



INSUWRAP **PVC 1500 TNL**

Single ply waterproofing membrane for Underground Structures

Product Description

Insuwrap PVC underground waterproofing membrane 1500 TNL is a calendered extruded high polymer waterproofing membrane, (thickness 1.50 mm) not compatible with bitumen, manufactured following highest International standards offering high physical properties and long term durability. Insuwrap 1500 TNL is manufactured using the best raw materials produced by SABIC.

Uses

- Tunnel Lining
- Tanking of Underground Structures

Advantages

- Safe application tools (No torch needed).
- INSUWRAP PVC is easy to apply using hot air welding for joints. The joints are homogeneously welded (PVC to PVC). No sealant or chemicals are required for joints (overlaps).
- No adhesives or primers are required for installation of INSUWRAP PVC.
- Self Extinguishing material (Safe in case of fire).
- INSUWRAP PVC is resistant to high temperature fluctuations.
- INSUWRAP PVC remains flexible throughout its life span and could be easily joined to new materials after installation, in case of extension or any mechanical damage.
- As a National product, produced in Kingdom of Saudi Arabia, future maintenance services and availability of materials are much faster and more reliable.
- Minimum slope is sufficient.

Application Instructions

1. Surface Preparation

Blasting concrete surface should be smooth, clean & free from sharp projections, otherwise, a protection layer (non-woven polyester 140 gr/m²) must be used to receive PVC membrane.

2. Horizontal Surface

Apply (PVC 1500 TNL) membranes loose laid for horizontal areas with 50 mm overlap by using hot air welding technique. Horizontal PVC membranes shall be installed to 300 mm height on the vertical walls to enable the welder to join the horizontal membranes at the corners properly with the followed vertical PVC membrane. Apply horizontally protection layer Non-woven polyester 140 g/m² with 100 mm overlap over the entire horizontal PVC membrane or as required. Cover sheets with permanent overlying construction as soon as possible. This can be by applying a minimum 50 mm thick concrete protection layer. Lay steel reinforcement and concrete as specified.

3. Vertical Surface

Apply (PVC 1500 TNL) membrane vertically by mechanical fixing using PVC coated galvanized metal strips (50 mm width) fixed horizontally to the walls by fasteners and receiving PVC membrane by using hot air welding technique over the strips. PVC rolls should be joined vertically with 50 mm overlaps using hot air welding technique. Pipes, ducts, cables, etc. where passing through sheets, must be completely



watertight using pre-formed collars fully bonded/sealed to both pipes and sheets. Dressing can be made at site using the same PVC liner. Cover external walls of tanking system with at least (10 mm thick) fiberboards provide a temporary support or contact adhesive to ensure full contact of boards to tanking system during back filling operation.

Technical Data

Test	Typical values
Membrane Thickness (mm)	1.50
<i>Tensile strength, min, 15 N/mm²</i>	
Longitudinal	> 15 N/mm ²
Transversal	> 15 N/mm ²
Elongation, min 200 %	> 250% MD, >220% CD
Thermal Stability %, < 2	< 1.0% both directions
Tear Strength (N), min 80N	> 90 N
Thermal Ageing %, -20 °C: no cracks	<1% both directions,
	-30 °C, no cracks
Slit Pressure Resistance	Pass
Roots Resistance	Pass
Combustibility	Pass
Water Vapour Defusion Resistance (Less than 30,000)	Less than 22,000
Water Absorption	Pass
Compression Strength	Pass
Puncture Resistance	Pass
Seam Strength	Pass
Resistance to Algae & Rot	High Resistance
Chemical Resistance	Pass

Standards Compliance

- DIN 16938 standard requirements
- DIN 16730 Standard Requirements
- SIA 280 Standard Requirements

Roll Size

Properties	Values
Roll Length	20 m
Roll Width	2.10 m
Weight/Roll (Approx.)	83 kg

Hot Air Welding Techniques

- The most common technique used to join PVC waterproofing sheets.
- The sheets should overlap by at least 50 mm.
- The hand welder is used for Hot Air welding of INSUWRAP PVC membranes.
- The hand welder is supplied with a 20 mm, 40 mm wide welding nozzles and 40 mm wide rubber roller.
- Temperature of welding varies from 400–600°C depending

on the ambience temperature, weather conditions, site conditions, speed of welding, etc.

Testing

After installation of water proofing membranes the following tests can be conducted:

1. Vacuum Test

2. Needle Test

3. Pressure Gauge Test

In case of any leakage the source of leakage will be determined, water will be drained and repair works will be carried out in the affected area. As per requirements test will be repeated.

Health & Safety

Environment factors can cause deposits formation as well as blockage of water outlets. Maintenance works, cleaning the related structures can cause stress on waterproofing. This can also be caused by uncontrolled access. Any work, which has to be done in relation to the liner, should always be carried out with specialized firms. In case of any damage inflicted on the waterproofing, the following guidelines should be noted:

- Any moisture which has penetrated through the damaged area should be drawn off; the area below should be as dry as possible.
- A reasonable area surrounding the damaged part should be thoroughly cleaned using rag & clean water (THF if needed).
- A new piece of Insuwrap PVC Liner is hot air welded 50mm beyond the damaged spot of the waterproofing.
- Removal of all dirt and debris.
- Rubber shoes are worn by people on the site.
- If ladders, steps etc; have to be used, it should not be placed directly on the liner and planks of wood should be placed underneath the feet to distribute the load. These load spreaders should not have sharp edges and, of course, there should be no protruding nails to avoid a direct contact of metal with the liner.
- Do not permit passage of any vehicle directly on membrane at any time.
- Clean residues of water and dust which form on the bottom by rubber wiper.
- PVC liner should be rubbed using a sponge or a cloth with clean water only.
- Water which was used for cleaning should be disposed.
- Avoid metal tools in cleaning process.

