

## PRODUCT DATA SHEET

# Sikaplan® WP 1100-20 HL

SHEET WATERPROOFING MEMBRANE FOR BASEMENTS AND TUNNELS



## DESCRIPTION

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

## USES

Waterproofing of tunnels and basements against water ingress.

## CHARACTERISTICS / ADVANTAGES

- High resistance to ageing
- Based on virgin material with consistent quality
- Without DEHP (DOP) plasticizers
- With signal layer to indicate damages
- Optimized flexibility, tensile strength and multi-axial elongation
- Elastic material behaviour
- 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
- Can be installed on damp and even wet substrates
- Temporary UV stability for installation
- Self-extinguishing in fire

## APPROVALS / CERTIFICATES

- 'Polymeric geosynthetic barrier for use in tunnels and underground structures. Fluid barrier.' according to EN 13491, certified by notified factory production control certification body 1213, certificate of conformity of the factory production control 1213-CPR-028, and provided with the CE marking.
- 'Flexible sheets for waterproofing - Plastic and rubber damp proof sheets including plastic and rubber basement tanking sheet' according to EN 13967, certified by notified factory production control certification body 1213, certificate of conformity of the factory production control 1213-CPD-029, and provided with the CE marking.
- Environmental safety certificate BBodSchV / M Geok E

## PRODUCT INFORMATION

<b>Packaging</b>	Roll size	2.20 m (width) × roll length 20 m or individual as specified
<b>Appearance / Colour</b>	Surface	smooth
	Colour	signal layer: yellow bottom layer: dark grey
<b>Shelf life</b>	5 years shelf life from date of production if stored properly in undamaged, unopened, original sealed packaging	
<b>Storage conditions</b>	Rolls must be stored in their original packaging, in a horizontal position in under 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.	
<b>Effective Thickness</b>	2.00 (-5 / +10 %) mm incl. signal layer	(EN 1849-2)
<b>Mass per unit area</b>	2.56 (-5 / +10 %) kg/m <sup>2</sup>	(EN 1849-2)

## TECHNICAL INFORMATION

<b>Tensile Strength</b>	17.0 (± 2.0) N/mm <sup>2</sup> (machine direction)	(ISO 527)(EN 12311-2)
	16.0 (± 2.0) N/mm <sup>2</sup> (cross direction)	
<b>Elongation at Break</b>	≥ 300 % (machine/ cross direction)	(ISO 527)
<b>Modulus of Elasticity in Tension</b>	≤ 20 N/mm <sup>2</sup> (machine/cross direction) (between 1 % and 2 % elongation, v = 5mm/min)	(ISO 527)
<b>Burst Strength</b>	≥ 80 % (D=1.0 m)	(EN 14151)
<b>Resistance to Static Puncture</b>	2.35 (± 0.25) kN	(EN ISO 12236)
<b>Resistance to Impact</b>	Watertight at 750 mm drop height (500 g falling weight, Method A)	(EN 12691)
<b>Long Term Compression Strength</b>	Watertight at 7.0 N/mm <sup>2</sup> (50 h)	(similar to SIA V280/14)
<b>Foldability at Low Temperature</b>	No cracks at - 20 °C	(EN 495-5)
<b>Dimensional Change after Heat</b>	Dimensional change	< 2.0% (machine/ cross) (+80 °C / 6 h)
<b>Resistance to Oxidation</b>	Change in elongation	≤ 10 % (EN 14575)
	Change of tensile strength	≤ 10 % (120 d / 80 °C)
<b>Behaviour after Storage in Warm Water</b>	Change of tensile strength	< 20 % (machine / cross)
	Change in elongation	< 20 % (machine / cross)
	Change of mass	< 4 % (SIA V280/13 and OEBV) (50 °C / 8 months)
	Change of mass	< 10 % (EN 14415) (70 °C / 360 days)

<b>Chemical Resistance</b>	Saturated Limewash (Test Liquid 2)		
	Reduction of tensile strength and elongation	≤ 20 %	(EN 14415) (23 °C / 90 d)
	5–6 % Sulfurous acid (Test Liquid 3)		
	Reduction of tensile strength and elongation	≤ 20 %	(EN 1847) (23 °C / 90 d)
	Foldability at low temperatures	No cracks at -20 °C	
<b>Microbiological Resistance</b>	Change in tensile strength	≤ 15 %	(EN 12225)
	Change in elongation	≤ 15 %	(16 weeks)
<b>Resistance to Weathering</b>	Remaining tensile strength and elongation:	≥ 75 %	(EN 12224) (350 MJ/m <sup>2</sup> )
<b>Reaction to Fire</b>	Class E		(EN 13501–1) (EN ISO 11925–2)
<b>Behaviour after Heat Welding of Overlaps</b>	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)
<b>Service Temperature</b>	-10 °C / +35 °C max.		
<b>Ambient Maximum Temperature of Liquids</b>	+35 °C		

## SYSTEMS

<b>System Structure</b>	Ancillary Products:		
	<ul style="list-style-type: none"> <li>▪ Sikaplan® WP Disc</li> <li>▪ Sikaplan® W Felt PP</li> <li>▪ Sikaplan® W Tundrain</li> <li>▪ Sikaplan® WP Protection Sheets</li> <li>▪ Sika Waterbar® WP for forming compartment, waterproofing of concrete joints in and fixings/terminations to the concrete</li> <li>▪ Sikaplan® WP Tape</li> </ul>		

## APPLICATION INFORMATION

<b>Ambient Air Temperature</b>	+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 5:1 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 necessary 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/m<sup>2</sup>) or a compatible drainage layer must be installed prior to the Sikaplan® WP 1100-20 HL membrane installation.

### APPLICATION METHOD / TOOLS

The Sikaplan® WP 1100-20 HL membrane is installed loose laid and mechanically fastened, or loose laid and ballasted as appropriate in accordance with the 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. All membrane overlaps must be heat welded using hand welding guns and pressure rollers or automatic heat weld-

ing 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 of the weld area. In the previously fabricated weld area the overlaps must be chamfered 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) of 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 resistant to permanent contact with bitumen, and some types of plastics other than PVC or Sika approved system components. For use over or adjacent to these materials, a separation layer of polypropylene geotextile ( $\geq 150 \text{ g/m}^2$ ) is required. The membrane is not UV stabilized and cannot be installed on structures permanently exposed to sunlight and weathering.

## BASIS OF PRODUCT DATA

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.

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