

System Specifications

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100% Silicone Roof Coating System For Aged Smooth and Granulated Modified Bitumen Membrane Systems

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100% Silicone Roof Coating System For Aged Smooth and Granulated Modified Bitumen Membrane Systems

Part 1 General

(Jan 2020)

This specification is a guide for coating and restoration of existing, aged, smooth and granulated Modified Bitumen (MB) roof systems utilizing the Mule-Hide 100% Silicone Roof Coating and accessory products.

1.1 Scope of Work

- A. Contractor will provide all labor, equipment and Mule-Hide labeled materials necessary to install a 100% Silicone Roof Coating System.
- B. Mule-Hide's most current Product Data Sheets and installation instructions shall be followed in conjunction with this specification.
- C. Contractor to complete all necessary repairs to the existing roof system to restore it to a watertight condition using similar materials prior to installing the 100% Silicone Roof Coating System.

1.2 Related Sections

- A. Related sections may or may not be applicable to this specification.
- B. Section 07 62 00: Sheet Metal Flashing and Trim: Metal flashing and counterflashing installation and requirements.
- C. Section 22 30 00: Plumbing: Roof drains, scuppers, gutters and downspout installation and requirements.

1.3 References

- A. ASTM D6694 Standard Specification for Liquid-Applied Silicone Coating
- B. NRCA Roofing and Waterproofing Manual
- C. Underwriters Laboratories Building Materials Directory
- D. CRRC (Cool Roof Ratings Council)

1.4 Submittals

- A. Submit Product Data Sheets (PDS) confirming physical and performance properties of each product used in the system.
- B. Submit Safety Data Sheets (SDS) for each product used in the system.
- C. Submit a roof survey including roof type, measurements and descriptions of the condition of the seams, penetrations, drains, gutters, known leaks and a moisture scan or test cuts with an indication of moisture content. Photographs of all conditions should be included in the submission.
- D. Submit a sample copy of the requested warranty type.

1.5 Quality Assurance

- A. Manufacturer Qualifications: Mule-Hide Products Co., Inc. shall provide a roofing system that meets or exceeds the criteria listed in this section.
- B. Contractor must be a Mule-Hide Warranty Eligible Contractor approved for the installation of the products utilized in this system specification.
- C. Supplier shall retain batch samples of all coating products used in the system for a minimum of 5 years.
- D. Prior to work commencing, the Mule-Hide Warranty Eligible Contractor shall submit a fully completed Silicone Roof Coating System Warranty Application to the Mule-Hide Technical Department. Included shall be an accurately dimensioned roof drawing plus photos of any unusual flashing details or roof conditions.
- E. Contractor shall furnish all insurance, licenses, permits and certifications as required by local authorities and/or the property owner.
- F. Contractor shall ensure that all work performed at the site shall be in accordance with National Roofing Contractors Association (NRCA) Low Slope Roofing Manual recommendations and all other pertinent guidelines issued by the NRCA in reference to other types of construction present at the job site.

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1.6 Product Delivery, Storage and Handling

- A. All products delivered to the job site shall be in their original unopened containers or wrappings and clearly labeled with the manufacturer's name, product identification and date of manufacture.
- B. Store all materials in a dry, clean area protected from the elements and damage. Place all stored materials on pallets and cover with a tarpaulin. Keep out of direct contact with sunlight.
- C. All liquid products and caulks shall be stored at temperatures between 60°F and 80°F. Materials exposed to lower temperatures affect the workability and performance of the product. Products shall be restored to the above temperature prior to use.
- D. All flammable materials shall be stored in a cool, dry area away from open flames and sparks. Follow precautions outlined on containers or supplied by the material manufacturer/supplier.
- E. All materials determined as being damaged (confirmed by Mule-Hide) due to improper storage on the job site are to be replaced with new materials.

1.7 Job Conditions

- A. The roof must be clean, dry and free of areas of ponding water, ice, snow, rain or dew, oils, grease, particulate matter or other debris.
- B. Roof must be inspected for the following existing conditions:
 - 1. Ridges, blisters, or other membrane or system defects
 - 2. Peeling and chalking of previous coatings
 - 3. Poorly attached vents or other projections
 - 4. Open seams and side laps
 - 5. Insufficient slope, damaged membrane or insulation
 - 6. Areas of ponding water – areas of dirt/debris accumulation
 - 7. Broken or improperly flashed pipes
 - 8. Broken or missing drain components
 - 9. Loose or damaged perimeter edge metal
 - 10. Deteriorated, damaged, or loose flashings
 - 11. Damaged or wet insulation or substrates
- C. All deficiencies must be properly corrected prior to the installation of the new silicone roof coating system.
- D. The contractor shall follow and comply with all safety regulations as recommended by OSHA.
- E. Any unusual or concealed condition discovered during the preparation of the existing roof surface or installation of the silicone roof coating system is to be reported to the owner and Mule-Hide immediately in writing. Work is to be halted until the owner has responded with a solution to the problems.
- F. All local building codes and requirements should be followed where applicable. It is the roofing contractor's sole responsibility to determine and ensure that the roofing system selected complies with all local codes and requirements.
- G. All air intake ventilation equipment should be shut off and all ductwork openings should be temporarily sealed during product application.

1.8 Precautions

- A. Coatings require mixing immediately prior to application. All containers shall be thoroughly mixed with a mechanical mixing device for a minimum of 5 (five) minutes each. Mix at low speed to avoid entraining air into the coating. Coatings shall be mixed no more than 1 (one) hour prior to use.
- B. This product cures through absorption of moisture from the air. Avoid entraining air when mixing. Do not mix at high speeds.
- C. Remixing of 100% Silicone Roof Coating is permitted as necessary.
- D. Remixing of Mule-Hide 2-Part Epoxy Primer after expiration of its pot life is not permitted.
- E. No products with a "Flash Point" below 100°F shall be permitted due to associated fire hazard.
- F. No products with chlorinated "Toxic Exempt" solvents including perchloroethylene, 111 trichloroethane or methylene chloride or isocyanates shall be utilized due to the associated health hazards to workers and building occupants.
- G. No asphalt or vegetable based oils may be used in the production of any product included in this specification.
- H. Materials should be maintained at a minimum temperature of 50°F for 24 hours prior to the application to ensure the optimal application qualities.
- I. Do not apply coating when ambient temperature is within 5°F of the dew point.
- J. Do not apply coatings during or just before rain, inclement weather or on frost covered or wet surfaces.
- K. The roof surface must be a minimum of 35°F to ensure that frozen condensation is not present on the roof surface.
- L. The roof surface should not exceed a maximum of 100°F to avoid blisters and pinholes.

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1.9 Protection of Buildings and Adjacent Areas

- A. It is the sole responsibility of the installing contractor to protect all surfaces adjacent to the surfaces to be coated including but not limited to, windows, doors, equipment and wall surfaces, either from overspray, brushing or rolling of the coatings being installed.
- B. All roof top air intake equipment should be turned off and all openings should be sealed to prevent any fumes from entering the building.
- C. When spraying, parking lots adjoining the building should be blocked off sufficiently to protect vehicles from wind borne overspray.

1.10 Warranties

Mule-Hide Roof Coating NDL System Warranties ("System Warranties") are available for commercial projects when approved by Mule-Hide and installed in compliance with Mule-Hide's published specifications and details. System warranties are only available when applied for and installed by Mule-Hide Warranty Eligible Contractors. System Warranties are not available for residential projects. The Roof Coatings Material-Only Limited Warranty is available for both residential and commercial projects. Mule-Hide defines a residential project as a single-family dwelling.

- A. Roof Coatings Warranty Application forms must be fully completed and submitted to the Mule-Hide Technical Department prior to beginning the project. Issuance of a warranty will be dependent upon completion of the project to the satisfaction of Mule-Hide and payment of any required warranty fees. Mule-Hide reserves the right to decline to issue any warranties for projects completed before the submittal of the proper Warranty Application to Mule-Hide.
- B. Mule-Hide's Silicone Roof Coating Material-Only Limited Warranty
 1. Mule-Hide offers a 10, 15, or 20-year Roof Coating Material-Only Limited Warranty for residential projects and commercial projects. This warranty covers leaks due to manufacturing defects only and does not include coverage for labor costs, leaks due to workmanship of the installed products, leaks caused by movement or deterioration of the existing roof surface to which the Acrylic Roof Coating System has been applied, leaks caused by other substrate conditions, other components not supplied by Mule-Hide and does not cover the appearance, cleanliness, discoloration or staining of the coating for any reason.
 2. Mule-Hide does not perform inspections of the installation before issuing the Roof Coatings Material-Only Limited Warranty. A Mule-Hide Warranty Application and the appropriate fee (if required) must be submitted to Mule-Hide to obtain this warranty. Proof of purchase (invoices) is required. See the Mule-Hide Roof Coatings Material-Only Limited Warranty sample for specific terms and conditions. This warranty is not transferrable.
- C. Mule-Hide's 20-year Premium Material-Only Warranty
 1. Available to warranty eligible contractors only. This warranty covers labor associated with leaks directly caused by product defects. This does not include coverage for labor costs associated with leaks due to workmanship of the installed products or other items noted above. Available for both residential and commercial projects, fees and additional information is available on the applicable warranty application.
- D. Mule-Hide's Roof Coatings NDL System Warranties for Commercial Buildings
 1. Mule-Hide offers a 10, 15 or 20-year Roof Coatings NDL System Warranties. The Roof Coatings NDL System Warranty is available through Mule-Hide Warranty Eligible Contractors only for commercial projects. This warranty is not available for residential projects. This warranty covers leaks due to manufacturing defects, premature weathering and the contractor's workmanship of the installed product. This warranty does not cover leaks due to movement or deterioration of the existing roof surface to which the Silicone Roof Coating System has been applied, leaks caused by other substrate conditions, components not supplied by Mule-Hide and does not cover the appearance, cleanliness, discoloration or staining of the coating for any reason.

See the Mule-Hide Roof Coatings NDL System Warranty sample for specific terms and conditions. Please contact the Mule-Hide Technical Department for information and requirements regarding the Mule-Hide Roof Coatings System Warranty Program.

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Mule-Hide Roof Coatings System warranties require the following minimum application rates:

Table 1 Smooth Modified Bitumen systems

Smooth Surface Modified Bitumen				
Warranty Type	Cleaner	Primer	Seams	100% Silicone Roof Coating
10-year	Clean with 115 Cleaner applied with low pressure sprayer then power washed.	1 coat @ .25 gal/100 sf.	100% Silicone Sealant brush applied @ 1.0 gal/100 linear feet of seams. Or 100% Silicone Roof Coating applied 6" wide @ 1.0 gal/100 sf centered over seams, embed fabric, apply second coat at same rate as the first	1 coat @ 1.5 gal/100 sf (24 wet mils, 23 dry mils)
15-year	Clean with 115 Cleaner applied with low pressure sprayer then power washed.	1 coat @ .25 gal/100 sf.	100% Silicone Sealant brush applied @ 1.0 gal/100 linear feet of seams. Or 100% Silicone Roof Coating applied 6" wide @ 1.0 gal/100 sf centered over seams, embed fabric, apply second coat at same rate as the first	1 coat @ 2.0 gal/100 sf (32 wet mils, 31 dry mils)
20-year	Clean with 115 Cleaner applied with low pressure sprayer then power washed.	1 coat @ .25 gal/100 sf.	100% Silicone Sealant brush applied @ 1.0 gal/100 linear feet of seams. Or 100% Silicone Roof Coating applied 6" wide @ 1.0 gal/100 sf centered over seams, embed fabric, apply second coat at same rate as the first	2 coats @ 1.25 gal/100 sf (20 wet mils, 19 dry mils per coat)

Table 2 Granule Surface Modified Bitumen systems

Granule Surface Modified Bitumen				
Warranty Type	Cleaner	Primer	Seams	100% Silicone Roof Coating
10-year	Clean with 115 Cleaner applied with low pressure sprayer then power washed.	1 coat @ .5 gal/100 sf.	100% Silicone Sealant brush applied @ 1.0 gal/100 linear feet of seams. Or 100% Silicone Roof Coating applied 6" wide @ 1.0 gal/100 sf centered over seams, embed fabric, apply second coat at same rate as the first	1 coat @ 2.0 gal/100 sf (32 mils wet, 31 mils dry per coat)
15-year	Clean with 115 Cleaner applied with low pressure sprayer then power washed.	1 coat @ .5 gal/100 sf.	100% Silicone Sealant brush applied @ 1.0 gal/100 linear feet of seams. Or 100% Silicone Roof Coating applied 6" wide @ 1.0 gal/100 sf centered over seams, embed fabric, apply second coat at same rate as the first	1 coat @ 2.5 gal/100 sf (40 wet mils, 38 dry mils)
20-year	Clean with 115 Cleaner applied with low pressure sprayer then power washed.	1 coat @ .5 gal/100 sf.	100% Silicone Sealant brush applied @ 1.0 gal/100 linear feet of seams. Or 100% Silicone Roof Coating applied 6" wide @ 1.0 gal/100 sf centered over seams, embed fabric, apply second coat at same rate as the first	2 coats @ 1.5 gal/100 sf (24 wet mils, 23 dry mils per coat)

Notes:

- Minimum application rates listed do not include thickness of primers or areas where additional coatings and reinforcement are required.
- When application rates are greater than 1 gal/100 sf per coat, the coverage can be divided into two equal coats totaling the proper application rates if desired.

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Part 2 Products

2.1 General

- A. The components of the Mule-Hide Silicone Roof Coating System shall be products manufactured or supplied by Mule-Hide Products Co., Inc.
- B. Components other than those supplied or manufactured by Mule-Hide may be submitted for review and acceptance by Mule-Hide's Technical Department. Any product requested for review and acceptance must be submitted prior to the job start. Mule-Hide's acceptance of any other product is based solely on chemical compatibility and published performance data provided by the component manufacturer. Other components may be considered on a job-by-job basis and must be approved in writing by Mule-Hide's Technical Department. Mule-Hide offers no warranty or guarantee for the performance or suitability of any component not supplied or manufactured by Mule-Hide.

2.2 Products

The primary product comprising the Silicone Roof Coating System shall be the Mule-Hide 100% Silicone Roof Coating that meets or exceeds the requirements of ASTM D6694. This product is a 100% silicone based, single-component roof coating that creates a barrier that is resistant to normal weathering, is durable, breathable and weatherproof. Refer to the Mule-Hide Product Data Sheets for physical properties and additional information.

2.3 Accessory Products

The following Mule-Hide materials must be used to install Mule-Hide Silicone Roof Coating Systems. Mule-Hide will not warrant any application where another manufacturer's product is substituted for a Mule-Hide product. All products listed below are physically and chemically compatible with each other.

- A. 115 Cleaner – a biodegradable detergent wash suitable for cleaning and preparing metal and aged roof surfaces (including but not limited to smooth BUR, modified bitumen, EPDM, TPO, Hypalon (CSPE) and PVC roof systems).
- B. Si 2-Part Epoxy Primer – a 2-part epoxy intended for preparing existing smooth surfaced asphalt roofs, modified bitumen, rusted metal and areas of light ponding (as defined by Section 3.2.C.), prior to coating with Mule-Hide's 100% Silicone Roof Coating or 100% Silicone Sealant. The application rate is .25 gal/100 sf for smooth surfaces, and .5 gal/100 sf for granulated surfaces.
- C. Multibase SB – a one-component acrylic coating used as a primer for aged PVC surfaces. The application rate is .5 gal/100 sf. It can be used in valleys and waterways but this product may not be used as a primer on any surfaces that pond water.
- D. 100% Silicone Sealant – a high solids non-shrinking, moisture cure silicone sealant intended for sealing joints in masonry, architectural metal, metal roof seams and fasteners and miscellaneous repairs prior to coating.
- E. MP Liquid Sealant – a single component, non-shrink, polyurethane sealant used for filling/topping pitch pans.
- F. ShapeShift Pitch Pans – high-strength polymer straight and outside corner sections that snap-lock together to create custom sized pitch pans to seal around various roof penetrations.
- G. Tietex® 325 Poly Fabric – a stitch-bonded polyester product that offers high-strength properties with good elongation for excellent thermal stress force accommodations. Tietex 325 Poly Fabric is a soft polyester that will readily conform to surface irregularities and is easy to handle.
- H. Walkway Granules – Mule-Hide Walkways granules are colored EPDM granules available in gray or safety yellow used with the 100% Silicone Roof Coating to provide a non-slip surface over a Mule-Hide Silicone Roof Coating System in areas of foot traffic or service areas.

2.4 Equipment

- A. Spray Equipment (optional) – Mule-Hide recommends the Graco GH 933ES Hi-Flo Big Rig sprayer with a Monarch 5:1 pump, 3/4" material hose (7,250 psi) up to 250 ft., 1/2" whip, XHF spray gun (7,250 psi) with a XDF 7,250 psi tip (.029 - .035). The recommended pressure at the gun should be 3,000 psi while spraying (Note: Pump lower must be set to maximum lower-ball travel). Please contact Mule-Hide Technical Department for more detailed information.
Note: Use of the Monarch pump requires the use of an air compressor capable of delivering 20CFM @ 90 psi.
- B. Miscellaneous equipment includes 3/4" to 1-1/4" nap, lint free, 9" roller covers and rollers, 6' handles, 4" double wide chip brushes, roofers' trowels, scissors for cutting fabric and a 1/2" power drill with mixing attachment.
- C. Miscellaneous hand and power tools may be required to complete any repairs to the existing roof.

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Part 3 Execution

3.1 Examination

- A. Prior to bidding the project a pre-inspection of the roof should take place with the Warranty Eligible Contractor and a Mule-Hide representative (local Territory Manager) to review the conditions of the roof and determine if the roof is suitable for the application of a Mule-Hide Silicone Roof Coating System. Mule-Hide requires a moisture scan of the entire roof submitted on Mule-Hide's Moisture Scan Report. This should be followed up with core cuts to confirm the actual condition.
- B. If the existing roof has been coated with aluminum coating all aluminum coating must be removed or the roof is not acceptable for the Silicone Roof Coating System. Adhesion tests are required after cleaning.
- C. If the roof surface has been coated with an emulsion, the roof is not acceptable for the Silicone Roof Coating System.
- D. If the roof surface has been coated with an acrylic coating that is in good condition, the application of the primer may not be required. Adhesion tests should be performed with and without the primer. Contact Mule-Hide Technical Department for additional guidelines to determine if a primer is required. Adhesion tests must be submitted to Mule-Hide for review prior to starting the project.
- E. Adhesion Tests
 1. The decision to perform adhesion tests should be determined at the time of the pre-inspection. Any smooth or granulated Modified Bitumen (Mod Bit) roof system having an existing coating covering the roof surface shall have adhesion tests performed. While there is no actual ASTM test method for field testing of adhesion for roof coatings, many manufacturers will reference ATSM D903 or ASTM D3359. Mule-Hide follows ASTM D903 and ASTM D6083 with the following modifications.
 2. Perform a minimum of two (2) tests, or a minimum of one (1) test per 100 squares (10,000 square feet) of roof surface. If the roof is divided up into several sections, then each section shall be addressed as an individual roof and the minimum test requirements shall be followed for each section.
 3. Performing adhesion tests
 - a. Using Si 2-Part Epoxy Primer or Multibase SB
 - i. Thoroughly clean an area a minimum of 12" square (12" by 12").
 - ii. Pre-cut several strips of Tietex fabric 1" wide and 8" to 10" long.
 - iii. Brush apply a coat of either Si 2-Part Epoxy Primer (.25 gal/100 sf) or Multibase SB (.5 gal/100 sf) in each area to be tested.
 - iv. Immediately embed the Tietex fabric into the primer/coating centering it in the coating but leaving about 3" to 4" of the strip laying loose past the edge of the primer/coating. Dry brush the fabric into the primer/coating to ensure complete embedment and leaving no voids, air pockets or wrinkles.
 - v. Apply a second coat at the same rate as the first coat.
 - b. Repeat this procedure for each adhesion test.
 - c. Allow the test patches to dry a minimum of 4 to 5 days before conducting the tests.
 - d. When conducting the tests, lift the loose fabric and pull slowly straight up, do not "jerk" the tag end of the fabric. If the fabric separates from the primer/coating, leaving the coating still adhered to the roof membrane, the test is a "pass". If the primer/coating separates from the roof surface, the test is a "fail".
 4. If any tests fail, contact Mule-Hide Technical Department to discuss further options/remedies.
 5. Adhesion test failures may disqualify the roof as acceptable for application of the Silicone Roof Coating System.
 6. Mule-Hide requires the contractor schedule with the local Mule-Hide Territory Manager to observe the removal of the fabric during the adhesion tests (preparation and application do not require observation).

3.2 Existing Conditions and Remedies

- A. Prior to the commencement of work, the roof shall be re-inspected and any conditions not included in the roof survey shall be added and noted. All new information must be communicated to the Mule-Hide prior to starting work.
- B. The existing roof assembly must be structurally sound, watertight and free of shrinkage, buckling, unacceptable ponding conditions, encapsulated moisture, open seams, open or damaged flashings, loose terminations or other serious defects. Do not install the Silicone Roof Coating System over saturated substrates or insulation.
- C. Defects and leaks shall be remedied prior to the installation of the Silicone Roof Coating System. Follow original manufacturers repair methods, refer to the NRCA Repair Manual for Low-Slope Membrane Roof Systems for individual condition repairs of defects or contact Mule-Hide Technical Department for recommendations. If repairs are extensive, contact Mule-Hide Technical Department for recommendations.
- D. No areas shall retain water more than 48 hours or at a depth exceeding 1/4" at any time. Drains must be installed as to allow positive drainage of the roof surface. Retained water may not cover more than 5% of the roof surface. Areas of ponding (must evaporate within 48 hours as defined by NRCA) may be eliminated by filling with insulation and installing new Mod Bit materials similar to the existing roof system before installing the Silicone Roof Coating System if it is not possible to install drains.

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- E. Existing insulation, membrane and all fasteners shall be inspected for insulation damage, membrane damage and fastener back out. Should any of these conditions exist, contact Mule-Hide Technical Department to determine a proper repair procedure.
- F. Any wet insulation must be removed and replaced with similar new insulation and new Mod Bit materials installed in the same manner as the Mod Bit membrane removed. Mule-Hide recommends following NRCA published guidelines for completing repairs and replacement of any area containing damaged or wet insulation or substrate. Depending on the extent of wet insulation, a complete replacement of the existing roof system may be required. Mule-Hide requires moisture scans be completed followed with core cuts to confirm the condition of the insulation and substrate.
- G. Existing flashings shall be properly terminated according to NRCA guidelines or the original membrane manufacturer's specifications. Defective terminations shall be remedied. Damaged flashings shall be repaired prior to installation of the Silicone Roof Coating System.
- H. Curbs and penetrations must not interrupt the flow of water off the roof. If defects are present, install crickets to divert water around the penetrations.
- I. If the existing roof surface contains multiple layers of aluminum coating that cannot be removed, the project is not acceptable for application of the 100% Silicone Roof Coating System.
- J. If the existing roof surface has been coated with asphalt emulsion, the roof is not acceptable for application of the Silicone Roof Coating System.
- K. The existing roof system must be returned to a sound, watertight condition prior to installation of the Silicone Roof Coating System.

3.3 Surface Preparation

- A. Mechanically remove all loose coatings and/or patching material as is possible. Wire brush to remove any areas of scaly rust on any metal surfaces to be coated. Remove all debris, dirt and other loose contaminants from the roof surface prior to cleaning. Aluminum roof coatings must be removed.
- B. The roof surface shall be cleaned with Mule-Hide 115 Cleaner in accordance with Mule-Hide's most current Product Data Sheet. Do not dilute the 115 Cleaner. Apply direct to the roof with a mop, pump sprayer or other suitable low-pressure sprayer at a rate of .25 to .5 gallon per 100 square feet. Avoid contact with painted surfaces or vinyl siding. Allow wet contact with the roof surface for a minimum of 15 minutes. Areas that are heavily contaminated or working in hotter temperatures may require an increased application rate from .5 gallon to 1 gallon per 100 square feet. Rewet the membrane with additional cleaner if needed. Agitate roof surface with stiff bristle broom or orbital scrubber. Heavily contaminated areas may require multiple cleanings with scrubbing to obtain a clean membrane.
- C. Rinse the roof surface with clean water and a minimum 2,000 psi power washer until no 115 Cleaner residue remains. Allow roof to dry completely prior to system installation. Spot check the dried membrane with a clean rag by wiping the surface of the membrane to determine if any residue remains. If the cloth shows signs of residue (dirt or chalk) then repeat the rinsing of the membrane. A second cleaning application may be required.
- D. The contractor must be careful not to damage the existing membrane or inject water into the system while cleaning.
- E. Check local building ordinances for acceptable disposal of the rinse water. Many areas do not permit discharge into sewer systems or water containment areas. Compliance with local building codes and ordinances is the sole responsibility of the contractor.
- F. All repairs to the existing roof surface made with similar Mod Bit products may be primed upon completion of the repair. There is not a delay to priming unless there are exposed asphalts (60-day cure time) or asphalt based roof mastics (90-day cure time).
- G. Areas of the roof surface where there is exposed roof mastic from recent repairs will require a 90-day cure time prior to application of the Si 2-Part Epoxy Primer or the Multibase SB. Priming roof mastics with less than a 90-day cure may cause cracking of the Silicone Roof Coating System.
- H. All substrates must be clean and dry prior to priming or coating.
- I. Prime Mod Bit roof surfaces and flashings with Mule-Hide Si 2-Part Epoxy Primer. Apply 1 coat of primer at an application rate on smooth surfaces of .25 gallon (4 wet mils) per 100 square feet using a short nap roller or brush. This is approximately 3.5 mils when dry. On granulated surfaces the application rate is .5 gallon per 100 square feet. Allow the primer to dry till the next day (minimum of 8 hours) prior to applying the 100% Silicone Roof Coating. Do not over apply the primer.
- J. Multibase SB may be substituted for Si 2-Part Epoxy Primer over Mod Bit and asphaltic surfaces that do not pond water. Multibase SB is applied at a rate of .5 gal/100 sf. over smooth surfaces and at 1.0 gal/100 sf over granulated surfaces. Allow a minimum of 2 hours of drying time. Lower temperatures or high humidity may require longer drying times.
- K. When priming the roof surface with the Multibase SB, all areas of light ponding should be primed first using the Si 2-Part Epoxy Primer. The epoxy primer should be applied at least 2 feet in all directions beyond the area where these conditions exist. Once the Si 2-Part Epoxy Primer is dry, the Multibase SB may be applied to the rest of the roof area overlapping onto the Si 2-Part Epoxy Primer approximately 6 inches maximum. Allow the Multibase SB to dry a minimum of 2 hours prior to proceeding with the silicone coatings or sealants.

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3.4 Application

- A. All Mod Bit roof surfaces, Mod Bit flashings and cleaned rusted metal intended to be coated with silicone coatings or sealants must first be primed with Mule-Hide Si 2-Part Epoxy Primer or Multibase SB (where permitted).
- B. If asphalt roof mastic has been used for repairs, exposed mastic must be allowed to cure for a 90-day period prior to priming.
- C. Begin the roof application by applying 1 coat of Si 2-Part Epoxy Primer using application rates in section 3.4 I. Allow to dry till the next day (minimum of 8 hours drying time) prior to applying the 100% Silicone Roof Coating.
- D. All Mod Bit and asphaltic roof surfaces that have proper drainage (no ponding exists) may be primed with Multibase SB. The Si 2-Part Epoxy Primer is required on any areas that exhibit light ponding, waterways, valleys and cleaned rusted metal.
- E. It is recommended that all details including but not limited to: curbs, parapets, penetrations, drains, scuppers, pitch pans, valleys, waterways, pipes, and light ponding areas are properly prepared as follows prior to coating the roof:
 1. Seams.
 - a. All Modified Bitumen seams (including but not limited to seams, end laps and edges of all flashings) shall be caulked with Mule-Hide 100% Silicone Sealant. Sealant is applied 2 inches wide the entire length of each seam with a 4" brush, applied approximately 1/8" thick and tapered on the edges.
 - b. An option to 100% Silicone Sealant is to strip seams and end laps with Mule-Hide 100% Silicone Roof Coating and a minimum 6" wide Tietex fabric. After priming the roof surface with the Si 2-Part Epoxy Primer or with Multibase SB (where permitted), the 100% Silicone Roof Coating shall be applied at an application rate of 1 gal/100 sf. (16 wet mils) and extending 4 inches out from the edge of the seam. Immediately embed the Tietex fabric and dry brush the fabric smooth to eliminate wrinkles and voids. Apply an additional coat of 100% Silicone Roof Coating over the fabric at the same rate of 1 gal/100 sf. (16 wet mils) to fully encapsulate it. Allow to dry till the next day (minimum of 12 hours) before coating the roof surface with the 100% Silicone Roof Coating.
 - c. The seam repairs and reinforcement installation above are used as the basis for all other stripping and flashing applications, if not specified, the overlaps and minimum reinforcements from this section should be used.
 2. Flashings and Penetrations
 - a. After priming, corners of curbs and parapets are coated with 100% Silicone Roof Coating at a rate of 1 gal/100 sf (16 wet mils). 6" wide Tietex fabric is embedded into the wet coating and dry brushed to remove any wrinkles or voids. The fabric should extend a minimum of 3" on each side of the corner. A second coat is then applied at the same application rate as the first coat. The coating should be allowed to dry till the next day (minimum of 8 hours) prior to coating the roof surface. Corners need to be reinforced similar to seam stripping only in a vertical application.
 - b. Curbs flashed with Mod Bit Cap Sheet shall have all seams/edges of flashings sealed with the 100% Silicone Sealant. After primer has dried, Sealant is applied 4 inches wide the entire length of each seam with a 4" brush, applied approximately 1/8" thick and tapered on the edges.
 - c. Scuppers are flashed using 100% Silicone Roof Coating and Tietex fabric with fabric reinforcement installed a minimum of 2" into the throat of the scupper and 3" minimum onto the wall or deck.
 - d. Pipes are flashed using a two-piece wrap of Tietex fabric installed in 100% Silicone Roof Coating after being primed with the Si 2-Part Epoxy Primer at an application rate of .25 gal/100 sf. Primer shall be allowed to dry a minimum of 2 hours prior to application of the 100% Silicone Roof Coating. Multibase SB may be used for priming in place of the Si 2-Part Epoxy Primer provided the detail is not in a ponding area.
 - i. Apply a base coat of 100% Silicone Roof Coating up the sides of the pipe flashing to the point of termination of the existing pipe flashing and around the base of the pipe extending a minimum of 3". Application of the 100% Silicone Roof Coating shall be at a rate of 1 gal/100 sf. (16 wet mils).
 - ii. Apply the vertical pipe wrap fabric around the pipe with relief cuts at the base to allow "fingers" to extend a minimum of 1" onto the deck. Dry brush the fabric to embed the fabric into the coating and remove any wrinkles or voids.
 - iii. The base flange wrap is installed on the deck, with a hole cut tight to the base of the pipe and a minimum of 3" coverage from the base of the pipe. Dry brush the fabric to embed the fabric into the coating and remove any wrinkles or voids.
 - iv. After embedding the fabric, apply a second coat of the 100% Silicone Roof Coating at the same application rate as the first coat fully encapsulating the fabric. Allow the coating to dry till the next day (minimum of 12 hours) prior to applying additional coats of the 100% Silicone Roof Coating.
 - v. If the pipe flashings are in sound condition, after priming, 100% Silicone Sealant may be applied with a brush or trowel approximately 1/8" thick around the pipe base extending from the base of the pipe out approximately 3". The sealant shall also be applied vertically a minimum 8" (where possible) encapsulating the existing flashing to the point of termination.

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- e. Sealant pockets are flashed similar to pipes with base and vertical wraps of reinforcing fabric, and the entire top of the pocket and penetrations (minimum 1" onto the penetration) coated with 100% Silicone Roof Coating.
 - f. Sealant pockets in sound condition, after priming, may be coated with the 100% Silicone Sealant applied with a brush or trowel 1/8" to 1/4" thick fully encapsulating the sealant pocket. Sealant should extend out from the base of the pocket a minimum of 3" on all sides with edges tapered to provide a smooth transition for the 100% Silicone Roof Coating.
 - g. Drains shall have a bead of 100% Silicone Sealant applied and feathered at the rear of the drain ring. Installation of the 100% Silicone Roof Coating shall be installed onto the feathered sealant.
 - h. Flashings and penetrations that cannot be sealed utilizing reinforcing fabric due to their shape or location shall be coated with just the 100% Silicone Sealant. Apply with a brush or trowel 1/8" thick to 1/4" thick and taper all edges. Allow to dry till the next day (minimum of 12 hours) prior to applying the 100% Silicone Roof Coating.
7. Waterways, Valleys, and Areas which Retain Water
 - a. These areas must not exceed the limitations identified in Section 3.2 Existing Conditions and Remedies. These areas require the use of the Si 2-Part Epoxy Primer or Multibase SB. Do not use Multibase SB in areas of ponded water.
 - b. Areas identified should be, after priming with the Si 2-Part Epoxy Primer, reinforced using 100% Silicone Roof Coating and Tietex fabric in wide roll widths (20" or 40"). The 100% Silicone Roof Coating shall be applied at an application rate of 1 gal/100 sf. (16 wet mils). Tietex fabric shall be embedded in the wet coating and dry brushed or rolled to remove wrinkles or voids. A second coat of the 100% Silicone Roof Coating is then applied at the same application rate as the first coat. Reinforce the designated area and allow the coating to dry till the next day (minimum of 12 hours). The reinforcing fabric shall be centered in valley or cricket areas.
 8. Application over Blistered Areas
 - a. Blisters which occur in the cap ply of the Mod Bit which exposes the existing insulation must be repaired using like materials prior to the installation of the 100% Silicone Roof Coating.
 - b. If there are additional waterproofing plies below the cap sheet, the blisters can be removed and the area left can be treated similar to a Waterway in the previous section.
 - c. The step-off of the plies shall be treated with 100% Silicone Sealant feathered to provide a smooth transition to the area removed prior to the installation of the 100% Silicone Roof Coating.
- F. Silicone Roof Coating Application
1. Make sure all roof surfaces to receive the roof coating, are clean, free of any contamination or debris and are dry. Make sure all prep work is completed and dry prior to starting coating of the roof surface.
 2. Thoroughly stir all containers of 100% Silicone Roof Coating prior to application. Do not thin this product. This product cures through absorption of moisture from the air. Avoid entraining air when mixing. Do not mix at high speeds. Dry time will be faster in humid conditions. Do not apply this product over damp or wet surfaces.
 3. Open and partially full containers will skin over quickly. If this occurs, remove skin and continue using the remaining product. Mule-Hide recommends applying the 100% Silicone Roof Coating in two coats for best results, either spraying or rolling.
 4. Apply a base coat of 100% Silicone Roof Coating at the application rate as determined by the warranty requirements. See Section 1.10 Warranties for application rates. Material is fast drying. Do not distribute excessive amounts onto the roof surface prior to rolling. Do not over roll as a textured finish will result. Allow coating to dry. Typical drying time between coats at ambient temperature is 2 to 4 hours.
 5. Apply a second coat (when determined by the warranty requirements) of 100% Silicone Roof Coating at the same application rate as the first coat. The second coat should be applied perpendicular (90 degrees) to the direction the first coat was applied. Material is fast drying. Do not distribute excessive amounts onto the roof surface prior to rolling. Do not over roll as a textured finish will result.
 6. If spraying, use a multi-pass technique for each coat to obtain even results. Protect unintended surfaces from overspray. It is not recommended to use a spray application if any wind is occurring.
 7. Use a wet film thickness gauge during installation to confirm application rates.
 8. See Section 1.10 Warranties for information on wet/dry film thickness requirements for the various warranties available from Mule-Hide.
- G. Walkway Areas
1. Walkways may be constructed over newly installed silicone roof coatings with the use of the Mule-Hide Walkway granules and additional silicone coating.
 2. Create outlines for the walkways by taping these areas off with masking or painters tape.
 3. Apply a fresh coat of 100% Silicone Roof Coating at a rate of .75 to 1.0 gal/100 sf (12 to 16 wet mils).
 4. As soon as the silicone is applied immediately broadcast the granules into the wet coating at a minimum rate of 15 lbs. per 100 square feet. Make sure the granules completely cover the new coating.
 5. As soon as the granules are broadcast, remove the tape. Do not wait for the silicone to dry.

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6. Do not let the silicone skin over before applying the granules as the granules will not adhere to the silicone. The silicone must be wet.
7. Allow the coating to dry until the next day. Once dry, vacuum the loose granules to prevent the excess from going into drains or gutters.
8. Over time, walkway surfaces may wear, but can easily be repaired or resurfaced by applying additional 100% Silicone Roof Coating and new granules.

Note: Walkways are maintenance items not covered by Mule-Hide warranties. Additional coating and granules and their application are the responsibility of the building owner.

3.5 Protection

Always follow OSHA guidelines for proper safety clothing and equipment when spraying products.

3.6 Clean-Up

Remove all containers, equipment, and debris from the rooftop and project site upon project completion. Refer to each individual Product Data Sheet for clean-up of each individual product.

Note: When estimating materials necessary to complete a Silicone Roof Coating System it is the Contractor's responsibility to include material calculations for waste.

END OF SECTION