

## PRODUCT DATA SHEET

# Sarnafil® TS 77-15

Polymeric FPO membrane for mechanically fastened roof waterproofing



### DESCRIPTION

Sarnafil® TS 77-15 (thickness 1.5 mm) is a polyester reinforced, multi-layer, synthetic roof waterproofing sheet based on flexible polyolefins (FPO) containing ultraviolet light stabilizers, flame retardant and an inlay of glass non-woven according to EN 13956.

Sarnafil® TS 77-15 is produced with an inlay of glass non-woven for dimensional stability and a polyester reinforcement for high strength. Sarnafil® TS 77-15 is a hot air weldable roof membrane formulated for direct exposure and designed to use in all global climatic conditions.

### USES

Waterproofing membrane for:

- Sarnafil® TS 77-15 L may only be used by experienced professionals.
- Mechanically fastened roofing systems

### CHARACTERISTICS / ADVANTAGES

- Proven performance over decades
- Various colours available
- Resistant to permanent UV exposure
- High dimensional stability due to glass fleece inlay
- Resistant to permanent wind exposure
- Resistant to all common environmental influences
- Resistant to micro-organisms
- Resistant to root penetration
- Compatible to old bitumen
- Hot air weldable

### ENVIRONMENTAL INFORMATION

- Conformity with LEED v4 SSc 5 (Option 1): Heat Island Reduction - Roof (only traffic white)
- Conformity with LEED v4 MRc 2 (Option 1): Building Product Disclosure and Optimization - Environmental Product Declarations
- 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
- IBU Environmental Product Declaration (EPD) available

### APPROVALS / STANDARDS

- British Board of Agrément (BBA) certified
- CE Marking and Declaration of Performance to EN 13956 - Polymeric sheets for roof waterproofing
- Compliance test Sarnafil® G 410-TS-77, FM Approvals, Certificate No. 3047304
- Certified Green Label by Singapore Green Building Council, Certificate Nbr. SGBP 3498

## PRODUCT INFORMATION

<b>Chemical Base</b>	Flexible Polyolefins (FPO)	
<b>Packaging</b>	Sarnafil® TS 77-15 standard rolls are wrapped individually in a blue PE-foil.	
	Packing unit	See price list
	Roll length	20.00 m
	Roll width	2.00 m
	Roll weight	66.00 kg
<b>Appearance / Colour</b>	Surface	Matt
	Colours	
	Top surface:	Beige Window grey (nearest RAL 7040) Anthracite (nearest RAL 7016) Reseda green (nearest RAL 6011) Copper brown (nearest RAL 8004) Traffic white (nearest RAL 9016)
	Bottom surface	Black
<b>Shelf Life</b>	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	
<b>Visible Defects</b>	Pass	(EN 1850-2)
<b>Length</b>	20 m (-0 % / +5 %)	(EN 1848-2)
<b>Width</b>	2 m (-0.5 % / +1 %)	(EN 1848-2)
<b>Effective Thickness</b>	1.5 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>	1.65 kg/m <sup>2</sup> (-5 % / +10 %)	(EN 1849-2)

## TECHNICAL INFORMATION

<b>Resistance to Impact</b>	Hard substrate	≥ 700 mm	(EN 12691)
	Soft substrate	≥ 900 mm	
<b>Hail Resistance</b>	Rigid substrate	≥ 20 m/s	(EN 13583)
	Flexible substrate	≥ 30 m/s	
<b>Resistance to Static Load</b>	Soft substrate	≥ 20 kg	(EN 12730)
	Rigid substrate	≥ 20 kg	
<b>Resistance to Root Penetration</b>	Pass		(EN 13948)
<b>Tensile Strength</b>	Longitudinal (md) <sup>1)</sup>	≥ 1000 N/50 mm	(EN 12311-2)
	Transversal (cmd) <sup>2)</sup>	≥ 900 N/50 mm	
	<sup>1)</sup> md = machine direction <sup>2)</sup> cmd = cross machine direction		

<b>Elongation</b>	<b>Longitudinal (md)<sup>1)</sup></b>		<b>≥ 13 %</b>		(EN 12311-2)
	<b>Transversal (cmd)<sup>2)</sup></b>		<b>≥ 13 %</b>		
<sup>1)</sup> md = machine direction <sup>2)</sup> cmd = cross machine direction					
<b>Dimensional Stability</b>	<b>Longitudinal (md)<sup>1)</sup></b>		<b>≤  0.2  %</b>		(EN 1107-2)
	<b>Transversal (cmd)<sup>2)</sup></b>		<b>≤  0.1  %</b>		
<sup>1)</sup> md = machine direction <sup>2)</sup> cmd = cross machine direction					
<b>Tear Strength</b>	<b>Longitudinal (md)<sup>1)</sup></b>		<b>≥ 300 N</b>		(EN 12310-2)
	<b>Transversal (cmd)<sup>2)</sup></b>		<b>≥ 300 N</b>		
<sup>1)</sup> md = machine direction <sup>2)</sup> cmd = cross machine direction					
<b>Joint Peel Resistance</b>	Failure mode: C, no failure of the joint				(EN 12316-2)
<b>Joint Shear Resistance</b>	≥ 500 N/50 mm				(EN 12316-2)
<b>Foldability at Low Temperature</b>	≤ -35 °C				(EN 495-5)
<b>External Fire Performance</b>	B <sub>ROOF</sub> (t1) < 20°				(EN 1187) (EN 13501-5)
<b>Reaction to Fire</b>	Class E				(EN ISO 11925-2, classification to EN 13501-1)
<b>Effect of Liquid Chemicals, Including Water</b>	On request				(EN 1847)
<b>Exposure to Bitumen</b>	Pass <sup>3)</sup>				(EN 1548)
<sup>3)</sup> Sarnafil® T is compatible to old bitumen					
<b>Resistance to UV Exposure</b>	Pass (> 5000 h / grade 0)				(EN 1297)
<b>Water Vapour Transimission</b>	μ = 190 000				(EN 1931)
<b>Water Tightness</b>	Pass				(EN 1928)
<b>Solar Reflectance</b>	<b>Colour</b>	<b>Initial</b>	<b>3 years aged</b>	<b>Test Insti- tute</b>	(ASTM C 1549)
	Beige	B0.64	C0.56	CRRC	
	White RAL 9016	F0.79	G0.68	CRRC	
<b>Thermal Emittance</b>	<b>Colour</b>	<b>Initial</b>	<b>3 years aged</b>	<b>Test Insti- tute</b>	(ASTM C 1371)
	Beige	0.91	0.87	CRRC	
	White RAL 9016	0.91	0.87	CRRC	
<b>Solar Reflectance Index</b>	<b>Colour</b>	<b>Initial</b>	<b>3 years aged</b>	<b>Test Insti- tute</b>	(ASTM E 1980)
	Beige	78	66	CRRC	
	White RAL 9016	99	82	CRRC	
CRRC tested products are listed in Cool Roof Rating Council (CRRC) product date base.					
<b>USGBC LEED Rating</b>	<b>Colour</b>	<b>Initial</b>	<b>3 years aged</b>	(ASTM E 1980)	
	RAL 9016	SRI > 82	SRI > 64		
	Beige	-	SRI > 64		
Conform on the minimum requirements of LEED V4 SS credit 5 option 1 Heat Island reduction - Roof.					

## SYSTEM INFORMATION

### System Structure

The following products must be considered for use depending on roof design:

- Sarnafil® T 66-15 D Sheet for detailing
- Sarnafil® TS 77 strips
- Sarnafil® T Metal Sheet
- Sarnafil® T Welding Cord
- Sarnabar® / S-U Bar with Sarnafast®
- Sarnafil® T Prep / Sarnafil® T Wet Task Set
- Sarnacol® T 660
- Solvent T 660
- Sarnafil® T Clean

Wide range of accessories is available e.g. prefabricated parts, roof drains, scuppers, walkway pads and decor profiles.

### Compatibility

Sarnafil® TS 77-15 may be installed on all thermal insulations and levelling layers suitable for roofing. No additional separation layer is required.

Sarnafil® TS 77-15 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.

## APPLICATION INFORMATION

### Ambient Air Temperature

-20 °C min. / +60 °C max.

### Substrate Temperature

-30 °C min. / +60 °C max.

## 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 : Sarnamatic 681, 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. Sarnafil® TS 77-15 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

Strictly follow installation procedures as defined in method statements, application manuals and working instructions which must always be adjusted to the actual site conditions.

#### 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-Linear fastening (Sarnabar®)

Unroll the Sarnafil® TS 77-15 membrane, overlap by 80 mm, weld immediately and fix to the substructure by means of the Sarnabar® fasteners. The preferred type of fastening will be advised by Sika. The spacing of the fasteners is in accordance with the project specific Sika calculations. The perimeter piece ends must be secured with the Sarnabar® Load Distribution Plate. For protection fasten a piece of Sarnafil® TS 77-15 under bar end and plate. Leave a 10 mm clearance between bar ends. Do not fasten in hole nearest bar end. Cover the bar ends with a piece of Sarnafil® TS 77-15 and weld. After installation the Sarnabar® must immediately be made watertight with a Sarnafil® TS 77-15 cover strip. At upstands and at all penetrations, the Sarnafil® TS 77-15 membrane must be secured with a Sarnabar®. The 4 mm diameter S-Welding Cord protects the Sarnafil® TS 77-15 roof covering against tearing and peeling off by wind uplift.

#### Fixing method-Spot fastening (Sarnafast®)

Sarnafil® TS 77-15 must always be installed at right angles to the deck direction. Sarnafil® TS 77-15 is fixed by means of the Sarnafast® fasteners and barbed washers/tubes along the marked line, 35 mm from the edge of the membrane. Sarnafil® TS 77-15 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 Sarnafil® TS 77-15 membrane must be secured with a Sarnabar®.

The 4 mm diameter S-Welding Cord protects the Sarnafil® TS 77-15 roof covering against tearing and peeling off by wind uplift.

#### Hot welding overlap seams

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. The effective width of welded overlaps by hot-air must be a minimum 20 mm.

#### Testing overlap seams

The seams must be mechanically tested with screw driver (rounded edges) to ensure the integrity / completion of the weld. Any imperfections must be rectified by hot air welding.

## FURTHER DOCUMENTS

Installation

- Application Manual

## LIMITATIONS

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

- Ensure Sarnafil® TS 77-15 is prevented from direct contact with incompatible materials (refer to compatibility section).
- Sarnafil® TS 77-15 must be installed by loose laying and without stretching or installing under tension.
- The use of Sarnafil® TS 77-15 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.

## 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.

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#### Product Data Sheet

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## 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

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 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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