

Sikaplan® WP 1100 – 20HL

(Sikaplan®-14.6 TU gelb/schwarz)

Sheet waterproofing membrane - Tunnel

Product Description

Sikaplan® WP 1100-20HL is a homogeneous sheet waterproofing membrane with a 0.6 mm thick signal layer, based on polyvinylchloride (PVC-P).

Uses

- Waterproofing of tunnels and other underground structures

Characteristics / Advantages

- Resistant to ageing
- Optimized tensile strength and elongation
- UV-stable (350 MJ/m² acc. to EN 12224)
- Resistant to root penetration
- Resistant to permanent water temperature of max. +35°C
- Dimensional stable
- Without DEHP (DOP) plasticiser, based on virgin material
- Flexible in cold temperatures
- Heat weldable
- Can be installed on wet substrates
- Suitable for contact with acidic soft water (low pH aggressive to concrete surfaces)
- Not bitumen resistant

Tests

Approval / Standards

Product Declaration EN 13491 – Geosynthetic barriers – Characteristics required for use as a fluid barrier in the construction of tunnels and underground structures.

CE-Certificate No. 1213-CPD-028.

Complies to requirements of SIA 272, TL/TB (ZTV-ING), EAG-EDT, ÖVBB

Product Data

Form

Appearance / Colours

Rolled sheet membrane, homogeneous.

Surface: smooth

Membrane thickness: 2.00 mm (incl. signal layer 0.60mm)

Colour: signal layer: yellow / bottom layer: dark grey

Packaging

Roll size: 2.20 m (roll width) x roll length individual as specified

Unit weight: 2.56 kg/m²

Storage



Storage Conditions	Rolls shall be stored in their original package, in horizontal position and under cool and dry conditions. They shall be protected from direct sunlight, rain, snow and ice, etc. The product does not expire during correct storage. Do not stack pallets of rolls during transport or storage.	
Technical Data		
Product declaration	EN 13491: (2013) mandatory only for European countries	1213-CPD-028
Thickness	2.00 (-5/+10%) mm	EN 1849-2
Mass per Unit Area	2.56 (-5/+10%) kg/m ²	EN 1849-2
Water Permeability	(liquid tightness) < 10 ⁻⁷ m ³ x m ⁻² x d ⁻¹	EN 14150:2001
Tensile Strength	Machine: 17.0 (± 2.0) N/mm ²	ISO R 527 – 1/3/5
	Cross: 16.0 (± 2.0) N/mm ²	ISO R 527 – 1/3/5
Elongation	Machine: ≥300 %	ISO R 527 – 1/3/5
	Cross: ≥ 300 %	ISO R 527 – 1/3/5
Static Puncture	2.35 (± 0.25) kN	EN ISO 12236
Burst Strength	≥ 80 %	EN 14151 D=1,0 m
Tear Strength	Machine: ≥ 42 kN/m	ISO 34 Method B; V=50 mm/min
	Cross: ≥ 42 kN/m	ISO 34 Method B; V=50 mm/min
Low Temperature Behaviour	≤ - 20°C pass	EN 495-5
Thermal Expansion	190x10 ⁻⁶ (±50x10 ⁻⁶) 1/K	ASTM D 696-91
Weathering	Remaining tensile strength and elongation: □ ≥ 75 %	EN 12224, 350 MJ/m ² ; ISO 527-3/5/100
Micro Organism	Change of tensile strength: ≤ 15 %	EN 12225; ISO 527-3/5
	Change in elongation: ≤ 15 %	EN 12225; ISO 527-3/5
Oxidation (90d/85°C)	Change of tensile strength: ≤ 10 %	EN 14575; ISO 527-3/5
	Change in elongation: ≤ 10 %	EN 14575; ISO 527-3/5
Environmental Stress Cracking	This method of testing is only suitable for flexible polyolefin (FPO) based materials.	ASTM D 5397-99 (EN 14576)
Chemical Resistance	A (hydrolyses under acid conditions): Change in elongation: ≤ 10 %	EN 14414: 2004-08; ISO 527-3/5
	B (hydrolyses under alkaline conditions): Change in elongation: ≤ 10 %	EN 14414: 2004-08; ISO 527-3/5
	D (artificial disposal water): Change in elongation: ≤ 10 %	EN 14414: 2004-08; ISO 527-3/5
Resistance to Root Penetration	Pass	EN 14416:2002
Reaction to Fire	Class E	EN ISO 11925-2
Technical Data	not relevant to EN 13491 and CE marking	
Modulus of elasticity	Machine / Cross: < 20 N / mm ²	ISO R 527 – 1/3/5
Determination of resistance to impact	Impact: 500g weight / falling height 1250mm Watertight after pressure test	SN EN 12691
Dimensional change after heat (+80°C/6h)	No blisters	
	Dimensional change machine/cross: < 2.0%	EN 1107-2
Thermal ageing (80°C/70d)	Change of tensile strength, machine/cross: <10%	EN 1296; ISO 527-3/5
	Change in elongation, machine/cross: < 10%	

Behaviour after storage in warm water (60°C/8 months)	Change of tensile strength, machine/cross <15% Change in elongation, machine/cross: <10% Change of mass: < 4%	SIA 280/13 (1996); ISO 527-3/5
Long term compression strength (50h / 7.0N/mm²)	No leakage after pressure	similar to SIA 280/13 (1996)
Behaviour after heat welding of overlaps	Shear resistance of welded seam: crack must occur outside of seam Peel resistance of welded seam: ≥ 6.0 N/mm Short time welding factor: f ≥ 0.6	EN 12317-2 EN 12316-2

System Information

System Structure	Ancillary products: <ul style="list-style-type: none"> - Sikaplan® WP Disc for fixing pieces - Sikaplan® W Felt PP - Sikaplan® W Tundrain Type B - Sikaplan® WP Protection sheet - Sika® Waterbars WP, Types AR and DR for fixing pieces and waterproofing concrete joints
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Application Details

Substrate Quality	<p>In-situ concrete: Clean, sound and dry, homogeneous, free from oils and grease, dust and loose or friable particles.</p> <p>Shotcrete: The profile of the shotcrete surface must not exceed a ratio of length to depth of 5:1 and its min. radius must be 20 cm. The shotcrete surface must not contain broken aggregates. Any leaks shall be sealed with Sika® waterproof plugging mortar, or drained with Sika® FlexoDrain. Where necessary to achieve the desired profile/surface, apply a fine sprayed concrete layer on the shotcrete surface with a min. thickness of 5 cm and aggregate diameter not exceeding 4 mm. Steel (girders, reinforcement mesh, anchors, etc.) must also be covered with a minimum 5 cm of fine sprayed concrete.</p> <p>The surface of the shotcrete and fine sprayed concrete must be cleaned (no loose stones, nails, wires, etc.).</p>
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Application Conditions / Limits

Substrate Temperature	0°C min. / +35°C max.
Ambient Air Temperature	+5°C min. / +35°C max. For installation below +5°C ambient temperature, special measures for safety requirements may be required in accordance with relevant national regulations.
Ambient max. Temperature of Liquids	+35°C (non-flowing seawater)

Application Instructions

Application Method / Tools	<p>Installation method: Loose laid and mechanically fastened, or loose laid and ballasted in accordance with the separate Sika Method Statement for sheet waterproofing membrane installations.</p> <p>All membrane overlaps shall 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).</p> <p>Welding parameters, such as speed and temperature shall be established with trials on site, prior to any welding works.</p>
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Notes on Application / Limits	Installation works shall only be carried out by Sika® trained contractors, experienced in the lining of tunnels and underground structures.
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	<p>The membrane is not resistant to permanent contact with materials including bitumen, and plastics other than PVC; on these it requires a separation layer of geotextile ($> 300 \text{ g/m}^2$).</p> <p>Sikaplan® WP 1100 – 20HL is not suitable as sheet waterproofing membrane for tunnels, when exposed permanently to non-flowing seawater temperature exceeding $+ 35^\circ\text{C}$ and when exposed to polluted, or waste waters.</p> <p>The watertightness of the structure shall be tested and approved after completion of the membrane installation works according to the requirements of the client's specifications.</p> <p>The membrane is not UV stabilised and can not be installed on structures permanently exposed to UV light and weathering.</p>
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.
Health and Safety Information	This product is an article within the meaning of Article 3.3 of Regulation (EC) No. 1907/2006. A safety data sheet following EC- Regulation 1907/2006, article 31 is not needed to bring the product to the market to transport or use it. The product does not damage the environment when used as specified.
REACH	<p>European Community Regulation on chemicals and their safe use (REACH: EC 1907/2006)</p> <p>This product is an article within the meaning 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. Therefore, there are no registration requirements for substances in articles within the meaning of Article 7.1 of the Regulation.</p> <p>Based on our current knowledge, this product does not contain SVHC (substances of very high concern) from the candidate list published by the European Chemicals Agency in concentrations above 0.1 % (w/w).</p>
Protective Measures	Fresh air ventilation must be ensured, when working (welding) in closed rooms. Local safety regulations must be observed.
Transportation Class	The product is not classified as hazardous good for transport.
Disposal	The material is recyclable. Disposal must be according to local regulations. Please contact your local Sika sales organisation for more information.
Legal Notes	<p>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.</p>


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