

**Thermo-Sil NP High Solids Silicone Restoration Coating
System
For PVC-TPO roof systems
Guide Specification**

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Section 1: General

1.01 GENERAL SYSTEM REQUIREMENTS

A. The HBS **Thermo-Sil NP** Restoration Coating System is recommended for Modified Bitumen or Smooth Built-Up roof systems. Consult with HBS Technical Department or an authorized HBS sales representative for;

- 1.) Maintenance of an existing or previously restored project; and
- 2.) Recommendations for restoring non-reinforced membrane systems.

1.02 GENERAL SYSTEM DESCRIPTION

A. This specification outlines HBS recommendations for applying the **Thermo-Sil NP** Restoration Coating Systems direct to PVC-TPO roof systems. Please visit our website, www.HuntsmanBuildingSolutions.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, adhesion testing, priming, proper cleaning 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 HBS 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.

1.03 QUALITY ASSURANCE

A. General:

1. HBS shall supply, and/or approve all materials used to complete the HBS **Thermo-Sil NP** Restoration Coating System for PVC & TPO roofing systems.
2. An authorized HBS 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 HBS Industries "Authorized Contractor 1".
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 ensure 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:

Thermo-Sil NP, 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. Cool Roof Rating Council's (CRRC) Rated Products Directory; **Please contact your HBS representative for additional information on product ratings**

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)

D. UL 790 Class A

Technical advice on application and suitability of HBS products is available from local authorized HBS sales representatives or by contacting:

Huntsman Building Solutions
Technical Department
3315 E Division St
Arlington, Texas 76011

1.04 SUBMITTALS

A. **Roof Survey:** Contractor shall submit a roof survey identifying the total area of the roof to receive the HBS **Thermo-Sil NP** 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 HBS, 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 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 HBS branded system components to the job site in their original, unopened packaging clearly marked with HBS' 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 Safety Data Sheet (SDS) 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 HBS, 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. **Roof Evaluation** – Contractor shall perform a non-destructive nuclear roof moisture survey of the roof to identify and mark wet area(s). A core sample may be required for analysis.

C. **Repair** – Remove and replace all identified wet insulation with like materials.

D. 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.

E. **Verification of Protective Coating Thickness:** When requested by HBS 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.

F. **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. HBS **Thermo-Sil NP** 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 Thermo-Sil SF 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 HBS approved and supplied fabric backed butyl tape

D. **Primer – HBS THERMO-SIL SP 15 Primer**

E. **Cleaner – Simple Green®** or other industrial strength detergent.

F. **Fasteners –** Mechanical Fasteners and plates that meet FM 4450.

G. **Protective Silicone Roof Coating:** ThermoSil NP, ThermoSil NP (QS)

H. #11 Ceramic Roofing Granules

Section 3 Execution

3.01 INSPECTION & REPAIR

A1. General

The PVC-TPO system (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 HBS **Thermo-Sil NP** Restoration Coating System.

A. Areas to receive the sprayed elastomeric coating shall be securely fastened to the building structure.

B. Remove any contaminants that will interfere with total adhesion of the coating system to the substrate.

C. The entire surfaces shall be cleaned by pressure washing to remove all contaminants. D. All

loose seams of existing roof system shall be sealed in accordance with the PVC manufacturer's recommendations. Seal all PVC single ply seams with butyl seam tape. E. Seal all HVAC duct work joints as needed with butyl seam tape

The HBS **Thermo-Sil NP** Roof Coating system can be applied directly over most existing, aged single ply membranes including PVC, TPO, EPDM, and Hypalon pending positive results from an in-field adhesion test. ***Primer May be required

Do not apply over wet substrates or when inclement weather is imminent. Total cure time requires complete evaporation of carrier. Not recommended for use in permanent standing water for periods longer than 72 hours. Cool temperatures and high humidity retard cure. Do not apply if climatic conditions prevent complete cure before rain, dew or freezing temperatures.

9B. 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. Fasteners

1. If insulation was attached with Mechanical Fasteners inspect for tenting or failure due to rust or age.

2. Remove and refasten any failed screws and plates.

D. Seams

1. Inspect all seams to ensure they are not delaminated and subject to water intrusion.

2. If delaminated, the portion of the seam that has lifted is to be trimmed back to the point at which the seam is still intact, then reinforce as described in Section 3.03.

E. Flashings and Transitions

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.

1. Correct as necessary to ensure a watertight seal prior to beginning Surface Preparation procedures.

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®.

C. **Prevent mechanical units** - from distributing fumes or vapors from the coating application into the building.

D. **NOTE.** Adhesion tests must be conducted and recorded prior to installation of the coating. If adhesion is found to be insufficient for the roofing system for the area in which it is located, the roofing system may require re clean, retest and evaluation to either be refastened to the roof deck or re-roofed. Engineering calculation for the proper fastening pattern to meet wind load requirements may be required. This engineering is at the expense of the contractor and may be conducted by a credentialed and approved engineer for the area in which the roof is located. Primer may be required, please consult with your local HBS representative for details.

3.03 SEAM AND FLASHING FORTIFICATION

Fully intact and structurally sound seams do not require fortification. Reinforce seams and flashings that reveal any degree of deterioration with one of the following methods:

Note: The maximum application rate on vertical surfaces of HBS **Thermo-Sil NP** HS is equal to 22 Wet / 18 dry mils per pass.

A. Fabric

1. Trim the portion of the seam that has delaminated back to the point at which it is still intact.
2. Apply a 16 wet mil base coat of HBS **Thermo-Sil NP** over the detail area.
3. Immediately embed 4" TIETEX T272 fabric into the coating centered over the interface.
4. Without stretching the fabric, smooth with a brush or roller to remove any wrinkles, air pockets, or fish-mouths.
5. Apply additional coating as necessary during embedment to conceal the fabric. Allow to dry before proceeding.
6. After application of fabric, apply to a thickness of 22 dry mils the HBS **Thermo-Sil NP** over all taped interfaces. The coating must completely encapsulate and extend a minimum of 2" inches to either side of the fabric. Allow to dry before proceeding.

Note: For applications over bituminous or asphaltic substrates, the use of Thermo-Sil Pro 9600 Bleed Blocker is suggested to prevent asphalt bleed-through or staining

B. Fabric Backed Butyl Tape

Note: Spot Adhesion testing of coating materials to butyl tape prior to full application is strongly recommended.

1. Trim the portion of the seam that has delaminated back to the point at which it is still intact.
2. Apply 4" fabric backed butyl seam tape over the detail area.
3. Center tape over the interface.
4. 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 fish mouths. 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.
5. Do not overlap intersecting lengths of tape. Cut and adhere tape so it forms a tight seam at all intersections.
6. After application of seam tape, apply an additional 16 wet mils of HBS **Thermo-Sil NP** over all taped interfaces. The coating 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. Adhesion testing should be considered.

A) Primer Coat

THERMO-SIL SP15

Application SP-15 may be brushed, rolled, or spray applied. Low-pressure airless spray equipment can be used to apply this material. Prior to use, SP-15 may be separated after shipping and storage, though it may look mixed. For best results, thoroughly blend contents of all containers using a power mixer for a minimum of 10 minutes prior to use. Before SP-15 is applied, all surfaces to be primed must be clean, dry, and paintable. It may be necessary to power wash to enhance adhesion. Apply the SP-15 at a rate of 1 gallon per 200 square feet. Packaging Sizes: SP-15 is available in 5 gallon and 55 gallon containers.

B) 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 HBS **Thermo-Sil NP** system to the entire roof substrate at a minimum rate of 1.5-gallon per 100 square feet dependent upon warranty length. Full thickness of dry mils may be applied for various 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 HBS **Thermo-Sil NP** up vent pipes, parapets, curbs and other protrusions a minimum of 3" above the existing flashing termination when present or a minimum of 3" above the substrate if existing flashings have been removed, 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 in the membrane 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.

C) Finish Coat

1. Apply a HBS **Thermo-Sil NP** finish coat to the entire roof substrate at a rate of no more than 2.0 gallons per 100 square feet.

- 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 HBS **Thermo-Sil NP** up vent pipes, parapets, curbs and other protrusions a minimum of 1" above the flashing base coat. 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.

Note: #11 Ceramic Roofing Granules may be installed in the topcoat to improve aesthetics, traffic resistance and impact resistance. No more than 2.5 gallons per 100 ft² should be applied in a single-pass or application

Inspection

1. Upon completion, the Contractor shall inspect their work for compliance with this specification.
2. When the HBS **Thermo-Sil NP** Restoration Coating System for Modified Bitumen or Smooth Built-Up roof systems 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 HBS **Thermo-Sil NP** dry film thickness (DFT) over reinforced seams and flashing details should be equal to or greater than 47 dry mils (This does not include measurement of sealants, reinforcing fabric, or seam tape.); and
 - c. The HBS **Thermo-Sil NP** Dry film thickness (DFT) over the general field of the roof should be equal to or greater than 21 dry mils based on warranty offered.
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 LIMITED PRODUCT WARRANTY

Huntsman Building Solutions is pleased to offer ten (10), fifteen (15) and twenty (20) year Limited Product warranties over foam insulation systems. These warranties are intended to protect the building owner from leaks due to product deterioration as a result of ordinary weather conditions. There is no fee for these warranties and the only requirement is the submittal of a Huntsman Building Solutions warranty request form. Third party inspections are not required. Specific conditions and limitations are identified in the warranty documents. Dry Film Thickness (DFT) and Huntsman Building Solutions product minimum requirements are as follows:

Minimum Coverage and Material Requirements

Ten Year Limited Product		Fifteen Year Limited Product		Twenty Year Limited Product	
HS Silicone	24 DFT/1.5 gal	HS Silicone	26 DFT/2.0 gal	HS Silicone	32 DFT/2.5 gal

4.02 LIMITED SYSTEM WARRANTY

Huntsman Building Solutions is also pleased to offer a ten (10), fifteen (15) and Twenty (20) year Limited System warranties for non-residential building projects. These warranties are intended to protect the building owner from leaks due to product deterioration as a result of ordinary weather conditions. There is a fee for these warranties and an inspection is required. Additionally, to be eligible for a system warranty, a Pre-Job Warranty Request Form must be filled out, submitted and approved by Huntsman Building Solutions prior to the start of the project. Minimum square footage eligible for a System Warranty is 15,000 square feet. Dry film thickness (DFT) and Huntsman Building Solutions product minimum requirements are as follows:

Minimum Coverage and Material Requirements

Ten Year Limited System		Fifteen Year Limited System		Twenty Year Limited System	
HS Silicone	25 Mils/1.5 gal	HS Silicone	28 Mils/ 2.0 gal	HS Silicone	32 Mils/2.5 gal

4.03 WARRANTY PROGRAM FOR SILICONE RESTORATION COATING SYSTEMS

Huntsman Building Solutions offers a selection of ten (10) year, fifteen (15) year and twenty (20) year Restoration Coating Limited Product and Limited System warranties for building owners. The following chart will assist you in choosing the appropriate warranty for your project.

Minimum Dry Film Thickness (mil) and HBS Product Quantity (gallon) Requirements. *

Duration	10-YEAR Limited		15-YEAR Limited		20-YEAR Limited	
	PRODUCT/SYSTEM		PRODUCT/SYSTEM		PRODUCT/SYSTEM	
TPO, PVC, Hypalon	24	HS 3.0	30	HS 4.0	40	4.50