



Auckland International Airport Transport Hub

ROOFING PVC VERSUS TPO

BUILDING TRUST



DON'T RISK YOUR GOOD REPUTATION ON A MEMBRANE WITH A BAD ONE

AS THE MOST TRUSTED SINGLE-PLY THERMOPLASTIC MEMBRANE MANUFACTURER IN THE WORLD, SIKA IS DEDICATED TO EDUCATING ITS CURRENT AND POTENTIAL CUSTOMERS ABOUT THE DIFFERENCES BETWEEN PVC AND TPO SYSTEMS. WHEN CHOOSING BETWEEN SARNAFIL AND TPO, MAKE THE LOGICAL DECISION; CHOOSE THE PROVEN MEMBRANE THAT WILL BEST PROTECT YOUR INVESTMENT.

Over the past 20 years, TPO has grown to become one of the most commonly used low-slope, single-ply roof membranes thanks in large part to its low price point. What you might not know is that most, if not all, TPO membrane manufacturers are on their second, third or even fourth generation of membrane formulations due to performance inconsistencies and many are still having issues.

HISTORY

Sarnafil: Sika pioneered the use of PVC for roofing applications back in 1962, developing the world's first thermoplastic reinforced membrane. Since that time, the company has manufactured more than 15 billion square feet of membrane. Over the past 30+ years, more than 5 billion square feet of Sarnafil have been installed and are performing on roofs all over the world.

TPO: Since being introduced in the 1990s, billions of square feet of TPO have been installed on roofs across America. While that fact may seem impressive on the surface, it's no secret that TPO products have gone through numerous formulation changes, particularly with regard to their flame-retardant, UV and heat stabilizer packages. Those changes continue today while manufacturers struggle to find a consistent formula to provide a long-term, durable membrane.

UV RESISTANCE

Sarnafil: It's no surprise that a roofing membrane's formulation is the cornerstone for its performance and long-term durability. Manufactured in America, Sarnafil PVC membranes are produced utilizing time-proven raw materials and are formulated to ensure long-term weatherability and protection from harsh UV rays.

TPO: The latest formulations of TPO membranes have relatively few years of "real world" exposure, so their resistance to heat, UV and general weathering is still unknown. Early generations of TPO membranes had many performance issues, which led to changes in their formulations. One of the most common problems was TPO failing in hot climates or when exposed to increased UV.

FIRE PERFORMANCE

Sarnafil: While fire safety codes have improved, losses from fire are still an ongoing concern. One of the most vulnerable parts of a building exposed to fire is its roof. Sarnafil membranes are made using PVC resin. Since PVC is inherently fire resistant, Sarnafil

membranes will self-extinguish when the source of the flame is removed.

TPO: Though some TPO manufacturers advertise a more fire resistant sheet at an upcharge, many TPO membranes will typically continue to burn even if the source of the flame is removed.

SEAM WELDING

Sarnafil: When welding seams on user-friendly Sarnafil membranes, there is a distinct "bleed out" to help ensure a proper weld. You also have the ability to probe the seam immediately, making quality control that much easier. This is crucial as seams can be a trouble area for water penetration.

TPO: There is a lack of visual "bleed out" during proper seam welding on TPO membranes, and there is a wait time before being able to probe the seam. As a result, it can be tricky to produce a good weld with TPO. Often times, you end up with cold welds or a membrane that isn't watertight, which could eventually lead to leaks.

RECYCLING

Sarnafil: Sika is the only commercial roofing company in the U.S. to receive certification from UL Environment relating to the recycled content of its roofing membrane products. Sika's membranes contain an average of 10 percent recycled vinyl content from pre- and post-consumer sources.

TPO: At this time, there does not appear to be any formal systematic program for recycling TPO at the end of its service life, specifically back into new membrane.



AGED-MEMBRANE WELDING

Sarnafil: Sarnafil sheets are repairable throughout their serviceable life. New Sarnafil membrane can be hot-air welded to aged material to create a “like-new” watertight seam.

TPO: TPO membranes are known to be very difficult to re-weld and/or patch. This can limit repair and rooftop modification as the material ages.

DIMENSIONAL STABILITY

Sarnafil: Sarnafil’s PVC membrane is dimensionally stable and offers two attachment methods. The Sarnafil Fastened system uses membrane with an internal polyester scrim to provide tear resistance. The Sarnafil Adhered system uses a fiberglass-reinforced membrane that delivers exceptional dimensional stability. Thanks to a low coefficient of thermal expansion and contraction, the service life of the roof is extended.

TPO: TPO membranes only offer a scrim reinforcement, making adhered roofs a challenge. The membranes have a higher coefficient of expansion and contraction than PVC membranes. This often results in roofs that are loose and baggy when installed, and over time they may shrink to the point of creating stress at fixation points.

WATER ABSORPTION

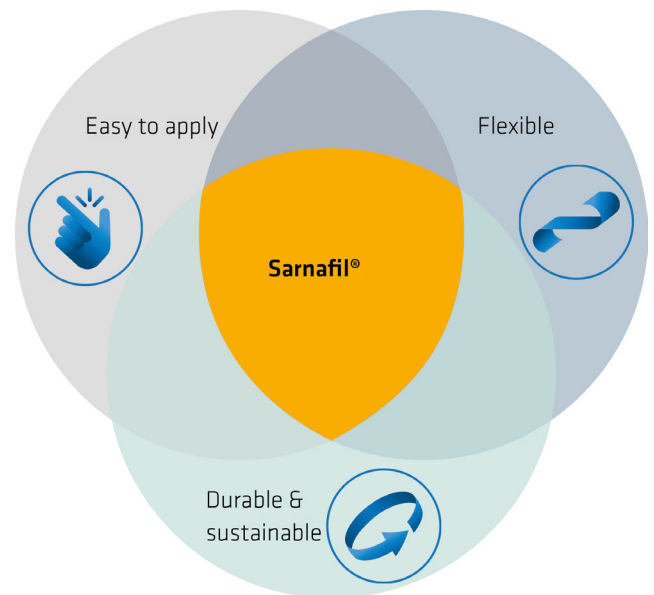
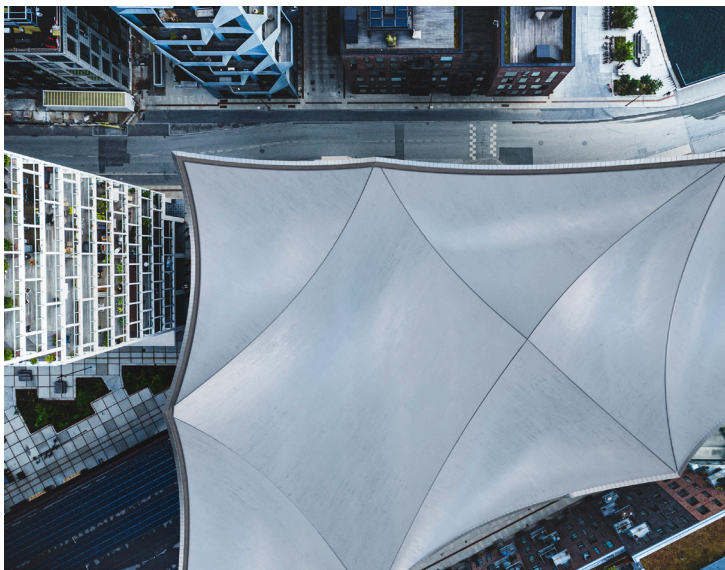
Sarnafil: Water absorption can cause membrane delamination and reduce the long-term performance of the membrane. Sarnafil membranes absorb less water than many competitive TPOs due to its anti-wick scrim and extrusion coating process, and with Sarnafil there is no cut edge sealing required.

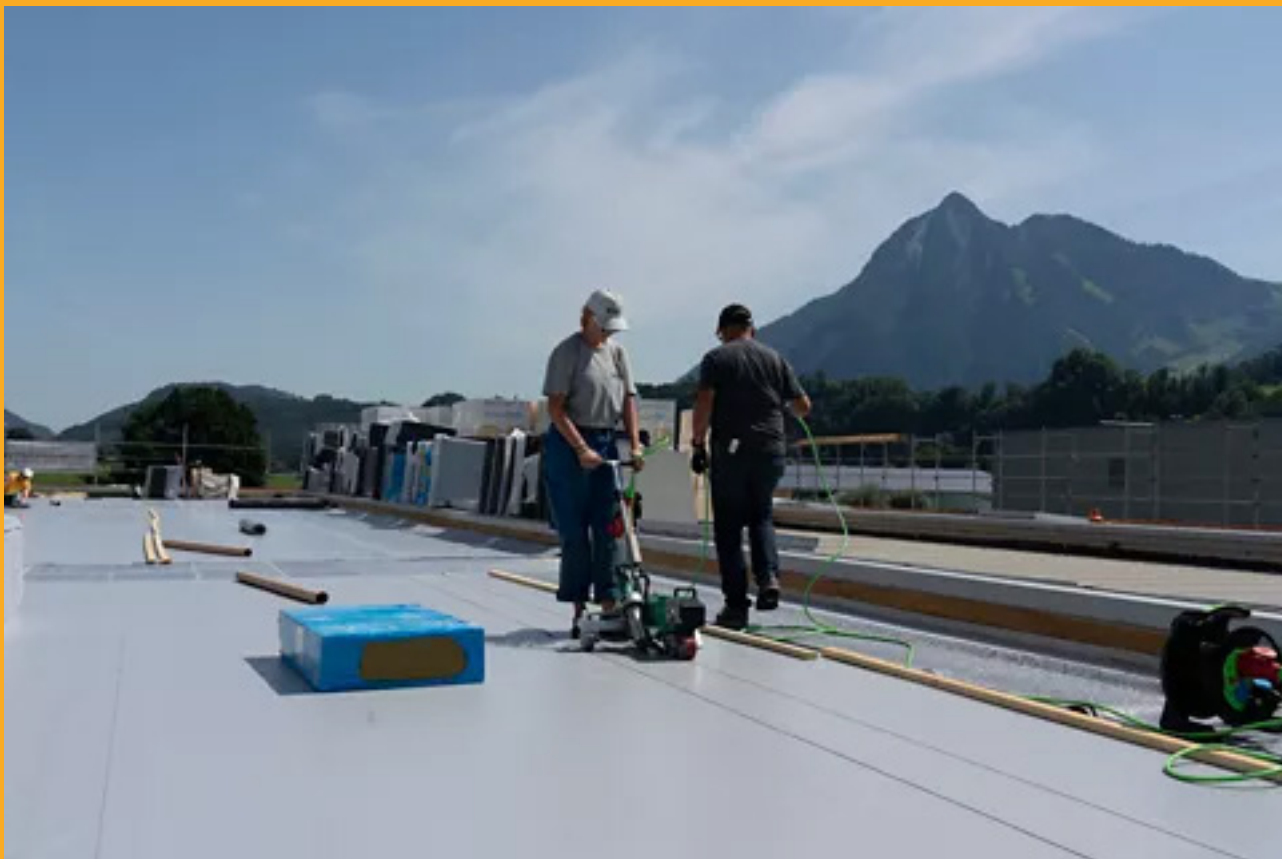
TPO: In contrast, you need to seal all cut edges (including factory edges) as TPO membranes typically use an uncoated or untreated scrim and therefore have the potential to wick water along the reinforcement. Water absorption also can affect the quality of seam welds.

FLEXIBILITY

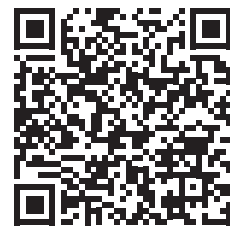
Sarnafil: The beauty of the Sarnafil membrane is that it’s incredibly easy to work with. Flexible sheets make handling and detailing much easier, even in cold weather.

TPO: TPO membranes are noticeably stiffer, making sheet handling and detailing more difficult, especially in cold weather. There could also be problems resulting from sheet wrinkling caused by automatic welder “tracking” issues.





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Sika is a specialty chemicals company with a globally leading position in the development and production of systems and products for bonding, sealing, damping, reinforcing, and protection in the building sector and industrial manufacturing. Sika has subsidiaries around the world and produces innovative technologies for customers worldwide. In doing so, it plays a crucial role in enabling the transformation of the construction and transportation sector toward greater environmental compatibility.



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