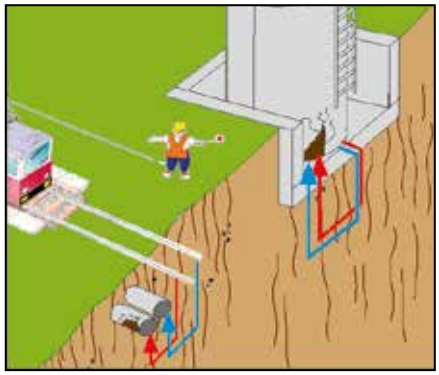
DIELECTRIC POLYESTER

SPECIAL MULTIFUNCTIONAL REINFORCED POLYMER-BITUMEN WATERPROOFING AND INSULATING MEMBRANE MADE OF DISTILLED BITUMEN AND DIELECTRIC POLYMERS, FOR STOPPING THE DISPERSION OF ELECTRICAL CURRENT FROM RAILWAY LINES AND FOR PROTECTING THE METALLIC PARTS OF UNDERGROUND WORKS FROM CORROSION

CATEGORY	CHARACTERISTICS			ENVIRONRMENTAL							METHOD OF USE		
EP S			Reazione al fuoco		ASBESTOS FREE	TAR FREE	CHLORINE FREE						
SPECIAL ELASTOPLASTOMERIC FOR SPECIFIC USES	WATERPROOF	ELECTRIC INSULATION	REACTION TO FIRE	ECO GREEN	ASBESTOS FREE	TAR FREE	CHLORINE FREE	RECYCLABLE	NON DANGEROUS WASTE	EXHAUSTED OIL FREE	TORCH APPLICATION	HOT AIR APPLICATION	NAILING

1 PROBLEM



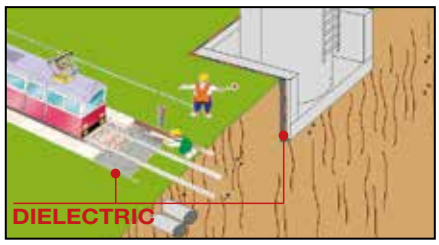
HOW TO STOP THE DISPERSION OF ELECTRICAL CURRENT FROM RAILWAY LINES

Dispersed dielectric currents also known as “stray currents” form in the ground near electric rail and tram lines. In DC electrified lines the current supplied by the sub-station runs through the overhead lines, supplying electrical energy to the electric motors of the trains and trams or returning to the sub-station, mostly through the rails but also through the ground near the tracks where a certain quantity of electricity is dispersed. If there are metal pipes in the ground, the dispersed current runs along these pipes until it reaches the vicinity of the electric rail and tram line sub-station causing interference in the pipes with the formation of a positively charged cathode where the current enters and a negatively charged cathode where it leaves with the relevant corrosion.

Alternating current electric lines may also generate the same kind of phenomena although on a less intense scale. The corrosion produced by stray currents is much greater than that produced by galvanic currents that generates when different metals come into contact or by the same metals in different atmospheric conditions) as the intensity of the current can reach tens of amperes.

A current of 1 Ampere corrodes 9 kg of iron and 33.6 kg of lead in one year. Pipes can be protected against corrosion with active or cathode protection, or with passive protection, in other words with suitable coatings. However, when a new rail or tram line is built in a residential area where the position of old underground installations is unknown or it is impossible to reach, obviously it will be necessary to keep the dispersion of electric current in the ground to a minimum. Instead of insulating the underground installations it will be necessary to insulate the rails of the electrified lines to contain the dispersion. Electrochemical corrosion can also be triggered by the mains earth circuit of a metal tank resting on the ground.

2 SOLUTION



DIELECTRIC POLYESTER is the INDEX membrane that insulates rails from electrical currents and stops the dispersion of current to the ground.

DIELECTRIC POLYESTER has a very high dielectric strength (CEI 15-1: 192 KV/cm) and also a very high volume resistivity (CEI 15-23: 486,8 TΩ cm) that make it an optimal electrical insulator.

As **DIELECTRIC POLYESTER** is waterproof and does not absorb humidity its electrical resistance remains unaltered in time.

It is resistant to site traffic and to the friction between the concrete surfaces where it is installed because it is reinforced with elastic, rot-proof, puncture resistant, non-woven single strand Spunbond polyester fabric.

DIELECTRIC POLYESTER is resistant to acids, inorganic bases to mould and bacteria.

The proposed conform layer build-up is also resistant to the oils, greases and hydrocarbons which it can be expected to come into contact with, in its specific use. The autogenous welding of the overlaps means no adhesives are used with different electric resistance, guaranteeing the homogeneity and continuity of the protection against stray currents.

DIELECTRIC POLYESTER also protects metallic structures on which it is bonded against corrosion as it is resistant to the acidity of the ground, is waterproof, does not absorb water and forms an effective vapour barrier against water vapour and oxygen.

The top face of the membrane is coated with a uniformly distributed, fine serigraphed talc, a patented treatment which makes it possible to quickly unroll the rolls and install the membranes with the reliable and quick welding of the joints. The underside of the membrane is coated with Flamina, a plastic film that melts when torched producing a strong bond over the entire surface area.

ADVANTAGES

- **The membrane is very thick which gives it a high electrical resistance.**
- **Puncture-resistant.**

APPLICATION FIELDS

DIELECTRIC POLYESTER is used to cover rail and tram track beds. The insulation technique is relatively simple as the membrane is dry laid horizontally, then turned up and hot bonded with a propane torch on the vertical parts. The overlaps between the sheets are hot bonded with the torch and will be 8 cm longitudinally and 10 cm crosswise with respect to the membrane.

The coating will then be protected with a layer of concrete on which the tracks will be laid. Before the concrete is cast on the membrane this will be covered with a 0.2 mm thick polythene sheet.

DIELECTRIC POLYESTER can be also used, torch-on fully bonded, to provide passive protection on pipes, tank basements or other underground metal structures.

CE INTENDED USE OF “CE” MARKING SPECIFIED ACCORDING TO THE AISPEC-MBP GUIDLINES

EN 13969 - BITUMEN DAMP PROOF SHEET INCLUDING BITUMEN BASEMENT TANKING SHEETS

- **Membranes for foundations**

- DIELECTRIC POLYESTER

TECHNICAL CHARACTERISTICS

	Standard	T	DIELECTRIC POLYESTER	
Reinforcement			"Non-woven" Spunbond polyester	
Thickness	EN 1849-1	±0,2	4 mm	5 mm
Roll size	EN 1848-1	-1%	1×10 m	1×10 m
Watertightness • after ageing	EN 1928 – B EN 1926-1928	≥ ≥	60 kPa 60 kPa	
Shear resistance L/T	EN 12317-1	-20%	800/600 N/50mm	
Maximum tensile force L/T	EN 12311-1	-20%	900/700 N/50mm	
Elongation L/T	EN 12311-1	-15% V.A.	50/50%	
Resistance to impact	EN 12691 – A		1250 mm	
Resistance to static loading	EN 12730 - A		20 kg	
Resistance to tearing (nail shank) L/T	EN 12310-1	-30%	150/150 N	
Dimensional stability L/T	EN 1107-1	≤	–0.50/+0.50%	
Flexibility to low temperature	EN 1109	≤	–10°C	
Reaction to fire Euroclass	EN 13501-1		E	
External fire performance	EN 13501-5		F roof (t1)	
Dielectric characteristics				
Dielectric strength (*)	CEI 15-1		192 KV/cm	
Volume resistance (*)	CEI 15-23		468.8 TΩ cm	

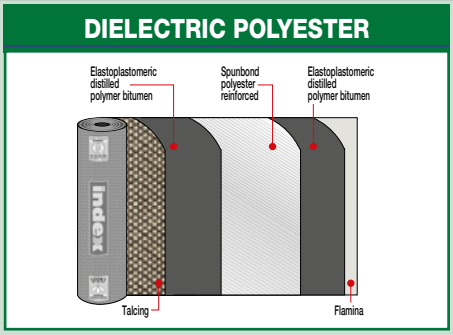
(*) Certification Università di Padova n. 4472/8.

Compliant with EN 13707 in terms of the resistance factor to steam penetration for reinforced polymer-bitumen membranes, the value of μ =20000 may be considered, unless declared otherwise.

REFERENCE

COMPOSITION OF THE MEMBRANE

DIELECTRIC POLYESTER



PRODUCT 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, in the points where it remains intact, preventing blisters and swelling.

TALC SURFACING. The talcing of the top face is carried out with a technique which evenly spreads the very thin talc over the top surface with a special pattern, preventing accumulation or zones without talc. This new system allow a quick unroll and gives the surface a pleasant aspect, which enable to torch it faster if compared to the other coarser mineral finishes.

• FOR ANY FURTHER INFORMATION OR ADVICE ON PARTICULAR APPLICATIONS, CONTACT OUR TECHNICAL OFFICE • IN ORDER TO CORRECTLY USE OUR PRODUCTS, REFER TO INDEX TECHNICAL SPECIFICATIONS •

index
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