



**Lapolla Thermo-Sil Restoration Coating System
For Metal Roofs
Guide Specification**

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Section 1: General

1.01 GENERAL SYSTEM REQUIREMENTS

- A. The Lapolla Thermo-Sil Silicone Restoration Coating System is recommended for all types of metal roofing. Consult with Lapolla's Technical Department or an authorized Lapolla sales representative for proper maintenance of an existing or previously restored project.

1.02 GENERAL SYSTEM DESCRIPTION

- A. This specification outlines Lapolla's recommendations for applying the Thermo-Sil 2200 Regular (R) or 3200 Silicone High Solids (HS) Restoration Coating System direct to Metal roof decks. Please visit our website, www.lapolla.com, to determine if an updated version of this specification is available.

The restoration process will recondition, preserve, and extend the useful life of the roof by effectively protecting the roof from further degradation. Procedures include preparation, priming, and reinforcing all seams and flashings integrally related to the roof. In addition to life-cycle cost benefits, significant energy savings can be realized.

- B. This document provides only general guidelines for application of LaPolla branded and ancillary materials. This general installation guide specification is not a project-specific specification and should not be used as such. Owners, architects, engineers, specifiers, consultants, contractors, and others may use and modify the information contained herein where necessary in preparing specifications for a particular roofing project. It is the responsibility of the owner, project manager, and contractor to ensure that this general installation guide specification is consistent with the contractual and construction requirements relating to the project.
- C. Note - The use of the Thermo-Sil 3200 High Solids silicone will impact the number of applications required to meet our minimum dry film thickness requirements. Our Thermo-Sil 3200 High Solids silicone may be applied at a maximum rate of 2 gallons per 100 square feet resulting in a dry film thickness of 29 mils, which is greater than the maximum rate required on our application chart for most warranties. This saves a great deal of both time and labor when compared to the Thermo-Sil 2200 Regular, which will require two applications in each warranty requirement.

In addition to the time and labor benefits of the Thermo-Sil 3200 High Solids Silicone, this product meets the requirements of Title 24 and the California requirements for Low VOC content.

1.03 QUALITY ASSURANCE

A. General:

1. LaPolla Industries, Inc. shall manufacture, supply, and/or approve all materials used to complete the Thermo-Sil 2200 R or 3200 HS Silicone Restoration Coating System for Metal roof decks.
2. An authorized Lapolla representative shall approve, in writing, any material substitutions, deviations from, and/or addendums to this specification.

B. Contractor:

1. All work shall be performed, or directly supervised, by a Lapolla Industries "Approved Applicator".
2. Contractor shall furnish verification of local, state, professional or other valid licenses necessary to operate and permits necessary to perform work.
3. Contractor shall furnish proof of insurance covering liability, property damage, workers compensation, auto insurance, and other coverage requested by the Owner or Project Manager.
4. Contractor shall observe accepted NRCA roofing practices and governing building codes when

performing work excluded from this general installation guide specification. (I.e. Replacement of roof accessories such as drains, gutters, vents, other penetrations, and other structural repair).

5. Contractor to insure all supervising field personnel onsite have a 30 hour OSHA card and all field personnel on site have a 10 hour OSHA card at a minimum.

¹ "Approved Applicator" status is required for warranty eligibility

C. Products and Services:

1. Lapolla's Thermo-Sil 2200 R or 3200 HS, specified herein is;
 - a. Certified by independent third-party tests to meet or exceed the physical properties set forth in ASTM D6694, "Standard Specification for Liquid Applied Silicone Coating Used in Roofing";
 - b. Approved by Miami-Dade Product Control for acceptance under the Florida Building Code, High Velocity Wind Zone;
 - c. Listed on the Cool Roof Rating Council's (CRRC) Rated Products Directory;
 - d. Certified by independent third-party tests for compliance with the State of California, California Energy Commission 2005 Building Energy Efficiency Standards for Residential and Non-Residential Buildings (Effective Date October 1, 2005), Section 118: Section (i) Mandatory Requirements for Cool Roofs, Paragraph 1, and Table 118-C Minimum Performance Requirements for Liquid Applied Roof Coatings. (Title 24).(Thermo-Sil 3200 HS only)
2. Technical advice on application and suitability of Lapolla products is available from local authorized Lapolla sales representatives or by contacting:
 - a. Lapolla Industries, Inc.
Technical Department
15402 Vantage Parkway East Suite #322
Houston, TX 77032
 - b. Email: warrantyservices@lapolla.com
 - c. Phone: (281) 219-4100

1.04 SUBMITTALS

- A. **Roof Survey:** Contractor shall submit a roof survey identifying the total area of the roof to receive the Lapolla Thermo-Sil 2200 R or 3200 HS Restoration Coating System along with pictures depicting the general condition of the roof, seams, penetrations, mechanical equipment, and other areas specified for detail.
- B. **Manufacturer Approval:** Contractor shall submit current written verification of "applicator approval" from LaPolla Industries, Inc.
- C. **Licenses & Permits:** Contractor shall submit verification of licenses and permits.
- D. **Insurance:** Contractor shall submit certificates of insurance.
- E. **Product Literature:** Contractor shall submit descriptive literature, Technical Data Sheets, and Material Safety Data Sheets for all materials specified for use on the project.
- F. **Warranty:** Contractor shall submit a copy of warranties, if any, offered upon successful completion of the project. (See Section 4.0 - Warranty).

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. **Delivery:** Contractor shall deliver all Lapolla branded system components to the job site in their original, unopened packaging clearly marked with Lapolla's logo, full product name, and lot or batch numbers. Contractor shall deliver ancillary project related materials to the job site in new condition, and where applicable, properly labeled.

- B. **Storage:** Contractor shall protect all materials from moisture, direct sunlight, excessive heat, or freezing. Furthermore, contractor shall store materials in accordance with Manufacturer's printed recommendations as listed on each product's Technical Data Sheet and/or product label. Do not expose or store silicone coating products in areas where the temperature may reach 35° F or below.
- C. **Handling:** Contractor shall handle and install materials per Manufacturer's printed instructions and standard industry practices for safeguarding against damage and contamination.
- D. **Damaged Materials:** Contractor shall not use materials damaged or contaminated in shipping, handling, or storage and must immediately remove them from the job site upon discovery.
- E. **Documentation:** Contractor shall maintain on premises the Manufacturer's Material Safety Data Sheet (MSDS) and Technical Data Sheet (TDS) for each product delivered to the job site. Workers are to review all such documents before work commences.
- F. **Disposal:** Contractor shall store and dispose of solvent based materials and materials used with solvent based materials in accordance with requirements of local authorities having jurisdiction.

1.06 FIELD QUALITY CONTROL

- A. **Installation / Environmental Conditions:** Contractor shall not install any system component when environmental conditions on the job site exceed those published on the Manufacturer's Technical Data Sheet and/or product label. When requested by Lapolla, Project Manager, or Contractor, at designated time intervals, the applicator shall record surface temperature, ambient temperature, relative humidity, and wind velocity on a Daily Quality Control Report Form.
- B. **Repair** – Repair areas must be dried and the soundness of the repaired area confirmed prior to installation of the coating system.
- C. Do not install silicone coatings under the following conditions:
 1. When ambient temperature is below 40°F.
 2. When wind velocity is above 20 mph, unless wind screens are utilized and objects in the surrounding area are properly protected.
 3. When raining or moisture is present on the roof deck/substrate.
 4. At temperatures less than 5°F above the dew point.
- D. **Verification of Protective Coating Thickness:** When requested by LaPolla or the Project Manager, the Contractor shall measure and record the wet film thickness of coating applications on a Daily Quality Control Form along with the quantity used, batch numbers, and total square feet covered.
- E. **Protection of Unrelated Work:** Contractor shall take all measures necessary to protect unrelated work surfaces and personal property from coating overspray, spills, and other damage.

Section 2: Products

2.01 SYSTEM DESCRIPTION

- A. Lapolla's Thermo-Sil 2200 R or 3200 HS Restoration Coating System is a fluid applied, Silicone elastomeric roof coating membrane with reinforced seams and flashing details. The fully adhered, seamless system exhibits outstanding adhesion, strength, flexibility, and water resistance.

2.02 MATERIALS

- A. **Silicone Sealant:** Dow Corning 795 Silicone Building Sealant or Momentive SilPruf SCS2000 Silicone Sealant or Approved alternates.
- B. **Reinforcement Fabric:** TIETEX® T272 100% Polyester Reinforcing Fabric or equal.
- C. **Self-Adhesive Seam Tape:** Hardcast™ CRT-1602 or Eternabond™ WebSeal Coating-Ready Seam Sealing Tape or other Lapolla approved and supplied fabric backed butyl tape.

- D. **Primer** – Lapolla’s RCS-30 Direct-To-Metal (DTM) rust inhibiting primer.
- E. **Cleaner** – **Simple Green®** or other industrial strength detergent.
- F. **Protective Silicone Roof Coating:**
 - 1. Lapolla Thermo-Sil 2200 R
 - a. 59% Solids by Volume allows for a theoretical yield of 9 Dry mils / 1 gallon per 100 SF application rate.
 - 2. Lapolla Thermo-Sil 3200 HS
 - a. 92% Solids by Volume allows for a theoretical yield of 15 Dry mils / 1 gallon per 100 SF application rate.

Section 3: Execution

3.01 INSPECTION & REPAIR

A. General

The Concrete roof deck assembly components, (i.e. insulation, seams, drains, penetrations, terminations, and other flashings), must be structurally sound, stable, well secured, and watertight. Repair or replace roof components that are deteriorated, damaged, or not functioning properly. If Contractor cannot assure a sound, stable, well-secured surface, the roof is not acceptable to receive the Lapolla Thermo-Sil 2200 R or 3200 HS Restoration Coating System.

B. Drains

The roof shall allow positive drainage of all water. Roof surfaces that pond more than 36 square feet of water, greater than 1/4" deep, in any area 48 hours after a rain are unacceptable. Small birdbaths cannot account for more than 5% of the entire roof surface.

- 1. Contractor shall install additional drains or make other corrective measures to eliminate ponding water.

C. Metal Panels - Metal roof panels should be cleaned prior to installation using a minimum of 2000 psi water pressure and then inspected.

- 1. Panels should be inspected for oil, grease or contamination. Any areas of contamination should be cleaned and removed using an industrial strength detergent.
- 2. Replace any structurally unsound panels.
- 3. Any existing roofing or mastic materials must be removed as the warranty will not cover failure of the underlying materials.
- 4. All loose paint, coating materials or rust must be removed using a wire brush, power washing (2000 psi minimum) or scraper.
- 5. All rusted areas should be primed with RCS-30 per the instructions on the Technical Data sheet.
- 6. Horizontal laps should be checked for separation under pressure. Apply pressure below the lap. If a gap of 1/8th inch or greater appears additional fastening is required using the appropriate fasteners and rubber grommets. The Horizontal seams shall reinforced using either a polyester scrim material or with fiber backed butyl tape and silicone coating. If no movement in the panel is identified, no repairs or reinforcement is required.
- 7. Vertical seams should be tight. If required, additional fasteners should be installed. Fasteners should be treated as described in the fastener section below.

D. Fasteners

- 1. Inspect fasteners on mechanically attached systems for tenting.

2. Replace as necessary per the original manufacturers repair guidelines or accepted NRCA practices.
3. Prior to coating the field of the roof, fasteners should be treated with a generous amount of silicone coating. Complete coverage may require two coats of silicone coating.

E. Flashings and Penetrations

1. Inspect all flashing details, (penetrations, roof mounted equipment, curbs, walls, parapets, drains, roof edge, etc.), to ensure they are well secured and functioning properly.
2. Correct as necessary to ensure a watertight seal prior to Surface Preparation procedures.
3. If flashing or penetrations have been previously sealed with a rubber or asphaltic based sealant, these areas must be treated with a silicone caulk to insure coating adhesion.

3.02 SURFACE PREPARATION

- A. All surfaces must be clean, dry, and sound; free of loose and peeling coatings, grease, oil, dirt, mildew, rust, and other detrimental foreign matter that will adversely affect adhesion and product performance of system components being applied. Manually or mechanically remove excessive amounts of deteriorated patching, flashing, or caulking materials before cleaning commences. Observe responsible trade practices during performance of all work.
- B. **Cleaning** – Thoroughly power wash the roof surface and all other areas to receive new coating with a minimum of 2000 psi water pressure. Any areas of grease or oil should be cleaned using an industrial strength detergent such as Simple Green®.

3.03 SEAM AND FLASHING FORTIFICATION

Fully intact and structurally sound seams and flashing details do not require fortification. Reinforce all seams, joints and flashings that reveal any degree of damage or deterioration with one of the following methods:

Note: The maximum application rate on vertical surfaces of Lapolla's Thermo-Sil 3200 HS is equal to 20 Wet / 18 dry mils per pass.

A. Fabric

1. Apply a 16 wet mil base coat of Lapolla Thermo-Sil 2200 R or 3200 HS over the detail area.
2. Immediately embed 4" TIETEX T272 fabric into the coating centered over the interface.
3. Without stretching the fabric, smooth with a brush or roller to remove any wrinkles, air pockets, or fish-mouths.
4. Apply additional coating as necessary during embedment to conceal the fabric. Allow to dry before proceeding.
5. After application of fabric, apply 16 wet mils of Lapolla Thermo-Sil 2200 R or 3200 HS over all overlaid interfaces. Lapolla Thermo-Sil 2200 R or 3200 HS must completely encapsulate and extend several inches to either side of the fabric. Allow to dry before proceeding.

B. Fabric Backed Butyl Tape

1. Apply 4" fabric backed butyl seam tape over the detail area.
2. Center tape over the interface.
3. Hold tape roll slightly above the surface and peel back several inches of release liner. Adhere tape into place keeping it centered on the seam. Rub or roll tape down firmly and evenly to remove any wrinkles, air pockets, or fishmouths. A wallpaper seam roller is helpful to secure the tape to the substrate. Peel back several more inches of release liner and continue taping as described. Do not stretch the tape during installation.

4. Do not overlap intersecting lengths of tape. Cut and adhere tape so it forms a tight seam at all intersections.
5. After application of seam tape, apply 16 wet mils of Lapolla Thermo-Sil 2200 R 3200 HS over all taped interfaces. Lapolla Thermo-Sil 2200 R or 3200 HS must completely encapsulate and extend several inches to either side of the seam tape. Allow to dry before proceeding.

3.04 PROTECTIVE COATING APPLICATION

All previously applied materials must be thoroughly dry before proceeding. Sweep, vacuum, or blow off any dirt, dust, or other contaminants that may have accumulated on substrates to be coated. Protect unrelated work areas from coating overspray and spills. Close or protect air conditioning and air intake vents.

A. Base Coat

When installing a two coat (Base coat and Top coat) system, the base coat and top coat must be applied in a cross hatch fashion. The base coat should be applied in the opposite direction of the desired direction of the topcoat to help ensure complete and consistent coating thicknesses.

1. Apply the Lapolla Thermo-Sil 2200 R or 3200 HS base coat to the entire roof substrate at a rate of 1-gallon per 100 square feet with Thermo-Sil 2200 R (16 wet mils / 9 dry mils) or Thermo-Sil 3200 HS (16 wet mils /15 dry mils) dependent upon warranty length. Full thickness of 18 dry mils may be applied for 5-year material warranty applications.
 - a. Apply using a medium nap roller or airless spray equipment using a cross hatch / multi-pass technique to ensure even and complete application.
 - b. Extend Lapolla Thermo-Sil 2200 R or 3200 HS up vent pipes, parapets, curbs and other protrusions a minimum of 3" above the substrate creating a self-terminating flashing. Apply coating in a straight line to achieve a functional and aesthetically pleasing appearance.
 - c. Inspect the roof surface after the base coat has cured for splits, tears, or other damage that may have been missed in the surface preparation process. These will be easier to detect on the coated surface. Repair any deficiencies as described before proceeding.
 - d. Protect coating from traffic and other abuse until fully cured.

B. Finish Coat

1. Apply a Lapolla Thermo-Sil 2200 R or 3200 HS finish coat to the entire roof substrate at a rate of no more than 2.0 gallons per 100 square feet, dependent upon warranty length, as additional applications may be required. Thermo-Sil 2200 R (24 wet mils / 14 dry mils) or Thermo-Sil 3200HS (24 wet mils / 22 dry mils).
 - a. Apply using a medium nap roller or airless spray equipment using a cross hatch /multi-pass technique to ensure even and complete coverage.
 - b. Extend Lapolla Thermo-Sil 2200 R or 3200 HS up vent pipes, parapets, curbs and other protrusions a minimum of 1" above the flashing base coat when possible. Apply coating in a straight line to achieve a functional and aesthetically pleasing appearance.
 - c. Protect coating from traffic and other abuse until fully cured.

C. Inspection

1. Upon completion, the Contractor shall inspect their work for compliance with this specification.
2. When the Lapolla Thermo-Sil 2200 R or 3200 HS Restoration Coating System for Metal roof decks has been completed as specified above;
 - a. The system should be fully adhered with no pinholes or blisters in the coatings, sealants, reinforcing fabric, or seam tape.

- b. The Thermo-Sil 2200 R or 3200 HS dry film thickness (DFT) over reinforced seams and flashing details should be equal to or greater than 26 dry mils (This does not include measurement of sealants, reinforcing fabric, or seam tape.); and
 - c. The Thermo-Sil 2200 R or 3200 HS Dry film thickness (DFT) over the general field of the roof should be equal to or greater than 18 dry mils.
3. Contractor shall correct all deficiencies, if any, and provide written verification that the project is complete, sound, and warrantable.

3.05 CLEANUP

- A. Contractor shall maintain a neat, clean, and safe work area at all times during system installation and remove trash daily.
- B. Upon completion of the project, the installer shall clean all areas of operation, (work, storage, other), of all equipment, containers, packaging, drips, spills, and other construction related debris. The jobsite should be left in a clean and neat order.

Section 4: Warranty

4.01 FIVE (5) YEAR LIMITED PRODUCT WARRANTY

- A. Upon successful completion of the Lapolla Thermo-Sil 2200 R or 3200 High Solids HS Restoration Coating System for Metal roof decks, the project may be eligible for a LaPolla Industries, Inc. Five (5) Year Limited Product Warranty. Eligibility is contingent upon:
 1. Contractor having a completed and approved Qualified Applicator Application on file with LaPolla Industries, Inc. prior to commencement of work.
 2. Contractor having a completed Qualified Applicator Agreement on file with LaPolla Industries, Inc. prior to commencement of work.
 3. Contractor having submitted and received approval from an authorized Lapolla representative on the Lapolla Pre-Installation Notice prior to commencement of work.
 4. Limited product only warranties are free of charge upon request; however they do require verification of compliance by an authorized LaPolla representative is required.

4.02 EXTENDED LIMITED PRODUCT WARRANTIES

- A. LaPolla also offers Ten (10) and Fifteen (15) Year Limited Product Warranties.
- B. In addition to the contingencies outlined in Section 4.01A.1-4, the following eligibility requirements apply:
 1. **Ten (10) Year Product Warranty**
 - a. The Thermo-Sil 2200 R or 3200 HS DFT \geq 34 mils over seams and flashing details.
 - b. The Thermo-Sil 2200 R or 3200 HS DFT \geq 22 mils over the general field of the roof.
 - c. Use 6" reinforcing fabric or seam tape instead of 4".
 2. **Fifteen (15) Year Product Warranty**
 - a. Thermo-Sil 2200 R or 3200 HS DFT \geq 40 mils over seams and flashing details.
 - b. Thermo-Sil 2200 R or 3200 HS DFT \geq 28 mils over the general field of the roof
 - c. Use 12" reinforcing fabric or seam tape instead of 4" or 6".

4.03 LIMITED SYSTEM WARRANTIES

- A.** Lapolla offers Five (5), Ten (10), and Fifteen (15) Year Limited System (Material and Labor) Warranties for the Lapolla Thermo-Sil 2200 R or 3200 High Solids HS Restoration Coating System for Metal roof decks. A Warranty Fee will apply. Lapolla calculates Warranty Fee's on a sliding scale that is dependent on the overall project size. Please consult with an authorized LaPolla sales representative to calculate the warranty fee for a particular project.

- B.** In addition to the contingencies outlined in Section 4.01A.1-4, the following eligibility requirements apply:
 - 1. Five (5) Year System Warranty**
 - a. The Thermo-Sil 2200 R or 3200 HS DFT \geq 37 mils over seams and flashing details.
 - b. The Thermo-Sil 2200 R or 3200 HS DFT \geq 22 mils over the general field of the roof.

 - 2. Ten (10) Year System Warranty**
 - a. The Thermo-Sil 2200 R or 3200 HS DFT \geq 41 mils over seams and flashing details.
 - b. The Thermo-Sil 2200 R or 3200 HS DFT \geq 26 mils over the general field of the roof.
 - c. Use 6" reinforcing fabric or seam tape instead of 4"

 - 3. Fifteen (15) Year Product Warranty**
 - a. The Thermo-Sil 2200 R or 3200 HS DFT \geq 49 mils over seams and flashing details.
 - b. The Thermo-Sil 2200 R or 3200 HS DFT \geq 34 mils over the general field of the roof
 - c. Use 12" reinforcing fabric or seam tape instead of 4" or 6".

End of Section