



Product Data Sheet

# HELIX<sup>®</sup> MAX LOW-RISE ADHESIVE

**DESCRIPTION**

August 2023

Helix<sup>®</sup> Max Low-Rise Adhesive (“Helix Max Adhesive”) is a low-rise, VOC-free, construction-grade, two-component polyurethane adhesive that is designed to bond Mule-Hide’s insulations and Fleece Back (TPO, PVC or PVC KEE) membranes to a variety of substrates. FM Approvals have been achieved over a variety of deck types and substrates.



**PACKAGING**

Available in both 15 and 50 gallon drums

**BENEFITS AND SUPPLEMENTAL STATEMENTS**

- Superior wind uplift resistance / FM approved
- Can be used for most re-roofing projects
- Quick, quiet, low-odor application
- Elongation of up to 150%
- Eliminates the need to pre-drill into concrete and gypsum decks
- Added puncture resistance of 33–50% compared to standard Helix Adhesive (with full spray application)
- Energy Efficient and Environmentally Sound: Each layer of Helix Max Adhesive (applied in full spray) expands to 1/16"-1/8" thick and provides an additional R-value of 0.20 to 0.50 per layer. The NRCA estimates that up to 10% of R-value can be lost due to joints in the insulation. The expanding nature of Helix Max Adhesive helps to seal insulation joints, so that when full spray application of Helix Max Adhesive is specified for insulation attachment in place of mechanical fasteners, the 3-8% loss in R-value can be eliminated.
- Water is used as the blowing agent in Helix Max Adhesive, making it VOC compliant and not labeled as a flammable product.
- Helix Max Adhesive offers a significant reduction in free MDI: from 32% to 23% compared to traditional urethane adhesives.

**APPLICATION**

**General Preparation**

1. The surface to which adhesive is to be applied shall be dry, clean and free of fins, protrusions, sharp edges, loose and foreign materials, oil and grease. Depressions greater than 1/4" (6 mm) shall be filled with Helix Max Adhesive or other approved patching material. All sharp projections shall be removed. Previously unexposed (shiny) asphalt must be primed with AeroWeb.
2. Seal gaps between the wall/penetration and concrete deck with Mule-Hide F5 Air & Vapor Barrier, FROTH-PAK, or other suitable material, to avoid condensation issues and positive pressure from air infiltration.
3. Apply Helix Max Adhesive when the substrate and ambient temperatures are 25°F (-4°C) or above when spraying or extruding with heated or non-heated equipment. Dispense the adhesive between 300-800 psi depending on the equipment used. Consult Mule-Hide Technical Department for more details.
4. Fibrous cement decks must be investigated for their ability to retain liquid adhesive, as some types of fibrous cement may allow liquid adhesive to flow through the deck.
5. Set pre-heater and hose temperature to 120°F (49°C). Temperature settings will vary with conditions.

Substrate Compatibility					
Insulation/Underlayments		Roof Decks		Existing Roofing Materials	
Poly ISO 1 & 2	Yes	Concrete	Yes	Smooth BUR	Yes <sup>5</sup>
StructoDek <sup>®</sup> High Density	Yes	Cellular Lt.Wt. Concrete	Yes <sup>12</sup>	Gravel BUR	Yes <sup>6</sup>
Expanded Polystyrene (EPS)	Yes <sup>1</sup>	NVS Lt.Wt. Concrete	Yes <sup>12</sup>	Mineral Cap Sheet	Yes
Extruded Polystyrene (XPS)	Yes <sup>2</sup>	Gypsum	Yes	Granular Modified-Bitumen	Yes

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New Sprayed Foam	Yes <sup>9</sup>	Cementitious Wood Fiber	Yes	Smooth Modified-Bitumen	Yes
Scarified SPF	Yes <sup>9</sup>	Plywood/OSB	Yes	Coal Tar Pitch	Yes <sup>7</sup>
DensDeck®	Yes	Painted Steel	Yes	Aluminum-Coated BUR	Yes <sup>8</sup>
Securock®	Yes	Galvanized Steel	Yes <sup>3</sup>	Acrylic-Coated SPF	Yes <sup>9</sup>
Oriented Strand Board	Yes	Acoustical Steel	Yes <sup>4</sup>	Silicone-Coated SPF	Yes <sup>9</sup>
Poly ISO 1HD	Yes	Wood Plank	Yes	Aged EPDM, Hypalon, TPO	Yes <sup>10</sup>
				Unexposed (Shiny) Asphalt	Yes <sup>11</sup>

1. Fleece Back membrane maybe installed directly over minimum 1.5-lb.-density EPS; however, to obtain UL & FM codes, an overlayment of StructoDek® High Density, DensDeck, Securock or Poly ISO insulation is required.
2. For insulation attachment only.
3. For new galvanized steel decks, power-washing is necessary to remove finishing oil residue if present.
4. For acoustical steel decks, fill the flutes with fiberglass or other suitable fill insulation and tack in place with strips of duct tape 3' OC or other adhesive, prior to spraying the deck with Helix Max Adhesive.
5. Existing Smooth BUR must be Type III or IV asphalt if the Fleece Back membrane is to be installed directly without insulation.
6. A minimum of an approved cover board or insulation is required over properly prepared gravel BUR. **Fleece Back membrane cannot be installed directly over a gravel/slag surface.**
7. An insulation providing the necessary R-value must be specified to prevent the coal tar pitch from softening. **Fleece Back membrane cannot be installed directly to coal tar pitch.**
8. Aluminum coatings must be removed by power-washing or by physical abrasion prior to the application of Helix Max Adhesive. Adhesion tests are required to confirm sufficient preparation of the substrate.
9. SPF roofing assemblies may be considered on a job-by-job basis based on the results of a field adhesion test. Silicone coatings must be completely removed. Contact Mule Hide Technical Department prior to bidding.
10. Contact Mule-Hide for specific requirements on recover applications over aged EPDM, Hypalon, or TPO membrane.
11. Requires AeroWeb for all applications.
12. New lightweight concrete must be confirmed by the contractor to be thoroughly dry. Existing substrates will require adhesion tests.

Coverage Rates by Installation Application							
Container Size	Approx. Net Wt./Set	Substrate	Max Coverage Rates <sup>1</sup> (sq. ft./set)				
			Spray <sup>2</sup>	Splatter <sup>3</sup>	4" OC	6" OC	12" OC
15-gal. Drum Set	275 lbs.	Insulation to a smooth flat surface	1,800-3,000	5,400-6,000	2,110-2,700	3,000-4,500	6,000-7,500
50-gal. Drum Set	991 lbs.	Insulation to a smooth flat surface	5,000-10,000	18,000-20,000	6,700-9,000	10,000-15,000	20,000-25,000

<sup>1</sup>The coverage rates published are estimates and not guaranteed. Application rates are based on 1/2" wide wet beads or full spray applied to a smooth, flat substrate. The adhesive will expand to 2"-3" wide and 1" above substrate when installed in beads. Coverage rates will decrease when used on irregular, rough or porous substrates. For example, installation over a properly prepared gravel surface BUR will consume approximately twice as much adhesive.

<sup>2</sup>Spray application is 100% coverage.

<sup>3</sup>Specialized guns and equipment are required for this application, contact Mule-Hide's Technical Department for more information.

## Insulation Attachment

1. Apply Helix Max Adhesive to the substrate. Allow the material to transition from a dark blue to a light blue colored foam.
  - a. For spray applications, spray adhesive to obtain full (100%) coverage (approx. 1/8" to 1/4" thick after foaming).
  - b. For bead applications, apply adhesive at 4", 6", or 12" on center with a **minimum 1/2" wide wet bead**. For steel decks, bead attachment of Helix Max Adhesive must run parallel with and be on top of the steel deck flutes.
2. Factory Mutual bead spacing guidelines in the perimeter and corner may differ from the table above. Beads at 12" OC are not acceptable at perimeters and corners.
3. Place insulation boards (maximum 4' x 4' insulation boards when adhesive is dispensed at 12" OC or when boards exceed 4" thickness, or 4' x 8' insulation boards when adhesive is applied at 4", or 6" beads) into adhesive after allowing it to rise and develop "string/body" (approx. 1-1/2 to 2" min.). String time will vary based on environmental conditions like temperature and humidity. Do not allow the adhesive to over-cure prior to setting insulation boards.
4. Designate one person to walk boards into place and then roll the boards between 5-7 minutes from the initial adhesive application. Boards may be temporarily weighted or relief-cut where necessary to keep the boards in constant contact with the adhesive until the adhesive cures.
5. At the beginning of the insulation attachment process and periodically throughout the day, check the adhesion of boards to ensure a tight bond is created and maximum contact is achieved.

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Bead Spacing Requirements*				
Building Height	Perimeter Width	Bead Spacing		
		Field	Perimeter	Corner
0-25'	4 Feet	12" OC	6" OC	6" OC
26'-49'	8 Feet	12" OC	6" OC	6" OC
50'-74'	12 Feet	12" OC	6" OC	6" OC
75'-100'	16 Feet	12" OC	6" OC	6" OC
101' or greater	Contact Mule-Hide Technical Department			

\*Bead spacing guidelines for 10, or 15-year, 55-mph warranties are listed below. Contact Mule-Hide's Technical Department regarding bead spacing for 20 and 30-year warranties and/or warranties with wind speeds higher than 55 mph.

## Fleece Back Installation

### Slide-in Method:

1. Unroll Fleece Back sheet and position. Fold the sheet back in half lengthwise (end-to-end).
2. Spray apply or bead apply Helix Max Adhesive to the substrate.
  - a. For full spray application, spray adhesive to obtain full coverage (approx. 1/8" to 1/4" thick after foaming). Ensure end laps are protected from adhesive.
  - b. For bead applications, apply at 4", 6", or 12" on center with a **min. 1/2" wide wet bead**. Ensure end laps are protected from adhesive.
3. Once "string time" occurs, gradually roll Fleece Back membrane into Helix Max Adhesive, checking for "string/body" every few feet. If membrane reaches adhesive that has NOT developed "string/body" stop rolling Fleece Back membrane into adhesive until string develops. As sheet is being installed, immediately start rolling the membrane width-wise with a 150-lb. segmented weighted roller. Repeat process until Fleece Back sheet is fully installed.

### Roll-in (Mod Bit) Method:

1. Unroll the Fleece Back sheet and position in place. Starting at one end of the membrane, using the roll core, carefully roll the membrane back up half way making sure you do not reposition the membrane. Leaving half the membrane laid out will help prevent this.
2. Spray apply or bead apply Helix Max Adhesive to the substrate.
  - a. For full spray application, spray adhesive to obtain full coverage (approx. 1/8" to 1/4" thick after foaming). Ensure end laps are protected from adhesive.
  - b. For bead applications, apply at 4", 6", or 12" on center with a **min. 1/2" wide wet bead**. Ensure end laps are protected from adhesive.
3. Once "string time" occurs, gradually roll Fleece Back membrane into Helix Max Adhesive, checking for "string/body" every few feet. If membrane reaches adhesive that has NOT developed "string/body" stop rolling Fleece Back membrane into adhesive until string develops. As sheet is being installed, immediately start rolling the membrane width-wise with a 150-lb. segmented weighted roller. Repeat process until Fleece Back sheet is fully installed.

## PRECAUTIONS

- Review the Safety Data Sheet for complete safety information prior to use.
- High-slope applications may require adhesive to be applied to the bottom of the insulation board to avoid running.
- The foam produced is an organic material. It must be considered as combustible and may constitute a fire hazard. The foam adhesive must not be left exposed or unprotected. Shield from heat and sparks.
- Do not smoke during application.
- Use with adequate ventilation. Avoid breathing vapors. Wear a NIOSH- or MSHA-approved respirator for organic vapors with prefilters and solvent-resistant cartridges or supplied airline respirators while spraying. Proper safety training is essential for all persons involved in the installation process. If vapor is inhaled, remove to fresh air and administer oxygen if breathing is difficult. Consult a physician immediately.
- Avoid contact with eyes. Safety glasses or goggles are required. If Helix Max Adhesive is splashed in eyes, immediately flush eyes with plenty of clean water for at least 15 minutes. Contact a physician immediately.
- Avoid contact with skin. Wear long-sleeved shirts and long pants. Wash hands thoroughly after handling. In case of contact with skin, thoroughly wash affected area with soap and water or corn oil. NOTE: Permeation-resistant gloves that meet ANSI/ISEA 105-2005 are required when handling the material or during application.
- Jobsite storage temperatures in excess of 90°F (32°C) may affect product shelf life. When temperatures are in excess of 90°F (32°C) utilize white membrane or material to shield the drums from direct sunlight. Should the components be stored at temperatures lower than 70°F (21°C), restore to room temperature prior to use. Do not allow Helix Max Adhesive to freeze.
- Use spray booths, windscreens and/or lower spray pressure when spraying in windy conditions.
- Precautions must be taken to prevent Helix Max Adhesive vapors or overspray from entering buildings during application. All air-intake vents on roofs must be closed during application of adhesive.

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- Use desiccant dryers on Part A drums to avoid formation of crystals from exposure to moisture in the air.
- KEEP OUT OF THE REACH OF CHILDREN.
- Desiccant dryers should be used to prevent atmospheric moisture contamination of the remaining diisocyanate. Even a small amount of contamination by water or other foreign substance could result in excess pressure and catastrophic failure of the drum. Do not reseal a drum if contamination is suspected. Move container to a well-ventilated area (outside) and allow to stand for at least 48 hours to allow escape of evolved carbon dioxide to avoid hazardous pressure build-up in container.
- Pressure should never be applied as a means of transferring liquid. If the drum will not be completely emptied, it is imperative to prevent atmospheric moisture contamination of the remaining diisocyanate. Even a small amount of contamination by water or other foreign substance could result in excess pressure and catastrophic failure of the drum. Do not reseal a drum if contamination is suspected. If product contamination occurs by water or other foreign substance and excess drum pressure occurs, if possible do not move drum and follow appropriate emergency procedures.

LEED Information	15/55 Gal Drums
Pre-consumer Recycled Content	0%
Post-consumer Recycled Content	0%
Manufacturing Location	Geismar, LA, Elwood, IL Chattanooga, TN
VOC Content	0 g/l
Solar Reflectance Index (SRI)	N/A

Base Component Property*	Part A (1) Polymeric Isocyanate	Part B (2) Polyols, Surfactants & Catalysts
Viscosity	400cps	400cps
Average Net Weight	9.88 lbs/gal	9.23 lbs/gal
Mixing Ratio by Volume	1:1 Ratio	1:1 Ratio
Shelf Life	1 Year	1 Year
Physical Property*	Test Method	Results
Elongation	ASTM D412	150%
Modulus @ 150% Elongation	ASTM D412	20 psi

\* Typical properties and characteristics are based on samples tested and are not guaranteed for all samples of this product. This data and information is intended as a guide and does not reflect the specification or specification range for any particular property of this product.

## PROTECTION & SAFETY

Mule-Hide maintains Safety Data Sheets on all of its non-exempt products. Safety Data Sheets contain health and safety information for your development of appropriate product handling procedures to protect your employees and customers. Mule-Hide's Safety Data Sheets should be read and understood by all of your supervisory personnel and employees before using Mule-Hide products in your facilities.

## ADDITIONAL INFORMATION

The information given on this PDS is subject to change without notice. Always check the Mule-Hide website at [www.mulehide.com](http://www.mulehide.com) for the latest information, changes and updates or contact Mule-Hide at 800-786-1492.

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