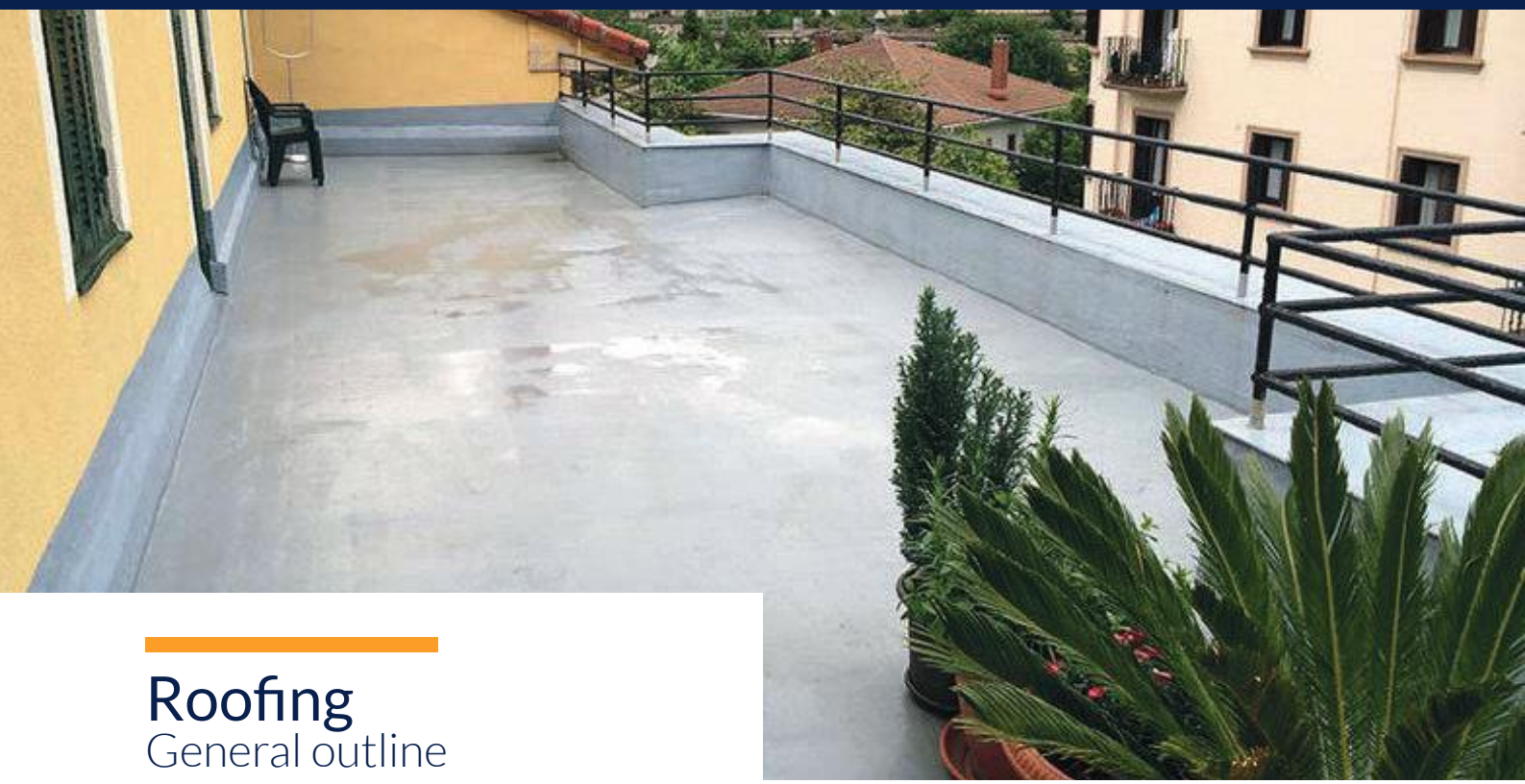
ROOFING
WATERPROOFING SYSTEM

TECNOCOAT CP-2049 is a waterproofing system based on cold applied polyurea that forms a solid, continuous and seamless membrane of the highest quality in formulation and manufacture.

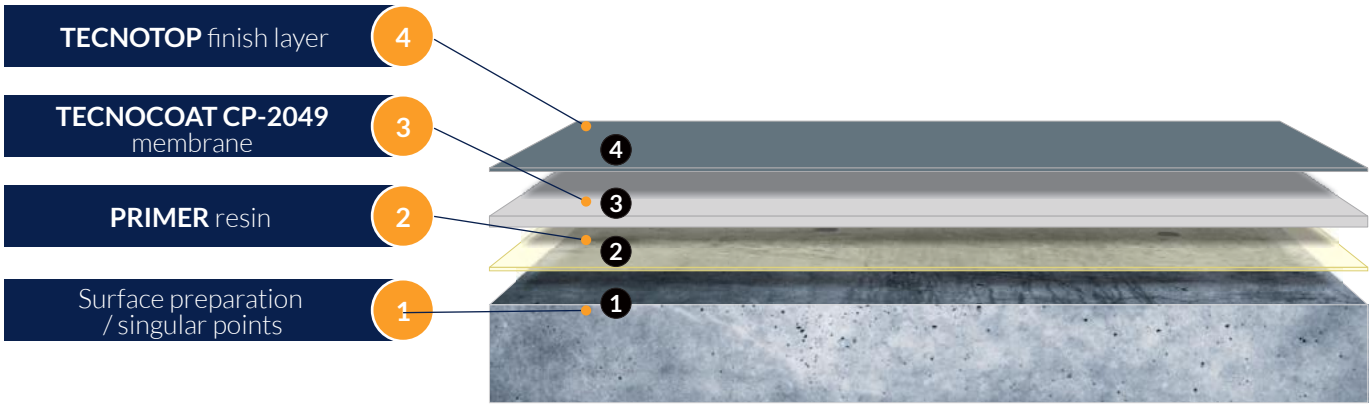
TECNOCOAT CP-2049 is an ideal system for waterproofing and protecting any project, regardless of its geometry, surface material or required finish.

The quality of the system **TECNOCOAT CP-2049** is recognized worldwide with the EOTA certification. **TECNOPOL's** technical stuff 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.
3. **Zero slope application,** it works under ponding water (ETA 20/0253)
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 ±2-3 kg/sqm).
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 20/0253).
12. **Walkable system:** resistant to pedestrian traffic, without heavy protection.

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

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

- Ambiance 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 ambiance 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 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).



Phreatic water presure not allowed.

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**.

Finally, a mechanical preparation is needed, to get a uniform roughened surface and to remove the laitances, using one of these systems, thus achieving a flat surface with a continuous roughness (CSP 4 to 6), 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 dry systems (vacuum cleaner).

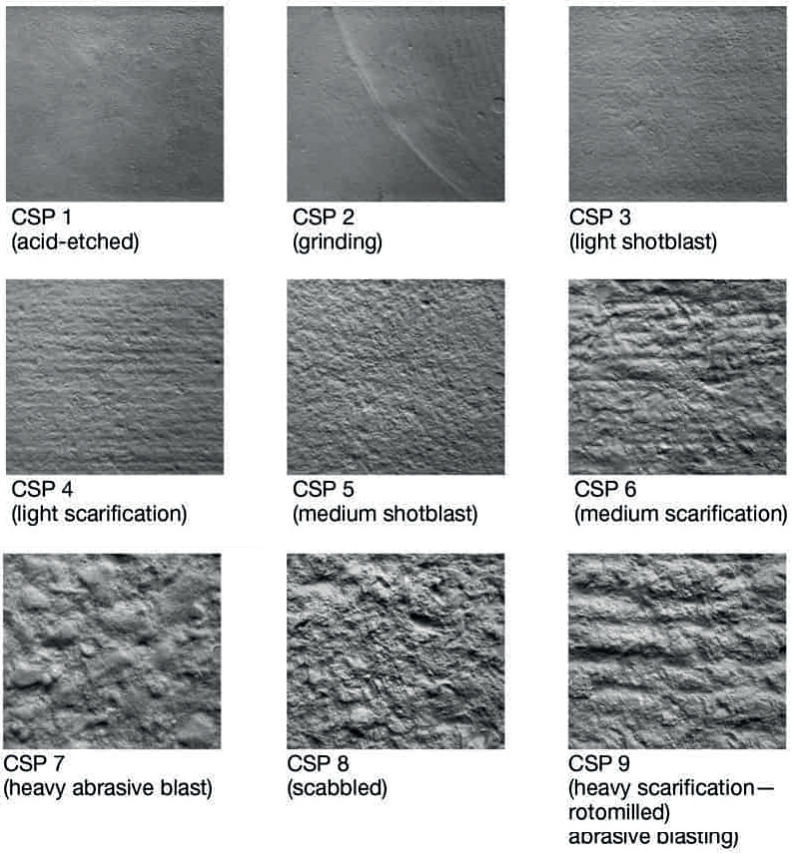




PROCESSES TO ELIMINATE THE LAITANCE ON THE CONCRETE

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).

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.

In many cases, in order to prevent corrosion or rust from occurring, and especially after a surface abrasion process, it is advisable to apply rust inhibitors prior to the application of the primer.

For this type of surface, cleaning after such work can in most cases be carried out with pressurised water. For optimum cleaning and degreasing, a ketone-based solvent can be used, which evaporates quickly.

Other necessary preparation processes are the encapsulation with **MASTIC PU** (see technical data sheet) of joints, screws and, in general, any point of the construction element that may have movements due to expansion.

Polyurethane foam can also be used to fill in areas between slabs or ridge tiles to provide physical support for the membrane application.

The water collection gutters must be watertight, as otherwise, in cases of heavy rainfall, they may not be able to absorb the full load of water. For this reason, the inner part where the gutter meets the eaves of the slabs must be completely watertight, with the help of **MASTIC PU** or **TECNOFOAM** pre-filling.

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** (see technical specifications on TDS) applied to 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 matches 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. 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 our **PRIMER EP-1010** epoxy resin 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 (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.

The application shall be carried out by spreading the **TECNOCOAT CP-2049** membrane reinforced with **TECNOMESH 100** on the substrate.

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 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.

It is important to check for good adhesion between the sheets to prevent them from lifting due to the adhesion of the membrane.

ASBESTOS SUBSTRATE

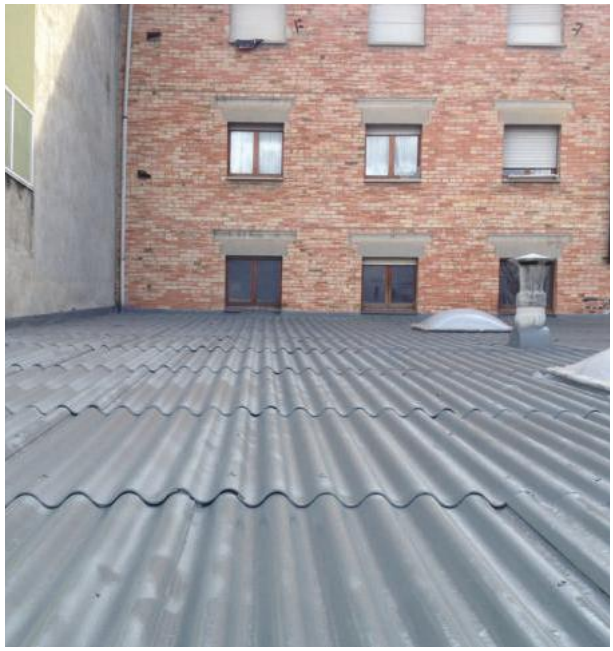
In many cases the overlaps of the plates that make up the substrate need to be resealed using sprayed polyurethane rigid foam, as well as checking their overall condition. Likewise, any screws, nuts and bolts in bad condition need to be resealed using **MASTIC PU** polyurethane Mastic or **TECNOBAND 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.

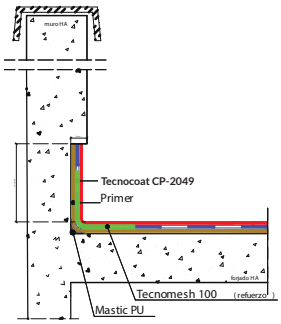
Check the level of water originating from this process before continuing with application of the membrane. If considered desirable, depending on the situation and the sheet.

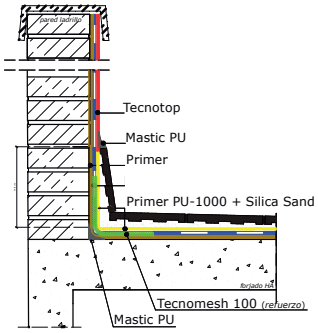
Another methodology of the preparation is to apply a continuous coat of **TECNOFOAM** (2-3 cms thickness) before **TECNOCOAT CP-2049** system.

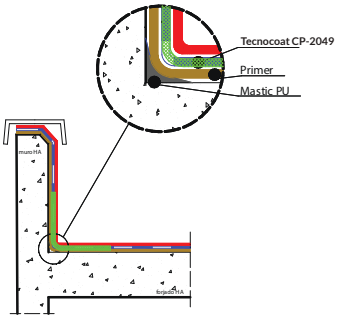




1b. Detail work





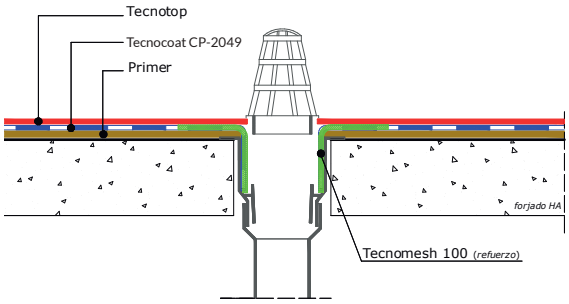


VERTICAL SURFACES
(FLASHING, UPSTANDS, SHARP EDGES)

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.

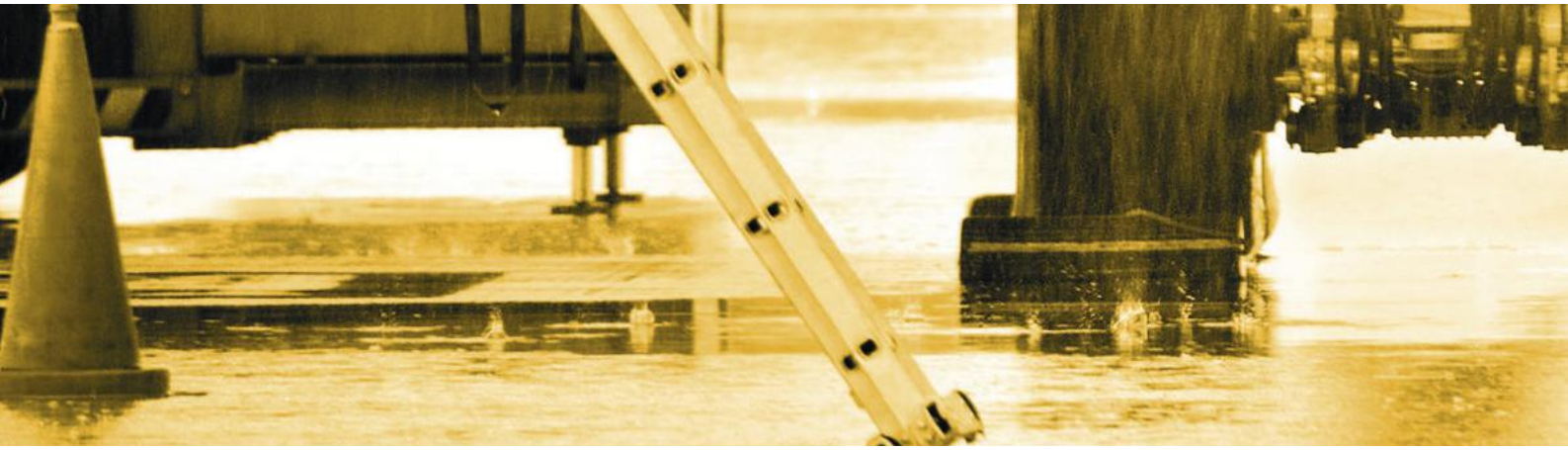
2. Final membrane's edge, to ensure that not water, rain filter out within the membrane and the wall (finish the system in the brick joint, making a linear regatta, placing a linear metallic finishing element).

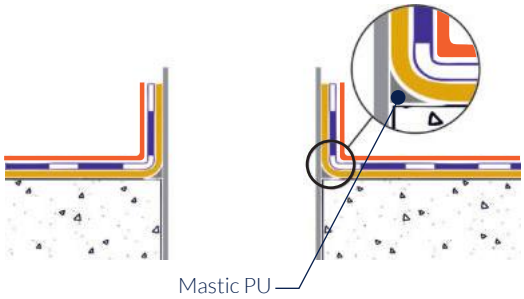
3. In turns or sharp edges on the top of the wall, it should cut them about 45 ° to avoid breakage due to an internal punching.



INTERNAL OUTLETS

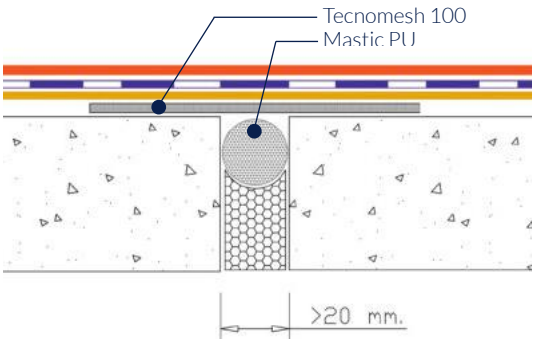
Smooth any encounter with pipes or any other element that crosses the support with **MASTIC PU**. This provides a good surface for vertical rotation of the membrane.





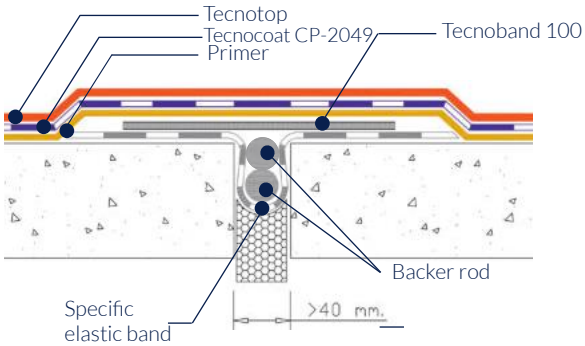
INTERNAL OUTLETS

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

Cleaned and filled in with **MASTIC PU** (never use silicones) elastic polyurethane as well as applying a top seal with **TECNOMESH 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 a **specific elastic band**. They should be applied and installed in the areas subject to structural movements according to the TDS.



2. Primer resin

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

MAIN PERFORMANCES

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

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

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.







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	Surfaces in high-damp conditions
Accepted surface	Concrete / Ceramic Tiles	Concrete / Ceramic Tiles	Metal / Ceramic tiles / Concrete	Concrete/Asphalt
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.

Tecnopol

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 a 20 Kg kit packaging. 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:

Single coat application

- 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

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

	PRODUCT	TYPE OF SURFACE	EXISTING SURFACE HUMIDITY	APPLICATION METHOD	YIELD	THICKNESS
1	**Surface preparation**					
2*	**PRIMER EPw-1070**	Asphalt	± 4%	• Apply by roller or electrical equipment.	100 ~ 200 g/ sqm	55 µ ~ 110 µ
	PRIMER EP-1040	Ceramic / Metal	± 10 %	• Apply by roller or electrical equipment.	150 ~ 300 g/ sqm	135 ~170 µ
	PRIMER EP-1020	Concrete / Ceramic tiles	± 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 ~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 CP-2049**		-	• Apply by trowel.	2.4 kg/sqm	1.5 mm

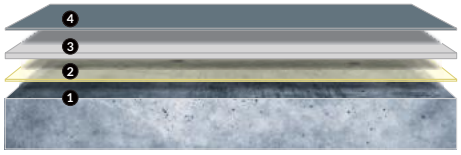
*Choose primer according surface type and his humidity.

RF1 · STANDARD NON-WALKABLE FLAT ROOF



4	**TECNOTOP 1C**	-	• Apply 1 coat of TECNOTOP 1C by roller.	150 g/sqm	89 µ

RF2 · WALKABLE ROOF (using SILICA SAND)



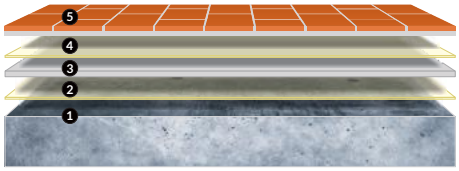
4	**TECNOTOP 2C**	-	• Apply a first coat of TECNOTOP 2C by short nap roller or electrical equipment.	150 g/sqm	90 µ
	SILICA SAND	-	• Spread SILICA SAND on the wet surface. • Once dried, remove the non bonded SILICA SAND (granulometry 0.3 ~ 0.8mm).	±1kg/sqm	-
	TECNOTOP 2C	-	• Apply the second layer (sealing layer) of TECNOTOP 2C with a short nap roller or airless equipment.	180 g/sqm	110 µ

RF3 · STANDARD WALKABLE FLAT ROOF (using Tecnoplastic)



4	**TECNOTOP 2C + TECNOPLASTIC C / F**	-	• Apply a first coat of TECNOTOP 2C mixed with TECNOPLASTIC C, or F (7~8%) by short nap roller.	150 g/sqm	90 µ
	TECNOTOP 2C	-	• Apply the second layer (sealing layer) of TECNOTOP 2C with a short nap roller or airless equipment.	180 g/sqm	110 µ

RF4 · CERAMIC FINISH

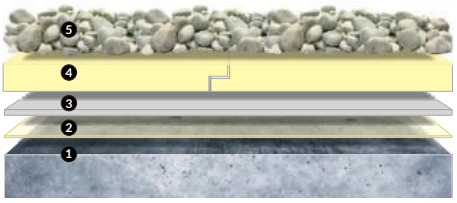


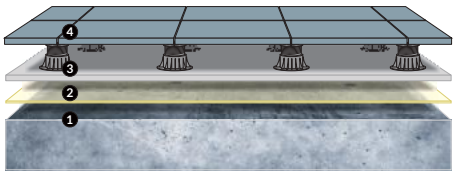
4	**PRIMER PU-1050 or EPw-1070**	-	• Apply by roller.	± 80 g/sqm	60 µ
	SILICA SAND	-	• Spread SILICA SAND on the wet surface. • Once dried, remove the non bonded SILICA SAND (granulometry 0.3 ~ 0.8mm).	±1 kg/sqm	-
5	**Cerámica**	-	• Apply the ceramic floor using a specific adhesive/mortar.	-	-

RF5 · OTHER FINISHES

TECNOCOAT CP-2049 accept other kind of finishes: gravels (IRMA system), elevated technical floor, pavements, etc.

For more information ask to our technical department.







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
- 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
- It's forbidden to reproduce it totally or partially
- All information provided is subject to the terms and conditions of sale of Tecnopol



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