

TECHNICAL INFORMATION

AUTHOR TECNOPOL TECHNICAL SERVICE

REFERENCE TECNOCOAT P-2049

VERSION v.4

REVISION DATE 23/05/2013

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TECNOCOAT P-2049

COMMENTS

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DESCRIPTION:

The 100% pure polyurea **TECNOCOAT P-2049** system was developed as a single coating suitable for waterproofing, protection and sealing in general.

TECNOPOL SISTEMAS S.L. has developed an aromatic, high density polyurea, the properties, usage and characteristics of which are described below.

The pure polyurea **TECNOCOAT P-2049** membrane is made up of two liquid components, isocyanates and amines, which are mixed together using spray equipment

ACCEPTED USES:

For waterproofing and protection of:

- Sloped roofs, terraces, balconies and overhangs.
- Tanks and irrigation canals (R.D. 140/2003 certification, pursuant to European Directive 98/83/CE)
- Coating for bridges (under asphalt), and elements of civil engineering
- Industrial floor surfaces with waterproofing and hard-wearing requirements (UNE-EN 1504.2 certification)
- Floor surfaces and roofs in car parking facilities with vehicle traffic, non-slip finish (pursuant to UNE ENV 12633:2003)
- Swimming pools, aquariums, lakes. Near sea water
- Retaining walls and foundations
- Roofs and roof gardens (Category P4 under EOTA, highly protected roof)
- Power, recycling, waste and water treatment and storage plants (UNE-EN 1504.2 certification), and petrochemical plants
- Vehicle and boat coatings

- Asbestos roofs.



Liquid Waterproofing System, Based on Pure Polyurea
Sistema líquido impermeabilización basado en Poliurea 100% Pura

EOTA CERTIFICATION	ETA validation N° Validación N° DITE	11/0357
	Minimum thickness Grosor mínimo	1,4 mm
	Working life of the system Vida útil del sistema	25 years - W3
	Tensile strength Resistencia a la tracción	23 MPa
	Roof slope Pendiente cubierta	S1 ~ S4
	Surface temperature range Rango de temperatura superficial	-20 ~ +90 °C
	External fire performance Comportamiento a fuego exterior (UNE-EN 13501-5)	Broof (t1)
	Fire reaction Reacción al fuego	Euroclass E
	Resistance to wind loads Adherencia del sistema	Able > 50Kpa
	Resistance to water vapour Resistencia a la difusión del vapor de agua (UNE-EN 1931)	$\mu = 2.279$
UNE-EN 1504.2	Resistance to plant roots Resistencia a las raíces (EN 13948)	YES
	Statement on dangerous substances Emisión de sustancias peligrosas	VOC's zero
	Water vapour transmission properties Velocidad transmisión agua-vapor (UNE-EN ISO 7783:2012)	CLASS I: $S_D < 5m$
Carbon dioxide permeability CO2 Permeabilidad al dióxido de carbono CO2 (UNE-EN 1062-6:2003)	$S_D < 50m$	
Liquid water permeability Permeabilidad al agua líquida (UNE-EN 1062-6:2003)	$W < 0.1 \text{ kg} / \text{m}^2 \cdot \text{h}^{0.5}$	



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GENERAL FEATURES:

- **TECNOCOAT P-2049** is a very sturdy and hard-wearing product that, once applied, offers great stability and durability.
- It holds W3 certification (ETA 11/0357), and has a useful life of 25 years with a minimum thickness of 1.4 mm.
- Thanks to its versatility and its drying time of between 3 and 5 seconds **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.
- 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.
- The **TECNOCOAT P-2049** pure polyurea membrane 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 where the maximum humidity ranges are specified, or our Technical Application Manual for TECNOCOAT P-2049. (TAM).
- The **TECNOCOAT P-2049** system requires solar radiation protection (UV rays) to ensure it does not lose its properties, given that it is an aromatic membrane. Therefore, our EOTA approved system incorporates a protective varnish, TECNOTOP 2C, for use in the absence of other physical protection elements.
- **TECNOCOAT P-2049** is immune to temperature changes of between -40° and +140°, 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 reaches its optimum conditions after approximately 24 hours.
- Contact with fuels, fertilizers, animal excrements or urine do not soften **TECNOCOAT P-2049** (Consult chemical resistance with our technical department)
- The **TECNOCOAT P-2049** system's properties enable it to bond to any surface, such as cement, concrete, polyurethane, wood, metal, etc. Furthermore, due to its resistance it can be walked on and it will accept a rough finish to make it non-slip.

COLORS:

REFERENCE	COLOR
P-2049.T1	DARK GREY
P-2049.T2	BLACK
P-2049.T3	GREY
P-2049.T4	RED

YIELD:

Product yield is 2 kg/m² according the kind of application, or kind of surface (advice with MTA TECNOCOAT P-2049).

PRESENTATION FORMATS:

Metal drums of 225 kg each component.



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EXPIRY:

12 months at temperatures between 5° C and 25° C, provided it is stored in a dry place. Once the tin has been opened, the product must be used immediately.

APPLICATION:

In general, the following aspects should be dealt with prior to spraying:

- Repair the surface (fill in depressions, eliminate unevenness, eliminate any old waterproofing, etc.).
- Clean the surface or substrate, removing any dust, dirt, grease or efflorescence.

The **TECNOCOAT P-2049** pure poliurea 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 a mix (ratio of $\pm 1:4$) of our epoxy resin PRIMER EP-1020 mixed 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 laitance or release agents should be eliminated and an open pore surface achieved by grit blasting, milling or sanding.

Next, clean 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 should be used.

Metal substrate:

Metal surfaces should be prepared using sand-blasting, in order to improve the surface's mechanical fixation properties.

Check the seals and overlaps and where necessary seal with DESMOSEAL MASILLA PU mastic or TECNOBAND 100, in combination.

For rapid and efficient cleaning of the surface use a ketene based solvent, our DILUYENTE TEC-4U Thinner.

Apply prior priming using a water-based epoxy type primer, our PRIMER EPw-1070, to improve surface leveling and bonding. Consult the technical specifications of this product.

Apply the TECNOCOAT P-2049 pure polyurea membrane.

Ceramic substrate:

Ceramic surfaces should not have empty joints or loose elements or parts. These should be filled with DESMOSEAL MASILLA 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 the water-based epoxy PRIMER EPw-1070.

Apply the TECNOCOAT P-2049 pure polyurea membrane.

Sheets: substrate:

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

There shall be cleaned with water, ensuring complete evaporation.



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Next 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 membrane.

Always consult the waiting and drying times and application conditions for all products in the Specification Sheet for each product or in the technical manual for application of the TECNOCOAT P-2049 (TMA) system

HANDLING AND TRANSPORT:

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.

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 air.

Waste: Waste generation should be avoided or minimized. Incinerate under controlled conditions in accordance with local laws and national regulations.

Anyway, consult the safety data sheet of the product, are publicly available.

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 1:4, this is used to fill in depressions in concrete surfaces, rapidly providing a firm and fast drying even base.

PRIMER PU-1050- PRIMER EPw-1070-PRIMER PUc-1050-PRIMER PU1000: These primers 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).

TECNOTOP 2C-: Dual-component colored aliphatic polyurethane varnish used to protect roofs and floors or ground against UV rays when there is no other protection.

TECNOTOP 2CP-: Dual-component colored aliphatic polyurethane varnish used to protect against UV rays and chlorinated water when waterproofing swimming pool, lakes and aquariums.

TECNOPLASTIC F: This plastic powder, once mixed with TECNOTOP 2C/2CP, forms a rough surface, conforming even to norm UNE ENV 12633:2003 (floors slipperiness), to achieve Class 3 (>45 slip resistance), depending on dosage (consult our technical department).

TECNOBAND 100: Cold bond deformable band made up of an upper layer of non-woven textile and 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.

DESMOSEAL MASILLA PU: Polyurethane mastic for filling joints (use together with Tecnoband 100 when necessary).



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APPLICATION REQUIREMENTS (MACHINE GUN):

- Heater temperature: 75°C
- Hose temperature 70°C ~75°C
- Pressure: 2700 ~ 2900 psi (180 ~ 200 bar)

PROPIERTIES (ACCORDING ETA 11/0357):

PROPERTIES	VALUES	RESULTS	METHOD
Density at 23°C	kg/m ³	1.100	BS 4370 PART 1 METH 2
Elongation at break at 23°C	%	>300	ISO 527
Tensile Strength at 23°C	23 MPa initial ~ 17 MPa a 25 years		UNE-EN ISO 527-3
Hardness (Shore A)		>90	DIN 53.505
Hardness (Shore D)		>50	DIN 53.505
Working life	W3 25 years and 1,4 mm of thickness		
Climatic zone	S (hard weather)		
Surface temperatures	-20°C~90°C		
Resistance to water vapor diffusion	μ	2.279	UNE EN 1931
Water vapor diffusion	g/(m ² / d)	14	UNE EN ISO 7783
User load	P4 (green roof, heavily loaded)		
Roof slope	S1~S4 ($\geq 0^\circ$), zero slope		
External fire behavior	Class. Broof (t1)		UNE-EN 13501-5:2007 A1:2010
Fire reaction	Euroclass E		
Resistance to movement	according at 1.000 times		EOTA TR-008
Gel time at 23°C	$\pm 3 \sim 5$ seconds		
Cured time at 23°C	± 12 hours		
Solids (VOC zero)	100%		
Anti roots	YES		UNE-EN 13948:2008
Chemical resistance	Resistant to many products and chemicals (consult technical department)		
Thermal resistance	It behaves consistently with temperature range of: -40°C ~ +140°C		

Applus⁺**TECNOPOL** SISTEMAS

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TECHNICAL DATA (ACCORDING ETA 11/ 0357) :

PROPERTIES	COMPONENT A	COMPONENT B
Specific gravity (g/cm ³)	1,11	1,09
Dry extract at 105°C (% weight) EN 1768	≥99	≥99
Ashes at 450°C (% weight) EN 1879	≤1	≤1
Viscosity (cps) (S63, 30 r.p.m. at 25°C) UNE-EN ISO 2555	600±50	400±50
Mix ratio – in weight	100	102
Mix ratio – in volume	100	100

TECHNICAL DATA (ACCORDING UNE-EN 1504.1):

PROPERTIES	VALUES	RESULT	METHOD
Abrasion Resistance	Mass loss	133 mg	UNE-EN ISO 5470-1:1999
Mass drop test	No cracks, no flaking, 20Nm mass 1000 g	Class II > 10Nm	UNE-EN ISO 6272-1-2004
	No cracks no flaking, 20Nm, mass 2000 g	Class II > 20Nm	
Resistance to strong chemical contact Shore D initial 53	Class I: 3 days without pressure	UNE-EN 13529:2005	
	H2SO4 at 20%	Shore D final 50	
	Oil motors	Shore D final 49	
	Salt 20%	Shore D final 53	
	Bleach	Shore D final 47	
	Na OH 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)	UNE-EN ISO 7783:2012
Equivalent air layer thickness	0,80 Sd (m)		UNE-EN ISO 7783:2012
Carbon dioxide permeability	Sd > 50 m		UNE-EN 1062-6:2003

