

PRODUCT DATA SHEET

Sikaplan® WP 2101-21 HL2

2.1 mm thick PVC sheet waterproofing membrane for tunnels with a thin signal layer

DESCRIPTION

Sikaplan® WP 2101-21 HL2 is a flexible, 2.1 mm thick, homogeneous sheet waterproofing membrane. It is based on premium-quality polyvinylchloride (PVC-p) and exceeds requirements of öBV tables 4.6 and 4.7.

USES

Sikaplan® WP 2101-21 HL2 is used for the waterproofing of tunnels against water ingress. Please note:

- The Product is not suitable for permanent exposure to liquids with temperatures above +45 °C.

CHARACTERISTICS / ADVANTAGES

- Certified for öBV tunnel guidelines, table 4.6 and table 4.7
- Proven performance over decades
- High resistance to ageing

- Contains no recycled materials
- Contains no DEHP (DOP) plasticisers
- Optimised flexibility, tensile strength and multi-axial elongation
- Flexible in very cold temperatures
- Good resistance to root penetration
- Good resistance to microbial degradation
- Conditionally UV stable
- Suitable for contact with acidic (soft) water and alkaline environments

APPROVALS / STANDARDS

- CE marking and declaration of performance based on EN 13491:2004/A1:2006 Geosynthetic barriers — Characteristics required for use as a fluid barrier in the construction of tunnels and underground structures
- Initial type testing , Sikaplan® WP 2101-21 HL2, SKZ, Test Report No. 226340-II

PRODUCT INFORMATION

Chemical base	PVC-p	
Packaging	Roll width	2 m
	Roll length	specified
	Rolls are wrapped in PE film. Refer to the current price list for available packaging variations.	
Colour	Signal layer colour	yellow
	Bottom layer colour	black
Shelf life	5 years from date of production	
Storage conditions	The Product must be stored in original unopened and undamaged sealed packaging in dry conditions and temperatures between +5 °C and +35 °C. Protect the Product from direct weather exposure. Store in a horizontal position. Do not stack pallets of the rolls on top of each other, or under pallets of any other materials during transport or storage. Always refer to	

	the packaging.	
Effective thickness	2.10 mm (-0.10 mm / +0.21 mm) including signal layer Signal layer thickness ≤ 0.2 mm	(EN 1849-2)
Mass per unit area	2.50 kg/m ² (-0.12 kg/m ² / +0.25 kg/m ²)	(EN 1849-2)
Colour	Surface texture <u>smooth</u>	

TECHNICAL INFORMATION

Resistance to impact	Method A, 500 g falling weight	Watertight at 1000 mm drop height	(EN 12691)
Resistance to static puncture	> 2.5 kN		(EN ISO 12236)
Resistance to root penetration	Pass		(CEN/TS 14416)
Long term compression strength	Water tightness, aged 48 hours	Watertight at 7.0 N/mm ²	(ÖBV Guideline Tunnel Waterproofing)
Tensile strength	Longitudinal (MD) Transversal (CMD)	19.0 N/mm ² ± 2.0 N/mm ² 18.0 N/mm ² ± 2.0 N/mm ²	(EN ISO 527-3)
Modulus of elasticity in tension	Longitudinal (MD) Transversal (CMD)	≤ 20 N/mm ² ≤ 20 N/mm ²	(EN ISO 527-3)
Elongation at break	Longitudinal (MD) Transversal (CMD)	> 330 % > 330 %	(EN ISO 527-3)
Burst strength	Burst stress, (1000 mm diameter, 10 kPa/min) Burst strain, (1000 mm diameter, 10 kPa/min)	5.7 N/mm ² 90 %	(DIN 61551)
Dimensional change after heat	Blisters, aged 6 hours at +80 °C Longitudinal (MD), aged 6 hours at +80 °C Transversal (CMD), aged 6 hours at +80 °C	No blisters < 2 % < 2 %	(EN 1107-2)
Foldability at low temperature	No cracks at -20 °C		(EN 495-5)
Reaction to fire	Class E		(EN 13501-5)
Chemical resistance	Change in tensile strength and elongation, 5-6 % sulphurous acid test, aged 120 days at +23 °C Change in tensile strength and elongation, saturated lime wash, aged 360 days at +50 °C	< 20 % < 10 %	(EN 1847) (EN 14415)
Behaviour after storage in warm water	Change in tensile strength, aged 240 days at +50 °C Change in elongation, aged 240 days at +50 °C Change in mass, aged 240 days at +50 °C	< 10 % (MD/CMD) < 10 % (MD/CMD) < 2 %	(ÖBV Guideline Tunnel Waterproofing)

Resistance to UV exposure	Not permanently UV stable		
Resistance to weathering	Not resistant to permanent weathering		
Resistance to oxidation	Change in tensile strength, aged 90 days at +85 °C	< 10 %	(EN 1847; EN 14575)
	Change in elongation, aged 90 days at +85 °C	< 10 %	
	Foldability at low temperatures, aged 90 days at +85 °C	No cracks at -20 °C	
Microbiological resistance	Change in tensile strength, aged 16 weeks	< 15 %	(EN 12225)
	Change in elongation, aged 16 weeks	< 15 %	
Service temperature	Maximum	+45 °C	
	Minimum	-10 °C	
Behaviour after heat welding	Behaviour of weld in shear test	Break occurs outside the seam	(EN 12317-2)
	Peel resistance of welded seam	No failure of the joint	(EN 12316-2)
Water permeability	< 10 ⁻⁶ m ³ ·m ⁻² ·d ⁻¹		(EN 14150)

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.

ECOLOGY, HEALTH AND SAFETY

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).

APPLICATION INSTRUCTIONS

SUBSTRATE QUALITY

For information on substrate quality and pre-treatment, refer to the following Sika® document:

- Sika Method Statement 850 72 03 Sikaplan® WP sheet membrane (PVC) system for waterproofing tunnels

APPLICATION

IMPORTANT

Application by trained personnel

The application of this Product must only be carried out by an applicator that is trained or approved by Sika. The applicator must also be experienced in this type of application.

IMPORTANT

Ventilation in confined spaces

Always ensure good ventilation when applying the Product in a confined space.

IMPORTANT

Avoid permanent contact with bitumen and plastics

The Product is not resistant to permanent contact with bitumen and some types of plastics other than PVC.

1. For use over or adjacent to these materials, apply a separation layer of polypropylene geotextile (≥ 150 g/m²).

For information on application, refer to the following Sika® documents:

- Sika Method Statement 850 72 03 Sikaplan® WP sheet membrane (PVC) system for waterproofing tunnels
- Sika Method Statement Shotcrete application directly onto sheet waterproofing membranes

LOCAL RESTRICTIONS

Note that as a result of specific local regulations the declared data and recommended uses for this product may vary from country to country. Consult the local Product Data Sheet for exact product data and uses.

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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Product Data Sheet

Sikaplan® WP 2101-21 HL2
November 2024, Version 08.01
02072010120000014

SikaplanWP2101-21HL2-en-IN-(11-2024)-8-1.pdf