

ECMASHIELD – PVC

TWIN COLOR GEO-MEMBRANE WITH SIGNAL LAYER

Description

ECMASHIELD PVC is a non-reinforced geomembrane, made of flexible polyvinyl chloride with thin yellow color signal layer and it is designed for tunnels and basement works. This geomembrane is not suitable for permanent exposure to UV-radiation. The signal layer helps in an easy visual detection of the damages caused to the geomembrane during the installation and during the successive works. When geomembrane, locally, sustains a loss of thickness by mechanical, thermal or other aggression, the thin signal layer will be damaged, and the dark layer of the geomembrane will appear underneath. Signal layer also helps in better lighting in the tunnel under construction by the reverberation of the artificial lights.

Advantages

- Geo-membrane with thin signal layer (twin color).
- Excellent resistance to impact and low temperatures
- Heat welded seams (allowing pressure test of joints) for long lasting performance
- Excellent chemical resistance to acids, bases and exhaust emissions
- Resistant to swelling, rotting and ageing.
- Very high level of water tightness, even with permanent deformation.
- High capacity for adaptation to irregularities or deformation of support due to its high deformability and welding strength.
- High resistance to puncturing
- Possible to create watertight compartments in case of larger areas
- Root resistance in accordance with EN14416.

Uses

- Waterproof lining for Road, Railway and Metro tunnels and UG stations
- Heavy Duty Waterproofing of deep basements (Raft & Retaining Walls) in high water table area
- Large Podiums and Green Roofs
- Lining of canals, water reservoirs, large swimming pools, STP tanks, etc.

Installation Guidelines

Surface Preparation: Prior to installation, examine the substrate and ensure a sound and continuous substrate, free from deleterious materials, sharp edges, projections and protrusions. An anti-puncturing geotextile should be placed onto the support of the waterproofing. Sharp edges and rock bolts, etc. shall be rounded off.

Installation: ECMASHIELD PVC geo-membranes are generally applied as loosely laid system directly on the substrate, sealing the overlapping joints with automatic double seam heat welding machines, no adhesives or other materials are required. In case of corners, hand held hot air welding machines can be used. Recommended overlap for loosely laid or bonded membrane is min. 80 mm. The weld ability and the quality of the welding done on site will be influenced by atmospheric conditions (temperature, humidity, etc.) and also by the surface condition of the geomembrane (clean and dry) and must be adapted accordingly. Extra care should be taken at corners, pipe penetrations and at terminations. Suitable PVC roundels shall be used to fix PVC membrane on vertical applications like retaining walls.

Large and critical areas can be divided in to watertight compartments not exceeding 150 m² using PVC water stop to stop lateral movement of water in case of any damage or puncture to the membrane. Injection ports and hoses shall be installed for future repair of leakages.

Post installation, ECMASHIELD PVC membrane shall be protected with geo-textile or/and protective concrete screed before laying of reinforcements or soil filling to avoid physical damage/ puncturing of the geo-membrane.

Patch Repairs: If any mechanical damage occurs to the membrane or if a seam is found defective after probing, repair will be undertaken by welding a patch of new membrane over the damaged portion. The patch is to be larger than the repair area by minimum 50mm in all directions and corners should be round off.

ECMASHIELD PVC membrane Waterproofing systems should be laid by experienced installers authorized by ECMAS as per design solutions and application methods illustrated in the technical manual published by ECMAS.

Technical Specifications

CHARACTERISTICS	NORMS	UNITS	SPECIFICATIONS
Thickness	EN 1849-2	mm	2.0 ±5%
Tensile strength	EN ISO 527	N/mm ²	L: ≥ 16, T: ≥ 16
Elongation at failure	EN ISO 527	%	L: ≥ 300, T: ≥ 300
Tear strength	DIN 53363	N/mm	≥ 80
	EN ISO 34	kN/m	≥ 40
Dimensional stability after accelerated ageing (6h/80°C)	EN ISO 1107-2	%	≤2
Puncture resistance (CBR)	EN ISO 12236	kN	≥2.4
Height of fall without perforation	DIN 16726	mm	≥1100
Cold folding resistance	EN 495-5		No cracks at -20°C
Resistant under water pressure	DIN 16726		Waterproof at 10 bar/10 h
			Waterproof at 6 bar/72 h
Behavior after storage in hot water (8 months/50°C)			
Mass Variation	SIA.V 280	%	≤4
Variation of elongation at failure		%	≤10
Variation of tensile strength		%	≤10
Folding at a temperature of -20°C			No cracks at -20°C
Behavior after long-term ageing 80°C / 7 days			
General appearance			No blister
Dimensional stability, L&T	DIN 16726	%	≤3
Variation of tensile strength, L&T		%	< ±10
variation of elongation at failure, L&T		%	< ±20
Folding at a temperature of – 20°C			No cracks at -20°C
Behavior after storage in hot water and alkaline solutions (90d/23°C) Methods A&B.			
Variation of tensile strength, L&T	EN 14415	%	< ±20
variation of elongation at failure, L and T			< ±20
Folding at a temperature of – 20°C			No cracks at -20°C
Root resistance	EN 14416		Fulfilled
Oxidation resistance	EN 14575		Fulfilled
Behavior in fire	EN ISO 11925		Class E

Packing

ECMASHIELD PVC are supplied in standard thicknesses of 2 mm and 2.1 m x 20 m roll size.

Shelf Life

Twenty-four months if stored in unopened original packaging under dry and covered storage conditions at a temperature between 5-30° C.

Storage & Handling

ECMASHILED PVC Rolls should be stored in a cool, dry, clean and level surface under the covered shed & protected from extreme temperatures.

Do not store in direct sunlight for more than 3 days.

Rolls should only be unwrapped from packaging at the time of installation.

Avoid stacking of rolls horizontally or in double stack position.

Health and Safety

This product is for industrial use only by trained operatives. Please refer to the Material Safety Data Sheet (MSDS) prior to the purchase and use of this product. All persons in contact with the materials should wear the appropriate protective clothing, spectacles and gloves

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