

Ultra High Performance Tensile Strength, UV Resistance & Fire Flame Resistance Waterproofing Sheet Membrane for Reinforced Concrete Roof Slab System, Hot-Air Weld-able Seamless Membrane

Products

Roof Seal TPO (thickness: 1.5, 1.8 & 2.0 mm) is a Polyester reinforced, multi layer's, synthetic roof waterproofing sheet membrane based on premium-quality flexible polyolefin's (TPO) containing ultraviolet light stabilizers, flame retardant and an inlay of glass non-woven according to EN 13956.

Roof Seal TPO is a hot air weld able roof membrane formulated for direct exposure and designed to use in all global climatic conditions. **Roof Seal TPO** is produced with an inlay of glass non-woven for dimensional stability and a polyester reinforcement for high strength. **Roof Seal TPO** is provided for mechanically attached roof systems.

Roof Seal TPO has no built-in stress at the time of production and has a fully encapsulated carrier with no risk to delimitation or water-wicking. The dimensional stability of **Roof Seal TPO** is excellent.

What's the TPO Membrane

Thermoplastic Polyolefin (**TPO**) is a single-ply UV reflective **roofing membrane** made from polypropylenes and ethylene-propylene rubber polymerized together. It is typically installed in a fully adhered or mechanically attached system, allowing the white **membrane** to remain exposed throughout the life of the **roof**.

How Long Does TPO Last

TPO compounds have changed in recent years, so it is impossible to say **how long** current roofs will **last**, but a general estimate puts a **TPO** roof between 15 and 20 years. This is due in part to the fact that the thickness or top layer of the material is laminated.

Is TPO Good for Roofing

TPO eases cooling costs due to UV resistance and reduces carbon emissions as well. The amazing thing about environmental impact with **TPO**, though, is the fact that it not only meets but far exceeds the EPA Energy Star requirements and is highly rated by the Cool Roof Rating Council.



Roof Seal TPO 20P, 2.00mm thick for Expose Roof Slab

Ultraviolet Resistance:

Not reflection to eye and no yellowing after 2500 hours.

- ❖ Adhesion is always good on substrates concrete surfacing.
- ❖ Excellent of chemical resistance, Good on hygienic roof slab surfacing.
- ❖ Adhesion promoting primers between old with new concrete.
- ❖ Non-toxic, the **Roof Seal TPO** waterproofing sheet membrane on health, All reinforced concrete roof surfaces

The **Roof Seal TPO [Model Type: P]** thickness & Polyester Fiber Mesh Reinforced, multi layers, Synthetic roof waterproofing sheet membrane

Model Type	Reinforced Structural	Thickness	Width	Roll Length	Color
Roof Seal TPO 15P	TPO + Polyester Fiber	1.5mm [±0.1]	2.05/m	15 or 20/m	White or Gray
Roof Seal TPO 18P	TPO + Polyester Fiber	1.8mm [±0.1]	2.05/m	15 or 20/m	White or Gray
Roof Seal TPO 20P	TPO + Polyester Fiber	2.0mm [±0.1]	2.05/m	15 or 20/m	White or Gray

The **Roof Seal TPO [Model Type: H]** thickness & roof waterproofing sheet membrane

Model Type	Reinforced Structural	Thickness	Width	Roll Length	Color
Roof Seal TPO 15H	TPO Homogeneous	1.5mm [±0.1]	2.05/m	15 or 20/m	White or Gray
Roof Seal TPO 18H	TPO Homogeneous	1.8mm [±0.1]	2.05/m	15 or 20/m	White or Gray
Roof Seal TPO 20H	TPO Homogeneous	2.0mm [±0.1]	2.05/m	15 or 20/m	White or Gray

The **Roof Seal TPO [Model Type: L]** thickness & Fabric Backing, multi layers, Synthetic roof waterproofing sheet membrane

Model Type	Reinforced Structural	Thickness	Width	Roll Length	Color
Roof Seal TPO 15L	TPO + Fabric Backing	1.5mm [±0.1]	2.05/m	15 or 20/m	White or Gray
Roof Seal TPO 18L	TPO + Fabric Backing	1.8mm [±0.1]	2.05/m	15 or 20/m	White or Gray
Roof Seal TPO 20L	TPO + Fabric Backing	2.0mm [±0.1]	2.05/m	15 or 20/m	White or Gray

Packaging: All 3 ranges type of Roof Seal TPO is standard rolls are wrap individually in foil

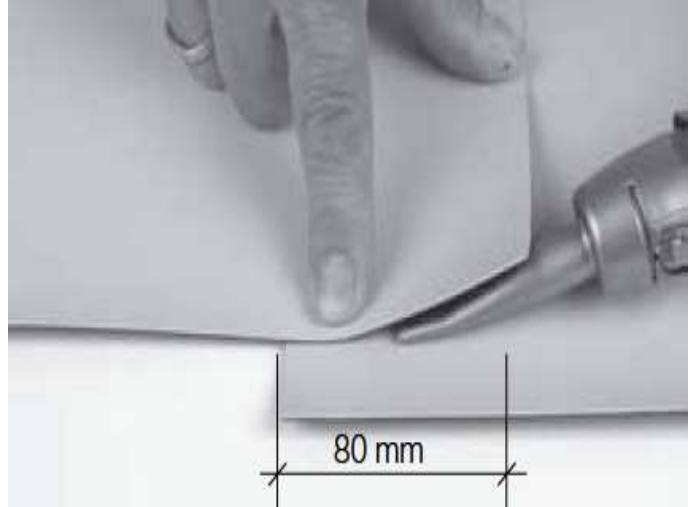


3 Ranges of Roof Seal TPO, [Model: L – Fabric Backing], [Model: H – Homogenous] & [Model: P – Multi Layer with Polyester Fiber Mesh Reinforced]

Photos of Method & Installation



Applied of Epoxy Primer and Adhesive



Method of Overlap for Roof Seal TPO



Welded Machine Laying Installation Overlap



Method of Installation for Downpipe Hole



Method of Installation for Side Skirting



Method of Installation for Side Skirting



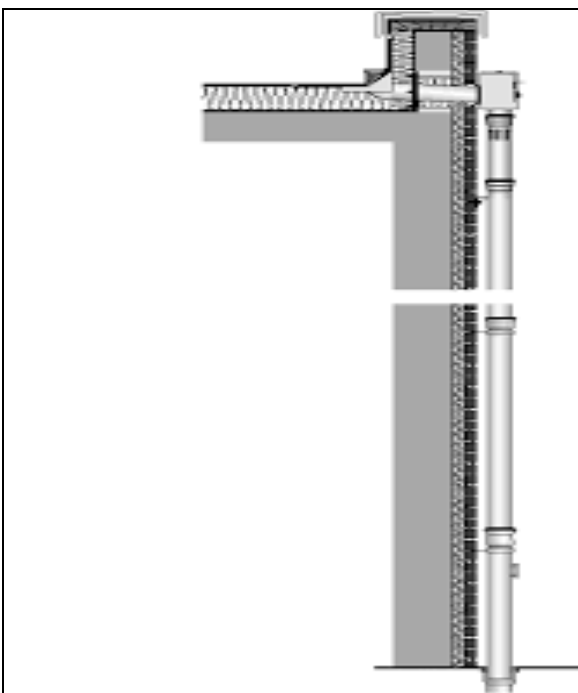
If Require of Roof Slab Expansion Joint Installation, the Recommended of Profile System



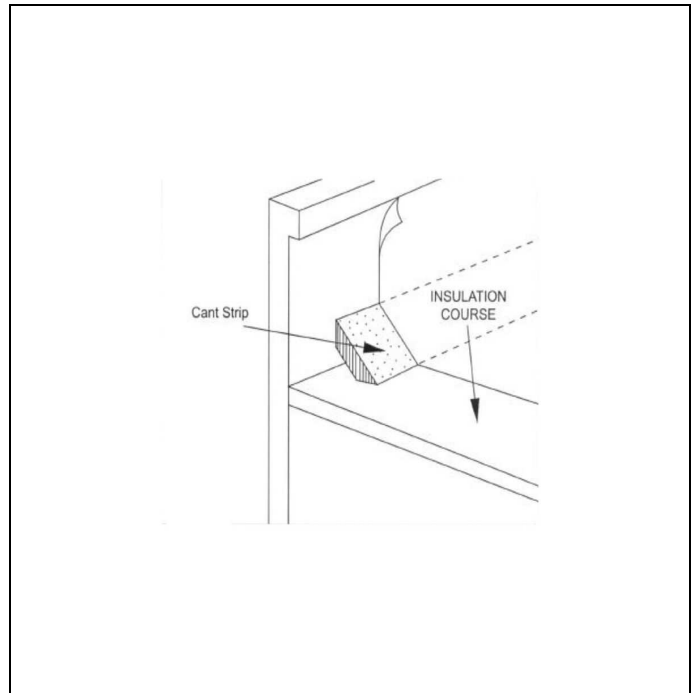
Install of Roof Seal TPO for Roof Downpipe



TPO Downpipe Profiles



Scupper Drain Details



Angel Filler Installation

Mechanical Performance of Properties
Roof Seal TPO 15 or 18 or 20

Product Declaration	EN 13956	
Effective Thickness	1.50 mm (±0.10) Roof Seal TPO 15 1.80 mm (±0.10) Roof Seal TPO 18 2.00 mm (±0.10) Roof Seal TPO 20	EN 1849-2
Weight Mass Per Unit Area	1.65 kg/m ² (±0.20) Roof Seal TPO 15 1.85 kg/m ² (±0.20) Roof Seal TPO 18 2.00 kg/m ² (±0.20) Roof Seal TPO 20	EN 1849-2
Visible Defects	Pass	EN 1850-2
Length	20 m (-0%/+5%)	EN 1848-2
Width	2 m (-0.5%/+1%)	EN 1848-2
Straightness	≤ 30 mm	EN 1848-2
Flatness	≤ 10 mm	EN 1848-2
Water Tightness	Pass	EN 1928
External Fire Performance Part 1-4	B _{ROOF} (t1) < 20°	ENV 1187 EN 13501-5
Reaction to Fire	Class E	EN ISO 11925-2, classification to EN 13501-1
Joint Peel Resistance	≥ 300 N/50 mm	EN 12316-2
Joint Shear Resistance	≥ 500 N/50 mm	EN 12317-2
Water Vapour Transmission Properties	μ = 150'000	EN 1931
Tensile Strength Longitudinal (md) ¹⁾ Transversal (cmd) ²⁾	≥ 1000 N/50 mm ≥ 900 N/50 mm	EN 12311-2
Elongation Longitudinal (md) ¹⁾ Transversal (cmd) ²⁾	≥ 13% ≥ 13%	EN12311-2
Resistance to Impact Hard Substrate Soft Substrate	≥ 700 mm ≥ 900mm	EN 12691
Resistance to Static Load Hard Substrate Soft Substrate	≥ 20 kg ≥ 20 kg	EN 12730
Tear Strength Longitudinal (md) ¹⁾ Transversal (cmd) ²⁾	≥ 300 N ≥ 300 N	EN 12310-2
Dimension Stability Longitudinal (md) ¹⁾ Transversal (cmd) ²⁾	≤ 0.2 % ≤ 0.1 %	EN 1107-2
Foldability at Low Temperature	≤ -35°C	EN 495-5
UV Exposure	Pass (> 5000h / grade 0)	EN 1297
Exposure to Bitumen ³⁾	Pass	EN 1548

¹⁾md = machine direction

²⁾cmd = cross machine direction

³⁾Roof Seal TPO is compatible to old bitumen

Method of Preparation & Application

- Step 01 **New Concrete Roof Slab & Existing Concrete Roof Slab** must cured at least 28 days and have with minimum Compressive Strength of 5,000 psi [35 Mpa]. Those cement slurry, plaster droppings, etc. must be remove, the surface of concrete free of oil, grease, and other loose particles and contamination's. Vacuum all dust and clean with water.
- Step 02 Apply layer of **Epo Bond Primer** by roller or spray, usually varies from 0.30-0.50/kg/m2 and allow drying for 12 hours.
- Note: Mix **Epo Bond Primer** with low speed drill and paddle for approximately 2 minutes. Insure a thorough mix. Never mix the material more than thirty (30) minutes. Do not apply Epoxy when ambient or temperatures are below 50 °F
- Step 03 If the roof floor slab surfaces is un-even or void or holes, using the epoxy patch mortar, made it even and flat.

Method Installation Procedure:

According to the valid installation instructions of manufacturer for **Roof Seal TPO** types system for mechanically fastened roofs.

Fixing Method, linear fastening TPO Rod Bars:

Unroll the **Roof Seal TPO** membrane, overlap by 80 mm, weld immediately and fix to the substructure by means of TPO Rod Bar. The type of fastening will be advised by **LaMaCo** Company.

The spacing of the fasteners is in accordance with the project specific calculations made by **LaMaCo** Company. The perimeter piece ends must be secured with the **Roof Seal TPO** Load Distribution Plate.

For protection fasten a piece of **Roof Seal TPO** 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 **Roof Seal TPO** and weld.

After installation the TPO Rod Bar must immediately be made watertight with a **Roof Seal TPO** cover strip. At up stands and at all penetrations, the **Roof Seal TPO** membrane must be secured with a TPO Rod Bar.

The TPO T Welding Cord protects the **Roof Seal TPO** roof covering against tearing and peeling off by wind uplift.

Fixing Method, spot fastening (Epo Patch or Epo Putty): **Roof Seal TPO** must always be installed at right angles to the deck direction.

Roof Seal TPO is fixed by means of the Epo Patch or Epo Putty with fasteners and barbed washers along the marked line, 35 mm from the edge of the membrane. **Roof Seal TPO** is overlapped by 120 mm.

Welding Method:

Before welding the seams are prepared with **Roof Seal TPO**. Overlap eams are welded by electric hot air welding equipment, such as manual hot air welding machines and pressure rollers or automatic hot air welding machines with controlled hot air temperature.

Recommended of Equipment:

Leister Triac PID for manual welding plus for automatic 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 situation prior to welding. The effective width of welded overlaps by hot air should be minimum 50 mm. The seams must be mechanically tested with screw driver to ensure the integrity /completion of the weld. Any imperfections must be rectified by hot air welding.

**Notes on
Installation Limits**

Installation works to be carried out only by **Roof Seal TPO**
Registered Contractors for roofing.

Temperature limits for the installation of the membrane:
Substrate temperature: -30 °C min. / +60 °C max.
Ambient temperature: -20 °C min. / +60 °C max.

Installation of some ancillary products, e.g. contact adhesives / cleaners is limited to temperatures above +5 °C. Please observe information given by Product Data Sheets. Special measures may be compulsory for installation below +5 °C ambient temperature due to safety requirements in accordance with national regulations.

The General Term & Conditions

All recommendations for use of our product, whether given by us in writing, verbally, or to be implied from the results of tests carried out by us are based on the current state of our knowledge. Notwithstanding any such recommendations the Buyer shall remain responsible for satisfying himself that the products as supplied by us are suitable for this intended process or purpose. Since we cannot control the application, use or processing of the products, we cannot accept responsibility therefore. The Buyer shall ensure that the intended use of the products will not infringe any third party's intellectual property rights. We warrant that our products are free from defects in accordance with and subject to our general conditions of supply.

The above mentioned details Specified key data are individually checked throughout, guarantee, and included in the certificates of Analysis (CoAs). & Typical key data are spot checked, the value are typical for the product and are indicated for information only. The values are not guaranteed or included in the CoAs.

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