

## PRODUCT DATA SHEET

## Sikaplan® TM-12

Polymeric FPO membrane for mechanically fastened roof waterproofing

## DESCRIPTION

Sikaplan® TM-12 (thickness 1.2 mm) is a polyester reinforced, multi-layer, synthetic roof waterproofing sheet based on polyolefins (FPO) containing ultraviolet light stabilizers and flame retardant according to EN 13956. Sikaplan® TM-12 is a hot air weldable roof membrane formulated for direct exposure and designed to use in all global climatic conditions.

## USES

Waterproofing membrane for:

- Mechanically fastened roofing systems

## CHARACTERISTICS / ADVANTAGES

- Resistant to UV exposure
- Resistant to permanent wind exposure
- Resistant against impact load and hail
- Resistant to all common environmental influences
- Resistant to micro-organisms
- Compatible with old bitumen
- Hot air weldable
- No open flame equipment required

## ENVIRONMENTAL INFORMATION

- Conformity with LEED v4 SSc 5 (Option 1): Heat Island Reduction - Roof
- Conformity with LEED v4 MRc 3 (Option 2): Building Product Disclosure and Optimization - Sourcing of Raw Materials
- Conformity with LEED v4 MRc 4 (Option 2): Building Product Disclosure and Optimization - Material Ingredients
- Conformity with LEED v2009 SSc 7.2 (Option 1): Heat Island Effect - Roof
- Conformity with LEED v2009 MRc 4 (Option 2): Recycled Content

## CERTIFICATES AND TEST REPORTS

- CE Marking and Declaration of Performance to EN 13956 - Polymeric sheets for roof waterproofing
- Reaction to fire according to EN 13501-1
- Factory Mutual (FM) Approval Class: 4470

## PRODUCT INFORMATION

|                     |                                                                              |                          |
|---------------------|------------------------------------------------------------------------------|--------------------------|
| Composition         | Flexible polyolefins (FPO)                                                   |                          |
| Packaging           | Sikaplan® TM-12 standard rolls are wrapped individually in a yellow PE-foil. |                          |
|                     | Roll length                                                                  | 25.00 m                  |
|                     | Roll width                                                                   | 2.00 m                   |
|                     | Roll weight                                                                  | 64.00 kg                 |
| Appearance / Colour | Surface                                                                      | matt                     |
|                     | Colour                                                                       |                          |
|                     | Top surface                                                                  | white (nearest RAL 9016) |
|                     | Bottom surface                                                               | black                    |
| Shelf Life          | 5 years from date of production.                                             |                          |

|                            |                                                                                                                                                                                                                                                                                                                                   |             |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Storage Conditions</b>  | Product must be stored in original unopened and undamaged sealed packaging in dry conditions and temperatures between + 5 °C and + 30 °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. |             |
| <b>Product Declaration</b> | EN 13956 - Polymeric sheets for roof waterproofing                                                                                                                                                                                                                                                                                |             |
| <b>Visible Defects</b>     | Pass                                                                                                                                                                                                                                                                                                                              | (EN1850-2)  |
| <b>Length</b>              | 25 m (- 0 % / + 5 %)                                                                                                                                                                                                                                                                                                              | (EN 1848-2) |
| <b>Width</b>               | 2 m (- 0.5 % / + 1 %)                                                                                                                                                                                                                                                                                                             | (EN 1848-2) |
| <b>Effective Thickness</b> | 1.20 mm (- 5 % / + 10 %)                                                                                                                                                                                                                                                                                                          | (EN 1849-2) |
| <b>Straightness</b>        | ≤ 30 mm                                                                                                                                                                                                                                                                                                                           | (EN 1848-2) |
| <b>Flatness</b>            | ≤ 10 mm                                                                                                                                                                                                                                                                                                                           | (EN 1848-2) |
| <b>Mass per Unit Area</b>  | 1.28 kg/m <sup>2</sup> (- 5 % / + 10 %)                                                                                                                                                                                                                                                                                           | (EN 1849-2) |

## TECHNICAL INFORMATION

|                                                                                     |                                          |                                                |              |
|-------------------------------------------------------------------------------------|------------------------------------------|------------------------------------------------|--------------|
| Resistance to Impact                                                                | hard substrate                           | ≥ 500 mm                                       | (EN 12691)   |
|                                                                                     | soft substrate                           | ≥ 700 mm                                       |              |
| Hail Resistance                                                                     | rigid substrate                          | ≥ 17 m/s                                       | (EN 13583)   |
|                                                                                     | flexible substrate                       | ≥ 23 m/s                                       |              |
| Resistance to Static Load                                                           | soft substrate                           | ≥ 20 kg                                        | (EN 12730)   |
|                                                                                     | rigid substrate                          | ≥ 20 kg                                        |              |
| Tensile Strength                                                                    | longitudinal (md) <sup>1)</sup>          | ≥ 800 N/50 mm                                  | (EN 12311-2) |
|                                                                                     | transversal (cmd) <sup>2)</sup>          | ≥ 800 N/50 mm                                  |              |
| <sup>1)</sup> md = machine direction<br><sup>2)</sup> cmd = cross machine direction |                                          |                                                |              |
| Elongation                                                                          | longitudinal (md) <sup>1)</sup>          | ≥ 13 %                                         | (EN 12311-2) |
|                                                                                     | transversal (cmd) <sup>2)</sup>          | ≥ 13 %                                         |              |
| <sup>1)</sup> md = machine direction<br><sup>2)</sup> cmd = cross machine direction |                                          |                                                |              |
| Dimensional Stability                                                               | longitudinal (md) <sup>1)</sup>          | ≤  0.5  %                                      | (EN 1107-2)  |
|                                                                                     | transversal (cmd) <sup>2)</sup>          | ≤  0.2  %                                      |              |
| <sup>1)</sup> md = machine direction<br><sup>2)</sup> cmd = cross machine direction |                                          |                                                |              |
| Tear Strength                                                                       | longitudinal (md) <sup>1)</sup>          | ≥ 250 N                                        | (EN 12310-2) |
|                                                                                     | transversal (cmd) <sup>2)</sup>          | ≥ 250 N                                        |              |
| <sup>1)</sup> md = machine direction<br><sup>2)</sup> cmd = cross machine direction |                                          |                                                |              |
| Joint Peel Resistance                                                               | Failure mode: C, no failure of the joint |                                                | (EN 12316-2) |
| Joint Shear Resistance                                                              | ≥ 500 N/50 mm                            |                                                | (EN 12317-2) |
| Foldability at Low Temperature                                                      | ≤ -25 °C                                 |                                                | (EN 495-5)   |
| External Fire Performance                                                           |                                          |                                                | (ENV 1187)   |
|                                                                                     | B <sub>ROOF</sub> (t1) < 20 °C           |                                                | (EN 13501-5) |
| Reaction to Fire                                                                    | Class E                                  | (EN ISO 11925-2, classification to EN 13501-1) |              |
| Effect of Liquid Chemicals, Including Water                                         | On request                               |                                                | (EN 1847)    |

|                                                                                                   |                           |          |              |                     |               |
|---------------------------------------------------------------------------------------------------|---------------------------|----------|--------------|---------------------|---------------|
| Exposure to Bitumen                                                                               | Pass <sup>3)</sup>        |          |              |                     | (EN 1548)     |
| 3) Sikaplan® TM is compatible to old bitumen                                                      |                           |          |              |                     |               |
| Resistance to UV Exposure                                                                         | Pass (> 5000 h / grade 0) |          |              |                     | (EN 1297)     |
| Water Vapour Transimission                                                                        | μ = 190 000               |          |              |                     | (EN 1931)     |
| Water Tightness                                                                                   | Pass                      |          |              |                     | (EN 1928)     |
| Solar Reflectance                                                                                 | Colour                    | Initial  | 3 years aged | Test Insti-<br>tute | (ASTM C 1549) |
|                                                                                                   | white                     | 0.89     | 0.89         | Intertek            |               |
| Thermal Emittance                                                                                 | Colour                    | Initial  | 3 years aged | Test Insti-<br>tute | (ASTM C 1371) |
|                                                                                                   | white                     | 0.89     | 0.89         | Intertek            |               |
| Solar Reflectance Index                                                                           | Colour                    | Initial  | 3 years aged | Test Insti-<br>tute | (ASTM E 1980) |
|                                                                                                   | white                     | 100      | 83           | Intertek            |               |
| CRRC tested products are listed in Cool Roof Rating Council (CRRC) product data base.             |                           |          |              |                     |               |
| USGBC LEED Rating                                                                                 | Colour                    | Initial  | 3 years aged |                     | (ASTM E 1980) |
|                                                                                                   | white                     | SRI > 82 | SRI > 64     |                     |               |
| Conform on the minimum requirements of LEED V4 SS credit 5 option 1 Heat Island reduction - Roof. |                           |          |              |                     |               |

## SYSTEM INFORMATION

|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| System Structure | <p>The following products must be considered for use depending on roof design:</p> <ul style="list-style-type: none"> <li>▪ Sarnafil® T 66-15 D Sheet for detailing</li> <li>▪ Sarnafil® TS 77 strips</li> <li>▪ Sarnafil® T Metal Sheet</li> <li>▪ Sarnafil® T Welding Cord</li> <li>▪ Sarnabar® / Sarnafast®</li> <li>▪ Sarnafil® T Prep / Sarnafil® T Wet Task Set</li> <li>▪ Sarnacol® T 660</li> <li>▪ Solvent T 660</li> <li>▪ Sarnafil® T Clean</li> </ul> <p>Wide range of accessories is available e.g. prefabricated parts, roof drains, scuppers, walkway pads and decor profiles.</p> |
| Compatibility    | <p>Sikaplan® TM-12 may be installed on all thermal insulations and levelling layers suitable for roofing. No additional separation layer is required. Sikaplan® TM-12 is suitable for installation directly on top of existing, carefully cleaned, levelled bituminous roofing, e.g. re-roofing over old flat roofs. Colour changes in membrane surface may occur if in direct contact with bitumen.</p>                                                                                                                                                                                          |

## APPLICATION INFORMATION

|                         |                           |
|-------------------------|---------------------------|
| Ambient Air Temperature | -15 °C min. / +60 °C max. |
| Substrate Temperature   | -25 °C min. / +60 °C max. |

## 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.

## FURTHER INFORMATION

**Installation**

- Application Manual

## IMPORTANT CONSIDERATIONS

Installation work must only be carried out by Sika® trained and approved contractors, experienced in this type of application

- Ensure Sikaplan® TM-12 is prevented from direct contact with incompatible materials (refer to compatibility section)
- Sikaplan® TM-12 must be installed by loose laying and without stretching or installing under tension
- The use of Sikaplan® TM-12 membrane is limited to geographical locations with average monthly minimum temperatures of -50 °C. Permanent ambient temperature during use is limited to +50 °C
- The use of some ancillary products such as adhesives, cleaners and solvents is limited to temperatures above +5 °C. Observe temperature limitations in the appropriate Product Data Sheets
- Special measures may be compulsory for installation below +5 °C ambient temperature due to safety requirements in accordance with national regulations

## ECOLOGY, HEALTH AND SAFETY

Fresh air ventilation must be ensured, when working (welding) in closed rooms.

### 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 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

### EQUIPMENT

#### Hot welding overlap seams

Electric hot air welding equipment, such as hand held manual hot air welding equipment and pressure rollers or automatic hot air welding machines with controlled hot air temperature capability of a minimum 600 °C.

Recommended type of equipment:

Manual: Leister Triac

Automatic : Leister Varimat

Semi-automatic: Leister Triac Drive

### SUBSTRATE QUALITY

The substrate surface must be uniform, smooth and free of any sharp protrusions or burrs, etc. Sikaplan® TM-12 must be separated from any incompatible substrates / materials by an effective separation layer to prevent accelerated ageing. The supporting layer must

be compatible to the membrane, solvent resistant, clean, dry and free of grease and dust. Metal sheets must be degreased with Solvent T 660 before adhesive is applied.

### APPLICATION

#### Installation procedure

Reference must be made to further documentation where applicable, such as relevant method statement, application manual and installation or working instructions.

#### Fixing method - General

The waterproofing membrane is installed by loose laying (without stretching membrane or installing under tension) with mechanical fastening in seam overlaps or independent from overlaps. Overlap seams are hot welded using specialised hot air equipment.

#### Fixing method-Spot fastening

Sikaplan® TM-12 must always be installed at right angles to the deck direction. Sikaplan® TM-12 is fixed by fasteners and washers/tubes along the marked line, 35 mm from the edge of the membrane. Sikaplan® TM-12 is overlapped by 120 mm. The spacing of the fasteners is in accordance with the project specific Sika calculations. At upstands and at all penetrations, the membrane must be secured by additional fasteners and washers/tubes, that protects the Sikaplan® TM-12 roof covering against tearing and peeling off by wind uplift.

#### Hot welding method

Overlap seams must be welded by electric hot welding equipment. Welding parameters including temperature, machine speed, air flow, pressure and machine settings must be evaluated, adapted and checked on site according to the type of equipment and the climatic conditions prior to welding.

#### Testing overlap seams

The seams must be mechanically tested with screw driver or steel needle to ensure the integrity/completion of the weld. Any imperfections must be rectified by hot air welding.

## 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 recom-

mendations, 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**

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