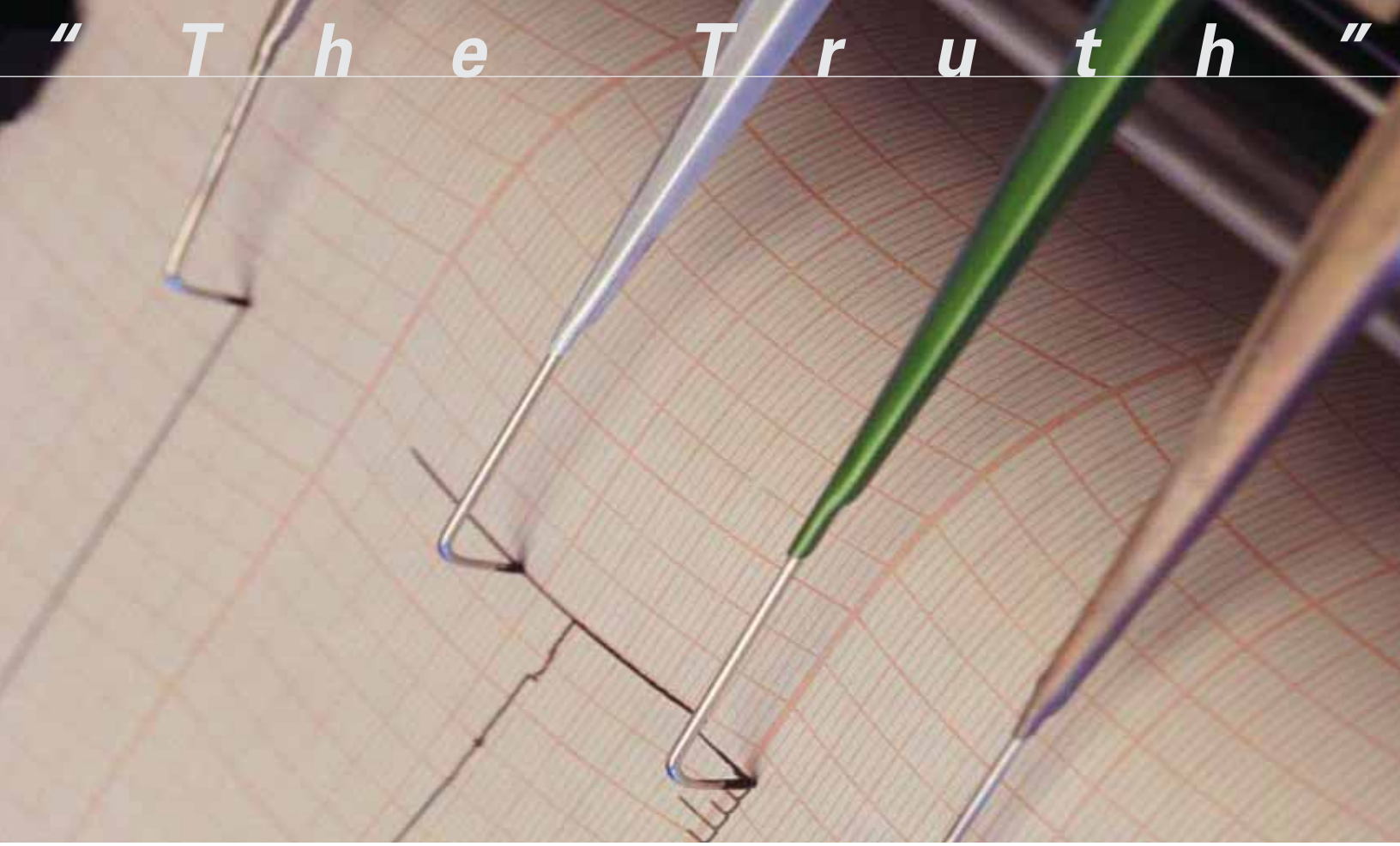
# “ T h e  T r u t h ”

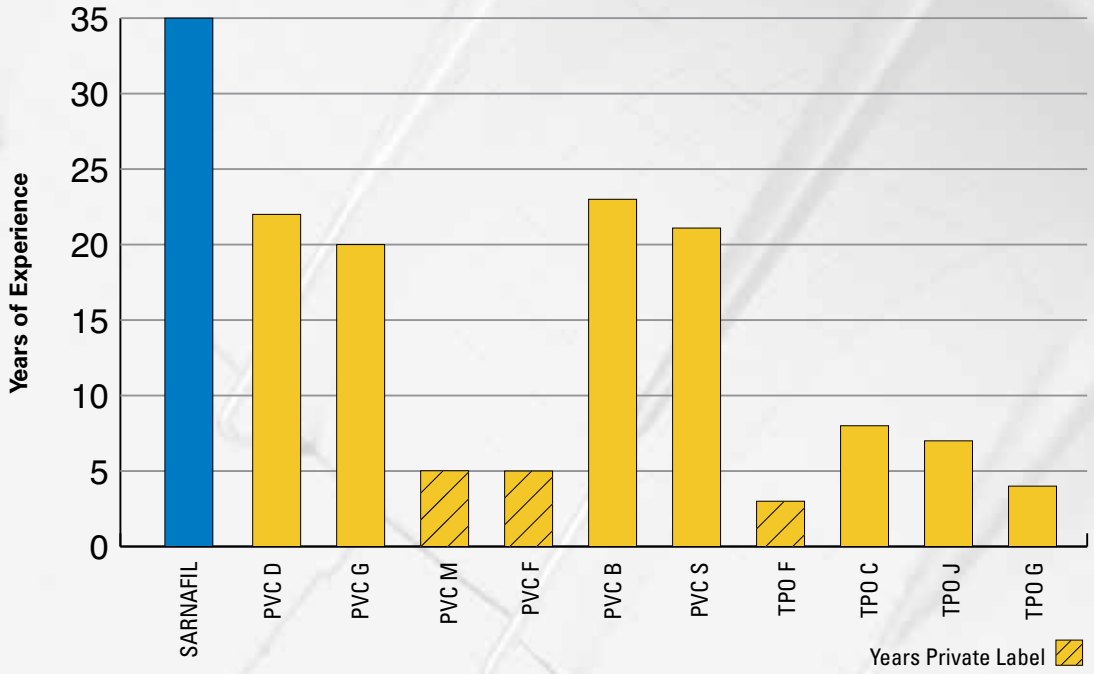


## *Straight Talk About Thermoplastic Single-Ply Roof Membrane*



Sarnafil®

**Graph 1**
**Thermoplastic Experience**




Source: 1999 NRCA Commercial Low Slope Roofing Material Guide
Note: TPO F not listed in NRCA Roofing Materials Guide

# *Straight Talk About Thermoplastic Membrane*

If you're a roofing consumer or a design professional, you need to select properly formulated, long-lasting, heat-welded thermoplastic roofing systems. To do that, you need information. Straight talk. The truth!

And the truth is what you'll get from Sika Sarnafil. We're the world's leading producer of heat-welded roofing materials, offering unique experience in thermoplastic membrane technology. In this report, we'll focus on the features, benefits, and engineering and performance requirements critical to long-lasting roofing systems. We'll present real-world performance criteria for heat-welded roofing material specifications. Our goal is to illuminate material properties, raise performance standards, and ultimately promote superior quality among all thermoplastic roof materials.

Heat-welded thermoplastic roofing membranes are the fastest-growing segment of the low-slope industrial/commercial roofing market. Most membranes of this type marketed in the United States are formulated with either PVC (polyvinyl chloride) or TPO (thermoplastic polyolefin).

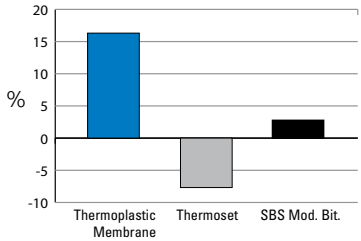
**Don't Be Fooled!**

• Over the past several years, many TPO roofing products produced in this country have been evolving in formulation and ingredients. These membranes should be regarded as experimental, since there's no long-term performance data to forecast their life expectancy.

• Many EPDM and built-up roof manufacturing companies are entering the heat-welded roofing business despite having little or no firsthand experience with thermoplastic membrane technology. As a result, experience levels vary considerably among suppliers (**Graph 1**).

Beware of unproven products and inexperienced suppliers! Sika Sarnafil roofing and waterproofing systems have proven themselves over decades—Demonstrating watertight performance capability 35 years after installation. Our heat-welded roofing membranes have the longest performance history of all thermoplastic membranes. In this report, we'll differentiate among various roofing membranes according to specific performance characteristics.

**Graph 2**
Percent Growth
of Square Feet Sold

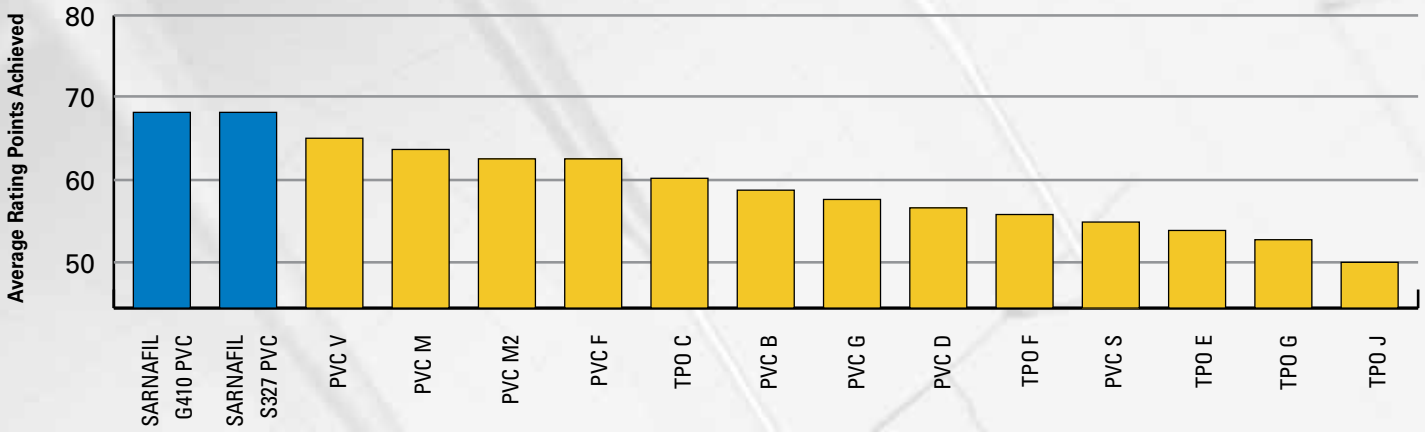



Source: November 2000 SPRI Statistics

Sarnafil®

# Sarnafil Membranes Rated #1 & #2

**Graph 3**
**Product Rating**




Source: Comparative Testing and Rating of Fifteen Thermoplastic Single-Ply Roof Membranes By C.G. Cash

Carl Cash is a principal and vice president at Simpson, Gumpertz & Heger, Inc. - a consulting engineering firm with offices in Arlington, MA and San Francisco, CA.

## *Sarnafil PVC Is Best*

In 1999, an in-depth analysis compared the physical properties and performance capabilities of most commercially available thermoplastic roofing products, including fifteen PVC and TPO thermoplastic membranes. The testing and performance rating was conducted by the consulting engineers at Simpson, Gumpertz & Heger, Inc. (SGH). Their analysis identifies specific testing methodologies and comparative performance results.

The SGH analysis is referenced on the following pages. For comparative purposes, Sarnafil membranes have been specifically labeled.

SGH test results confirmed that the performance rating of Sika Sarnafil roofing membranes was superior to the other commercially available heat-welded products.

**The SGH analysis and findings were presented at the 1999 International Symposium for Durability of Building Materials sponsored by the Canadian National Research Council. This research was also published in the October, 1999 and May, 2000 issues of RCI Interface, the journal of the Roof Consultants Institute.**

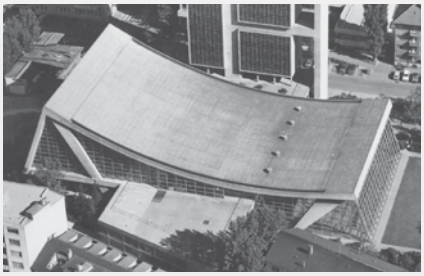
At the conclusion of his extensive analysis on the performance properties of thermoplastic membranes, Carl G. Cash made the following observations:

- "Most PVC membrane samples rate significantly higher than their TPO counterparts."
- "For example, the top-rated six samples are all PVC's. Four of the six lowest rated samples are TPO's."
- "All of the five TPO samples have an average rating at or below the average for this group of fifteen samples."
- **"This suggests that the best choice for a durable membrane is PVC when PVC and TPO membranes are considered."**
- "The only rational procedure for selecting a roofing system is its past performance on the roof in the same climate as the new project."
- "When faced with selecting a membrane system without the support of a history of excellent performance, an unbiased rating system may be useful." (**Graph 3**)

Sarnafil®

# *The Facts About Membrane Formulation*

Earlier, we urged caution when considering products that continually "evolve." Frequent formulation changes often indicate that the manufacturer is searching for the right mix of components. When evaluating roofing membranes for a specification, insist that the manufacturers tell you how long their current membrane formulation has been in use. Specify proven performance and require a consistent material formulation.



Biel Swimming Pool, Biel Switzerland
1964 Installation - Roof Performed for 34 Years

Remember, the formulation of a roofing membrane is the foundation for its long-term performance and durability.

Vinyl polymeric roofing membranes are typically formulated with a combination of PVC resins, stabilizers, plasticizers, fire retardants, and pigments. Sarnafil blends these components to produce consistently high-quality roofing products that stand alone in providing customer satisfaction and protection.

Almost 40 years ago, the polymer chemists at Sarnafil engineered what are now recognized as the longest-performing thermoplastic roofing and waterproofing membranes in the world. The basic formulation that has protected buildings for all these years is still used today.

**Thumbs Up for Sika Sarnafil**

Sika Sarnafil recently conducted a survey of owners of the oldest Sarnafil roofs in the U.S.

**Survey Results:**

- The main reasons for choosing a Sarnafil roof: performance history and life-cycle cost.
- 93.3% of respondents said they were very satisfied with their Sarnafil roofs (now 15-25 years old).
- 83.3% of respondents said they would recommend Sarnafil to another building owner.
- Building owners confirmed that Sarnafil has one of the lowest annual maintenance costs in the roofing industry.

Sarnafil®

# Sarnafil Performs Under UV Exposure

**Table 1**
**QUV Exposures of PVC Membrane**

| Specimen | 2000 Hours | 4000 Hours | 5000 Hours |
|---|---|---|---|
| A | D3 | D3 | C4 |
| B | - | - | C4 |
| C | - | - | C4 |
| D | C4 D3 | C4 | C4 |
| E | C4 | C4 | C4 |
| F | - | C4 | C4 |
| G | - | C4 | C4 |
| S327 | - | - | - |
| G410 | - | - | - |
| J | C4 D3 | C4 | C4 |
| K | C3 D3 | C2 D2 | C3 D2 |
| L | C4 D3 | C3 D3 | C4 |

ASTM Round-Robin Testing

Legend

C1 Cracking/crazing severe (7x magnification)

C2 Cracking/crazing moderate (7x magnification)

C3 Cracking/crazing slight (7x magnification)

C4 Cracking/crazing very slight (7x magnification)

D1 Discoloring severe

D2 Discoloring moderate

D3 Discoloring slight

- Sarnafil membranes exhibited no crazing, cracking or discoloration

## *Long-Term Performance: Formulation Is the Key*

The formulation of a thermoplastic roofing membrane directly affects the material's long-term performance. The durability and historical performance of thermoplastic membranes depend on the ingredients in these weatherproofing materials. Independent evaluations have repeatedly confirmed the soundness of Sika Sarnafil's advanced engineering and membrane formulation.

In the early 1990's, while re-evaluating the ASTM standard for PVC roofing, the subcommittee on thermoplastic membranes conducted round-robin testing of twelve PVC roofing membranes. This was done to determine the specific type of UV bulb that should be utilized when analyzing the performance of roofing membranes under simulated, accelerated weathering conditions (QUV).

**Table 1** (above) documents the results of this analysis. Of the thermoplastic PVC materials, only Sika Sarnafil's S327 and G410 roofing membranes showed no signs of discoloration, crazing, or cracking after 5,000 hours of QUV "B" bulb exposure. This test predicts that various thermoplastic membrane formulations will behave differently under ultraviolet exposure. Not surprisingly, weathering performance characteristics also reveal a wide range of capabilities.

Long-term exposure to natural UV radiation has also proven Sarnafil to be extremely durable and reliable.

Charrette Corporation, Woburn, MA
1975 Installation - Roof Still Performing

Sarnafil®

**Table 2**
**Observations Upon UV-Condensing Humidity Exposure - Changes**

| Product: | SARNAFIL G410 | SARNAFIL S327 | PVC V | PVC M | PVC M2 | PVC F | TPO C | PVC B | PVC G | TPO E | PVC D | TPO F | PVC S | TPO G | TPO J |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Exposure | | | | | | | | | | NT | | NT | | | |
| Hours | | | | | | | | | | | | | | | |
| 1,000 | GL | GL | SLYE | YE | YE | SLYE | SLYE | YE | YE | | SLYE | | GL | SLYE | YE |
| 2,000 | | | | SC | | C | SLC | | | | | | SLYE | | |
| 3,000 | | | GL | | | | C | | | | | | | SC | |
| 4,000 | | | ST | | | | | | ST | | | | | | |
| 5,000 | | | | | | | ST | | | | SLST | | | | SLC |
| 6,000 | | SLST | | SLST | | | | SLST | | | | | | P | |
| 7,000 | SLST | | | | | | | | | | | | | | |
| 8,000 | | | SH | | | | | ST | P | | | | | B | |
| 9,000 | | | | | | | | SH | | | SH | | | | |
| 10,000 | | SC | | | | | | | | | | | | | |

LEGEND:
B = BROWN EDGES
C = CHALKING
GL = GLOSS LOSS
P = PINKING
SC = SCRIM PRONOUNCED
SH = SHRINKAGE
SL = SLIGHT
ST = STIFFER
YE = YELLOWING
NT = NOT TESTED

Source: Comparative Testing and Rating of Fifteen Thermoplastic Single-Ply Roof Membranes By C.G. Cash

# *Test Proves Sarnafil Resists Property Changes*

It has been almost a decade since ASTM first conducted their round-robin, accelerated weathering test under QUV "B" bulb exposure. The findings of SGH's recently completed thermoplastic membrane analysis concur with ASTM's earlier research. Data from the SGH study helps to specifically identify and highlight certain performance variations that exist between competing products that would otherwise be less apparent.

Upon UV exposure, the Sarnafil membranes exhibit no signs of physical property changes until 6,000 or 7,000 hours. The gloss loss (GL) reported is believed to be in the acrylic coating, not the polymer. All other membranes tested displayed some yellowing, which is a sign of polymer degradation. The Sarnafil membranes did not yellow even after 10,000 hours—an important consideration for determining the long-term reflectivity of a roof membrane. Reflective roof membranes help alleviate urban heat islands, improve air quality, and reduce cooling costs.

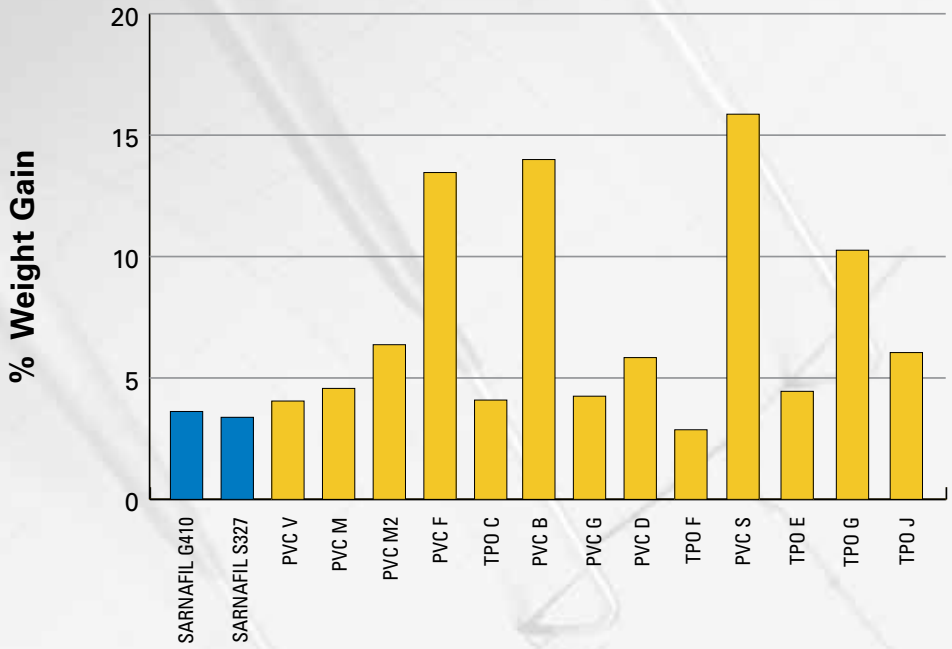
**Table 2** (above) illustrates that most other PVC and TPO membranes exhibit some yellowing, chalking, scrim pronouncing, or stiffening before 5,000 hours of exposure. PVC V and PVC G products exhibited stiffening at 4,000 hours and would not pass the ASTM D4434 minimum standard for PVC roofing membranes.

**The Bottom Line:**
When subjected to accelerated weathering, Sarnafil's basic and time-tested formulation continues to demonstrate superior results.

Sarnafil®

# Superior Resistance to Water Absorption

**Graph 4**
**Water Absorption**
ASTM D-570




Source: Comparative Testing and Rating of Fifteen Thermoplastic Single-Ply Roof Membranes By C.G. Cash

## *Watch Out for Water Absorption*

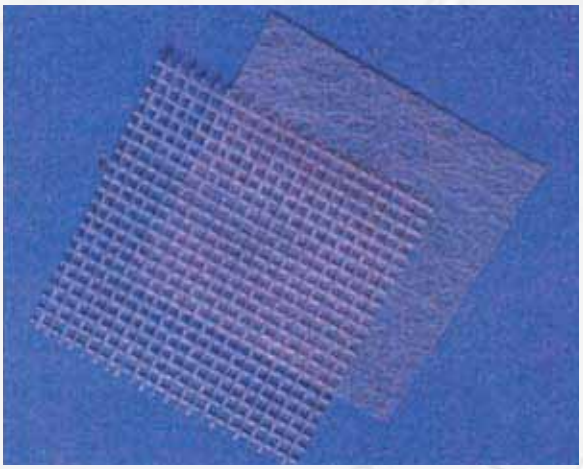
Another defining performance property of a thermoplastic roofing membrane is water resistance. Long-term performance can be diminished when a membrane tends to absorb rather than repel water. Water absorption can impede heat welding and routine repairs, and prevent future modifications for rooftop equipment.

Excessive water absorption, common in certain thermoplastic membranes, is caused by absorptive internal plasticizer mixes, and/or a laminated membrane construction. Certain polymeric plasticizer-based membranes and several laminated roof membranes display the greatest increase in weight after water immersion—an obvious sign that the roofing membrane has absorbed some water. Be skeptical about roofing products that tend to absorb the elements they're supposed to repel!

As you can see from **Graph 4** (above), the combination of Sika Sarnafil's formulation and production method deliver superior resistance to water absorption. Although every roof should promote drainage, Sarnafil membranes resist the absorption of standing water. Unlike several alternative systems, including other single-plies, the occurrence of standing water does not affect the coverage of a Sika Sarnafil warranty.

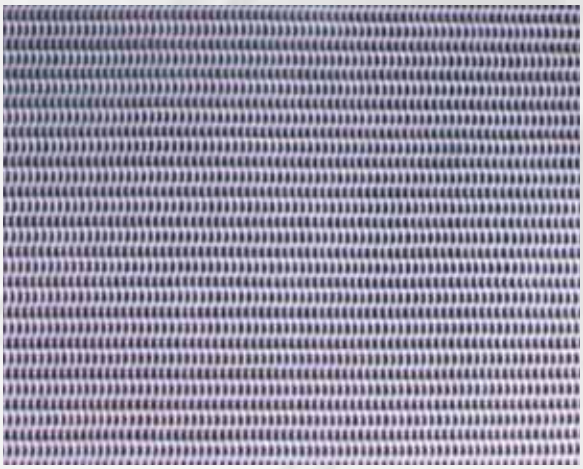
Sarnafil®

**Figure 1**



***Polyester and Fiberglass Reinforcements***

**Figure 2**



***A Close Weave Reinforcement Can Prevent Polymer Bonding - Allowing for Potential Water-Wicking and Membrane Delamination***

# *Reinforcing the Truth About Reinforcement*

The function of reinforcement within a roofing material has been both misrepresented and misunderstood. Reinforcement provides long-term dimensional stability to all roofing membranes. Built-up roofing and single-ply membranes require some type of reinforcement to control expansion and contraction.

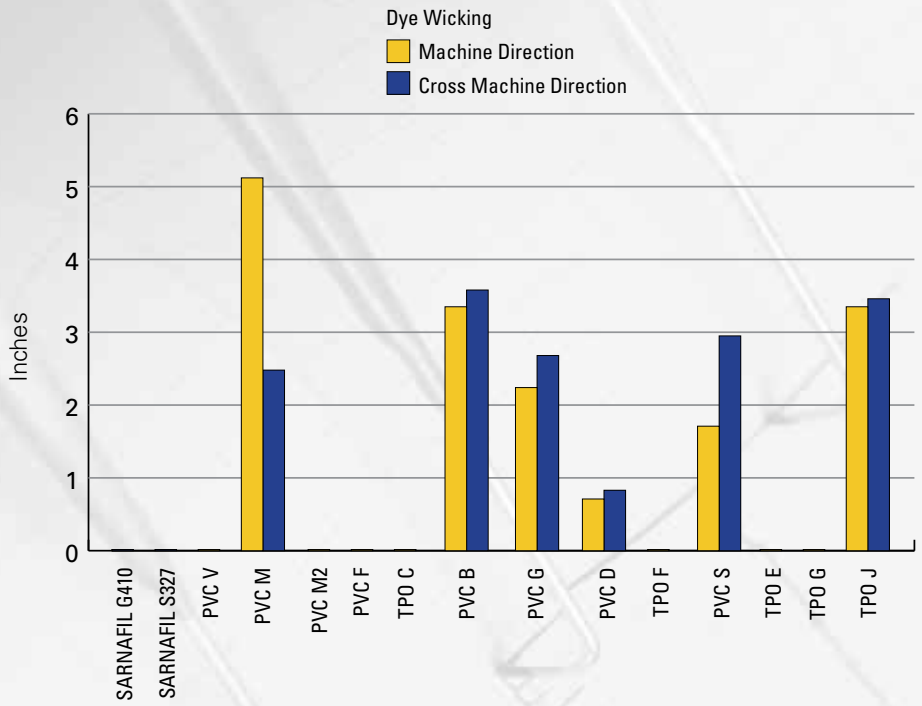
Two types of reinforcement (**see Figure 1**) are utilized within single-ply membranes: nonwoven fiberglass mat and woven polyester scrim. Over 35 years ago, Sika Sarnafil engineers decided to reinforce all roofing membranes manufactured by the company.

The type of reinforcement utilized within a particular membrane was chosen to provide the specific physical properties needed to meet the design requirements of different roof system applications.

The enhanced dimensional stability of a thermoplastic membrane is an important design parameter for adhered and ballasted systems. Sika Sarnafil's G membranes are fiberglass-reinforced to deliver long-term dimensional stability. Sarnafil G410 membranes are the most dimensionally stable single-ply roofing membranes in the world (ASTM D 1004).

Mechanically fastened roofing systems are intermittently affixed to a building's structure. The three-dimensional forces endured by a membrane at the point of mechanical attachment requires strength and resistance to oscillating stress. In light of this, scrim reinforcement is desirable for its enhanced tensile and tear strength. Sarnafil's S327 membrane, designed for use in mechanically fastened roof applications, is reinforced with a woven polyester scrim.

**Graph 5**
**Dye Wicking**




Source: Comparative Testing and Rating of Fifteen Thermoplastic Single-Ply Roof Membranes By C.G. Cash

## *Reinforcement: No Substitute for Polymer Thickness*

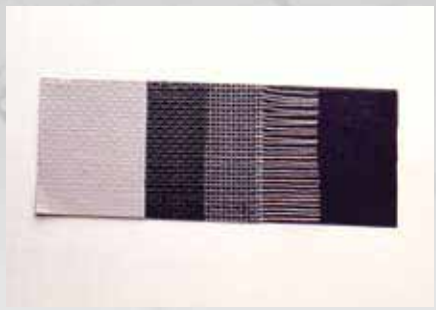
Typically, temporary fabric structures and tarpaulins are manufactured with a high-strength, closely woven reinforcement (see **Figure 2**) that provides the base for the application of a light polymeric coating or thin film laminates applied to either side.

Waterproofing *polymer* protects a building from the intrusion of inclement weather; the reinforcement does not. A strong reinforcement is no substitute for polymer thickness!

A tightly woven reinforcement can reduce the area available for polymeric-coating contact adhesion, which is needed in the spaces around and within the scrim. Scrim reinforcements that are proportionately excessive can also diminish the bonding strength within and between laminated layers of certain membranes. This allows water another opportunity to intrude and damage a roof.

Designers and building owners have learned that water-wicking along the reinforcement can prevent future repairs, result in a delaminating membrane, and lead to premature roof failure. A dye-wicking test illustrates the ability for water to be absorbed and travel along the reinforcement (**Graph 5** above). The Sarnafil G410 and S327 membranes absorbed no dye, which is a testimony to their monolithic construction.

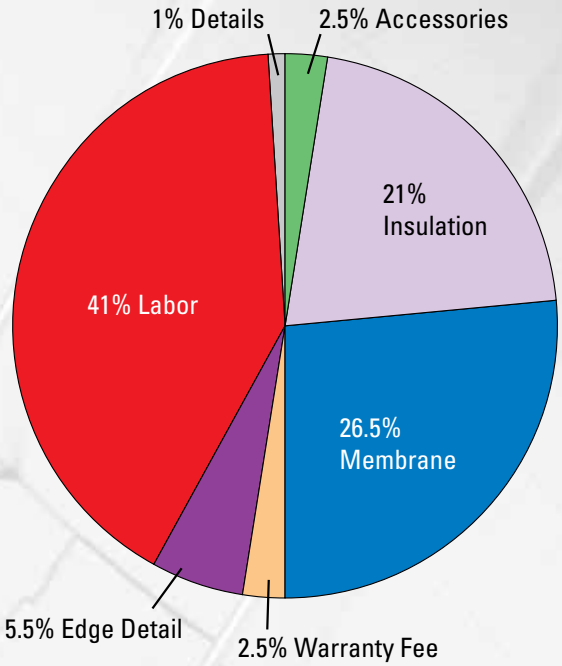
By integrating a unique coating manufacturing process with a proven material formulation and specific membrane reinforcements, Sarnafil has established a no-nonsense reputation for delivering roofing solutions that can withstand the world's harshest conditions.



***Sarnafil's Reinforcement Becomes Embedded in Polymer During a Coating Process***

Sarnafil®

**Estimated Cost Breakdown of an Installed Thermoplastic Roof**




System Description:
22 ga. Steel Deck, 1 layer of 2.7" Sarnatherm insulation, Sarnafil Membrane Mechanically Attached, clad metal edge with 5" fascia, 4 roof drains, 4 HVAC units, 8 stacks, 10 Year warranty.

## *Polymer Thickness Pays Off*

Consultative guidance is an important component of the roof purchase transaction. Roof consultants and design professionals have been omitted from the breakdown illustrated above only because their fees are rarely part of the actual roof contract. The graphic above is intended to highlight the minimal relative price impact that additional high-grade polymer has on the installed cost of a roofing system. Although not captured in the illustration, Sika Sarnafil strongly endorses knowledgeable guidance as a means to facilitate roof design and installation.

The polymer content of a thermoplastic roofing membrane represents about 75 percent of its overall production cost. When making thermoplastic membranes, the manufacturer can save money by reducing polymer thickness.

That's no benefit to roofing consumers. A reduction in polymer can be detrimental to a roofing system's long-term capability. By not carefully considering their polymer investment, uneducated buyers often consign their roofs to premature failure.

In addition to thickness, raw-material grade variations affect the durability and cost of a roof's membrane. The cost differential between low- and high-grade polymer can vary by 25% - 30%. The above chart shows the estimated cost of an installed mechanically attached thermoplastic roof. The membrane—which protects the insulation, the building, and its contents—represents only 26.5% of the entire roofing cost (19% if the expense of removing an old roof is an additional project requirement).

The SGH analysis found that, on average, Sarnafil membranes displayed more polymer thickness than the other thermoplastic membranes analyzed (**Table 3** next page).

Surprisingly, when the installed cost of a high-quality thermoplastic roofing membrane is compared to that of a lower-cost alternative, the price difference is insignificant. A few pennies per square foot are typically all that separates Sarnafil from alternative thermoplastic roofs of similar polymer thickness.

Clearly, increasing polymer thickness has little impact on the installed cost of a roof system. In fact the cheapest way to increase durability and other long-term performance properties is to demand more polymer.

Sarnafil®

**Table 3**

**Labeled vs. Measured Polymer Thickness**

| Product | Labeled Thickness (Mils) | Measured Thickness of Polymer (Mils) | Deviation of Polymer Thickness From Label (Mils) | Deviation of Polymer Thickness From Label (%) |
|---|---|---|---|---|
| SARNAFIL G410 | 48 Mils | 48 Mils | - | - |
| SARNAFIL S327 | 48 Mils | 49 Mils | + 1 Mils | 2.1 % More |
| PVC V | 50 Mils | 40 Mils | -10 Mils | 20.0 % Less |
| PVC M | 50 Mils | 44 Mils | -6 Mils | 12.0 % Less |
| PVC M2 | 40 Mils | 34 Mils | -6 Mils | 15.0 % Less |
| PVC F | 48 Mils | 43 Mils | -5 Mils | 10.4 % Less |
| TPO C | 45 Mils | 43 Mils | -2 Mils | 4.4 % Less |
| PVC B | 50 Mils | 46 Mils | -4 Mils | 8.0 % Less |
| PVC G | 48 Mils | 40 Mils | -8 Mils | 16.6 % Less |
| PVC D | 35 Mils | 28 Mils | -7 Mils | 20.0 % Less |
| TPO F | 45 Mils | 43 Mils | -2 Mils | 4.4 % Less |
| PVC S | 36 Mils | 33 Mils | -3 Mils | 8.3 % Less |
| TPO E | 45 Mils | 42 Mils | -3 Mils | 6.6 % Less |
| TPO G | 45 Mils | 46 Mils | +1 Mils | 2.2 % More |
| TPO J | 45 Mils | 31 Mils | -14 Mils | 31.1 % Less |

Source: Comparative Testing and Rating of Fifteen Thermoplastic Single-Ply Roof Membranes By C.G. Cash

## *Insist on Certified Polymer Thickness*

It's unwise to select a roofing system without first establishing a minimum polymer thickness. We urge you to be skeptical about roofing membranes specified to deliver an ambiguous "nominal" thickness. The *nominal* thickness guidelines set forth by ASTM actually encourage misleading product descriptions. These guidelines have allowed the thickness of roofing products to exhibit negative variances of 10% compared to their advertised description! Sarnafil has introduced a certified polymer thickness program to challenge the roofing industry's "laissez-faire" endorsement of *nominal* thickness nomenclature.

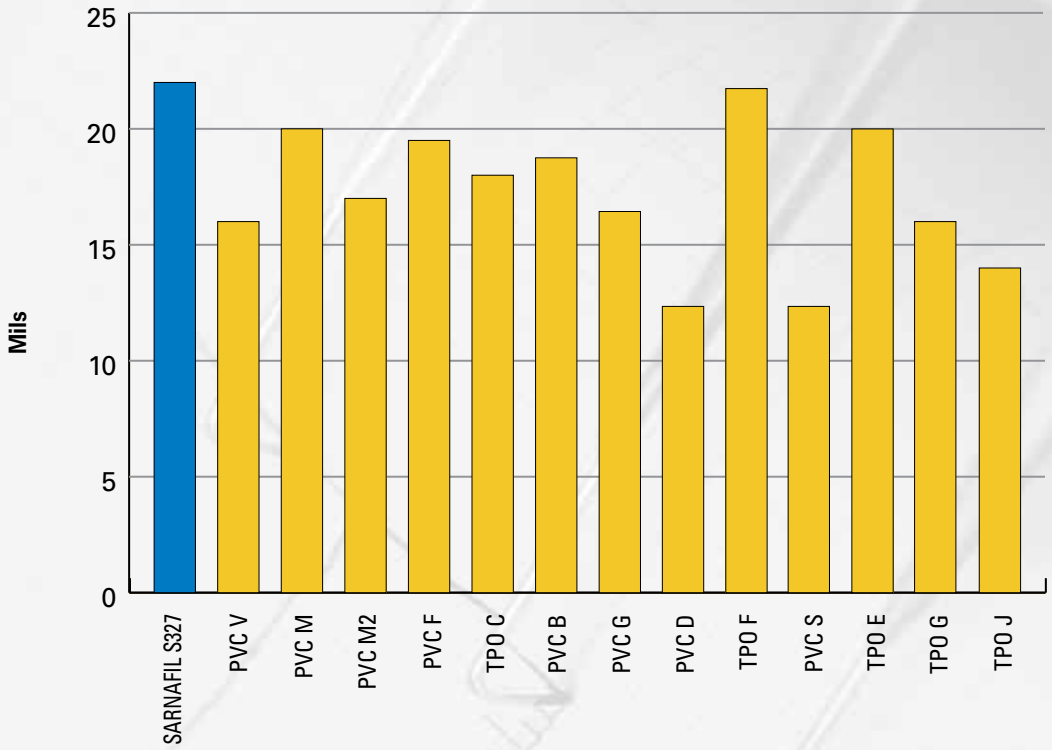
Roofing specifications should require that the consumer be provided with a certificate of polymer thickness by the manufacturer. This requirement will satisfy designers and building owners by helping to ensure that all roofing membranes under consideration are providing an absolute minimum polymer thickness.

When several brands of roofing are listed in a specification, the certified thickness requirement establishes a more uniform basis for comparison. Sika Sarnafil roofing and waterproofing membranes can be manufactured with a thickness ranging between 48 and 120 mils.


Certified Polymer Thickness Program

Sarnafil®

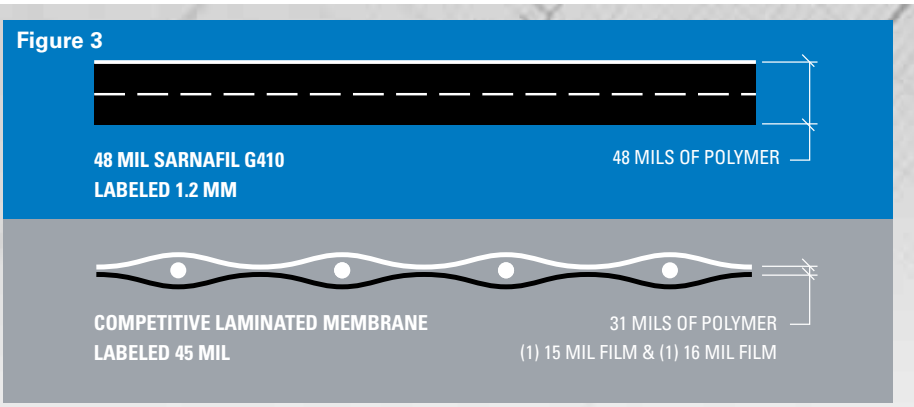
**Graph 6**
**Thickness of Polymer Above Reinforcement**




Source: Comparative Testing and Rating of Fifteen Thermoplastic Single-Ply Roof Membranes By C.G. Cash

# *The Polymer Barrier—First Line of Defense*

**Figure 3**




The amount of waterproofing polymer contained within thermoplastic roofing materials can vary significantly. In addition to polymer grade and thickness, the Cost of Goods Manufactured is lower for companies that produce roofing membranes by laminating thin films of polymer around a reinforcing layer.

A cross-section of the laminated membrane construction (**Figure 3** above) has been graphically compared to the cross-section of a Sarnafil coated membrane.

**Figure 3** identifies basic differences in membrane construction and illustrates discrepancies in polymer thickness. As shown in **Table 3** (previous page), Sarnafil membranes have been found to provide a polymer barrier that is often 10% greater than that offered by alternative thermoplastic membranes. Additional polymer above the reinforcement has proven to be a more durable and protective barrier. This barrier can optimize a roof's performance because it is directly exposed to extreme weather conditions (**Graph 6**).

**Polymer thickness also provides:**

- Superior tear resistance
- Greater tensile strength
- Enhanced durability and puncture resistance (**Table 4**)
- Improved consistency of heat-welded seams

**Table 4**

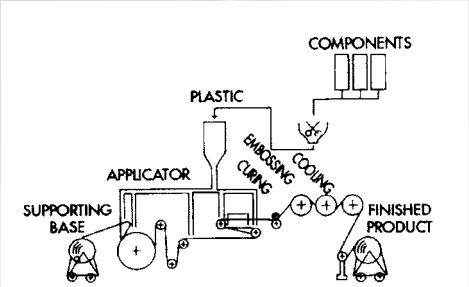
**Puncture Resistance Results**

| Type | Thickness | Height of Falling Ball 70°F |
|---|---|---|
| PVC | 32 MIL | 9.8″ |
| PVC | 45 MIL | 17.7″ |
| White TPO | 45 MIL | 15.7″ |
| Black TPO | 45 MIL | 14.2″ |
| EPDM Unreinforced | 45 MIL | 6.1″ |
| EPDM Reinforced | 55 MIL | 12.2″ |
| SARNAFIL | 48 MIL | 24.4″ |
| SARNAFIL | 60 MIL | 36.7″ |
| SARNAFIL | 72 MIL | 40.8″ |
| SARNAFIL | 80 MIL | 51.0″ |
| SARNAFIL | 96 MIL | 67.3″ |
| SARNAFIL | 120 MIL | 89.7″ |

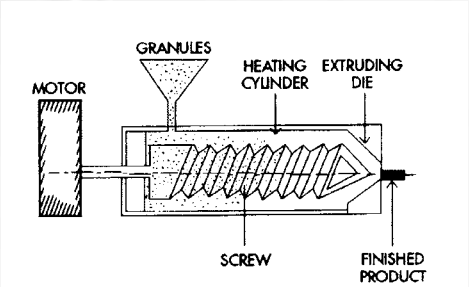
Test SIA/14

Sarnafil®

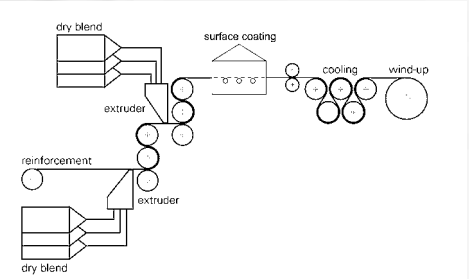
**Figure 4**



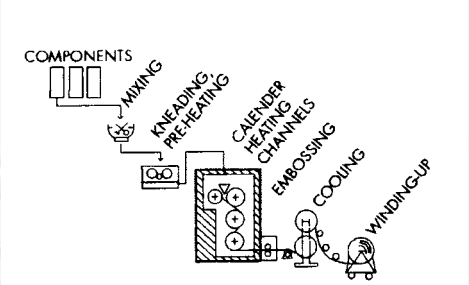

SPREAD COATING




EXTRUSION




EXTRUSION COATING




CALENDERING

## *Monolithic Membrane Makes the Best Roofing*

Single-ply membrane can be made through various manufacturing methods: spread coating, extrusion coating, or by laminating extruded or calendered films. In 1961, Sika Sarnafil developed a unique spread coating process specifically for creating roofing and waterproofing membrane. In 1991, Sika Sarnafil introduced a new state-of-the-art manufacturing process called extrusion coating. The spread coat and extrusion coating processes are recognized today as the best methods for producing monolithic, reinforced, dimensionally stable roofing membranes.

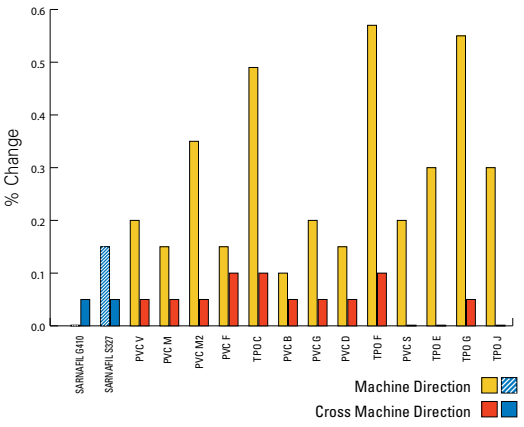
The Sika Sarnafil manufacturing processes impart a number of performance-enhancing characteristics that are unique.

• A coating process completely embeds the reinforcement and creates a monolithic membrane that can't delaminate. A monolithic membrane also inhibits water-wicking along the reinforcement, thereby eliminating the need for caulking of exposed edges—a maintenance item for the building owner.

• Less stress is built into the membrane during a coating process, eliminating the need to relax the sheet prior to seaming or attaching as is commonly required with other manufacturing methods. Sarnafil membranes exhibited exceptional dimensional stability (see **Graph 7**).

**Graph 7**

Linear Dimensional Change
ASTM D 1204




Comparative Testing and Rating of Fifteen Thermoplastic Single-Ply Roof Membranes By C.G. Cash

Sarnafil®

**NFPA Headquarters -- Quincy, MA**
**Central operations of the National Fire Protection Association are sheltered beneath a UL Class-A fire-rated roofing system manufactured by Sika Sarnafil.**

# *What You Should Know About Fire Resistance*

Polyvinyl chloride (PVC or vinyl) materials have excellent fire performance properties. PVC, in particular, will not burn once the source of heat or flame is removed.

Burning objects won't spread a fire to nearby items unless they release enough heat to ignite them. What's more, the heat has to be released quickly enough to avoid dissipation while traveling through the cold air surrounding anything not on fire. That's why the main criterion for identifying a fire hazard is widely accepted to be a material's rate of heat release during combustion. In fact, rate of heat release has been shown to be much more important than ease of ignition, smoke toxicity, or flame spread, for determining whether someone will have enough time to escape a building fire.

Full-scale fire testing with a specific focus on rate of heat release has been conducted on a variety of fixtures and materials, including upholstered furniture, mattresses, electronic cables, packaging systems, plastic display stands, and wall-lining products. In every applicable case, results show that products based on properly formulated PVC materials are invariably top-rated performers.

The inherent fire resistance of a Sarnafil membrane is evidenced by successful achievement and full compliance with roofing's most significant fire safety requirements. Sarnafil membranes enjoy certification under the strict fire code standards of more than twenty countries throughout the world.


**Vertical Fire Test**
PVC roofing membranes such as Sarnafil can self-extinguish and resist the spread of flame. In a laboratory experiment, a flame source was applied for ten seconds to the underside of SBS modified bitumen, fire retardant TPO, Sarnafil, and fire retardant EPDM. When the flame source was removed, the Sarnafil membrane extinguished the fire, while the alternative membranes continued to support combustion.

Sarnafil®


Sea World, Orlando, FL


United Center, Chicago, IL


Staples Center, Los Angeles, CA

Candler Building, New York, NY


Spirit of Ford, Dearborn, MI

## *A Touch of Color Adds a Touch of Class*

Sika Sarnafil introduced colored membranes more than 20 years ago. Today, Sika Sarnafil-colored membranes are employed to accent the architectural design features of a building. Colored membranes are also used to create logos, and roofs are becoming a significant means of advertising. At the same time colors were introduced, Sika Sarnafil also introduced a dirt resistant coating for the exposed surface to keep the roof membrane clean.

**Factory-Applied Surface Coating:**

- Helps repel dirt and airborne contaminates from the membrane's surface
- Improves reflectivity, resulting in cooling energy savings
- Eases positioning of the membrane during installation

Sika Sarnafil's EnergySmart Roof® is a white membrane that is factory-manufactured with a unique, dirt resistant coating. This coating helps to simplify the maintenance of a roof's reflectivity.

The EnergySmart Roof®

Sarnafil®


Bogenhalle Reinhard, Sachseln, Switzerland, installed in 1967.

# *Features and Benefits of Sarnafil Membrane*

**Sika Sarnafil Thermoplastic Roofing Membranes: Summary of Benefits**

- Proven, long-lasting formulation
- Reduced cooling costs with highly reflective roofing membranes
- Reflective roofs promote better air quality
- Factory-applied, dirt-resistant coating helps keep membrane clean
- Superior fire performance
- Sika Sarnafil's EnergySmart Roof® meets ENERGY STAR® guidelines for energy efficiency
- Available in custom colors for a smooth, visually appealing finish
- Hot-air welded seams are stronger than tapes or adhesives
- Exceptional tear and puncture resistance
- Low maintenance (no coatings required)
- Low life-cycle cost
- Reinforcements for specific applications and physical properties
- Various membrane thicknesses available for additional durability and puncture resistance

**We hope our straight talk has been helpful to you. For a free kit entitled "A Practical Guide to Specifying Quality Thermoplastic Roofing Membrane," contact us by phone or register online.**

**Sika Sarnafil**
A Division of Sika Corporation
100 Dan Road
Canton, MA 02021
Tel: 1-800-576-2358
Fax: 781-828-5365
www.sikacorp.com

**Sika Sarnafil**
A Business Unit of Sika Canada Inc.
6820 Davand Drive, Unit 2
Mississauga, Ontario
L5T 1J5 Canada
Tel: 1-800-268-0479
Fax: 905-670-5278
www.sika.ca

Products displaying the ENERGY STAR® Logo must meet the energy-efficiency guidelines set by the EPA. Look for the Logo on Sika Sarnafil's roofing products.

Sarnafil®

0730/5M/0608