

TALKING POINTS



PVC Roofing Systems



Mule-Hide PVC Roofing Systems offer better solutions for projects requiring high chemical resistance such as restaurants, laboratories, factories, etc.

- Mule-Hide PVC membranes are polyester reinforced and have twice the puncture resistance and tear strength of fiberglass-reinforced PVC membranes.
 - PVC has an affinity for polyester and molecularly bonds to polyester (mechanical and molecular bonds – wetting of fibers). PVC repels polypropylene fleece and does not molecularly bond to polypropylene (mechanical bond only– no wetting of fibers).
- System warranties are available up to 20 years on commercial projects and material warranties are available up to 10 years on residential projects.
- Mule-Hide PVC membranes are naturally fire resistant.
- PVC membranes have an established history and have been used in roofing since the '70s.
- Mule-Hide PVC membrane production uses half the fossil fuels of other thermoplastic production.
- Mule-Hide PVC membranes are recyclable during production and at the end of the roof's life cycle.
- Mule-Hide skirted PVC Edge Metal accessories increase contractor productivity (refer to Edge Metal & Accessories Toolbox Talking Points).

Different PVC Membranes Available

PVC Membrane					
<ul style="list-style-type: none"> • Polyester reinforced • Three standard colors: White, Cool Tan, Cool Gray 	50 (nom) mil	60 (nom) mil	80 (nom) mil	*60 (min) mil (white)	
		40.5" x 100'	40.5" x 100'	40.5" x 75'	5' x 100'
		5' x 100'	5' x 100'	5' x 75'	10' x 100'
		81" x 100'	81" x 100'	81" x 75'	
		10' x 100'	10' x 100'	10' x 75'	

*60 (minimum) mil in White only, for use when architectural specification dictates minimum thickness versus nominal thickness

PVC Fleece Back			
<ul style="list-style-type: none"> • Polyester reinforced • Polyester fleece • Three standard colors: White, Cool Tan, Cool Gray 	60 (nom) mil (115 total mil)	80 (nom) mil (135 total mil)	
		5' x 100'	5' x 75'
		10' x 100'	10' x 75'



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PVC KEE HP			
<ul style="list-style-type: none"> • Polyester reinforced • Three standard colors: White, Cool Tan, Cool Gray 	50 (nom) mil	60 (nom) mil	80 (nom) mil
	5' x 100'	5' x 100'	5' x 75'
	10' x 100'	10' x 100'	10' x 75'

The benefits of Mule-Hide PVC previously mentioned hold true for Mule-Hide ketone ethylene ester (KEE) HP. Mule-Hide PVC KEE HP membranes are manufactured with DuPont™ Elvaloy® KEE HP polymer, which requires less plasticizers to make the membrane permanently flexible. The KEE HP polymer has a higher molecular weight that helps to preserve the membrane's physical attributes. Additionally, KEE HP provides the following advantages over standard PVC and standard KEE:

- Reduces plasticizer migration to maintain membrane integrity
- Increases weldability by 51% over standard KEE
- Improved low temperature flexibility (-51°F vs. -40°F)
- Provides greater chemical resistance for projects such as restaurants, laboratories, factories, etc.
- Improves aesthetics by resisting dirt pick up

PVC KEE HP Fleece Back			
<ul style="list-style-type: none"> • Polyester reinforced • Polyester fleece • Color: White 	45 (nom) mil <i>(105 total mil)</i>	60 (nom) mil <i>(115 total mil)</i>	80 (nom) mil <i>(135 total mil)</i>
	10' x 100'	10' x 100'	10' x 75'

Mule-Hide PVC Accessories

ALL Mule-Hide PVC flashing accessories are KEE HP based. Refer to the PVC brochure for a complete listing of the accessories available for use in a Mule-Hide PVC Roofing System.

Mule-Hide PVC Adhesives, Sealants & Cleaners

- HydroBond™ Water-Based PVC Bonding Adhesive - designed to bond PVC membranes to a clean, dry horizontal surface as a wet lay-in adhesive with slopes up to 2:12. HydroBond is used with both smooth-backed and fleece-backed PVC membranes. Since HydroBond is a wet lay-in adhesive, it is applied to the substrate only. This is a product and labor saving distinction over a traditional contact adhesive where both membrane and substrate require adhesive. No time is wasted waiting for the contact adhesive to dry, and the wet lay-in application doubles the installed coverage per pail.
- HydroBond is the only adhesive necessary for a PVC install, as the HydroBond adhesive can also be used as a contact adhesive for vertical applications, such as flashings. This eliminates the need for different adhesives for the horizontal and vertical surfaces on the roof.
- Low VOC PVC Bonding Adhesive – a solvent-based contact adhesive that allows bonding of PVC membranes to various porous and non-porous substrates, which meets all current VOC regulations for California and the OTC.
- PVC Membrane Cleaner - a clear liquid solvent used to clean PVC membranes that have been exposed to the weather prior to heat welding.
- PVC Cut Edge Sealant - a free flowing polymeric material designed for use at the cut edge (exposed scrim) of Mule-Hide PVC reinforced membrane seams after the membrane has been welded to itself or to Mule-Hide PVC-coated Edge Metal.



PVC Roofing Systems Audience Advantages

Why **CONTRACTORS** value Mule-Hide PVC Roofing Systems:

- Easier to work with compared to other thermoplastic membranes (Easier to weld and more flexible than TPO)
- Mule-Hide PVC Roofing Systems offer better solutions for projects requiring high chemical resistance such as restaurants, laboratories, factories, etc.
- Use of HydroBond Water-Based PVC Bonding Adhesive as single-side, wet lay-in, application greatly improves productivity and narrows the cost gap between PVC and TPO in fully adhered applications
- HydroBond is used as a contact adhesive where needed - eliminating the need for additional adhesives in the system
- Mule-Hide KEE HP membranes offer better weather resistance, UV protection and more flexibility over competitors' KEE membranes
- Available in standard PVC, KEE HP, and fleece back options, providing a breadth of viable solutions for nearly any roofing situation
- Available in 3 standard colors: White, Cool Gray and Cool Tan
- Available in 4 standard thicknesses: 50 mil, 60 mil, 80 mil and 60 mil minimum
- PVC skirted edge metal products increase productivity and profit
- Mule-Hide PVC Skirted Edge Metal accessories provide design flexibility to incorporate color into the roof edge while maintaining a superior heat-welded connection on the roof
- Up to 20-year system commercial project warranties and 10-year material residential warranties are available
- Available nationwide through distribution - adding all of the value of distribution to this product line
 - o Local inventory – simplify filling material shortages and no longer have to fill trucks or worry about deficit freight
 - o Local logistics and job site coordination – distribution provides the simplest means to get the right product to your job site at the right time.
 - o Access to credit
 - o Local customer service and problem solving
 - o Local inside and outside sales support





PVC Roofing Systems

Audience Advantages

Why **ARCHITECTS** value Mule-Hide PVC Roofing Systems:

- Mule-Hide PVC Roofing Systems offer better solutions for projects requiring high chemical resistance such as restaurants, laboratories, factories, etc.
- Use of HydroBond Water-Based PVC Bonding Adhesive as single-side, wet lay-in, application greatly improves productivity, narrowing the cost gap between PVC and TPO in fully adhered applications, and provides a VOC-free adhesive alternative
- Available in 3 standard colors: White, Cool Gray and Cool Tan
- Available in 4 standard thicknesses: 50 mil, 60 mil, 80 mil and 60 mil minimum
- Mule-Hide PVC-Skirted Edge Metal accessories provide design flexibility to incorporate color into the roof edge while maintaining a superior heat-welded connection on the roof
- Environmentally responsible membrane that uses less energy to produce, is recyclable both pre- and post-usage, and is naturally fireproof
- Available in standard PVC, KEE HP, and Fleece back options, providing a breadth of viable solutions for nearly any roofing situation
- Up to 20-year system commercial project warranties and 10-year material residential warranties are available
- PVC is a proven product with more than 40 years of history in the American roofing market

Why **BUILDING OWNERS** value Mule-Hide PVC Roofing Systems:

- PVC is a proven product with more than 40 years of history in the American roofing market
- Environmentally responsible membrane that uses less energy to produce, is recyclable both pre- and post-usage, and is naturally fireproof
- Available in 3 standard colors: White, Cool Gray and Cool Tan
- Available in 4 standard thicknesses: 50 mil, 60 mil, 80 mil and 60 mil minimum
- PVC-Skirted Edge Metal accessories provide a premium roof edge at affordable prices
- Up to 20-year system commercial project warranties and 10-year residential material warranties are available





PVC Roofing Systems Common Misconceptions

Common Misconception: “PVC is too expensive. I can install TPO much cheaper.”

Answer: The actual cost differences are closer to, and even sometimes cheaper than comparable TPO systems. Labor is essentially equal between TPO and PVC. The increase in cost is left on the roof in the form of a superior performing product.

Cost comparisons between TPO and PVC were done for both mechanically attached and fully adhered applications based on the following design:

Size: 100' x 100'

Roof Edge: Drip edge, no parapet

Deck: Steel

Insulation: 2 layers 2.5" polyisocyanurate with an R-value=30.6

Membrane: 60 mil, 10' wide field sheets

Material Comparison (Cost Difference vs. PVC Fully Adhered with HydroBond)				
PVC fully adhered with HydroBond	TPO fully adhered with Solvent Base	TPO fully adhered with Low VOC	TPO fully adhered with Low VOC 1168	TPO fully adhered with WBBA 2000
\$27,672.40	\$26,011.00	\$27,663.40	\$29,295.40	\$28,513.40
Cost diff. vs TPO	-\$1,661.40	-\$9.00	\$1,623.00	\$841.00
Percent diff. vs TPO	-6.39%	-0.03%	5.54%	2.95%

Comparisons were made utilizing Mule-Hide's HydroBond Water-Based PVC Bonding Adhesive for PVC membrane versus a TPO fully adhered system utilizing each of Mule-Hide's approved adhesives for TPO.

Mule-Hide PVC fully adhered with HydroBond adhesive, used in a single-sided, wet lay-in, application is a lower installed cost solution over TPO fully adhered with a contact adhesive. As shown above, material costs of a fully adhered PVC system using HydroBond is equal to or lower than TPO fully adhered with Low VOC, Low VOC 1168 or WBBA 2000 bonding adhesives. The 6.39% price difference between PVC and TPO adhered with TPO (solvent base) Bonding Adhesive is quickly erased with the labor savings provided by using HydroBond in a single-side, wet lay-in application.

Core Fact: The use of Mule-Hide's HydroBond Water-Based PVC Bonding Adhesive reduces material and labor costs and makes fully adhered PVC a lower installed cost solution over TPO fully adhered with a contact adhesive.



TALKING POINTS



PVC Roofing Systems Common Misconceptions



EHD Fasteners
#3 Phillips
#15 Thread
1-1/4" to 24"



HDP Fasteners
#3 Phillips
#14 Thread
1-1/2" to 12"



2.4" Seam Plate

Material Comparison (Mechanically Attached System)				
Fastener spacing	PVC mechanically attached	TPO mechanically attached	\$ Difference of TPO vs PVC mechanically attached	% Difference vs TPO mechanically attached
12" on center	\$25,178.12	\$22,472.12	-\$2,706.00	12.04%
6" on center	\$25,449.88	\$22,743.88	-\$2,706.00	11.09%

Although the PVC membrane cost per 10' roll is 42% higher than the TPO membrane cost, that 42% material cost premium only equates to an 11-12% increase in the total installed system material cost, depending on system fastener spacing.

Core Fact: The roll price difference of PVC versus TPO is offset considerably when the cost of the entire system is calculated. Labor to install PVC or TPO are essentially equal. The increase in cost is left on the roof in the form of a superior-performing product.

Common Misconception: "I can use pressure-sensitive components in a PVC system."

Answer: Not true. Pressure-sensitive tapes have an adverse reaction to PVC membranes. Pressure-sensitive accessories are not available in Mule-Hide PVC product line. The use of 6" RUSS, 10" RUSS or Pressure Sensitive Cover Strip is not approved in any Mule-Hide PVC system.

Core Fact: There are no pressure-sensitive accessories in the Mule-Hide PVC product line because the tapes are adversely affected by the PVC membrane.

Common Misconception: "PVC only comes in narrow rolls."

Answer: Not true. Mule-Hide offers 10' wide PVC sheets that can be used in a mechanically fastened or fully adhered application. Here are the PVC roll widths available from Mule-Hide:

Material Comparison (Mechanically Attached System)				
Membrane	40.5" Roll Width	5' Roll Width	81" Roll Width	10' Roll Width
PVC	X	X	X	X
PVC KEE HP		X		X
PVC Fleece Back			X	X
PVC KEE HP Fleece Back				X