

PRODUCT DATA SHEET

Sikaplan® WT 2200-21 HL2

SHEET WATERPROOFING MEMBRANE FOR TUNNELS

PRODUCT DESCRIPTION

Sikaplan® WT 2200-21 HL2 is a flexible, homogeneous sheet waterproofing membrane with a signal layer ≤ 0.2mm, based on flexible polyolefins (FPO).

USES

Waterproofing of tunnels against water ingress

CHARACTERISTICS / ADVANTAGES

- High resistance to ageing
- Optimized flexibility, tensile strength and multi-axial elongation
- With thin signal layer to indicate damages
- High dimensional stability under permanent pressure and heat
- High resistance to mechanical influences
- Flexible in cold temperatures
- Suitable for contact with acidic soft water and alkaline environments
- Resistant to root penetration and micro-organisms
- Optimized workability, thermally weldable
- Hand welding without extrusion seams
- Can be installed on damp and even wet substrates
- Temporary UV stability for installation
- Bitumen resistant

APPROVALS / STANDARDS

- 'Polymeric geosynthetic barrier for use in tunnels and underground structures. Fluid barrier.' according to EN 13491, Declaration of Performance Nr. 70311763, certified by notified factory production control certification body 1213, certificate of conformity of the factory production control 1213-CPR-017, and provided with the CE marking.
- Certified acc. ÖBV/2012 'Richtlinie Tunnelabdichtung' (Tab. 4.6 and 4.7) and SIA 272/2009.
- Environmental safety certificate BBodSchV / M Geok E.

PRODUCT INFORMATION

Packaging	Roll size	2.00 m (width) × roll length individual as specified.
Appearance / Colour	Surface	smooth
	Colour	signal layer: beige bottom layer: black
Shelf Life	5 years shelf life from date of production if stored properly in undamaged, unopened, original sealed packaging	
Storage Conditions	Rolls must be stored in their original packaging, in a horizontal position and in cool and dry conditions. They must be protected from direct sunlight, rain, snow and ice, etc. Do not stack pallets of rolls during transport or storage.	
Effective Thickness	2.10 (-5 / +10 %) mm incl. signal layer	(EN 1849-2)
Mass per unit area	1.98 (- 5 / +10 %) kg/m ²	(EN 1849-2)

TECHNICAL INFORMATION

Tensile Strength	20.5 (± 4.0) N/mm ² (machine/ cross direction)	(ISO 527)
Elongation at Break	≥ 700 % (machine/ cross direction)	(ISO 527)
Tensile Modulus of Elasticity	≤ 55 N/mm ² (machine/ cross direction)	(ISO 527)
Burst Strength	≥ 50 % (D=1.0 m)	(EN 14151)
Resistance to Static Puncture	3.5 (± 0.25) kN	(EN ISO 12236)
Resistance to Impact	Watertight at 750 mm drop height (500 g falling weight, Method A)	(EN 12691)
Foldability at Low Temperature	No cracks at -50 °C	(EN 495-5)
Dimensional Change after Heat	< 2.0 % (machine/ cross direction)	(EN 1107-2) (+80 °C / 6 h)
Resistance to Oxidation	Change of tensile strength	≤ 20 % (EN14575)
	Change in elongation	≤ 20 % (90d/ 85 °C)
Behaviour after Storage in Warm Water	Change of tensile strength	< 15 % (machine/ cross) (similar to SIA 280/13)
	Change in elongation	< 10 % (machine/ cross)
	Change of mass	< 4 % (50 °C/ 8 months)
	Change of mass	< 10 % (i.e. resistance to leaching) (EN 14415) (70 °C/ 360 days)

Chemical Resistance	Saturated Limewash (Test Liquid 2)		
	Reduction of tensile strength and elongation	≤ 25 %	(EN 14415) (50 °C / 360 d)
	Reduction of impact load (drop height)	≤ 40 %	
	Change of mass	≤ 7 %	
	5–6 % Sulfurous acid (Test Liquid 3)		
	Reduction of tensile strength and elongation	≤ 25 %	(EN 1847) (23 °C / 120 d)
	Reduction of impact load (drop height)	≤ 30 %	
	Change of mass	≤ 4 %	
	0.5 % Sulphuric acid		
	Reduction of tensile strength and elongation	≤ 25 %	(EN 1847) (50 °C / 360 d)
	Reduction of impact load (drop height)	≤ 40 %	
	Change of mass	≤ 7 %	
Resistance to Weathering	Remaining tensile strength and elongation:	≥ 75 % (350 MJ/m ²)	(EN 12224)
Reaction to Fire	Class E		(EN 13501-1)(EN ISO 11925-2)
Behaviour after Heat Welding of Overlaps	Shear resistance of welded seam	Break occurs outside of seam	(EN 12317-2)
	Peel resistance of welded seam	≥ 6.0 N/mm	(EN 12316-2)
Service Temperature	- 10 °C min./+ 40 °C max.		
Ambient Maximum Temperature of Liquids	+ 40 °C		

SYSTEM INFORMATION

System Structure	Ancillary products: <ul style="list-style-type: none"> ▪ Sikaplan® WT Disc ▪ Sikaplan® W Felt PP ▪ Sikaplan® WT Protection Sheet ▪ Sikaplan® W Tundrain ▪ Sika Waterbar® WT
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APPLICATION INFORMATION

Ambient Air Temperature	+5 °C min.
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APPLICATION INSTRUCTIONS

SUBSTRATE QUALITY

In-situ concrete: Clean, sound and dry, homogeneous, free from oils and grease, dust and loose or friable particles.

Shotcrete: The profile of the shotcrete surface must not exceed a ratio of length to depth of 10:1 and its min. radius must be 20 cm. The shotcrete surface must not contain broken aggregates. Any leaks must be sealed with Sika® waterproof plugging mortar, or drained with a Sika® FlexoDrain system. Where neces-

sary to achieve the desired profile/surface, apply a fine sprayed concrete layer on the shotcrete surface with a min. thickness of 3-5 cm and aggregate diameter not exceeding 8 mm. Steel (girders, reinforcement mesh, anchors, etc.) must also be covered with a minimum of 4 cm fine sprayed concrete. The shotcrete surface must be clean (no loose stones, nails, wires, etc.). A polypropylene geotextile (≥ 500 g/m²) or a compatible drainage layer must be also installed prior to the membrane application.

APPLICATION METHOD / TOOLS

The Sikaplan® WT 2200-21 HL2 membrane is installed loose laid and mechanically fastened, or loose laid and ballasted as appropriate and in accordance with the separate Sika Method Statement for sheet waterproofing membrane installations. The jointing faces must be dry and free from contaminations. For contaminated/soiled surfaces, follow the instructions for cleaning and preparation etc. in the Sika Method Statement. Sarnafil® T Prep must be used for seam preparation, unless the coating adversely influenced by weather conditions and/or oxidation material is pressed out of the bonding area during the welding process, e.g. by the heated wedge. Clean, freshly unpacked rolls of the membrane can be welded using automatic heat welding equipment without any additional preparation. All membrane overlaps must be welded by using hand welding guns and pressure rollers, or automatic heat welding machines, with individually adjustable and electronically controlled welding temperatures (such as the manual Leister Triac PID / automatic: Leister Twinny S / semi-automatic: Leister Triac Drive). Welding parameters, such as speed and temperature must be established with trials on site, prior to any welding works. The execution of T-joints demands particular preparation. In the previously fabricated weld area the overlaps must be machined off carefully.

LIMITATIONS

Installation works must only be carried out by Sika® trained contractors, experienced in the waterproof lining of tunnels and belowground structures. Particular precautions must be taken for installation in wet conditions, at temperatures below + 5°C, and when the relative air humidity (RH) is more than 80%. The effectiveness of these measures must be proven. Fresh air ventilation must always be ensured, especially when working (welding) in closed rooms and in accordance with all relevant local regulations.

The membrane is not UV stabilized and cannot be installed on structures permanently exposed to sunlight and weathering.

VALUE BASE

All technical data stated in this Product Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

LOCAL RESTRICTIONS

Please note that as a result of specific local regulations the performance of this product may vary from country to country. Please consult the local Product Data Sheet for the exact description of the application fields.

ECOLOGY, HEALTH AND SAFETY

REGULATION (EC) NO 1907/2006 - REACH

This product is an article as defined in article 3 of regulation (EC) No 1907/2006 (REACH). It contains no substances which are intended to be released from the article under normal or reasonably foreseeable conditions of use. A safety data sheet following article 31 of the same regulation is not needed to bring the product to the market, to transport or to use it. For safe use follow the instructions given in this product data sheet. Based on our current knowledge, this product does not contain SVHC (substances of very high concern) as listed in Annex XIV of the REACH regulation or on the candidate list published by the European Chemicals Agency in concentrations above 0.1 % (w/w)

LEGAL NOTES

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

SIKA LIMITED

Watchmead
Welwyn Garden City
Hertfordshire, AL7 1BQ
Tel: 01707 394444
Web: www.sika.co.uk
Twitter: @SikaLimited

SIKA IRELAND LIMITED

Ballymun Industrial Estate
Ballymun
Dublin 11, Ireland
Tel: +353 1 862 0709
Web: www.sika.ie
Twitter: @SikaIreland



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