

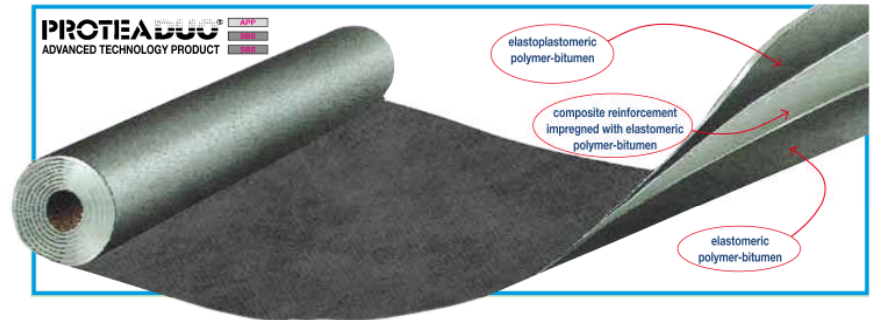
PROTEADUO TRIARMATO

(COMPOSITE WATERPROOFING MEMBRANE WITH MULTILAYER COMPOSITE POLYMER BITUMEN AND COMPOSITE REINFORCEMENT)

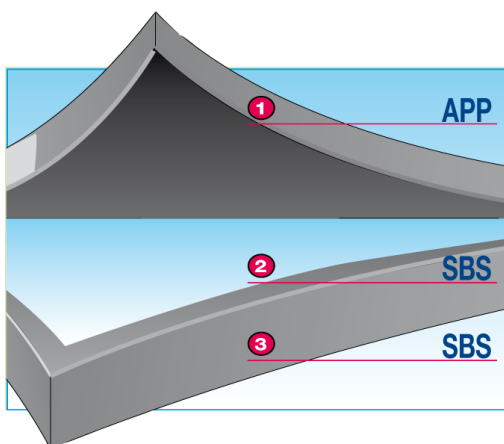
CAN I HAVE A MEMBRANE WITH ONE LAYER IN SBS MODIFIED BITUMEN AND OTHER APP MODIFIED BITUMEN?

Description PROTEADUO is a composite waterproofing membrane where the reinforcement is impregnated with SBS bitumen; the underside, in contact with the substrate, is made from SBS bitumen while the top face is made from APP bitumen.

The elastoplastomeric compound of the underside contains distilled bitumen and thermoplastic rubber made from a block copolymer radial butadiene styrene. It has an ultimate elongation of 2000%, flexibility in cold weather that reaches -25°C and an extremely high resistance to thermo-oxidizing ageing. The elastoplastomeric compound of the upper face's protective layer contains distilled bitumen, atactic polypropylene, isotactic and polyolefinic elastomers which are resistant to U.V. rays; it has stabilizing additives against thermal shock and a softening point of over 150°C. The reinforcement is also the result of thorough research into the strengthening of waterproofing membranes. As is well known, "non-woven" polyester fabric, while being resistant and elastic, is more sensitive to temperature than mineral fiber reinforcement and can cause the membranes to deform. The traditional coupling with fiberglass solves the problem of stability but even during application the bending of the membrane causes tiny breakages in the fiberglass that can damage the bituminous mass which covers it. PROTEADUO TRIARMATO (Triple reinforcement) has a special composite three-layer reinforcement, where the fiberglass is compressed between two layers of "non-woven" polyester single strand Spunbond fabric and so cannot damage the bituminous mass. Stability is guaranteed by the fiberglass mat which limits the movements of the membrane both at high and low temperatures. The compound is protected and reinforced with a "non-woven" polyester fabric. The composite material is more resistant to nail tearing than normal reinforcements, therefore PROTEADUO can be mechanically fixed. The fibers are completely impregnated and coated with an elastomeric compound using an exclusive procedure which guarantees absolute impermeability, high resistance to tearing and impact, and excellent elasticity even at low temperatures. PROTEADUO POLYESTER is also reinforced with composite "non-woven" polyester fabric which is stabilized with fiberglass mat to guarantee stability in hot conditions, while at low temperatures it behaves like a pure polyester reinforced membrane.



The underside of PROTEADUO is coated with Flamina film which has a high retraction when torched during application.



The elastomeric layer ensures excellent adhesion on the most widely used construction materials, on polymer-bitumen membranes and also on oxidized bitumen coatings and old bituminous layers.

The upper face is coated with a new multifunction surface finish called Texflamina, which can be painted immediately after application and guarantees optimal adhesion of SOLARIS aluminum, INDECOLOR SV paints and INDECOLOR water-based paint. It is also compatible with ALLUMASOL, ELASTOLIQUID and ELASTOLIQUID PUR coatings.

Thanks to the high heat resistance of the top polymeric layer, PROTEADUO can be covered with hot bituminous conglomerate. PROTEADUO withstands exposure to the sun's rays without heavy protection, but a coat of light colored paint is always

recommended, especially when applying on insulation. This will help to reduce the effects of thermal shock and also help to insulate the roof.

To meet specific requirements, both types of membrane are produced with the upper face coated with slate flakes, both in a natural color and stove colored. These coated membranes are called MINERAL PROTEADUO.

The slate is hot bonded to the outer APP-bitumen layer with a strong and long-lasting bond. The membranes are produced with an 8-cm wide, slate free strip on the upper face to allow the bonding of the overlaps.

MINERAL PROTEADUO is used as a final visible layer where it is possible to appreciate its decorative effect.

PROTEADUO TRIARMATO 4 mm and MINERAL PROTEADUO TRIARMATO 4 mm are the first membrane certified by Euro agreement issued by I.T.C. and recognized in other EC countries.

ADVANTAGES			
Resistance to ageing is guaranteed by the upper APP-bitumen layer	The underside in SBS-bitumen and the continuously extruded polyester fiber reinforcement guarantee excellent fatigue strength	The high softening point of the upper face guarantees heat resistant properties. Hot road asphalt can be poured straight	The SBS-bitumen of the underside membranes is also compatible with oxidized bitumen coatings
It combines the advantages of APP bitumen with those of SBS bitumen	It lasts longer than both APP bitumen membranes and SBS bitumen membranes	It can be painted immediately	The only SBS smooth (not slated) bitumen membrane that can be directly asphalted.

Applications field PROTEADUO is applied in single layers or as a finishing layer in a multi layer system. The high mechanical resistance, elasticity, thermal stability and durability of PROTEADUO make it suitable for use on roofs which are subject to considerable dimensional variations both in hot and cold climates. The strong welds obtained on the smooth upper face, both for side and head laps, guarantees perfect bonding even on flat areas and in the presence of pounding. PROTEADUO is therefore also used for hydraulic work coverings. When used in direct contact with the ground it will be necessary to add Phenoxy-Fatty Acid Ester additive, a special anti-root agent.

Thanks to the excellent fatigue strength characteristics of elastomeric membranes, even when the membrane is full bonded, PROTEADUO resists dimensional variations and active cracks which appear on cement surfaces. PROTEADUO TRIARMATO and PROTEADUO POLYESTER 25 may be used with hot asphalt and the adhesion between membrane and conglomerate is much stronger and lasts longer than that obtained on the self-protected mineral coatings of normal SBS-bitumen membranes currently used on bridges.

Therefore, PROTEADUO TRIARMATO and PROTEADUO POLYESTER 25 is used to waterproof of planks and of parking roofs in mountain areas as well.

As a confirmation of the high heat resistance of the upper face of PROTEADUO POLYESTER 25, we certified this product for its application under poured asphalt also. PROTEADUO POLYESTER 25 has been approved for application both under asphalt concrete and poured asphalt by Ministry of transport of Czech Republic.

The excellent compatibility of the membrane with bituminous surfaces in general, including oxidized bitumen, even if it has only just been applied, guarantees the long-lasting adhesion of PROTEADUO both on difficult restoration work and on new bituminous coatings.



EN 13707 - Reinforced bitumen sheets for roof waterproofing
EN 13969 - Bitumen damp proof sheet including bitumen basement tanking sheets
EN 14695 - Reinforced bitumen membranes for waterproofing concrete bridge structures and other concrete surfaces subject to traffic

Loading Table	Product specifications			Loading in 20' FCL	
	Thickness	m ² /roll	Rolls/pallet	Pallets	M ²
Proteaduo Triarmato (triple reinforcement)	4 mm	10	24	20	4800
	5 mm	10	20	20	4000
Mineral Proteaduo Triarmato (triple reinforcement)	4 mm	10	20	20	4000
	4,5 kg/m ²	10	24	20	4800
Proteaduo Poyester (reinforced with Polyester)	4 mm	10	24	20	4800
	5 mm	10	20	20	4000
Mineral Proteaduo Polyester (reinforced with Polyester)	4,0 kg/m ²	10	25	20	5000
	4,5 kg/m ²	10	24	20	4800

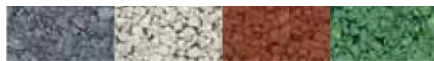
Finishing



EMBOSSING FLAMINA. The embossing on the lower surfaces of the membranes finished with Flamina film makes it possible to lay the product precisely and quickly; forming a smooth surface when melted with the torch. It indicates the correct melting temperature and lets the film retract faster. The embossing also enables optimal vapour diffusion; in spot bonded and loose laid installation.



TEXFLAMINA. Multifunction, protection finishing consists of a non-woven synthetic fiber flame-melting, coupled to the upper face of the membrane prevents the coils from sticking to the roll, facilitates walkability at the time of installation, enhances the adhesion of adhesives and paints and prolongs its life.



MINERAL PROTECTION. On the visible face of the membrane, a protective coating made up of slate granules of various colours is hot bonded. This mineral shield protects the membrane from ageing caused by UV rays in the points where it remains intact, preventing blisters and swelling.

Method of use	Torch Application	Hot Air Applicatio	Nailing	Cold adhesive	Oxidized Bitumen
	✓	✓	✓	✓	✓

CATEGORY	CHARACTERISTICS			ENVIRONMENTAL						METHOD OF USE				
 COMPOSITE ELASTOPLATOMERIC	 WATERPROOF	 REACTION TO FIRE	 ECO GREEN	 ASBESTOS FREE	 TAR FREE	 CHLORINE FREE	 RECYCLABLE	 NON DANGEROUS WASTE	 EXHAUSTED OIL FREE	 TORCH APPLICATION	 HOT AIR APPLICATION	 NAILING	 COLD ADHESIVE BONDING	 APPLICATION WITH MOLTEN BLOWN BITUMEN

TECHNICAL SPECIFICATIONS

			PROTEADUO TRIARMATO		MINERAL PROTEADUO TRIARMATO		PROTEADUO POLYESTER		MINERAL PROTEADUO POLYESTER	
Reinforcement	Standard	T	3-layer non woven spunbound polyester and fiberglass		3-layer non woven spunbound polyester and fiberglass		Non woven composite polyester stabilized with fiberglass		Non woven composite polyester stabilized with fiberglass	
Thickness	EN 1849-1	±0,2	4mm	5mm	4mm	4,5kg/m ²	4mm	5mm	4,0kg/m ²	4,5kg/m ²
Mass per Unit Area		±12%								
Roll size	EN 1848-1		1x10m		1x10m		1x10m		1x10m	
Watertightness	EN 1928 – B	≥	60 kPa		60 kPa		60 kPa		60 kPa	
Shear resistance L/T	EN 12317-1	20%	650/550 N/50mm		650/550 N/50mm		600/400 N/50mm		600/400 N/50mm	
Maximum tensile force L/T	EN 12311-1	-20%	750/650 N/50mm		750/650 N/50mm		700/500 N/50mm		700/500 N/50mm	
Elongation L/T	EN 12311-1	15%	50%/50%		50%/50%		40%/45%		40%/45%	
Resistance to impact	EN 12691 – A		1000 mm		1000 mm		1250 mm		1250 mm	
Resistance to Static Loading	EN 12730 A		15 kg		15 kg		15 kg		15 kg	
Resistance to tearing (nail shank) L/T	EN 12310-1	-30%	250/250 N		250/250 N		160/200 N		200/200 N	
Dimensional Stability	En 1107-1	≤	-0,30/+0,10		-0,30/+0,10		-0,25/+0,10		-0,25/+0,10	
Flexibility to low temperature	EN 1109	≤	-25°C -20°C		-25°C -20°C		-25°C -20°C		-25°C -20°C	
Flow resistance at high temperature	EN 1110	≥	100°C		100°C		100°C		100°C	
UV Ageing	EN1297		Test Passed		Test Passed		Test Passed		Test Passed	
Reaction to Fire - Euroclass	EN 13501-1		E		E		E		E	
External fire performance	EN 13501-5		F roof		F roof		F roof		F roof	
Technical Specification for waterproofing of concrete bridge decks and other trafficked areas (EN 14695)										
Res. To dynamic water pressure	EN 14694	≥	500 kPa							
Comp. by heat conditioning	EN 14691	≥	80%							
Bond Strength	EN 13596	≥	0,4N/mm ²							
Shear Strength	EN 13653	≥	0,15N/mm ²							
Res. To compaction	EN 14692		Test Passed							

