

## MONNELI INSUWRAP 2000 TNL

*2.0mm thick PVC Membrane for Underground Structures & Tanking System*

### Product Description

Insuwrap 2000 TNL is a homogeneous PVC (polyvinylchloride) sheet waterproofing membrane.

### Uses

Insuwrap 2000 TNL is used for:

- Waterproofing of basements, tunnels and other underground structures

### Properties

Properties	Results
Appearance	PVC rolled sheet membrane
Membrane thickness	2.0 mm
Colour	Translucent, Twin or Single Colour

### Advantages

- High tensile strength and elongation
- Hot air weldable
- Flexible throughout life span
- Resistant to ageing
- Long durability
- High dimensional stability
- Anti-Root membrane
- Can be installed on wet and dry substrates
- Designed to be used in hot climates
- Resistant to natural aggressive mediums in ground water soil

### Standards

- Tested according to testing requirements of DIN 16938, DIN 16730 and SIA 280/10,11,12,15.



## Technical Data

Test Performed	Test Method	Standard Requirements	Results
Membrane Thickness	DIN 16938	±10%	2.0 mm
Mass			2.6 kg/m <sup>2</sup>
Tensile Strength (N/mm <sup>2</sup> ) Longitudinal Transversal	DIN 16938	>15N/mm <sup>2</sup> Both direction	≥11 N/mm <sup>2</sup>
Elongation longitudinal transversal	DIN 16938 DIN 16730	>200% Both directions	>400% both directions
Thermal Stability longitudinal transversal	DIN 16938	6h / 80°C <2	<1.0% both directions
Thermal Ageing	DIN 16938	7d / 80°C change of tensile strength <±20% longitudinal elongation  Change of elongation <±20% longitudinal transversal folding in cold at -20°C: no cracks	<10% both directions  <10% Both directions  -30°C, no cracks
Slit Pressure Resistance	SIA 280/4	1h / 5 bars (0.5N/ mm <sup>2</sup> ) tight	Passed
Roots Resistance	SIA 280/10	No root penetration ingrown root must die off	Passed
Combustibility	SIA 280/11	Class V / smoke class 2	No cracks at -30°C
Water Vapour Diffusion Resistance	DIN 16730	Less than 30,000	Less than 21,000
Water Absorption	SIA 280/12	8 months storage in water <±6% folding in cold at -20°C, no cracks	Passed
Compressive Strength	SIA 280/13	48h / 7N / mm <sup>2</sup> tight	Passed
Puncture Resistance	DIN 16730	Drop hammer 500g, no leak on falling from 750mms	Passed
Seam Strength	SIA 280/15	No peeling or sliding of welded seam	Passed
Cold Bend	DIN 16730	No cracks at -20°C	No cracks at -30°C
Durability of Water Tightness against Chemicals	DIN 16938		Passed
Resistance to Algae & Rot	DIN 16730	No roots penetration	No penetration, growth dies off

All values are subject to 5-10 % tolerance

## Complimentary Products

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- PVC Coated Aluminium sheet for termination Geotextile membrane
- Protection layer
- PVC Waterbar: Elastojoint PVC
- Re-injectable hose: Elastojoint RHS (optional)
- Injection resin: Betocryl 60
- PVC Injection flanges
- PU Sealant

## Instruction for Use

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### Substrate Preparation

The surface of the concrete substrate shall be sound, clean, dry or wet, and uncontaminated. This preparation shall be as such as to leave a sound exposed concrete surface free from dust, laitance and any delirious matter.

The guniting surface must not contain broken aggregates. Any leaks shall be sealed with Murex, a water plug mortar, or with Betocryl 60, a Polyurethane injection resin. The surface of the guniting and fine sprayed concrete must be cleaned (no loose stones, nails, wires, etc.).

### Application

#### Loosely Laid PVC Sheet Installation

Install loosely laid PVC sheets over entire area so the light colour is at the visible side towards the substrate.

#### **A. Horizontal Installation:**

1. Install the Geotextile membrane over the entire horizontal area before the PVC membrane in full accordance with manufacturer's method statement
2. Accurately align sheets and maintain uniform side and end laps of minimum dimensions required. Stagger end laps.
3. Install the Geotextile membrane as a protection layer over the entire area above the PVC membrane followed by a minimum of 50mm cementitious screed

#### **B. Vertical Applications:**

1. Install the Geotextile membrane over the entire vertical area in full accordance with manufacturer's method statements
2. Accurately align sheets and maintain uniform side and end laps of minimum dimensions required.
3. Install the protection layer of Geotextile membrane above the PVC membrane over the entire area in full accordance with method statement
4. Secure top termination of waterproofing with continuous, PVC coated aluminium strip, and a suitable PU sealant as recommended by waterproofing manufacturer.

#### **C. Seam Installation:**

Hot air welding and end laps of overlapping sheets according to manufacturer's method statement to ensure a watertight seam installation. Inspect outside edge of seams with pointed metal probe and ensure completed laps lay flat through one of the following methods:

1. **Method 1:** All seams of installed waterproofing can be subject to pneumatic test at test pressure of 2.00 bars.

2. **Method 2:** Testing the welded joint using a vacuum test machine

D. Any hole, resulting from construction activities, noted in installed membrane shall be repaired in accordance with manufacturer's method statement.

## Ambient Temperature

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+5°C - +60°C

## Packaging

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Roll size: 2.10 m (roll width) x 20m (roll length)

1.40m x 25.0m (roll length)

Unit weight: 2.60 kg/m<sup>2</sup>

## Storage

Rolls shall be stored in their original package, in horizontal position and under cool and dry conditions protected from direct sunlight and rain.

Insuwrap PVC membrane does not expire and has a very long life expectancy.

## Limitations

Do not directly apply the PVC membrane permanently on bitumen and plastics other than PVC, a separation layer of geotextile is required.

## Health & Safety

Local safety regulations must be observed. Information and advice on the safe handling, storage and disposal of chemical products, users shall refer to the most recent Material Safety Data Sheet.

## Legal Notes

The information, and, in particular, the recommendations relating to the application and end-use of Colmef Insuwrap products, are given in good faith based on Colmef current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Colmef's recommendations.

The information in this Technical Data Sheet is based on Colmef Monnelli's experience. Colmef Monnelli does not accept any liability arising from the use of its products as it has no direct or continuous control over where or how its products are applied. All Colmef Monnelli's Data Sheets are updated on regular basis. It is the user's responsibility to obtain the latest version.

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