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

TECNOCOAT P-2049 is a two-component, sprayable, aromatic coating suitable for waterproofing, protection, and sealing. It is made up of two high reactive liquid components, isocyanates and resins, mixed together using our specific spray equipment TC2049 or similar, to form a solid, continuous, watertight and waterproof, seamless, hard and elastic pure polyurea membrane, with high mechanical qualities. It has CE marking on the basis of a statement made DoP Declaration of Performance (DoP) conforms to the UE 305/2011 regulation.

USES

For roofing, waterproofing, and protection of:

- ROOFING: Sloped and flat roofs (walkable), balconies, and overhangs. (ETA11/0357,BBA16/5340,DTA 19.2665)
- IRMA roofing system
- 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 the asphalt on concrete elements of civil engineering (ETA 16/0680)
- Tanks and irrigation canals, potable water contact (BS-6920 and WRAS approval)
- Concrete decks, retaining walls, and foundations (EN-1504.2 "Products & systems for protection/repair of concrete structures")
- Green roofs and walls (P4:TH4, ETA 11/0357, BBA 16/5340, DTA 19.2665)
- Power plants, recycling, water-waste plants, water treatment, and petrochemical plants (EN-1504.2)
- Swimming pools, aquariums, lakes. Near seawater
- Vehicle and boat coatings (bed liners)
- Flat or sloped asbestos roofs (used with TECNOFOAM G-2060 HFO, spray polyurethane foam system)
- As a protection for SPF (TECNOFOAM G-2060 HFO spray polyurethane foam system)

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

Recommended minimum thickness	±1,5 mm (working life:W3, 25 years)
Tack-free time	±5 secs
Tensile strength	>20 MPa
Elongation at break	>350 %
Hardness Shore A	>93
Application method	Spray equipment
VOC (volatile organic compounds)	0

COLORS

	White
	Gray
	Black
	Red

* The 60 kg kit format is only available in gray

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 holds an ETA 11/0357, issued by EOTA (European Organization for Technical Assessment). under the EAD 030350-00-0402 guide, specific approval for "**Liquid Applied Roof Waterproofing Kit, based on pure polyurea** " working life 25 years (W3), at 1.4 mm thickness, ponding water admitted
- it holds a BBA certification n 16/5340 (validation on UK market and influenced) for **waterproofing of walkable roofs,** at 1.4 mm thickness, ponding water admitted
- It holds the French Certificate DTA 5.2-19-2665 (Avis Technique) issued by CSTB **for deck roofing,** at 1.4 mm thickness, ponding water admitted
- it holds 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), at 2,3 mm thickness.
- suitable for 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"** and WRAS approval.
- it holds the test of diffusion coefficient to Radon gas according to ISO/DTS 11665-13.
- the application and training are done by our spray equipment TC2049 (spray-equipment.tecnopolgroup.com) or similar
- thanks to its versatility and its tack-free time of 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.
- recommended consumption is approximately 1,7 kg /sqm (at 1,5 mm dry film thickness). This data could vary depending on the type of application, weather conditions, or substrates' nature.
- his properties allow it to adhere to any surface such as concrete, ceramic tiles, metals, spray polyurethane foam (Tecnofoam G-2060 HFO), plywood, asphalt/bituminous sheets. In any case or material, the surface must be consistent, firm, clean, and dry when the products are applied. Recommended applying directly on the concrete deck.
- free from harmful VOC compounds, therefore, it does not hurt the ozone layer (VOC's zero). It's 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..
- it 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

- 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.
- 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)
- the 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, DTA 5.2-19/2665, 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, TECNOTOP 2CP or TECNOTOP 1C.
- contact with fuels, fertilizers, animal excrements or urine does not soften TECNOCOAT P-2049. Please, consult chemical resistances with our technical department.
- Consult our technical department, the Technical Guides of systems or the Application Methodologies, the characteristics of the proposed system according to the use, situation, or type of application.

PACKAGING

- Metal drums of 225 kg each component (B side: amines and A side: isocyanates).
- Metal drums of 60 kg each component (B side: amines and A side: isocyanates).

SHELF LIFE

12 months at temperatures between 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. 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)
- 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
- clean up the surface or substrate, removing any dust, dirt, grease, or efflorescence.

NOTE: in case of doubt of all above, apply before in a restricted area and to check, also carry out some adhesion test

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 applications 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 PRIMER EP-1010
- 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-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 two-component polyurethane PRIMER PU-1050/PRIMER PUc-1050, the epoxies PRIMER EP-1010, PRIMER EP-1020, or PRIMER EPw-1070 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.

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 quick 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.
- apply the required primer; in these cases, non-porous surfaces use PRIMER EP-1040, PRIMER EP-1010, 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.

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.º
- 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.

Metal substrate (see TECNOCOAT P-2049 EL TDS)

Notes:

- Consult in all cases the waiting times, drying time, singular points treatment, conditions of applying all the products through the technical data sheets of each product, the technical guidelines, or consulting 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.

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 (100-150 g/sqm) of polyurethane resin PRIMER PU-1050, PRIMER EPw-1070
- light spread SILICA SAND over the wet primer applied before
- wait for the total drying
- apply TECNOCOAT P-2049 ; compatibility also with: TECNOCOAT CP-2049, TECNOCOAT CP-2049 PLUS, DESMOPOL with DESMOPLUS or DESMOPLUS 700
- apply TECNOTOP S-3000/2C/2CP/1C, in consumption and desired thicknesses in the case of no protection against UV rays.

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 (100-150 g/sqm) of polyurethane resin PRIMER PU-1050, PRIMER EPw-1070.
- light spread SILICA SAND over the wet primer applied before
- wait for the total drying
- apply TECNOCOAT P-2049; compatibility also with: TECNOCOAT CP-2049, TECNOCOAT CP-2049 PLUS, DESMOPOL with DESMOPLUS or DESMOPLUS 700
- apply TECNOTOP S-3000/2C/2CP/1C, in consumption and desired thicknesses in the case of no protection against UV rays.

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: 70-75 ºC
- Heater amines temperature:70-75ºC
- Hose temperature:±70 ºC
- Working pressure: 2.500 - 3.000 psi
- Recommended mixing chamber: GU-07008-1 or GU-07008-2 (*use mechanical purge chamber)*

Anyway, these parameters for adjusting the projection equipment are approximate and may change depending on the weather conditions of the environment at the moment to apply, therefore, it is the responsibility of the applicator values in each case the option to choose.

HANDLING 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-1010: 100% solids, two-component, fillerized epoxy resin, to fill in depressions in concrete surfaces, one coat application so, rapidly providing a firm and fast drying even base.
- PRIMER EP-1020: 100% solids, two-component, epoxy resin, improving the adhesion, in one coat application so, rapidly providing a firm and fast drying even base.
- PRIMER PU-1050/PUc-1050:these several resins are applied on the substrate beforehand to improve bonding and level the surface and regulate the humidity in the substrate (see permitted levels in their technical specifications).
- PRIMER EP-1040: epoxy resin for its previous application on metallic or ceramic supports, improving adhesion, absorbing resident moisture in the support, and regularizing the planimetry of the support.
- PRIMER EPw-1070: epoxy water-based resin for the application on concrete, asphalt sheets, metal, or ceramic, improving adhesion, absorbing resident moisture in the support.
  PRIMER WET: epoxy resin for the application on concrete or ceramic substrates, improving adhesion, absorbing resident moisture in the substrate.
- TECNOCOAT CP-2049: pure cold polyurea coating for manual application, self-leveling for waterproofing.
- TECNOCOAT CP-2049 PLUS: pure cold polyurea coating for manual application, self-leveling for waterproofing. It is certified by a European Technical Approval (ETA 20/0253) under EAD 030350-0402 for roofing.
- TECNOTOP 2C: dual-component, glossy, and colored aliphatic polyurethane resin, used to protect walkable and vehicular roofs and floors or ground against UV rays when there is no other protection.
- TECNOTOP 2CP: dual-component, satin and colored aliphatic polyurethane resin used to protect against UV rays and chlorinated/salted water for swimming pools, lakes, and aquariums waterproofing.
- TECNOTOP 1C: single component, glossy, and 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, coating for protection against UV rays, quick dry time, and excellent chemical and mechanical characteristics.
- 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.
- TECNOMESH 200 BASE: non-woven woven for previous placement on excessively irregular substrates or in areas of earth or natural substrate.
- MASTIC PU: polyurethane mastic for filling joints (use together with TECNOBAND 100 when necessary).

TECHNICAL DATA (ACCORDING TO ETA 11/0357 AND BBA 16/5340)

PROPERTIES	RESULTS
Density ISO 1675	±1,10 ±0,05 g/cm³
Tack-free time	±5 seconds
Recoat time	10 secs ~ 48 hours
Service temperaturerange	-20 ºC~90 ºC
Walkable/vehicular	±3 hours / ±12 hours
Elongation at break ISO 527-3	>350%
Tensile Strength ISO 527-3	>20 MPa after 10 days
Shore Hardness A/D DIN 53.505	>93 / >50
Working life	W3:25 years at 1,4 mm thickness
Climatic zone	S (hard weather)
Resistance to water vapor diffusion EN 1931	µ=2.279
Water vapor diffusion ISO 7783	14g/(sqm/day)
Temperatures / User loads	P4: TH4, for all supports at W2 P4: TH4, for steel/concrete/OSB at W3
Construction element slope	S1~S4, zero slope, ponding water admitted
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
VOC content (volatile organic compounds)	0
Solid content ISO 124:2014	100%
Anti roots certificate EN 13948:2008	YES
Concrete adherence	>2 MPa
Chemical resistance	Resistant to many products and chemicals (consult technical department)
Ambiance thermal resistance	It behaves consistently with a temperature range of -40 ºC ~ +140 ºC

Results were performed in the laboratory at 23ºC and 50% RH, under controllable conditions. These values may vary depending on the application, climatology, or substrate conditions.

TECHNICAL DATA OF COMPONENTS

PROPERTIES	COMPONENT A	COMPONENT B*
Density ISO 1675	1,11 ±0,05 g/cm³	1,10 ± 0,05 g/cm³
Viscosity (at 12 rpm) ISO 2555	850±50 cps	1.100 ± 250 cps
Mix ratio – in weight	100	102
Mix ratio – in volume	100	100

** Data for component B pigmented in gray. For other colorations or neutral, consult the official COA issued by Tecnopol (Certificate of Analysis for each batch delivered). Results were performed in the laboratory at 23ºC and 50% RH, under controllable conditions.*

ASTM CERTIFICATIONS

PROPERTIES	RESULT
Tensile strength ASTM D412:2016 (Method A)	25,23 MPa
Elongation at break ASTM D412:2016 (Method A)	658 %
Hardness Shore A ASTM D2240:2015	99
Hardness Shore D ASTM D2240:2015	61
Tear strength ASTM D624-00:2012	101,5 N/mm
Water vapor transmission ASTM E96/E96M-16	0,18 g/sqm/day
Taber abrasion (H18 wheel, wear index) ASTM D4060:2014	109,0
Taber abrasion (H22 wheel, wear index) ASTM D4060:2014	105,0
Resistance to water penetration ASTM D-570-98 (2018)	0%
Impact resistance ASTM G14-04:2010 e1	55,68 kg.cm
UV accelerated weathering (1000 hours) ASTM G154-16	no blistering/no cracking/no chalking/no peeling/no delamination
Crack Bridging ASTM C836/C836M:2015 and ADM/CE/002:2017	1.-no cracks occurred after 10 cycles at 2 mm.
	2.-crack at 12 mm width
Crack Bridging ASTM C1305/C1305M-16 and ADM/CE/002:2017	1.-no cracks occurred after 10 cycles at 8 mm. 2.-crack at 12 mm. width
Adhesion strength to steel ASTM D4251:2017 (Method B, Tye I tester)	3,23 MPa
Adhesion strength to concrete ASTM D4541:2002 (Method A, Tye I tester)	2,20 MPa

Results performed in the laboratory at 23ºC and 50% RH, under controllable conditions. These values may vary depending on the application, climatology, or substrate conditions.

OTHER CERTIFICATIONS AND TECHNICAL DATA

PROPERTIES	RESULT
Diffusion coefficient to Radon gas ISO/DTS 11665-13.	4*10-12 sqm/sec
Tear strength ISO 34-1:2011	48 kN/m (±3)
Non-migration to potable water BS-6920, WRAS approval, and European Directive 98/83/CE	ABLE *(check the official document)*
Global migration (ethanol simulant at 20% and 10%) EN 1186-1:2002 and EN 1186-3:2002	ABLE *(check the official document)*
Depth of water penetration DIN 1048 Pt5:1991	10 bar/0 mm
Max. tensile strength ISO 37 at 7 days internal test	28 MPa
Max. elongation ISO 37 at 7 days internal test	345%
Modulus 100% ISO 37 at 7 days internal test	11 MPa
Environmental and support application temperature range	3ºC ~ 40ºC
Max. relative humidity	85%
Walkable / Vehicular	±3 hours / ±12 hours

Results were performed in the laboratory at 23ºC and 50% RH, under controllable conditions. These values may vary depending on the application, climatology, or substrate conditions.

Tecnopol®
Finlàndia, 33 · 08520 Les Franqueses del Vallès · Barcelona (Spain)
(+34) 93 568 21 11 · info@tecnopol.es · www.tecnopol.es