GETTING WHAT YOU PAY FOR WITH THE SARNAFIL MEMBRANE THICKNESS GUARANTEE

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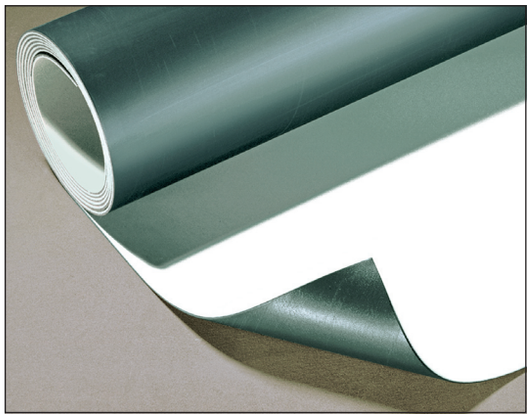
Sarnafil BUILDING TRUST Sika®

Longtime PVC Roofing System Manufacturer Sika Goes Beyond ASTM Standards, Guaranteeing That All Sarnafil-Branded Membranes Will Meet or Exceed Label Thickness Designation

All of us are familiar with the old maxim that "you get what you pay for," and most will readily vouch for that statement's fundamental truthfulness. But what of single-ply roofing membranes? Do building owners really get what they pay for under current industry standards established by the American Society for Testing Materials (ASTM)? These standards for various single-ply membranes allow a manufacturer to produce a membrane 10 percent thinner (or thicker) than its labeled thickness, meaning that a membrane labeled 60 mils could actually be 54 mils and still be in compliance.

Specifiers and building owners are generally unaware of this situation, even though it has a direct impact on product value. And, of course, it goes beyond "getting what you pay for."



Roofing membrane thickness is a key determinant to longevity, durability and weldability. Roof surfaces have to withstand challenging climatic and meteorological conditions involving moisture, temperature, and solar radiation and wind. Over time, these forces combine to age membranes, resulting in part in a loss of thickness for all products. All other factors being equal, a thicker membrane withstands these forces longer.

In addition, commercial roofs typically host HVAC and mechanical equipment which entail foot traffic for maintenance and repair. Thicker membranes stand up better to punctures and abrasion, in addition to weathering and to aging. The commercial roofing market has generally moved in the direction of thicker membranes as a result.

Other Manufacturers Falling Short

Production techniques utilized in the manufacture of single-ply membranes have advanced over the years and most major manufacturers can now produce membrane thicknesses with great precision. So why do so few companies produce single-ply membranes that actually meet the labeled thickness?

The ASTM standards do not require it, but the primary factor is presumably the price-sensitive, competitive nature of the roof manufacturing business. One independent roofing consultant has estimated that the cost to add thickness to membranes is between $.01 and $.015 per sq ft per added mil of thickness. On a nominal 60-mil membrane, the added cost for just 3 mils (5 percent of 60) would be $.05 per sq ft.[1]

In fact, independent testing of fifteen thermoplastic roof membranes in 1998 by the consulting engineering firm Simpson Gumpertz & Heger showed that only the Sarnafil-branded adhered and mechanically-attached membranes and one other membrane from another manufacturer actually met the labeled thickness, with all the other membranes failing to measure up (see accompanying table, Labeled vs Measured Thickness - 1998).

Labeled vs. Measured Membrane Thickness
Simpson Gumpertz & Heger, Inc., 1998

Product	Labeled Thickness	Measured Thickness	Deviation of Thickness from Label	Deviation of Thickness from Label (%)
Sarnafil S327	**48 Mils**	**48 Mils**	**–**	**–**
Sarnafil G410	**48 Mils**	**49 Mils**	**+ 1 Mils**	**2.1 % More**
PVC 3	50 Mils	40 Mils	- 10 Mils	20.0 % Less
PVC 4	50 Mils	44 Mils	- 6 Mils	12.0 % Less
PVC 5	40 Mils	34 Mils	- 6 Mils	15.0 % Less
PVC 6	48 Mils	43 Mils	- 5 Mils	10.4 % Less
TPO 1	45 Mils	43 Mils	- 2 Mils	4.4 % Less
PVC 7	50 Mils	46 Mils	- 4 Mils	8.0 % Less
PVC 8	48 Mils	40 Mils	- 8 Mils	16.6 % Less
PVC 9	35 Mils	28 Mils	- 7 Mils	20.0 % Less
TPO 2	45 Mils	43 Mils	- 2 Mils	4.4 % Less
PVC 10	36 Mils	33 Mils	- 3 Mils	8.3 % Less
TPO 3	45 Mils	42 Mils	- 3 Mils	6.6 % Less
TPO 4	45 Mils	46 Mils	+ 1 Mils	2.2 % More
TPO 5	45 Mils	31 Mils	- 14 Mils	31.1 % Less

Testing conducted internally in 2013 by Sika and involving most of these very same single-ply membranes (see accompanying graph next page, Labeled vs Measured Thickness - 2013) showed that nothing had changed – again, only the two Sarnafil membranes and one other membrane reached the labeled thickness.

These test results indicate that virtually all manufacturers other than Sika produce membranes at or near the bottom of the 10 percent ASTM tolerance in thickness.

In bid situations, competitive membranes may be labeled 48 mil or 60 mil, but in reality only one is likely to actually meet the mil thickness – Sarnafil. Were architects or consultants to specify a minimum thickness rather than a nominal thickness in competitive bid situations, all manufacturers would be forced to supply the same minimum thickness.

Track record should be the number one factor when determining the quality of a product. Bids requiring a minimum thickness, however, would be consistent with respect to thickness and this would allow for a more equal evaluation of the proposals.

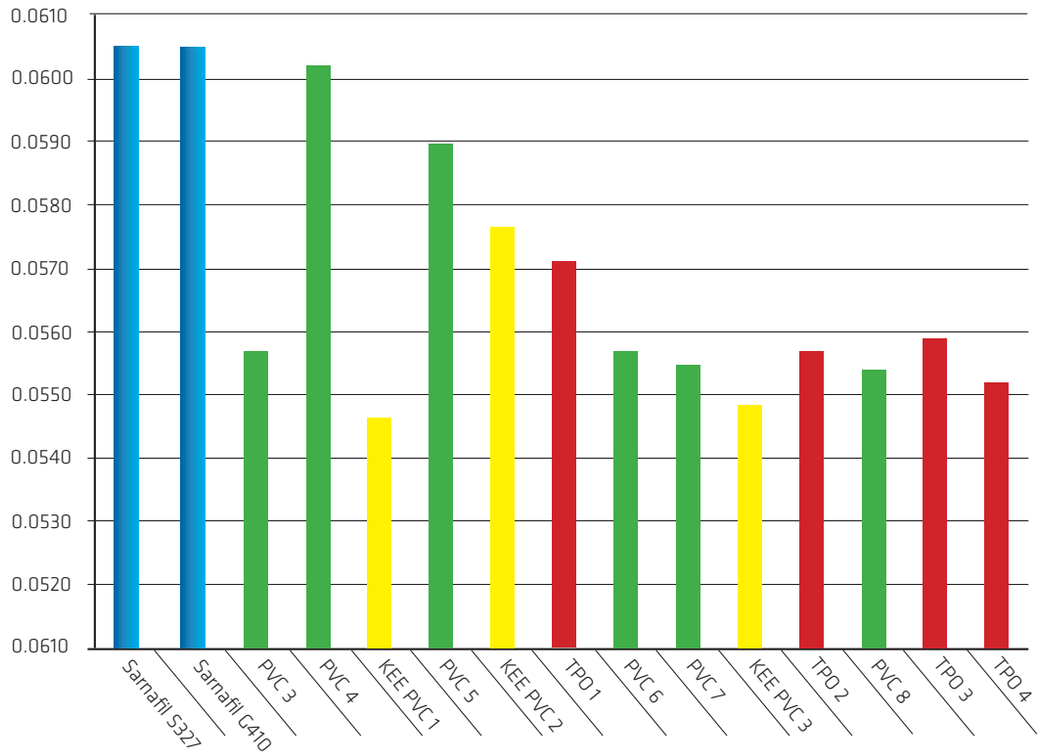
Single Ply Welding

A properly executed hot air welded seam is critical to the long-term performance of thermoplastic membranes. Research conducted by Sika and published in the Journal of ASTM International examined the welding properties of five different thermoplastics, consisting of three PVCs and

1 Jeff Evans, RRC, "Intolerable Tolerances," Interface magazine, December 2010.

two TPOs[2]. This study examined the weldability of these materials after immersion in water and exposure to severe soiling. The research showed, among other things, that the telegraphing of scrim through the surface of single ply materials is a detriment to achieving high weld strengths. The thinner the membrane, the more pronounced this effect is likely to be.

Labeled vs. Measured Membrane Thickness - All Membranes Labeled 60 Mil
Sika Corporation • Roofing, 2013



The Thickness Guarantee Program

Sika guarantees that the thickness of any Sarnafil membrane will meet or exceed the thickness indicated on the package label. If, at the time of installation, the membrane measures less than the labeled thickness per ASTM D-751, Sika will remunerate the building owner $0.05 per square foot for the amount of material measuring less than the labeled thickness to a maximum of $5,000.

Sarnafil roofing and waterproofing membranes are manufactured with a thickness ranging from 48 mils to 96 mils. Applicable products include all Sarnafil-branded membranes in all widths, including flashing membrane. This would encompass all thicknesses of Sarnafil S327 and G410 roofing membranes as well as the company's G476 waterproofing membrane. The membrane thickness in mil units is included in the descriptor on the membrane roll labels for all Sarnafil-brand membranes.

All thickness measurements for bareback membrane are made as specified in ASTM D-751, the

2 Stanley Graveline, Sika Corporation, "Welding of Thermoplastic Roofing Membranes Subjected to Different Conditioning Procedures," Journal of ASTM International, Vol. 4, No. 8, 2007.

test method specified in ASTM PVC standard D4434. The gauge used to measure thickness is a deadweight type equipped with a dial graduated to read directly to 0.001 inches. Measurements are made at a minimum of five different areas across the *width* of the sheet, exclusive of the area adjacent to either selvage and within one-tenth the width of the membrane or within 100 inches (2.5 m) of either end. The measurements are then averaged and reported as the average thickness.

For feltback membranes, lamination of felt to the back of the membrane interferes with the measurement of the membrane thickness after manufacture. Verification of membrane thickness will be made based on manufacturing quality assurance data.

Longevity Table
Sika Sarnafil Roof Systems

29+ Years	Robbins Hall University of California, Davis
28+ Years	Copps Coliseum Hamilton, Ontario, Canada
45+ Years	Hydro Power Station Personico, Switzerland
29+ Years	North Thurston High School Lacey, Washington
31+ Years	Winthrop Elementary School Hamilton, Massachusetts
24+ Years	Romanow Container Westwood, Massachusetts
24+ Years	One Capital Center Boise, Idaho
28+ Years	Filtration Group Joliet, Illinois
36+ Years	First United Methodist Church Laconia, New Hampshire

Robbins Hall

First United Methodist Church

Sarnafil Track Record

Proven performance over time is the best indicator of roofing system quality. Sika's focus on producing the highest quality Sarnafil membranes has resulted in a track record second to none.

Longevity under real-world conditions has occurred around the world, in all types of climates, and led the British Board of Agrément to issue a certificate in 2008 indicating that the durability of Sarnafil membranes, when used in accordance with the relevant BBA certificates, should have a life in excess of 35 years. The accompanying Sika Sarnafil Longevity Table lists just a sampling of Sarnafil roofing system installations still performing today after many decades of service.

We'll Measure Up, or We'll Pay Up

Sika has a no-nonsense reputation for delivering roofing solutions that withstand the world's harshest conditions. The Thickness Guarantee Program for Sarnafil membranes ensures that architects and roofing consultants can specify with confidence, and that building owners will truly "get what they pay for." Roofing contractors can continue to look to Sika as a trusted partner in the installation of quality roofing systems.

This program also heightens both the awareness and the importance of fair product comparisons. A minimum membrane thickness requirement establishes a more uniform basis for comparison when multiple manufacturers compete in a bid situation, and all specified products would be required to meet the same membrane thickness criteria.

Sika has put their reputation on the line and money on the table as part of this program. Sarnafil membranes will meet or exceed advertised thicknesses. Sika Corporation guarantees it.

ADDITIONAL INFORMATION

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