

PRODUCT DATA SHEET

SikaProof®-110 PP-500

FULLY BONDED, PRE-APPLIED WATERPROOFING MEMBRANE FOR TUNNELS WITH A 500 G/M² GEOTEXTILE LINEARLY FIXED AT THE BACK

DESCRIPTION

SikaProof®-110 PP-500 consists of a flexible polyolefin (FPO) layer membrane (EVA based) with a hybrid bonding layer that forms a mechanical and chemical dual bond with the in situ concrete lining, and a non-woven polypropylene geotextile (felt), which is linearly fixed onto the membrane during the manufacturing process and serves as a protection.

USES

Waterproofing of tunnel and below ground structures

CHARACTERISTICS / ADVANTAGES

- Strong mechanical and chemical bonding properties on inner concrete lining
- No lateral water migration between inner concrete structure and membrane
- Excellent thermal jointing properties
- Highly flexible, also in cold temperatures
- Strong crack bridging ability
- Fast and simple installation

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
- Conforms to KS F 4911 (Waterproofing sheet of synthetic polymer).

PRODUCT INFORMATION

Chemical Base	Functional layer: Cement modified polymer Membrane layer: Flexible Polyolefin (EVA based) Protection layer: Non-woven polypropylene geotextile
Packaging	SikaProof®-110 PP-500 standard rolls are wrapped individually in a PE-foil. Roll width : 2.0 or 2.1 m Roll length 20 m or specified.
Appearance / Colour	Functional layer : Rough / White to grey Membrane layer : Smooth / White to grey Protection layer : Fleece texture / White
Shelf Life	SikaProof®-110 PP-500 membrane rolls have a shelf-life of 24 months from date of production.

Storage Conditions	Product must be stored in original unopened and undamaged sealed packaging in dry conditions and temperatures between + 5°C and +35°C, 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 packaging.	
Effective Thickness	Thickness including the functional layer : 1.4mm Thickness of the membrane : ≥ 1.0 mm	
Mass per Unit Area	1.84 kg/m ² (including geotextile)	
Felt Weight	500 (±50) g/m ²	(ISO 9864)
	<u>Other felt characteristics</u>	<u>Chemical base Polypropylene</u>
	Tensile Strength - MD: Min. 27.0 kN/m	(EN ISO 10319)
	Tensile Strength - CMD: Min. 22.0 kN/m	(EN ISO 10319)
	CBR Puncture Resistance: Min. 3,600 N	(EN ISO 12236)
	Thickness under 2 kPa: 3.0 (±0.8) mm	(EN ISO 9863-1)

TECHNICAL INFORMATION

Resistance to Impact	> 350 mm	(EN 12691)
Resistance to Static Load	Method B, 20 kg for 24 hours	Pass (EN 12730)
Resistance to Static Puncture	> 1.5 kN	(EN ISO 12236)
Tensile Strength	Machine direction > 8 N/mm ² Cross direction > 8 N/mm ²	(EN 12311-2)
Elongation	Machine direction > 500% Cross direction > 500%	(EN 12311-2)
Resistance to Tear (nail shank)	Machine direction > 500 N Cross direction > 500 N	(EN 12310-1)
Joint Peel Resistance	Peel resistance of welded seam > 80 N/50mm	(EN 12316-2)
Reaction to Fire	Class E	(EN ISO 11925-2)
Water Tightness	Method B, 24 hours at 60 kPa	Pass (EN 1928)
Durability of Water Tightness Against Ageing	Aged 12 weeks at +70 °C Method B, tested for 24 hours at 60 kPa	Pass (EN 1928; EN 1296)
Durability of Water Tightness Against Chemicals	Calcium hydroxide, aged 28 days at +23 °C, tested 24 hours at 60 kPa	Pass (EN 1928; EN 1847)
Ambient Maximum Temperature of Liquids	+ 35 °C max.	
Adhesion in Peel	> 20N/50mm	(DIN EN 1372)
Resistance to Lateral Water Migration	Pass	(ASTM D5385 / D5385M)

SYSTEM INFORMATION

System Structure

SikaProof®-11 Anchor
SikaProof®-12 Anchor
Sikaplan® WT Trumpet Flange

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.

LIMITATIONS

Installation works must only be carried out by Sika trained contractors, experienced in the waterproof lining of tunnels and belowground structures.

Precaution measures 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 in closed rooms and in accordance with all relevant local regulations.

The SikaProof®-110 PP-500 is not UV stabilized and cannot be installed on structures permanently exposed to sunlight and weathering.

At all block joints (stop-end formwork), membrane protection with an additional plain membrane strip of 50 cm installed over the waterproofing membrane is recommended.

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 the 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

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.).

APPLICATION

The SikaProof®-110 PP-500 membrane is installed loose laid and mechanically fastened in accordance with the Sika Method Statement for sheet waterproofing membrane installations (available separately on request).

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 thermally jointed using hand welding gun 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). Thermal jointing parameters, such as speed and temperature must be established with trials on site, prior to any thermal jointing works.

T-joints demand specific preparation of the thermal jointing area. For more specific instructions refer to the Sika Method Statement.

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.

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. It may be necessary to adapt the above disclaimer to specific local laws and regulations. Any changes to this disclaimer may only be implemented with permission of Sika® Corporate Legal in Baar.

SIKA HONGKONG LTD.

Rm.1507-12, Blk A, New Trade Plaza,
6 On Ping Street, Shatin, N.T., H.K.
Phone: +852 26868108
Fax: +852 26453671
Mail: marketing@hk.sika.com
Website: www.sika.com.hk



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