PRODUCT DATA SHEET

PENECOAT™ ELASTIC

Version, Penetron Hellas 19.01.2023

LIQUID-APPLIED POLYURETHANE WATERPROOFING MEMBRANE

PENETRON® ADVANCED WATERPROOFING & PROTECTION SYSTEMS

DESCRIPTION

PENECOAT™ ELASTIC is a liquid-applied, highly permanent, elastic, cold applied and cold curing, one component polyurethane membrane, used for long-lasting waterproofing. PENECOAT™ ELASTIC cures by reaction with ground and air moisture and provides excellent mechanical, chemical, thermal and UV resistance properties.

RECOMMENDED FOR

- Rooftops
- Balconies and terraces
- Green roofs
- Wet areas (under-tile) in bathrooms, balconies, kitchens, etc.
- Protection of polyurethane foam insulation
- Flowerbeds and planter boxes
- Concrete constructions (bridge-decks, tunnels, etc.)
- Traffic decks (pedestrian and vehicular)
- Bitumen and asphalt felts, PVC, TPO, PP, EPDM membranes and old acrylic coatings

ADVANTAGES

- Simple application (roller or airless spray)
- When applied polymerizes and forms a seamless, waterproofing membrane without joints
- Resistant to water and frost. Leaves no bare spots or puddles
- Provides resistance to root penetration (green roof application)
- Provides high sun reflectivity
- Crack-bridging up to 3 mm thick, even at -20 ºC (-4 ºF)
- Provides water vapor permeability (allows the substrate to “breathe”)
- Provides exceptional surface adherence without any additional anchoring
- Excellent resistance to weather and sunlight (UV radiation)
- Maintains its mechanical properties over a temperature span of -30 ºC to 90 ºC (-22 ºF to 194 ºF). No seasonal softening or hardening occurs
- The waterproofed surface can return to service
- The membrane can be easily repaired locally within minutes, in case it gets mechanically damaged

TECHNICAL CHARACTERISTICS

Type	Prepolymerized polyurethane resin
Color	White
Rain stability time	4 hours [20 ºC (68 ºF), 50% RH]
Light pedestrian traffic time	18-24 hours [20 ºC (68 ºF), 50% RH]
Final Curing Time	7 days [20 ºC (68 ºF), 50% RH]
Chemical properties	Good resistance against acidic and alkali solutions (5%), detergents, seawater and oils

Technical characteristics of PENECOAT™ ELASTIC

Characteristic	Test Result	Test Method
Elongation at break	> 800 %	ASTM D 412
Tensile strength	> 4 N/mm^2	ASTM D 412
Puncture resistance	350 N	ASTM E154M (0,8mm film)
Tear strength	40 N/mm	ASTM D624 (type B)
Crack bridging ability (23 °C)	4,4 mm	EN 14891
Crack bridging ability (-5 °C)	3,7 mm	EN 14891
Crack bridging ability (-20 °C)	3,6 mm	EN 14891
Water vapor permeability	12 gr/m^2/day	DIN EN 1931
Resistance to mechanical damage by static impression	High Resistance (Class: P3)	EOTA TR-007
Resistance to mechanical damage by dynamic impression	High Resistance (Class: P3)	EOTA TR-006
Resistance to water pressure	No Leak (1 m water column, 24 h)	DIN EN 1928
Adhesion to concrete	> 1,9 N/mm^2 (concrete surface failure)	EN 1542
Hardness (Shore A scale)	65	ASTM D 2240 (15")
Resistance to root penetration	Resistant	UNE CEN/TS 14416
Solar reflectance (SR)	0.87 (white colour)	ASTM E903-96
Solar emittance (ε)	0.89(white colour)	ASTM E408-71
Thermal resistance [176 °F (80 °C) for 100 days]	Passed - No significant changes	EOTA TR-011
UV accelerated ageing (in the presence of moisture)	Passed - No significant changes	EOTA TR-010
Resistance after water ageing	Passed	EOTA TR-012
Hydrolysis (5% KOH, 7 days cycle)	No significant elastomeric change	INHOUSE LAB
Resistance to flying sparks and radiating heat	Passed	DIN 4102-7
Reaction to fire	Class E, Broof(t1), Broof(t4)	EU Norm
Service temperature	-30 °C to 90 °C (-22 °F to 194 °F)	INHOUSE LAB
Solid content	~85 %	INHOUSE LAB
Shock temperature (20 min)	200 °C (392 °F)	INHOUSE LAB

All data are average values obtained under laboratory conditions. Impractical use, temperature, humidity and absorption of the substrate may influence the above given values.

DIRECTIONS FOR USE

Surface Preparation: Surface must be clean, dry and sound, free of any contamination, which may harmfully affect the adhesion of the membrane. Maximum moisture content should not exceed 5%. Old, loose coatings, dirt, fats, oils, organic substances and dust need to be removed by a grinding machine. Possible surface irregularities need to be smoothened. Any loose surface pieces and grinding dust need to be thoroughly removed. New concrete structures need to dry for at least 28 days. Carefully repair and seal existing cracks and joints, before the application, for long lasting waterproofing results. Contact PENETRON HELLAS S.A. for additional information, regarding your project.

Priming:

Porous surfaces: Prime absorbent surfaces, like concrete, cement screed or wood with PENEPRIMER™ – PU primer. Alternatively, dilute PENECOAT™ ELASTIC in 10 – 15% (by volume) PENECLEANER™ A PLUS and apply as mentioned. Apply PENECOAT™ ELASTIC after approx. 2 – 3 hours (while the surface is "tacky").

Non-porous surfaces: Prime non-absorbent surfaces, like metal, ceramic tiles, old coatings and "green" concrete, with PENEPOX™ – W primer and apply PENECOAT™ ELASTIC after approx. 12 hours (while the surface is "tacky").

Allow the primer to cure, according to its technical instructions.

Application: Apply PENECOAT™ ELASTIC on the primed surface, while the surface is wet ("tacky") and lay it out by a roller or a brush, until all surface is covered. If desired, you can use airless spray.

Reinforce always with FABRIC at difficult areas (in the first layer of wet product), such as wall-floor connections, chimneys, pipes, waterspouts (siphon), etc. While wet, put a correct-size piece of FABRIC on PENECOAT™ ELASTIC, press it to soak and then apply enough amount of PENECOAT™ ELASTIC, till saturation of the FABRIC.

After 12 hours (not later than 48 hours), apply another layer of the PENECOAT™ ELASTIC. If necessary, apply a third layer of the PENECOAT™ ELASTIC.

NOTE: Reinforcement of the entire surface with the PENETRON® FABRIC is highly recommended. Use 2 – 4 in (5 – 10 cm) stripe overlapping. If PENECOAT™ ELASTIC is applied without FABRIC reinforcement, we recommend a three-layer application.

Finishing: For a color-stable and chalking-free surface, apply one or two layers of the PENECOAT™ PU – L over PENECOAT™ ELASTIC. The application of PENECOAT™ PU – L is especially required, if a dark final color is desired (e.g. red, grey, green, etc.). If a medium traffic, wear-resistant surface is desired (e.g. balconies, terraces), apply two layers of PENECOAT™ PU – L. If a heavy traffic, abrasion-resistant surface is desired (e.g. car parking), apply one or two layers of PENECOAT™ PU – H after sprinkling sufficient amount of proper grade quartz sand (0,1 to 0,4mm particle size). The coverage with quartz sand should be made in third layer (sacrificial layer) of PENECOAT™ ELASTIC while the surface is still fresh, where the indicative consumption of PENECOAT™ ELASTIC is 0,5 kg/m^2.

NOTE: PENECOAT™ system is slippery when wet. In order to avoid slipperiness during wet days, sprinkle suitable aggregates (QUARTZ SAND MIX) onto the still wet coating, to create an anti-slip surface.

COVERAGE
Approx. coverage of primer on porous surface

PENEPRIMER™ – PU	0,25 kg/m^2 (0,05 lb/ft^2)
PENECOAT™ ELASTIC /10–15% (by vol.) PENECLEANER™ A PLUS	0,5 kg/m^2 (0,1 lb/ft^2)

Approx. coverage of primer on non-porous surface

PENEPOX™ – W	0,15 – 0,20 kg/m^2 (0,03 – 0,04 lb/ft^2)

Approx. coverage of PENECOAT™ ELASTIC is 0,6 – 0,7 kg/m^2 (0,12 – 0,14 lb/ft^2) per layer. Indicatively, for two layers 1,2 – 1,5 kg/m^2 (0,25 – 0,31 lb/ft^2) is recommended. The use of FABRIC is expected to double the PENECOAT™ ELASTIC consumption per m^2 (ft^2).

NOTE: In case of certification according to European Technical Assessment ETA 20/0012 of 16 July 2021 for PENECOAT™ ELASTIC, FABRIC 110P is used as reinforcing fabric and the consumption is:

Working life	W2 (10 years)	W3 (25 years)
Minimum layer thickness	1,6 mm	2,9 mm
Minimum quantity consumed	2,4 kg/m^2	4,1 kg/m^2

The European Technical Assessment ETA 20/0012 of 16 July 2021 is valid for a period of 10 years (W2) and 25 years (W3) depending on the applied thickness.

In case of certification according to European Technical Assessment ETA 22/0357 of 19 May 2022 for PENECOAT™ ELASTIC, the consumption is:

Working life	W3 (25 years)	
Components	Trade name	Consumption
Primer over concrete metal and PU	PENEPOX W : epoxy water based	≥ 0,15 kg/m^2
System 1	PENECOAT ELASTIC + 3 % (weight) P-BOOSTER (+ Optional: PENECOAT PU-L)	≥ 2,3 kg/m^2
	FABRIC 60P	----------
System 2	PENECOAT ELASTIC + 3 % (weight) P-BOOSTER	≥ 1,8 kg/m^2
	PENECOAT PU-L	≥ 0,15 kg/m^2

SPECIAL CONSIDERATIONS

DO NOT apply over 0,6 mm thickness (dry film) PENECOAT™ ELASTIC per layer. For the best results, the temperature during application and cure should be between 5 ºC and 35 ºC (41 ºF and 95 ºF). Low temperatures may cause retardation in curing, while higher temperatures may accelerate the process. High humidity may affect the final finish.

Always stir PENECOAT™ ELASTIC well before use.

Available colours of PENECOAT™ ELASTIC are white, grey, red and green.

Contact PENETRON HELLAS S.A. for specific instructions, regarding your project.

PACKAGING

PENECOAT™ ELASTIC is available in 25 kg (55 lb), 15 kg (33lb), 6 kg (13 lb) and 1 kg (2 lb) pails.

STORAGE / SHELF LIFE

When stored in a dry and cool place in their original, unopened containers, shelf life is 12 months. Protect the material against moisture and direct sunlight. Storage temperature should be between 5 ºC – 35 ºC (41 ºF – 95 ºF).

SAFE HANDLING INFORMATION

Wear appropriate eye, skin and breathing protection, when using this product. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. KEEP OUT OF REACH OF CHILDREN. For further information please refer to Safety Data Sheet. PENETRON HELLAS S.A. has recently updated Safety Data Sheet on the safe use of PENETRON® products. Each Safety Data Sheet contains health and safety information for the protection of your employees and your customers.

CERTIFICATION

CE

PENETRON HELLAS S.A.
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136 79 Acharnes, Greece
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1128-CPR-10.09.0479
DOP NO: 14.026-17-01D160922-05
EN 1504-2
PENECOAT ELASTIC
Surface protection product for concrete – coating
Principles 1 Protection against Ingress – method 1.3
Principles 2 Moisture Control – method 2.2
Principles 8 Increasing Resistivity – method 8.2
Linear shrinkage: NPD
Coefficient of thermal expansion: NPD
Adhesion by cross-cut test: NPD
Permeability to CO_2: S_D>50m
Water vapour permeability:Class I: SD<5m
Capillary absorption and permeability to water:
$\omega < 0,1\ kg/m^2.h^{0,5}$
Thermal compatibility: NPD
Resistance to thermal shock: NPD
Chemical resistance: NPD
Crack bridging ability: NPD
Adhesion strength by pull-off test: ≥ 1,5 (1,0) N/mm^2
Reaction to fire: Class F
Slip / skid resistance: NPD
Behavior after artificial weathering: NPD
Antistatic behavior: NPD
Adhesion on wet concrete: NPD
Dangerous substances: According 5.3

PENETRON HELLAS S.A. 50 Thrakomakedonon Av., 136 79 Acharnes, Greece 21 DOP NO: 14.026-17-01D160922-05 EAD 030350-00-0402: Liquid-applied roof waterproofing using kits based on polyurethane PENECOAT ELASTIC European Technical Assessment: ETA 20/0012 of 16 July 2021				
Description of the product				
Minimum layer thickness			1,6 mm	2,9 mm
Minimum quantity consumed:			2,4 kg/m^2	4,1 kg/m^2
Roof slopes			S1 to S4 (< 5^o to > 30^o)	
Performance of the product			Description / Class / Level	
External fire performance EN 13501-5			B_{ROOF} (t1)	
Reaction to fire EN 13501-1			Class E	
Statement on dangerous substances			The kit does not contain dangerous substances	
Water vapour diffusion resistance factor (μ)			μ~1830	
Watertightness			Watertight	
Resistance to wind loads			≥ 50 kPa	
Resistance to mechanical damage (perforation) (compressible and non-compressible substrates)			P1 to P3 (from low to normal)	P1 to P4 (from low to high)
Resistance to fatigue movement			W2	W3
Resistance to the effects of	low surface temperature		TL3 (-20 ^{o}C)	TL4 (-30 ^{o}C)
	high surface temperature		TH4 (90 ^{o}C)	
Working life according to the resistance to ageing media (heat and water)			W2 (10 years)	W3 (25 years)
UV resistance in presence of moisture (climatic zones)			M and S (moderate and severe climatic)	
Resistance to plant roots			No performance assessed	
Effects of variations in kit components and site practices	at 8 ^{o}C	Maximum tensile strength	9,7 MPa	
		Elongation	22.7	
		Dynamic indentation	P3	P4
	at 40 ^{o}C	Maximum tensile strength	10,4 MPa	
		Elongation	29,9%	
		Dynamic indentation	P3	P4
Effects of day joints			≥ 300 kPa	
Resistance to slipperiness			No performance assessed	

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DOP NO: 14.026-17-01D160922-05
EAD 030350-00-0402: Liquid-applied roof waterproofing using kits based on polyurethane
PENECOAT ELASTIC
European Technical Assessment: ETA 22/0357, 19 May 2022

Components		**Trade name**	**Consume**
Primer over concrete metal and PU		PENEPOX W : epoxy water based	≥ 0,15 kg/m^2
System 1	Waterproofing membrane	PENECOAT ELASTIC + 3 % (weight) P-BOOSTER (+ Optional: PENECOAT PU-L)	≥ 2,3 kg/m^2
	Internal mesh	FABRIC 60P	----------
System 2	Waterproofing membrane	PENECOAT ELASTIC + 3 % (weight) P-BOOSTER	≥ 1,8 kg/m^2
	Finish layer: UV Protection	PENECOAT PU-L	≥ 0,15 kg/m^2

Characteristics of the System "PENECOAT ELASTIC SYSTEM "		
Minimum thickness	Without internal mesh 1,0 mm	
	With internal mesh 1,2 mm	
Water vapour diffusion resistant factor	~1620	
Resistance to wind loads	>50 kPa	
Resistance to plant roots	NPA	
Statement on dangerous substances	NPA	
Resistance to slipperiness	NPA	
Essential characteristics	**Performance**	
External fire performance	System 1 without PENECOAT PU-L: BROOF (t4) for pitches ≤ 10º and non-combustibles support, for other types of supports and pitches: NPA System 2 with PENECOAT PU-L: NPA	
Fire reaction	NPA	
Expected working life	W3 (25 years)	
Climatic zone of use	S (Severe)	
User loads	Support; Concrete / steel: P3: TH2 - TH1 P2: TH4 - TH3	Support; PU: Without mesh P1: TH4 - TH1 With mesh: P2: TH4 - TH1
Roofs slopes	S1 - S4	
Minimum surface temperatures	TL4 (-30 ºC)	
Maximum surface temperatures	TH4 – TH1	

WARRANTY - DISCLAIMER

PENETRON HELLAS S.A. warrants that its products are manufactured under certified ISO Standard procedures, are of excellent quality and shall be free from material defects and contain all components in their proper proportion. Should any of the products be proven defective, the liability to PENETRON HELLAS S.A. shall be limited to replacement of the material proven to be defective, since the standard application procedures have been met and the suitability of the product for the particular application have been proven. PENETRON HELLAS S.A. makes no warranty as to merchantability of fitness for a particular purpose. User, after contacting the distributor of the product, shall determine the suitability of the product for his intended use and assume all risks and liability in connection therewith. While every care has been taken, the information provided in this product's data sheet make no part of any contract. All recommendations, technical data and test data contained in this product's data sheet are based upon the results of control laboratory tests or in actual field tests. However, PENETRON HELLAS S.A. makes no warranty of any kind, concerning this data. In any case, this data are given in good faith based in the PENETRON HELLAS S.A. experience, till the publication of this sheet. Due to variance in storage, handling and applications of the materials, PENETRON HELLAS S.A. accepts no liability for the results obtained. It is suggested that potential users try small applications to determine the suitability of each individual product for their specific requirements. The users should always refer to the most recent edition of the product's data sheet. PENETRON HELLAS S.A. may particularly differentiate its versions of the product's data sheet compared with those of PENETRON INTERNATIONAL LTD or respective PENETRON companies worldwide. These changes are due to text formatting, different application weathering and procedures or different product names and aim at the optimal consumer information.

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