



TECNOCOAT P-2049 - 100% PURE POLYUREA MEMBRANE FOR WATERPROOFING AND COATING

The 100% pure polyurea TECNOCOAT P-2049 system was developed as a two-component, sprayable, aromatic coating suitable for waterproofing, protection and sealing in general. It's made up of two high reactive liquid components, isocyanates and amines, which are mixed together using specific spray equipment, to form an aromatic, continuous, seamless, high density, solid and elastic pure polyurea membrane, with high mechanical and chemical resistance qualities.

It has CE marking on the basis of a statement made DoP Declaration of Performance (DoP) conforms to the UE 305/2011 regulation. The declaration is available on demand.



USES

For waterproofing and protection of:

- **ROOFING:** Sloped and flat roofs (walkable), balconies and overhangs. (ETA 11/0357 "Liquid Applied Roof Waterproofing Kit, based on pure Polyurea" and BBA 16/5340)
- **FLOORING:** Car parks with heavy traffic, industrial floor surfaces with waterproofing and hard-wearing requirements (according to EN 1504.2); including an approved non-slip finish (ENV-12633:2003)
- **BRIDGE DECK:** coating under asphalt on concrete elements of civil engineering (ETE 16/0680 "Liquid Applied Bridge Deck Waterproofing based on pure polyurea")
- Tanks and irrigation canals, potable water contact (according to BS-6920)
- Retaining walls and foundations (EN 1504.2 "Products & systems for protection/repair of concrete structures")
- Green roofs and walls (ETA 11/0357 Liquid Applied Roof Waterproofing Kit, and BBA 16/5340)
- Power plants, recycling, water waste, water treatment and petrochemical plants (EN-1504.2)
- Swimming pools, aquariums, lakes. Near sea water
- Vehicle and boat coatings (bed liners)
- Asbestos roofs rehabilitation (use with TECNOFOAM SPF)
- IRMA roofing system
- As a protection for an SPF (spray polyurethane foam TECNOFOAM G-2060HFO)

NOTE: call our technical department about the application to other supports or situations

minimum thickness	±1,5 mm
tensile strength at 23°	>20 MPa
elongation at break at 23°C	>350 %
shore A hardness at 23°C	>90
tack free time at 23°C	±5 secs
working life	W3, 25 years
application method	spray equipment



VOC (volatile organic compounds)

0



COLORS

	White
	Grey
	Black
	Red

GENERAL FEATURES

- TECNOCOAT P-2049 is a very strong solid membrane, flexible and hard-wearing product that, once applied, offers great stability, durability, and a perfect waterproofing and seal
- it has an ETA 11/0357 specific approval for "**Liquid Applied Roof Waterproofing Kit, based on pure polyurea**" working life 25 years (W3) with a minimum thickness of 1.4 mm, issued by EOTA (European Organization for Technical Assessment). the recommended thickness is 2 mm(2,1 kg/m²), but always consult our technical department or check our Technical Guidelines, depending on scope or use.
- it has an ETA 16/0680 specific approval for "**Liquid Applied Bridge Deck Waterproofing based on pure polyurea**", to use as a protection for the concrete on bridge deck and to be covered by asphalt, issued by EOTA (European Organization for Technical Assessment) (see the specific Technical Guideline)
- it has a BBA certification 16/5340 (validation on UK market)
- suitable for a drinking water for human consumption, issued y NFS Wales Ltd., under the BS-6920 "Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water") (see the specific Technical Guideline)
- suitable for ponding water, and works under ponding water (according to ETA 11/0357)
- this system must have positive drainage, so don't use when hydrostatic pressure is present
- the properties of the TECNOCOAT P-2049 system allow it to adhere to any surface such as concrete, ceramics, metals, polyurethane foam (Tecnofoam G-2060), wood, asphalt/bituminous sheets. In any case or material, the



- surface must be consistent, firm, clean and dry when the products are applied.
- it is recommended to apply them directly on the structural slabs of reinforced concrete (forged).
 - the application and training are done by our spray equipment TC2049 (spray-equipment.tecnopolgroup.com) or similar
 - free from harmful VOC compounds, therefore, does not hurt the ozone layer (VOC's zero).
 - the TECNOCOAT P-2049 system is 100% recyclable by mechanical means friendly to the environment
 - no gas collection for recycling and/or destruction is required
 - it doesn't emit substance to the environment once installed.
 - its application is recommended directly on the structural concrete slabs. The product is certified to be applied at zero slopes (ETA 11/0357, ETA 16/0680 and BBA 16/5340). In this way, the execution of mortar slopes or other protective materials is not necessary to do.
 - thanks to its versatility and its tack free time around 5 seconds (reduces facility downtime) TECNOCOAT P-2049 adapts to any surface, making it the ideal product for application on uneven surfaces and in areas of any shape, whether curved or squared.
 - TECNOCOAT P-2049 system's properties enable it to bond to any surface, such as concrete, ceramic tiles, polyurethane foam, wood, metals, bituminous sheets, acrylic paints (for other surfaces, please contact us)
 - furthermore, due to its resistance, it can be walked on and it will accept a rough finish to make it non-slip (according to ENV 12633:2003)
 - applying TECNOCOAT P-2049 saves in seals and any other kind of joins, as the finish is uniform and makes up a single layer, providing a surface with optimum maintenance and cleaning properties.
 - TECNOCOAT P-2049 pure polyurea coating system should be applied in dry conditions avoiding the presence of humidity or coming from the surface to be coated or the substrate, whether at the time of application or subsequently (pressure from phreatic water level).
 - in the event there is humidity in the substrate at the time of application, consult the technical specifications of our primers in the TDS
 - the TECNOCOAT P-2049 system requires solar radiation protection (UV rays) to do not lose its physical and mechanical properties, given that it is an aromatic membrane. Therefore, our EOTA (European Organization for Technical Assessment) approved systems (ETA 11/0357 and 16/0680) and BBA 16/5340, incorporates a protective polyurethane colored aliphatic resin, TECNOTOP 2C, for use in the absence of other physical protection elements. You can apply too TECNOTOP S-3000, our polyaspartic resin for coating and UV protection.
 - TECNOCOAT P-2049 is immune to ambience temperature changes of between -40° to 140°C, conserving its elastic properties without becoming cracked or soft.
 - the fast reaction of TECNOCOAT P-2049 upon application provides great stability in a few seconds and it may be walked on and guarantees waterproofing in less than 3 hours. This polyurea coating reaches its optimum conditions after approximately 24 hours.
 - contact with fuels, fertilizers, animal excrements or urine does not soften TECNOCOAT P-2049. Please, consult chemical resistance with our technical department.

PACKAGING

Metal drums of 225 kg each component (B side: amines and A side: isocyanates). Agitate B side (AMINES) before inserting the transfer pump and use.

SHELF LIFE

12 months at temperatures between 41 to 95 °F (5°C to 35°C), 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. Once opening drum, B side must be agitated mechanically before inserting the transfer pumps and use.

APPLICATION METHOD

In general, you should take the following factors:



- repair the surface (fill in depressions, eliminate unevenness, eliminate any old waterproofing, etc.)
- singular points preparation(perimeter, sinks / evacuations, expansion joints or structural)
- clean up the surface or substrate, removing any dust, dirt, grease or efflorescence.
- remove any silicone-based products
- the surface has to be enough compressive strength of adhesion of the membrane. If it were not so, we will proceed to apply our primers resins to achieve this target
- adhesion tests may be required for certain substrates
- in general, all surface preparation requires the removal of all grease, dirt loose and flaking materials prior to the application of TECNOCOAT P-2049
- the pull-off strength of the membrane on concrete is 362 psi (2,5 MPa).
- in case of doubt of all above, apply before in a restricted area and to check

The TECNOCOAT P-2049 pure polyurea system can be applied to many different surfaces and the procedure will vary depending on its nature or state. Below we set out some of the application for the most common surfaces; for other surfaces not described, please contact our technical department.

Concrete substrate

- any depressions or voids should be repaired using our epoxy resin mortar: mix (ratio of $\pm 1:4$) of epoxy resin PRIMER EP-1020 with silica sand.
- the concrete should be completely cured (concrete curing takes 28 days) or, in any case, the maximum level of humidity allowed for the substrate should be verified, depending on the primer used.
- any concrete latencies or release agents should be eliminated and an open the pore surface achieved by grit blasting, milling or sanding (to achieve a Concrete Surface Preparation index -CSP- 3 to 6 from ICRI Guide 03732, depending on the final use). Recommended CSP 3 or CSP 4.
- on old concretes, some acid-etched is needed to open the pores for primer acceptance
- clean up and eliminate all contaminants from the elements, such as dust or particles from the previous processes.
- apply the primer in the conditions and with the parameters indicated in the technical specifications for these products. In general, the dual-component polyurethane PRIMER PU-1050/PRIMER PUC-1050 or the epoxy PRIMER EP-1020 should be used, to promote adherence to the concrete surface, reduce the pinhole appearance, and absorption of moisture in the substrate (please check the primers absorption capacity in the TDS)
- apply the TECNOCOAT P-2049 pure polyurea coating.
- application of the aliphatic resin TECNOTOP S-3000/2C/2CP/1C in consumption and desired thicknesses in the case of no protection against UV rays. This application can be done with short hair roller type equipment "airless" (consult the TDS of these products before use)

Ceramic substrate

- ceramic surfaces should not have empty joints or loose elements or parts. These should be filled with MASTIC PU mastic, complemented with TECNOBAND 100 on the joints if necessary.
- for rapid and efficient cleaning of the surface use pressurized water and check that it evaporates completely. Also, verify that all dust and other physical contaminants have been eliminated.
- next, apply the required primer; in these cases of non-porous surfaces use PRIMER EP-1040 or PRIMER EPw-1070.
- apply the TECNOCOAT P-2049 pure polyurea coating.
- application of the aliphatic resin TECNOTOP S-3000/2C/2CP/1C, in consumption and desired thicknesses in the case of no protection against UV rays. This application can be done with short hair roller type equipment "airless" (consult the TDS of these products before use)

Sheets substrate:

The existing sheet surfaces (bitumen, EPDM, PVC, asphalt ...) must not show surface areas raised or not in good



condition. He withdrew in poor areas.

- rolled roofing of any type should be in good condition prior to application; check the situation of the sheets and value the actions to do
- there shall be cleaned with water to complete evaporation.
- remove and replace some sections if need be
- next to apply the required primer; in these cases of non-porous surfaces use the water-based epoxy PRIMER EPw-1070.
- apply the TECNOCOAT P-2049 pure polyurea coating.
- application of the aliphatic polyurethane resin TECNOTOP S-3000/2C/2CP/1C, in consumption and desired thicknesses in the case of no protection against UV rays. This application can be done with short hair roller type equipment "airless" (consult the TDS of these products before use)

Metal substrate (see TECNOCOAT P-2049 EL TDS)

Notes:

- Consult in all cases the waiting times, drying time, singular points treatment, conditions of application of all the products through the technical data sheets of each product, the technical handbook of application of TECNOCOAT, or consult our technical department.
- For other types of supports/substrates, for further information on the execution application procedure, for any additional questions, please, consult the technical data sheets (TDS) of these products, or our technical department.
- These guidelines are valid although they can be modified, according to the situation of the supports, conditioning of the bearing structures of the elements to be waterproofed, external climatology or situation at the time of application

REPAIR AND OVERLAPS PROCESSES

REPAIR

In cases where the membrane repair by accidental causes, or assembly procedures not covered installations, shall be as follows:

- cut, removal of the affected area and/or damaged surface
- sanding this area extending about 20–30 cm. around the perimeter, for overlapping security
- cleaning (vacuuming) of waste generated (powder, dust...); if it's possible don't use water, and if used, support humidity value; ketones applicability based solvents for reducing this type of surface cleaning
- apply a thin layer (50-100 g/m²) of polyurethane resin PRIMER PU-1000
- light spread SILICA SAND over the wet primer applied before
- wait for the total drying
- apply TECNOCOAT P-2049, TECNOCOAT CP-2049 or DESMOPOL(adding DESMOPLUS, using by the roll, squeegee or trowel)
- apply TECNOTOP S-3000/2C/2CP/1C, in consumption and desired thicknesses in the case of no protection against UV rays. This application can be done by short hair roller type equipment "airless" (see the conditions of application in the product datasheet TDS)

OVERLAPS

In cases has been exceeded recoat time (24~48 hours), so the waiting time between jobs is prolonged, proceed as follows:

- sanding strip longitudinal overlap of about 20–30 cm. wide
- cleaning (vacuuming) of waste generated (powder, dust...)or existing dust; if it's possible, do not use water, and



if it's used, check the support humidity value; ketones applicability based solvents for conducting this type of surface cleaning

- apply a thin layer (50-100 g/m²) of polyurethane resin PRIMER PU-1000.
- light spread SILICA SAND over the wet primer applied before
- wait for the total drying
- apply TECNOCOAT P-2049, TECNOCOAT CP-2049 or DESMOPOL (adding DESMOPLUS, using by roll, squeegee or trowel)
- apply TECNOTOP S-3000/2C/2CP/1C, in consumption and desired thicknesses in the case of no protection against UV rays. This application can be done by short hair roller type equipment "airless" (see the conditions of application in the product datasheet TDS)

APPLICATION REQUIREMENTS (SPRAY EQUIPMENT)

For the formation, it is necessary to mix the two initial liquid components, isocyanates and amines by our spray equipment TC2049 (spray-equipment.tecnopolgroup.com) or similar (proper maintenance and cleaning it is recommended). The general parameters for this material will be the following:

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

These temperature and pressure parameters have to be valued, ratified or be varied by the applicator, depending on the conditions of each climate zone, weather situation or as projection equipment specifications.

HEALTH AND SAFETY

These safety recommendations for handling, are necessary for the implementation process as well as in the pre and post, on exposure to the loading machinery. Always read the MSDS before use and handling the product.

- Respiratory Protection: When handling or spraying use an air-purifying respirator.
- Skin protection: Use rubber gloves, remove immediately after contamination. Wear clean body-covering. Wash thoroughly with soap and water after work and before eating, drinking or smoking.
- Eye / Face: Wear safety goggles to prevent splashing and exposure to particles in the air.
- Waste: Waste generation should be avoided or minimized. Incinerate under controlled conditions in accordance with local laws and national regulations.
- Vapor and atomized liquids are harmful
- Use only in ventilated areas, wear approved respirators when necessary
- Keep out of reach of children
- Do not use near high heat or open flame

Anyway, consult the material and safety data sheet (MSDS) of the product. To obtain an MSDS, please call +34935682111 or send an email to dpont@tecnopol.es

COMPLEMENTARY PRODUCTS

The TECNOCOAT P-2049 system may be complemented with the following products as a means of protection or to improve its physical-mechanical properties depending on its exposure, the desired finish or the type of substrate.

- PRIMER EP-1020: mixed with silica sand in a ratio of $\pm 1:4$, or calcium carbonate in ratio $\pm 1:2$, this is used to fill in depressions in concrete surfaces, rapidly providing a firm and fast drying even base.
- PRIMER PU-1050 | PRIMER EP-1040 | PRIMER EPw-1070 | PRIMER PUc-1050 | PRIMER PU-1000 | PRIMER EP-1020: these several resins are applied on the substrate beforehand to improve bonding and level the surface, as



well as regulating the humidity in the substrate (see permitted levels in their technical specifications). Consumption may vary depending on the type of support, nature or surface texture. Consult the technical specifications of each product or our technical department.

- **TECNOCOAT CP-2049:** pure cold polyurea coating for manual application, self-leveling for small applications on TECNOCOAT P-2049, repairs or application in areas of difficult access
- **TECNOTOP 2C:** dual-component colored aliphatic polyurethane resin, used to protect walkable and vehicular roofs and floors or ground against UV rays when there is no other protection. (according to ETA 11/0357 and BBA 16/5340)
- **TECNOTOP 2CP:** dual-component colored aliphatic polyurethane resin used to protect against UV rays and chlorinated water when waterproofing swimming pools, lakes, and aquariums.
- **TECNOTOP 1C:** single component colored aliphatic, used to protect non-walkable roofs or only for maintenance, against UV rays when there is no other protection
- **TECNOTOP S-3000:** (polyaspartic resin) two-component, aliphatic, colored, cold polyurea coating for protection against UV rays, in situations of decks or floors without additional protection. Excellent for vehicular cover applications, quick-drying and setting up.
- **TECNOPLASTIC:** this plastic powder, once mixed with TECNOTOP 2C/2CP/S-3000/1C, forms a rough surface, conforming even to norm ENV 12633:2003 (floors slipperiness), to achieve Class 3 (>45 slip resistance), depending on dosage (consult our technical department).
- **TECNOBAND 100:** the cold bond deformable band made up of an upper layer of non-woven textile and a lower layer of viscoelastic self-adhesive coating, which together allow it to adapt to the shape of the substrate. This band is ideal when dealing with structural joints and overlapping metal materials.
- **MASTIC PU:** polyurethane mastic for filling joints (use together with TECNOBAND 100 when necessary).



TECHNICAL DATA (ACCORDING TO THE ETA 11/0357 AND BBA 16/5340, FOR ROOFING, EUROPEAN GUIDE005)

PROPERTIES	RESULTS
Density at 23 °C ISO 1675	1.100 kg/m ³
Elongation at break at 23 °C ISO 527-3	>350%
Tensile Strength at 23 °C ISO 527-3	>20 MPa after 10 days
Hardness (Shore A) at 23°C DIN 53.505	>90
Hardness (Shore D) at 23°C DIN 53.505	>50
Working life (EOTA and BBA)	W3: 25 years and 1,4 mm of minimum thickness according to ETA 11/0357
Climatic zone	S (hard weather)
Surface temperatures	-20 °C~90 °C
Resistance to water vapor diffusion EN 1931	$\mu=2.279$
Water vapor diffusion ISO 7783	14g/(m ² /day)
User load	P4 (green roof, heavily loaded)
Roof slope	S1~S4, zero slope
External fire behavior EN 13501-5:2007 A1:2010	Class. Broof (t1)+t2)+(t3)+ (t4)
Fire reaction	Euroclass E
Resistance to movement EOTA TR-008	according to 1.000 times
Tack free time at 23 °C	±5 seconds
Cured time at 23 °C	10 seconds~48 hours
VOC content	0 (solids content 100%)
Anti roots certificate EN 13948:2008	YES
Chemical resistance	Resistant to many products and chemicals (consult technical department)
Thermal resistance	It behaves consistently with a temperature range of -40 °C ~ +140 °C

TECHNICAL DATA OF COMPONENTS(ACCORDING TO THE ETA 11/ 0357, FOR ROOFING, EUROPEAN GUIDE 005)

PROPERTIES	COMPONENT A	COMPONENT B
Specific gravity at 23°C ISO 1675	1,11±5%/cm ³	1,09-1,12 ±5%/cm ³ *
Viscosity (S63, 30 rpm at 23 °C) ISO 2555	900±50 cps	650±50 cps *
Mix ratio – in weight	100	102



Mix ratio – in volume	100	100
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**: these data only in neutral color; for other colors, this data may vary, please check COA*



TECHNICAL DATA (ACCORDING TO THE EN 1504.2)

PROPERTIES	VALUES	RESULT	STANDARD
Abrasion Resistance	Mass loss	133 mg	EN ISO 5470-1:1999
Mass drop test	No cracks, no flecking, 20Nm mass 1000 g	Class II>10Nm	EN ISO 6272-1-2004
	No cracks no flecking, 20Nm, mass 2000 g	Class II>20Nm	
Resistance to strong chemical contact Shore D initial 53	Class I: 3 days without pressure		EN 13529:2005
	SO4 H2 at 20%		Shore D final 50
	Oil motors		Shore D final 49
	Salt 20%		Shore D final 53
	Bleach		Shore D final 47
	OH Na 20%		Shore D final 51
	Diesel		Shore D final 50
Water liquid permeability	kg/m ² h 0,5	w<0,0045: (< 0,1 kg/m ² h 0,5)	
Water vapor transmission speed	V=6,67 (g/m ² x day)	Class I: Sd<5 m (permeable to vapor)	EN ISO 7783:2012
Equivalent air layer thickness	0,80 Sd (m)		EN ISO 7783:2012
Carbon dioxide permeability	Sd>50 m		EN 1062-6:2003

OTHER CERTIFICATIONS

PROPERTIES	RESULT	STANDARD
Tear strength at 23°C	48 kN/m (±3) (check the official issued document)	ISO 34-1:2011
Crack Bridging	PASS (check the official issued document)	ASTM C1305/C1305M-16
Non-migration to potable water	ABLE(check the official issued documents)	BS-6920 Suitability of non-metallic products for use in contact with water intended for human consumption with regards to their effect on the quality of the water European Directive 98/83/CE
Food contact (ethanol 20%)	ABLE (check the official document)	EN 1186-1:2002 EN 1186-3:2002

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