TEXAS DEPARTMENT OF INSURANCE

Engineering Services / MC 103-3A 333 Guadalupe Street P.O. Box 149104 Austin, Texas 78714-9104
Phone No. (512) 322-2212 Fax No. (512) 463-6693

PRODUCT EVALUATION Effective March 1, 2005
RC-96

The following product has been evaluated for compliance with the wind loads specified in the International Residential Code (IRC) and the International Building Code (IBC). This product shall be subject to reevaluation 3 years after the effective date.

This product evaluation is not an endorsement of this product or a recommendation that this product be used. The Texas Department of Insurance has not authorized the use of any information contained in the product evaluation for advertising, or other commercial or promotional purpose.

This product evaluation is intended for use by those individuals who are following the design wind load criteria in Chapter 3 of the IRC and Section 1609 of the IBC. The design loads determined for the building or structure shall not exceed the design load rating specified for the products shown in the limitations section of this product evaluation. This product evaluation does not relieve a Texas licensed engineer of his responsibilities as outlined in the Texas Insurance Code, the Texas Administrative Code, and the Texas Engineering Practice Act.

Polyglass and **Mule-Hide Modified Bitumen Roof Systems** manufactured by

POLYGLASS USA, Inc.
555 Oak Ridge Road
Humboldt Industrial Park (SW)
Hazleton, PA 18201
(800) 894-4563

and marketed under private label by

Mule-Hide Products Co., Inc.
P.O. Box 1057
Beloit, WI 53512-1057

will be accepted in designated catastrophe zones along the Texas Gulf Coast when installed in accordance with the manufacturer's installation instructions and this product evaluation.

PRODUCT DESCRIPTION

Polyglass USA, Inc. Products

Polyflex is a torch applied, polyester reinforced, APP modified bitumen membrane with a burn off polyethylene back face and a smooth or sanded top surface.

Polyflex G is a torch applied, polyester reinforced, APP modified bitumen membrane with a burn off polyethylene back face and a granule top surface.

Polyflex G FR is a torch applied, polyester reinforced, APP modified bitumen membrane with a burn off polyethylene back face, a granule top surface, and fire retardant chemistry.

Polyflex SA P is a self-adhered, polyester reinforced, APP modified bitumen membrane with a self-adhering back face and a sanded top surface.

Polyflex SA P G is a self-adhered, polyester reinforced, APP modified bitumen membrane with a self-adhering back face and a granule top surface.

Polyflex SA P G FR is a self-adhered, polyester reinforced, APP modified bitumen membrane with a self-adhering back face, a granule top surface, and fire retardant chemistry.

PolyAll SA is a self-adhered, polyester reinforced, APP modified bitumen membrane with a self-adhering back face and a aluminum foil top surface.

PolyRam SA is a self-adhered, polyester reinforced, APP modified bitumen membrane with a self-adhering back face and a copper foil top surface.

Polybond is a torch applied, polyester reinforced, APP modified bitumen membrane with a burn off polyethylene back face and a smooth or sanded top surface.

Polybond G is a torch applied, polyester reinforced, APP modified bitumen membrane with a burn off polyethylene back face and a granule top surface.

PRODUCT DESCRIPTION (Continued)

Elastoflex S6 is a torch or hot asphalt applied, polyester reinforced, SBS modified bitumen membrane with a burn off polyethylene or sanded back face and a polyethylene or sanded top surface.

Elastoflex S6 G is a torch or hot asphalt applied, polyester reinforced, SBS modified bitumen membrane with a burn off polyethylene or sanded back face and a granule top surface.

Elastoflex S6 G FR is a torch or hot asphalt applied, polyester reinforced, SBS modified bitumen membrane with a burn off polyethylene or sanded back face, a granule top surface, and fire retardant chemistry.

Elastoshield TS4 is a torch or hot asphalt applied, polyester reinforced, SBS modified bitumen membrane with a burn off polyethylene or sanded back face and a granule top surface.

Elastoshield TS4 FR is a torch or hot asphalt applied, polyester reinforced, SBS modified bitumen membrane with a burn off polyethylene or sanded back face, a granule top surface, and fire retardant chemistry.

Elastoflex V is a torch or hot asphalt applied, fiberglass reinforced, SBS modified bitumen membrane with a burn off polyethylene or sanded back face and a sanded top surface.

Elastoflex V G is a torch or hot asphalt applied, fiberglass reinforced, SBS modified bitumen membrane with a burn off polyethylene or sanded back face and a granule top surface.

Elastoflex V G FR is a torch or hot asphalt applied, fiberglass reinforced, SBS modified bitumen membrane with a burn off polyethylene or sanded back face, a granule top surface, and fire retardant chemistry.

Elastoflex SA P is a self-adhered, polyester reinforced, SBS modified bitumen membrane with a self-adhering back face and a polyolefin film top surface.

Elastoflex SA P FR is a self-adhered, polyester reinforced, SBS modified bitumen membrane with a self-adhering back face, a granule top surface, and fire retardant chemistry.

Elastoflex SA P G is a self-adhered, polyester reinforced, SBS modified bitumen membrane with a self-adhering back face and a granule top surface.

Elastoflex SA V is a self-adhered, fiberglass reinforced, SBS modified bitumen base/ply sheet with a self-adhering back face and a polyolefin film top surface.

Elastoflex SA V Base is a self-adhered, fiberglass reinforced, SBS modified bitumen base/ply sheet with a self-adhering back face and a smooth top surface.

Elastoflex SA V FR Base is a self-adhered, fiberglass reinforced, SBS modified bitumen base/ply sheet with a self-adhering back face, a smooth top surface, and fire retardant chemistry.

Elastoflex SA V G is a self-adhered, fiberglass reinforced, SBS modified bitumen membrane with a self-adhering back face and a granule top surface.

Elastoflex SA V G FR is a self-adhered, fiberglass reinforced, SBS modified bitumen membrane with a self-adhering back face, a granule top surface, and fire retardant chemistry.

Elastobase is a SBS modified asphalt coated fiberglass reinforced base sheet.

Elastobase V is a SBS modified asphalt coated fiberglass reinforced base sheet.

Xtraflex is a torch applied, polyester reinforced, TPO modified bitumen membrane with a burn off polyethylene back face and a smooth top surface.

Xtraflex G is a torch applied, polyester reinforced, TPO modified bitumen membrane with a burn off polyethylene back face and a granule top surface.

Xtraflex G FR is a torch applied, polyester reinforced, TPO modified bitumen membrane with a burn off polyethylene back face, a granule top surface, and fire retardant chemistry.

Mule-Hide Products Co., Inc Products

SA Base Sheet is a self-adhered, fiberglass reinforced, SBS modified bitumen base/ply sheet with a self-adhering back face and a smooth top surface.

SA Base Sheet (FR) is a self-adhered, fiberglass reinforced, SBS modified bitumen base/ply sheet with a self-adhering back face, a smooth top surface, and fire retardant chemistry.

Nail Base is a SBS modified bitumen, fiberglass reinforced base sheet with a sand finish on the bottom surface and a polyolefin film top surface.

SA-SBS Cap Sheet is a self-adhered, polyester reinforced, SBS modified bitumen membrane with a self-adhering back face and a granule top surface.

SA-SBS Cap Sheet (FR) is a self-adhered, polyester reinforced, SBS modified bitumen membrane with a self-adhering back face, a granule top surface, and fire retardant chemistry.

SA-APP Cap Sheet (smooth) is a self-adhered, polyester reinforced, APP modified bitumen membrane with a self-adhering back face, and a smooth top surface.

SA-APP Cap Sheet is a self-adhered, polyester reinforced, APP modified bitumen membrane with a self-adhering back face and a granule top surface.

SA-APP Cap Sheet (FR) is a self-adhered, polyester reinforced, SBS modified bitumen membrane with a self-adhering back face, a granule top surface, and fire retardant chemistry.

LIMITATIONS

Assembly No. 1.1 – Design Wind Pressure: -60 psf
Assembly No. 1.2 – Design Wind Pressure: -60 psf
Assembly No. 1.3 – Design Wind Pressure: -52.5 psf
Assembly No. 2 – Design Wind Pressure: -60 psf
Assembly No. 3.1 – Design Wind Pressure: -82.5 psf
Assembly No. 3.2 – Design Wind Pressure: -82.5 psf
Assembly No. 4.1 – Design Wind Pressure: -60 psf
Assembly No. 4.2 – Design Wind Pressure: -52.5 psf
Assembly No. 5.1 – Design Wind Pressure: -45 psf
Assembly No. 5.2 – Design Wind Pressure: -45 psf
Assembly No. 5.3 – Design Wind Pressure: -45 psf
Assembly No. 5.4 – Design Wind Pressure: -60 psf
Assembly No. 5.5 – Design Wind Pressure: -60 psf
Assembly No. 5.6 – Design Wind Pressure: -52.5 psf

For All Applications: Roof decks, in which this product is to be installed upon, shall be provided with positive drainage. A minimum roof slope after construction of ¼ inch per foot is recommended.

Prime decks were required, in accordance with requirements and recommendations of the primer & deck manufacturer (if applicable). For re-roofing and re-cover applications, existing roof surfaces shall be primed as necessary with Polyglass 100A asphalt primer or an asphalt primer meeting ASTM D-41 specification and allow to dry prior to installing the Polyglass roofing system.

Polyglass recommends when applying the self-adhered membranes to new wood decking, that the wood be clean and dry. Application of ASTM D-41 asphalt primer is not required. When applying the self-adhered membrane in a re-cover or re-roofing application, cleaning and priming of the wood decking is required.

Please note that Polyglass does not permit direct application to a wood deck, when said deck is covering an inhabitable environment, i.e. living space. Habitable environments present ventilation issues; as such, Polyglass requires the application of a mechanically attached base sheet or recover board, before applying self-adhered membranes. Refer to Polyglass application guidelines as published in the Polyglass Technical Guide, available from Polyglass USA, Inc.

Note: The fastener patterns in the field and around the perimeter of the roof are the same. The perimeter of the roof shall be those areas within 4 feet of the roof edge and within 4 feet on each side of the roof ridge. The perimeter shall also include all roof corners.

INSTALLATION INSTRUCTIONS

Assembly No. 1.1

Deck:	19/32" plywood or wood plank.
Base Sheet:	Polyglass: One ply of Elastobase Poly/Sand or Sand/Sand or Elastobase V fastened to the deck with Buildex Roofgrip fasteners and Flat Bottom Plates spaced 12" o.c. in 4" side and end laps and 12" o.c. in two equally spaced staggered rows in the center of the sheet. Mule-Hide: One ply of Nail Base fastened to the deck with Buildex Roofgrip fasteners and Flat Bottom Plates spaced 12" o.c. in 4" side and end laps and 12" o.c. in two equally spaced staggered rows in the center of the sheet.
Ply Sheet:	Polyglass: (Optional) One ply of Elastobase, Elastobase V, Modibase, Perma Ply No. 28, Elastoflex S6, Elastoflex V, Elastoflex V2.5, Polybond, or one or more plies of ASTM 2178 Type IV or VI ply sheet fully adhered with Type 3 or Type 4 hot asphalt within the EVT range (425°F-475°F) at a rate of 20-40 lbs/square. Mule-Hide: (Optional) One ply of Nail Base fully adhered with Type 3 or Type 4 hot asphalt within the EVT range (425°F-475°F) at a rate of 20-40 lbs/square.
Membrane:	One ply of Polyflex, Polyflex G, Polyflex G FR, Polybond, Polybond G, Xtraflex, Xtraflex G, Xtraflex G FR torch applied, or one ply of Elastoflex S6 G, Elastoflex S6 G FR, Elastoshield TS4, or Elastoshield TS4 FR torch applied or fully adhered with Type 3 or Type 4 hot asphalt within the EVT range (425°F-475°F) at a rate of 20-40 lbs/square.
Surfacing:	(Optional) 1. Gravel at 400 lbs/sq or slag at 300 lbs/sq in a flood coat of hot asphalt at 60 lbs/sq. 2. Karnak 97 Fibrated Aluminum Asphalt Roof Coating or Asbestos Free Aluminum Roof Coating at 1-1/2 gal/sq. 3. Kokem Products Sunguard acrylic Roof Coating at 1 gal/sq. 4. Monsey Endure Aluminum Roof Coating, Weather Check, or Pro-Grade Aluminum Roof Coating at 1-1/2 gal/sq. 5. Grundy al MB Aluminum Roof Coating at 1-2 gal/sq. 6. Fields F350 Heat Shield aluminum Coating or F630 Heat Shield Fibered Aluminum Coating at 1-1/2 gal/sq.

INSTALLATION INSTRUCTIONS (Continued)

Assembly Nos. 1.2 and 1.3

Deck: 19/32" plywood or wood plank.

Base Sheet: One ply of CertainTeed Glasbase, Polyglass Base, Firestone MB Base, JM Perma-Ply #28, Tamko Glass Base, or GAFGLAS #75 fastened to the deck as described below.
Assembly No. 1.2: Fasten base sheet with 11 gauge annular ring shank nails with 17/64" head diameter and 1-5/8" diameter tin caps spaced 8" o.c. in 4" side and end laps and 8" o.c. in two equally spaced staggered rows in the center of the sheet.
Assembly No. 1.3: Fasten base sheet with Deckfast #14 screws and Hex Plates or Tru-Fast HD screws and MP-3 Plates spaced 12" o.c. in 4" side and end laps and 12" o.c. in two equally spaced staggered rows in the center of the sheet.

Ply Sheet: Polyglass: (Optional) One ply of Elastobase, Elastobase V, Modibase, Perma Ply No. 28, Elastoflex S6, Elastoflex V, Elastoflex V2.5, or one or more plies of ASTM 2178 Type IV or VI ply sheet fully adhered with Type 3 or Type 4 hot asphalt within the EVT range (425°F-475°F) at a rate of 20-40 lbs/square.
Mule-Hide: (Optional) One ply of Nail Base fully adhered with Type 3 or Type 4 hot asphalt within the EVT range (425°F-475°F) at a rate of 20-40 lbs/square.

Membrane: See Assembly No. 1.1.

Surfacing: See Assembly No. 1.1.

Assembly No. 2

Deck: 19/32" plywood or wood plank.

Base Sheet: Polyglass: (Optional if using ply sheet in hot asphalt) One ply of Elastobase, Elastobase V, Modibase, Perma Ply No. 28, or GAFGLAS #75 fully adhered with Type 3 or Type 4 hot asphalt within the EVT range (425°F-475°F) at a rate of 20-40 lbs/square to the deck.
Mule-Hide: (Optional if using ply sheet in hot asphalt) One ply of Nail Base fully adhered with Type 3 or Type 4 hot asphalt within the EVT range (425°F-475°F) at a rate of 20-40 lbs/square to the deck.

Ply Sheet: Polyglass: (Optional if using base sheet in hot asphalt) One ply of Polybond, Polyflex, or Xtraflex torch applied, or one ply of Elastobase, Elastobase V, Modibase, Perma Ply No. 28, Elastoflex S6, Elastoflex V, Elastoflex V 2.5, or one or more plies of ASTM 2178 Type IV or VI ply sheet fully adhered with Type 3 or Type 4 hot asphalt within the EVT range (425°F-475°F) at a rate of 20-40 lbs/square.
Mule-Hide: (Optional if using base sheet in hot asphalt) One ply of Nail Base fully adhered with Type 3 or Type 4 hot asphalt within the EVT range (425°F-475°F) at a rate of 20-40 lbs/square.

Membrane: Polyglass: One ply of Polyflex, Polyflex G, Polyflex G FR, Polybond, Polybond G, Xtraflex. Xtraflex G, or Xtraflex G FR torch applied, or one ply of Elastoflex S6 G, Elastoflex S6 G FR, Elastoshield TS4, or Elastoshield TS4 FR torch applied or fully adhered with Type 3 or Type 4 hot asphalt within the EVT range (425°F-475°F) at a rate of 20-40 lbs/square, or one ply of Elastoflex SA-P, Elastoflex SA-P FR, Elastoflex SA-P G, Elastoflex SA-V G, Elastoflex SA-V G FR, PolyAll SA, Polyflex SA-P(S), Polyflex SA-PG, Polyflex SA-P G FR, or PolyRam SA self-adhered.
Mule-Hide: SA-SBS Cap Sheet, SA-SBS Cap Sheet FR, SA-APP Cap Sheet (smooth), SA-APP Cap Sheet, SA-APP Cap Sheet FR self-adhered.

Surfacing: See Assembly No. 1.1.

Assembly No. 3.1

Deck: 19/32" plywood or wood plank.

Base Sheet: None.

Ply Sheet: Polyglass: One ply of Elastoflex SA-V, Elastoflex SA-V Base, Elastoflex SA-V FR Base, Elastobase, or Elastobase V self-adhered.
Mule-Hide: SA Base Sheet, SA Base Sheet FR self-adhered.

Membrane: See Assembly No. 2.

Surfacing: See Assembly No. 1.1.

INSTALLATION INSTRUCTIONS (Continued)

Assembly No. 3.2

Deck: 19/32" plywood or wood plank.
Base Sheet: See Assembly No. 2.
Ply Sheet: See Assembly No. 2.
Membrane: See Assembly No. 2.
Surfacing: See Assembly No. 1.1.

Assembly No. 4.1

Deck: 19/32" plywood or wood plank.
Base Sheet: See Assembly No. 1.1.
Ply Sheet: Polyglass: (Optional) One ply of Polyflex, Polybond, or Xtraflex torch applied, or one ply of Elastobase, Elastobase V, Modibase, Perma Ply No. 28, Elastoflex S6, Elastoflex V, or Elastoflex V 2.5, or one or more plies of ASTM 2178 Type IV or VI ply sheet fully adhered with Type 3 or Type 4 hot asphalt within the EVT range (425°F-475°F) at a rate of 20-40 lbs/square.
Mule-Hide: (Optional) One ply of Nail Base fully adhered with Type 3 or Type 4 hot asphalt within the EVT range (425°F-475°F) at a rate of 20-40 lbs/square.
Membrane: See Assembly No. 2.
Surfacing: See Assembly No. 1.1.

Assembly No. 4.2

Deck: 19/32" plywood or wood plank.
Base Sheet: One ply of CertainTeed Glasbase, Polyglass Base, Firestone MB Base, JM Perma-Ply #28, Tamko Glass Base or GAFGLAS #75 fastened to the deck with Deckfast #14 screws and Hex Plates or Tru-Fast HD screws and MP-3 Plates spaced 12" o.c. in 4" side and end laps and 12" o.c. in two equally spaced staggered rows in the center of the sheet.
Ply Sheet: See Assembly No. 4.1.
Membrane: See Assembly No. 2.
Surfacing: See Assembly No. 1.1.

Assembly Nos. 5.1 and 5.2

Deck: 19/32" plywood or wood plank.
Base Sheet: One ply of ASTM D 2626 asphalt-saturated and coated organic felt base sheet, 30 lb. minimum, fastened to the deck as described below.
Assembly No. 5.1: Fasten base sheet with 11 gauge annular ring shank nails with 17/64" head diameter and 1-5/8" diameter tin caps spaced 4" o.c. in 4" side and end laps and 4" o.c. in two equally spaced staggered rows in the center of the sheet.
Assembly No. 5.2: Fasten the base sheet with Simplex Mega Cap-Nails spaced 6" o.c. in 4" side and end laps and 9" o.c. in two equally spaced staggered rows in the center of the sheet.
Ply Sheet: Polyglass: (Optional) One ply of Elastoflex SA-V, Elastoflex SA-V Base, Elastoflex SA-V FR Base, Elastobase, or Elastobase V self-adhered.
Mule-Hide: SA Base Sheet, SA Base Sheet FR.
Membrane: Polyglass: One ply of Elastoflex SA-P, Elastoflex SA-P FR, Elastoflex SA-P G, Elastoflex SA-V G, Elastoflex SA-V G FR, PolyAll SA, Polyflex SA-P(S), Polyflex SA-P G, Polyflex SA-P G FR, or PolyRam SA self-adhered.
Mule-Hide: SA-SBS Cap Sheet, SA-SBS Cap Sheet FR, SA-APP Cap Sheet (smooth), SA-APP Cap Sheet, SA-APP Cap Sheet FR self-adhered.
Surfacing: See Assembly No. 1.1.

INSTALLATION INSTRUCTIONS (Continued)

Assembly No. 5.3

Deck: 19/32" plywood or wood plank.
Base Sheet: Two plies of ASTM D 2626 asphalt-saturated and coated organic felt base sheet, 30 lb. minimum, fastened to the deck with 11 gauge annular ring shank nails with 17/64" head diameter and 1-5/8" diameter tin caps spaced 9" o.c. in 2" side and end laps and 9" o.c. in two equally spaced staggered rows in the center of the sheet.
Ply Sheet: (Optional) See Assembly No. 3.1.
Membrane: See Assembly Nos. 5.1 and 5.2.
Surfacing: See Assembly No. 1.1.

Assembly No. 5.4

Deck: 19/32" plywood or wood plank.
Base Sheet: See Assembly No. 1.1.
Ply Sheet: See Assembly No. 4.1.
Membrane: See Assembly No. 2.
Surfacing: See Assembly No. 1.1.

Assembly Nos. 5.5 and 5.6

Deck: 19/32" plywood or wood plank.
Base Sheet: See Assembly Nos. 1.2 and 1.3.
Ply Sheet: See Assembly Nos. 1.2 and 1.3.
Membrane: See Assembly No. 2.
Surfacing: See Assembly No. 1.1.

Note: The manufacturer's installation instructions shall be on the job site during the installation. All fasteners shall be corrosion resistant as specified in the International Residential Code (IRC) and the International Building Code (IBC).