Rhino Linings® DuraTite® 1380 Silicone Roof Restoration System over Metal Roof Surfaces

NOTE: These specifications were current at the time of publication but are subject to change without notice. Please confirm the accuracy of these specifications with the manufacturer and/or distributor prior to installation.

SPECIFIER NOTE: This guideline does not outline all procedures for preparation and finishing of penetrations, drains, flashings, etc. This work should be outlined separately by the contractor/applicator before the work commences and shall be performed in a manner consistent with best trade practices and local building code.

This specification is based on systems manufactured by Rhino Linings Corporation, 9747 Businesspark Avenue, San Diego, CA 92131 Telephone: 1-800-422-2603, FAX 858-450-6881, www.rhinolinings.com. For assistance with specific product applications or with editing sections for your specific application, please contact the manufacturer.

Compliance with all Application Guide Specifications contained herein is required for participation in the Rhino Linings® DuraTite® Warranty Program. Prior to the start of a project a Rhino Technical Representative must inspect the proposed project and give written approval before project is eligible for warranty.

PART 1 — GENERAL

1.1 SUMMARY

A. These application guide specifications outline the materials, methods and conditions required for the proper application of the Rhino Linings DuraTite 1380 silicone roof restoration system over metal roof surfaces (22 gauge steel or heavier). When applied in accordance to the following specifications, DuraTite 1380 will coat, seal and protect metal surfaces that show signs of degradation from exposure to weather elements and common use.

B. The existing metal roof surface must be in sound condition and must demonstrate industry acknowledged typical effects from aging and use. With proper application DuraTite 1380 will provide a weather tight seal that protects the substrate from further damage caused by ultra violet light, water and other normal weathering hazards.

C. To qualify for application of this coating system a roof must have positive drainage and no standing water.

1.2 APPROVED CONTRACTOR

A. All Rhino Linings DuraTite® coatings and products shall be applied by a Rhino Qualified Contractor in order to qualify for the DuraTite Warranty Program

1.3 SUBMITTALS

A. Manufacturers published Technical Data Sheets (TDS) for all products contained in this specification.

B. Product handling, storage and safety as outlined in applicable Safety Data Sheets (SDS).

C. If applicable, additional installation procedures from Rhino Technical Representative as required for any unique roof characteristics or desired performance standards.

D. If applicable, evidence of certification as a Rhino Qualified Contractor from manufacturer.

E. If applicable, warranty documentation and procedure.

1.4 PRODUCT HANDLING, STORAGE, & SAFETY

A. Materials shall be delivered to jobsite or contractor in original, unopened containers with manufacturer's original labeling intact and clearly displaying product name, safety information, and batch/lot numbers.

B. Material shall be handled in accordance with manufacturer's storage and handling requirements as outlined on Technical Data Sheets (TDS) and shall comply with local fire & safety requirements.

C. Store materials in dry protected areas and on clean raised platforms with securely anchored weather protective covering.

D. Material that appears to have been damaged or frozen in transit, or bearing any other visible defect shall not be used or installed and shall be immediately removed from work site and returned to manufacturer upon discovery.

E. Adequate ventilation, protection from hazardous fumes and overspray potential shall be observed for all workers and associated trades in close proximity of site applications.

F. Prior to coating installation all personnel who are to be present during installation shall review appropriate Safety Data Sheets (SDS) provided by manufacturer.

G. Prior to coating installation, contractor must post all appropriate hazard signs in accordance with OSHA jobsite safety standards and take appropriate measure to notify building occupants and jobsite workers of any potential risks.

H. Keep Rhino Linings DuraTite® coating containers covered when not in use. Dispose of all containers in accordance with state and local environmental regulations.

1.5 JOBSITE CONDITIONS

A. Contractor shall not proceed with application of any DuraTite® coatings unless jobsite conditions and weather conditions are acceptable as specified by manufacturer on technical data sheet (TDS). No application of materials shall commence during inclement weather. Do not apply within two hours of sunset, rain, fog or freezing temperatures.

B. It is acceptable for the premises to remain occupied during the entire roofing project period. Contractor shall cooperate with the building owner or representative during construction operations to facilitate continued use of the facility and to protect vehicles, building occupants and building contents from damage during roofing project.

C. No other trades are permitted on the roof during the application or cure time of any DuraTite coating applications.

D. All heating, ventilation and air-conditioning (HVAC) equipment should be turned off during the entire application from prep to finish of DuraTite coating system.

E. Air intake vents, blowers, air conditioning units and evaporative coolers shall be disconnected or otherwise modified to prevent fumes from entering into the building or from contaminating the roof surface with condensate water.

F. It is the responsibility of the contractor to protect surfaces near the application work area to prevent overspray damage.

G. The coatings included herein shall not be applied when moisture is present on the substrate or if rain is expected before coating will properly cure. See all applicable Technical Data Sheets for information on cure profiles.

H. Wind barriers shall be used if wind conditions could affect the quality of the material being applied.

PART 2 — PRODUCTS

2.1 COATINGS AND RELATED MATERIALS

A. All materials used shall be supplied by Rhino Linings and shall meet specifications and physical properties as outlined in product Technical Data Sheets (TDS).

B. Materials approved for use in the Rhino Linings DuraTite® maintenance coating system include:

1. DuraTite® 1380 - High Solids Silicone Base & Top Coat
2. DuraTite Prime 2100 – 1:1 Epoxy Primer
3. DuraTite Prep – Substrate Cleaner
4. TieTex T-325 Polyester Fabric or equivalent supplied by Rhino Linings.
5. Mini Fibers for Thickening Purposes supplied by Rhino Linings.
6. Butyl Rubber Tape
7. Safety Yellow Silicone Walkway System (optional)

2.2 WARRANTY

A. Rhino Linings warrants that supplied material will be free from defect and will meet or exceed physical properties as published, when stored, handled and installed according to product application guidelines and when applied by a qualified applicator. Any material found to have a manufacturer defect shall be replaced at Rhino Linings expense. This guarantee does not cover incidental or consequential damages, labor, loss of production, or any other damages of any kind. The sole remedy for a claim of defective material shall be limited to replacement of defective material only.

B. The ***Rhino Linings® DuraTite® Warranty Program*** is available for an additional fee for qualifying roof projects. To be eligible for the Rhino Linings DuraTite Warranty Program the contractor must be qualified by Rhino Linings in advance and follow all procedures detailed in the warranty documentation. In addition, compliance and installation in accordance with product application specifications contained herein is required for participation in the Rhino Linings® DuraTite® Warranty Program.

2.3 QUALITY ASSURANCE

A. Primers, coating applied membrane repairs, and basecoats shall be allowed to cure before proceeding with subsequent applications

B. All coatings and primers shall be coated within recommended time period. If application is delayed beyond that time, consult the Rhino Linings Technical Department for recommendations.

C. The installation of this system should be accomplished in the presence of or with the advice of a Rhino Linings Representative.

D. No traffic shall be permitted on the coated roof surface for a minimum of 3 days. Damage to the coating by other trades shall not be the responsibility of the roofing manufacturer or contractor.

E. It is recommended that 15% variance be added to achieve the minimum dry mils requirement. It is the contractor's responsibility to meet the total dry film thickness required.

F. It is the responsibility of the contractor to maintain job progress report and daily logs of work completed as required by Manufacturer to assure that installation is in accordance with Manufacturers requirements.

PART 3 — APPLICATION

3.1 ROOF EXAMINATION

A. Adhesion tests are required for all surfaces to receive coating including all metal flashings. Documentation of adhesion tests is the responsibility of the contractor.

B. Verify roof slope prior to beginning installation. The existing roof must have positive drainage and there shall be no areas of standing water on the roof 24 hours after a rain, greater than 100 sq. ft. and more than ½" deep. Inspect and replace any roof drains or vents to ensure proper performance.

C. Replace deteriorated or structurally unsound decking.

D. All roof drains shall be inspected to ensure proper performance.

E. All roof systems fasteners shall be inspected for observed back out

3.2 SURFACE PREPARATION AND SUBSTRATE CLEANING

NOTE: Preparation shall include but is not limited to the procedure contained herein. Additional requirements may be advised by Rhino Linings after roof inspection to ensure proper adhesion and performance of coatings. It is the responsibility of the contractor to examine and inspect the substrate and perform all preparation work prior to application of any coatings.

All major repairs to substrate, vents, flashings, gutters and skylights should be complete. Examine flashing details for loose or deteriorated materials. Flashing terminations should be examined at perimeters, roof penetrations and drains to ensure the original material integrity has not been compromised. Proper inspection and preparation of the existing roof is critical to the long term performance of the DuraTite 1380 Silicone Metal roof restoration. It is imperative the applicator correct any substrate deficiencies prior to coating with any of the DuraTite restoration coatings.

A. All instances of heavy deposits of dirt, leaves and other debris shall be removed from the roof using stiff bristle broom.

B. Loose coating, paint, rust and scale shall be removed using: wire brush, scraper, sanding, or water blasting.

C. Remove and replace loose or backed-out fasteners by moving the fastener and plate at least 4" from the original location.

D. Algae, mildew or fungus on any areas of roof shall be treated with a solution of 1 part household bleach and 3 parts water.

E. Areas of grease contamination are to be cleaned with an industrial strength detergent. If the substrate is heavily soiled, the detergent may need to be applied and scrubbed with a stiff bristle broom.

F. New galvanized panels weathered less than 6 months shall be cleaned with 5% hydrochloric or phosphoric acid wash to remove contamination from oils or protective coverings applied to new metal.

G. Once sufficient contaminant removal has been performed, pressure wash the entire substrate with water. Using a minimum 2,000 psi pressure washer, rinse the surface with clean water. For sloped roofs begin at the lowest point of the roof and work toward the highest point, keeping the pressure washer tip within 12" of the roof surface. Once at the highest point, work down with a final rinse to remove residue. Additional time should be spent where contaminants have been treated to ensure that cleaning products are flushed entirely.

NOTE: Care should be taken when choosing industrial cleaners to make sure surrounding landscaping is not harmed.

3.3 PRIMING THE SUBSTRATE

Note: All exposed fasteners must be tightened or replaced prior to priming. Primer cure time will vary depending upon the ambient temperature and humidity. Stop application two hours before rain or when the dew point would be reached. Primer must be coated within 72 hours of application. If primer is not coated within 72 hours, contact Rhino Linings Technical Department for further instruction.

A. Prior to application of the DuraTite Prime 2100 allow the roof to dry completely.

B. Extend DuraTite Prime 2100 up protrusions (vent pipes, parapets, curbs and other protrusions at a minimum of 3" above existing flashing termination or substrate if existing flashings have been removed, creating a self-terminating flashing.

C. For rust free roofs, apply at a rate of 300 square feet per gallon with roller or by spray. Allow the primer to cure a minimum of 4-24 hours before proceeding with coating or substrate repairs.

D. For roofs with Minimal rust, apply two coats of DuraTite Prime 2100 at a rate of 300 square feet per gallon each. Allow the primer to cure a minimum of 4-24 hours before proceeding with 2nd coat. Allow final coat to cure a minimum of 4-24 hours before proceeding with coating or substrate repairs.

E. For roofs with pronounced rusting, apply two coats of DuraTite Prime 2100 at a rate of 150 square feet per gallon each. Allow the primer to cure a minimum of 4-24 hours before proceeding with 2nd coat. Allow final coat to cure a minimum of 4-24 hours before proceeding with coating or substrate repairs.

3.4 SEAM AND FLASHING FORTIFICATION INSPECTION AND REPAIR

NOTE: DuraTite Mini Fiber mixture consists of 2 parts DuraTite 1380 to 1 part Mini Fibers by volume.

A. The entire roof surface must be primed prior to making repairs with coatings.

B. Fill the old fastener hole location with DuraTite 1395B or the 2:1 mixture of DuraTite 1380 and Mini Fibers. Apply DuraTite 1380 with an embedded 4”X4” patch of Polyester fabric, apply a top coat of DuraTite 1380.

C. New fastener locations should be coated with DuraTite 1395B or 2:1 DuraTite Mini Fiber mixture at a minimum application thickness of 60 wet mils.

D. Fortification in an area larger than 2” must be re-adhered and overlaid with a minimum 6 inch wide Polyester fabric and DuraTite 1380. Use a brush to apply DuraTite 1380 liberally to the affected seam and surrounding area. While the DuraTite 1380 is in its liquid form, center and embed a strip of 6 inch wide polyester fabric to the coating. Cover the polyester fabric with additional DuraTite 1380 until the fabric is fully encapsulated. Feather the coating out beyond the fabric onto the membrane by 2 inches on both sides.

E. For roof penetrations, a 12”X12” polyester fabric with hole in the middle (for penetration) should be embedded into a liberal coat of DuraTite 1380. Encapsulate polyester fabric completely in all directions by extending beyond the fabric by 2” on the roof deck and 6” beyond the fabric when waterproofing vertical surfaces.

F. At parapet walls, firewalls, expansion joint curbs, mechanical curbs or large skylights, DuraTite 1380 and Polyester fabric should be used to overlay all flashing. Other areas around field fabricated pipe seals, pourable sealer pockets, small prefabricated curbs, tie-ins, etc. shall also be covered with DuraTite 1380 and Polyester Fabric.

G. Small incidental areas of ponded water will not impact the performance of this coating system: however in accordance with industry standards, the roofing assembly should be designed to prevent ponding of water on the roof for prolonged periods (longer than 48 hours). If necessary, tapered edge strips, crickets, new drains, or saddles are to be installed where periodic ponding may occur.

H. Re-inspect the roof surface for additional penetrations created in the process of cleaning and repair as well as any seams that may need reinforced or areas that may require fortification.

1. Horizontal laps

    A. Apply foot pressure to under lapping panel next to joints. If joint opens more than 1/16”, add fasteners to tighten the opening

    B. Fill all horizontal laps with DuraTite 1380 mixed with mini fibers or DuraTite 1395B. Apply with brush into joint and feather out onto the panel to achieve a smooth appearance.

    C. Apply DuraTite 1380 liberally to horizontal lap area, imbed polyester fabric into wet coating and apply another coat of DuraTite 1380 completely covering the fabric and out on the metal panel. Smooth out any wrinkles or fish mouths. Care must be taken to ensure the finish is flat and smooth.

2. Vertical Seams:

    A. If vertical seams are open more than 1/16”, add fasteners to tighten the opening.

    SPECIFIER NOTE: select one of the following two options below per needs of the job:

B. Fill all vertical seams with DuraTite 1380 mixed with mini-fibers or DuraTite 1395B. Brush product into joint and feather out onto panel. Care must be taken to ensure the finish is flat and smooth.

C. Apply DuraTite 1380 liberally to horizontal lap area, imbed polyester fabric into wet coating and apply another coat of DuraTite 1380 completely covering the fabric and out onto the metal panel. Smooth out any wrinkles or fish mouths. Care must be taken to ensure the finish is flat and smooth.

3. Ridge Caps

A. Ridge gaskets shall be a minimum ½" from outside lip.

B. Replace missing ridge gaskets.

C. Brush closure cavity with DuraTite 1380 mixed with mini-fibers or DuraTite 1395B at a minimum rate of 125 mils to encapsulate closure and feather out onto the panel

D. Apply DuraTite 1380 @ 1 gps to ridge cap area, imbed polyester fabric into wet coating and apply another coat of DuraTite 1380 completely covering the fabric and out onto the metal panel. Smooth out any wrinkles or fish mouths. Care must be taken to ensure the fnish is flat and smooth.

4. Gutters

A. Loose coating, paint, rust and scale should be removed during the preparation portion of this specification.

B. DuraTite Prime 2100 gutters during the prime portion of this specification.

C. Use the above 3 course method utilizing DuraTite 1380 and polyester fabric for all seam repair needed on gutters.

5. Flashings:

A. Weathered but solid flashings, round projection, machine legs, posts, guide wire straps , inside and outside corners, and all termination points, may be flashed using DuraTite 1395B or DuraTite 1380 mixed with mini-fibers.

B. Brush light trowelable product around the base of the penetration or at the juncture of the roof to wall so that the product is a minimum 3" wide and a minimum ¼ thick at the center and tapers to 40 mils at the edge. The trowelable mixture may also be used to create cants and as a joint filler.

C. Small tears, cuts or delaminated seams 2" or less may be repaired with DuraTite 1395B or a 2:1 mixture of DuraTite 1380 and Mini Fibers.

3.5 FIELD QUALITY CONTROL

NOTE: The recommended gallons for minimum mil thickness is a guideline and should be verified by the contractor to ensure that the minimum mil thickness is applied to the roof surface. Each contractor should estimate coating requirements based on actual experience, surface texture, substrate condition, wind, waste, and other factors increasing estimated gallons required. The total dry mil thickness of all coatings,

as well as the total dry mil thickness of the topcoat shall meet the minimums required by Rhino Linings. Ribs in metal roofing add surface area, and the amount of that additional area will depend on the configuration of the panels. If the specific factor is not known, a factor of 1.3 may be used as a multiplier to the measured square footage of the roof for ribbed metal roofing.

A. Care must be taken in applying silicone coatings near tie-in lines. Silicone can inhibit primer adhesion and lead to delamination.

B. Pay special attention to overspray, which can texture or discolor adjoining finished sections. Wind direction should conduct overspray away from finished roofing surfaces.

C. Damage to coating by other trades shall not be the responsibility of the roofing manufacturer or contractor.

D. See Technical Data Sheets for application equipment recommendations.

3.6 BASECOAT

A. Spray or roll one coat of DuraTite 1380 basecoat to coat all surfaces including expansion joint covers and flashings. Coating must cover all surfaces completely. Refer to the Application Rate section below for the wet mils to apply to achieve specified dry film thickness for each target term.

B. Extend DuraTite 1380 basecoat up protrusions (vent pipes, parapets, curbs and other protrusions a minimum of 3” above existing flashing termination or substrate if existing flashings have been removed, creating a self-terminating flashing. An extra pass of coating is required at all flashings, edge terminations and penetrations.

C. A visual inspection of the basecoat should take place before application of the topcoat to confirm an acceptable surface/substrate to accept the topcoat. Any deficiencies must be repaired prior to application of the topcoat. Base coat should be completely cured prior to proceeding with topcoat.

D. Care must be taken that the vertical component of the metal corrugation is also coated to specified millage.

3.7 TOPCOAT

A. Spray or roll top coat of DuraTite 1380, if needed to achieve the total dry film thickness shown in the Application Rates shown below. Coat all surfaces including expansion joint covers and flashings. The total dry mil thickness of the coating shall be at least the thickness as shown below for the time period specified.

B. The top coat and any subsequent coats should be applied in a perpendicular direction to the previous coat(s).

C. Extend DuraTite 1380 basecoat up protrusions (vent pipes, parapets, curbs and other protrusions a minimum of 3” above existing flashing termination or substrate if existing flashings have been removed, creating a self-terminating flashing. An extra pass of coating is required at all flashings, edge terminations and penetrations.

D. The top coat shall completely cover the base or intermediate coat including expansion joint covers parapets and flashing.

E. Care must be taken that the vertical component of the metal corrugation is also coated to specified millage.

F. Spray additional coats when required of contrasting color, at an application rate designed to achieve the required total dry mil thickness for the project.

3.8 APPLICATION RATE

A. DuraTite 1380 has 69% solids based on volume. The application rates below are based on this solid content, and are a guide but not a guarantee of dry film thickness. Actual dry film thickness will depend on the efficient and consistent application of the wet coating. The terms shown below are for the estimated service life of the roof before recoating is recommended.

B. 5-year term: Apply 1.8 gallons per 100 square feet to achieve a target dry film thickness of 20 mils.

C. 10 year term: Apply 2.0 gallons in total per 100 square feet in two separate applications of 1.0 gallon each to achieve a target dry film thickness of 22 mils.

D. 15 year term: Apply 2.26 gallons in total per 100 square feet, in 2 separate applications of 1.13 gallons each, to achieve a target dry film thickness of 25 mils.

G. 20 year term: Apply 3.3 gallons in total per 100 square feet, in 2 separate applications of 1.65 gallons each, to achieve a target dry film thickness of 36 mils.

3.9 GRANULE APPLICATION & WALK PADS (OPTIONAL)

A. Contact a Rhino Linings Representative for information on this product and application process.

3.10 Job Completion

A. All Rhino Linings DuraTite® coatings must be completely cured before exposing to water or to foot traffic.

B. Inspect completed roofing system and correct all defects. If areas appear to be undercoated, recoating may be needed to ensure final thickness to meet the Rhino Linings specification.

C. Verify that all coated areas appear to be fully adhered to the substrate. A visual inspection looking for poor adhesion such as flaking, blistering etc is required. Contact Rhino Linings representative for advice on how to fix flawed areas in need of work.

D. Certain job conditions, site conditions, or substrates may result in pin holing or out gassing during curing. A visual inspection looking for typical signs of out gassing such as excessive pockmarks, pinholes etc. is required. Contact Rhino Linings representative for advice on how to fix flawed areas in need of work.

E. Take care to clean up all debris, excess materials, and equipment and remove from the job site.

F. Restrict construction traffic and equipment movement on completed roofing system to only essential action. Provide appropriate protection against traffic and construction activities on completed roof. Damage to the roof by other trades or personnel shall not be the responsibility of Rhino Linings or qualified applicators.

G. A Rhino Linings representative or an independent inspector shall inspect the completed roofing system and notify the contractor of any defects in the application. This is only done if a warranty is being issued.

H. Take care to clean up all debris, excess materials, and equipment and remove from site.

I. Reflectivity of coatings may be reduced if roof surface is not cleaned on a regularly scheduled basis.