
TWENTY YEAR SPECIFICATION FOR SEALGUARD VFI-990 FLUID APPLIED SILICONE MEMBRANE FOR REHABILITATION OF LAPPED METAL ROOFS

1 GENERAL:

1.01 General System Description

- A.** *SEALGUARD* VFI-990 SILICONE Restoration Coating System is recommended for anodized aluminum, pre-finished metal, galvanized steel, (aged for one year or treated) and existing steel, (excluding siliconized and fluorocarbon finishes). Consult with Volatile Free, Inc. (VFI[®]) for additional information when restoring previously restored projects.

- B.** Restoring with *SEALGUARD* VFI-990 SILICONE will preserve and extend the useful life of the roof by protecting the roof's exposure to common degrading elements and weather conditions. The use is restricted to circumstances where the roof surface is in sound condition, but requires a renewal of the roof surface due to the normal effect of aging and use.

- C.** Specifications here include guidelines for preparation, priming and reinforcing all seams and flashings integrally related to the roof. This is a general installation guide specification and is not a project-specific specification. It is the responsibility of the owner, project manager and contractor to ensure that this general installation guide is followed when work pertains to the project.

- D.** A Volatile Free, Inc. Technical Representative shall approve, in writing, any material substitutions, deviations from and/or addendums to this specification.

1.02 Contractor to:

- A.** Provide all labor and materials, equipment and accessories necessary to repair, clean and prepare existing metal surfaces. Install Volatile Free, Inc.'s primer and Silicone Roof Coating System in accordance with this specification and manufacturer's instructions. Reference the following sections for more detailed information.
 - 1. Environmental requirements (1.08)
 - 2. Quality Preparation Program (1.09)
 - 3. Preparation of the surface to receive work. (3.01)
 - 4. Wash the surface of the existing roof as recommended by VFI. (3.02)
 - 5. Prime surfaces as recommended by VFI. (3.03)
 - 6. Install Silicone Coating System. (3.04 – 3.06)
 - 7. Fiberglass Skylight Renewal (3.07)

8. Traffic areas and walk ways (3.08)

9. Warranty (5.0)

1.03 Work Excluded:

- A. Repair to structural components of the roof
- B. Replacement of or modification to drains, vents, ducts, metal caps or other penetrations
- C. Installation of materials to change slope or otherwise facilitate water drainage

1.04 Approved Materials and Contractors:

- A. The contractor and materials associated with the project shall be used only if approved by VFI and Owner.
- B. Products used must have Miami Dade NOA or Florida Product Approval.
- C. A minimum of five years roofing experience is required from the applicator in order to apply the waterproofing materials specified. The applicator must have a current Certification certificate from Volatile Free, Inc.
- D. VFI shall be a single source of the roofing system.
- E. The contractor's qualifications and equipment must be approved by VFI.
- F. Unspecified materials shall be submitted to the architect/owner for approval prior to the bid date. In requesting approval, a letter of certification must be signed by an officer of the manufacturer, stating that the alternative material is equal to or better than the specified product. The manufacturer shall have a minimum five years of manufacturing experience.

1.05 Submittals:

A. Customer:

- 1. The VFI pre-job form should be filled out and sent to VFI for approval.
- 2. **Signed and filled out application rates on Warranty Specification/Affirmation Signatures Form, see page 10**

B. Manufacture:

- 1. VFI's published technical data and certified data, to support published ratings.
- 2. Contractor's certification certificate issued prior to bid date from VFI.
- 3. VFI's Technical Representative shall provide written instructions on care and maintenance and repair of the coating system within the scope of the maintenance agreement or guarantee.

1.06 Product Delivery, Storage, and Handling:

- A. Deliver VFI materials in unopened containers with VFI labels affixed. Include the

following on the label of each container: Manufacturer's name, product name, product type, lot number, mixing instructions, and precautions.

- B. Contractor shall have materials delivered in sufficient quantities so as not to cause delays in the work.
- C. Contractors shall be responsible for storage and protection of all materials required. Materials shall be stored in a manner so as not to exceed the VFI specified temperature limitations. (see product label or data sheet) In all cases, the storage and handling of materials shall conform to the requirements of VFI and the applicable safety regulatory agencies.
- D. It is the responsibility of the contractor to calculate and add a loss factor due to wind, surface profile and overspray.

1.07 Pre-Construction Conference:

- A. Adhesion tests may be required if a labor and material warranty is requested or if the roof was previously coated or has other defects in the existing substrate deemed questionable by the contractor, owner, or VFI. All results will be recorded and saved by Volatile Free, Inc. One pull test must be conducted for every 10,000 sq. ft.
- B. Prior to the start of the project, a meeting shall be held at the job site attended by the Contractor's Representative, Technical representation of VFI, and the Owner's representative to review materials, application procedures, and all items associated to this phase of the work. **(Optional)**
- C. The installation of this system shall be accomplished periodically in the presence of or with the advice of the Manufacturer's Technical Representative. Contact VFI for assistance.

1.08 Environmental Requirements:

- A. Install all materials in strict accordance with all published safety, weather and temperature precautions given by VFI.
- B. The contractor is to take precautions to protect this building project, other adjacent facilities and property.
- C. All air intake ventilation equipment shall be turned off or otherwise modified to prevent fumes from entering the building.
- D. Blowers, air conditioning units, and evaporative coolers shall be disconnected or otherwise modified to prevent fumes from penetrating into the building or from contaminating the roof surface with condensing water.
- E. No smoking signs to be posted as mandated by local fire officials
- F. Do not install coating materials under the following conditions:
 - 1. When surfaces are wet or rain is imminent
 - 2. **Spray Application-** When wind velocity is above fifteen (15) MPH without using a windscreen. In conjunction with a wind screen, protective coverings must be fastened to stay secure in wind and be vented if used in conjunction with preventing moisture collection.

3. Do not install *SEALGUARD* VFI-990 SILICONE below 40°F/ 4.5°C and do not install VFI-#11 below 50°F/ 10°C.

1.09 Quality Preparation Program

- A. Roof shall be free of debris and fixtures not secured as part of roof mounted equipment.
- B. Lift all non-secured units for access beneath them for the entire project.
- C. Metal panels that are deteriorated to the point that the roof's structural integrity is compromised must be replaced.
- D. Install all materials to change the pitch or otherwise facilitate the water drainage.
- E. When a labor and material warranty is requested the following environmental conditions, including the overall weather conditions, shall be recorded by the contractor on the Daily Quality Control Report and submitted with the finished structural guarantee request: General Weather Conditions (i.e. cloudy, sunny, rainy, etc.) Surface Temperature, Surface Moisture, Ambient Temperature, Relative Humidity and Wind Velocity.
- F. All products must be mixed with proper equipment on the day of application. See product label or Product Data Sheet for instructions.
- G. Coating thickness shall be checked during application for proper thickness per specification; as stated on the warranty procedures or on work order, whichever is greater.

2 PRODUCTS:

2.01 Materials:

- A. All products listed are manufactured, supplied, or approved by VFI of Brookfield, Wisconsin.
 1. Seam Tape: BR TAPE- Fabric-Backed Butyl Tape provided by VFI
 2. Polyester Fabric: PF- non-woven polyester fabric provided by VFI
 3. Wash: VFI-1009 Cleaning Concentrate
 4. Primer: VFI-#11 Water Based Epoxy Primer
 5. Coating: *SEALGUARD* VFI-990 SILICONE roof coating, in color chosen by owner

This coating, shall meet the following mean technical requirements:

a. Solids:	by Volume	94% +/- 1
b. Tensile:	ASTM D-412	450 psi
c. Elongation:	ASTM D-412	170%
d. Permanent Set:	ASTM D-412	1% max.
e. Hardness Shore A	ASTM D-2240	55
f. Tear Resistance	ASTM D-624	36 pli
g. Water Vapor Permeability	ASTM E-96 @ 20 MIL	4.4 perms

6. Granules When Specified: Use #11, 3M Roofing Granules or equivalent. Use Lucas Fire White #11 granules for Cool Roof Rating
7. *SEALGUARD* VFI-990 SILICONE with reinforcing fibers purchased from Volatile Free, Inc. can be used as a caulk
8. *SEALGUARD* VFI-990 SILICONE Walk Pad (Safety Yellow)
9. Skylight Renewal coating: *SEALGUARD* VFI-994 Clear Silicone
10. Granules (Safety Yellow)
11. Reinforcing fibers
12. *SEALGUARD* VFI-993 Flashing Grade Silicone

2.02 Other Materials Required:

- A. All other materials shall be approved by VFI as per Section 1.04, A.

3 EXECUTION:

NOTE: Care must be taken to ensure that the substrate is dry and properly prepared. The owner and/or contractor must correct any defect in the condition of the existing substrate prior to the coating, otherwise, these defects may adversely affect the condition of the coating over time, necessitating maintenance and/or repair and affecting the warranty. The contractor is responsible in making sure the existing roof is sound, stable and a well-secured surface. If this criteria is not met, *SEALGUARD* VFI-990 SILICONE rehabilitation is not recommended.

3.01 Surface Preparation:

- A. The existing metal roof is to be repaired and structural components of the roof should be complete and in good condition. Particular care should be taken when inspecting field fabricated seams, flashing and terminations. All damaged drains, vents, ducts, gutters, metal caps, flashing or other penetrations must be replaced or modified. **Prime the entire roof prior to making any repairs with coatings.**
- B. Inspect for damage or stress and repair. Inspect the entire roof surface and flashings for any damage. Repair any damage to avoid water getting blown under the metal during the cleaning process.
- C. Remove large volumes of dirt, leaves and other debris with a broom or blower. Roof cements and cold applied materials, detrimental to adhesion and application of roofing materials, should be removed.
- D. Rusted roofs with structural integrity should have severely rusted areas power sanded to provide a clean surface. Care must be taken to remove all loose paint, rust and scale.
- E. Where rust has damaged the structural integrity of the metal panel one of two methods can be used to repair the damage.
 - If less than 10% of the panel is damaged, clean and prime the rusted areas. Cut a piece of identical panel long enough to extend past the damaged area by 10 inches. Repair with coating and fabric.
 - If more than 10% of the panel is damaged, replace with new metal panels

- F. All gaps should be repaired to be tight and flush. Gaps and deflection between panels shall be eliminated by installing additional screws or rivets as necessary to restrict deflection to ¼" or less.
- G. If deflection between panels cannot be repaired to ¼" or less, a polyethylene backer rod or spray applied polyurethane foam may be used to fill the gap.
- H. Loose or backed-out fasteners must be tightened or replaced with oversized fasteners.
- I. Any roof with a nail fastening system should have screw reinforcement around all ridges, end caps and around the perimeter. The entire roof must have screw reinforcement every 8 feet.
- J. Protruding nails must be replaced with screws. Care must be taken to use screws long enough to be effective.
- K. The installation of materials to change the pitch or otherwise facilitate the water drainage has been completed.
- L. Open seams, cracks and cuts must be covered completely or repaired to encapsulate the defect prior to the cleaning process.

NOTE: Allow roof to dry before applying VFI-1009 Cleaning Concentrate

3.02 Surface Wash: Allow roof to dry before applying VFI-1009 Cleaning Concentrate

- A. VFI-1009 Cleaning Concentrate should be diluted at a 1:10 ratio with water. Apply the diluted cleaning solution to the dry substrate under low pressure using a Hudson type agricultural sprayer **at the rate of 2,000 sq. ft. per gallon of VFI-1009**. Allow the solution to stand for a minimum of 15 minutes. Low areas and depressions in the substrate having excessive dirt build-up may require additional solution and/or scrubbing with a stiff-bristled broom. Extremely stubborn areas may require treatment with a more concentrated dilution. Using a pressure washer with 2,000 psi, start washing at the lower end and work up to the top of the roof. Keep the tip close enough to loosen all contaminates. Rinse back down the slope to remove contaminates and wash the solution from the roof. (See Product Data Sheet)
- B. Attach a wand or extension to the high pressure hose and use a standard spray tip to achieve maximum cleaning of the substrate. Repeat rinsing as required to remove the cleaning solution. Allow the substrate to completely dry prior to the application of any coating materials including primer.
- C. Areas containing grease, oil, animal fats or other surface contaminants shall be scrubbed with liquid degreaser or tri-sodium phosphate until clean.
- D. Use concentrated chlorine solution to treat areas of mildew, fungus, or algae.
- E. All cleaning agents must be rinsed off of the roof and allow the roof to dry before proceeding.

NOTE: It is crucial to ensure that the preexisting substrate is clean and dry prior to coating with the VFI system. Prime the entire roof prior to making any repairs with coatings.

3.03 Priming:

- A.** For roofs with no rust, apply VFI-#11 primer to the washed surface **at the rate of 0.33 gallons per 100 sq. ft. (5 wet mils, 2.5 dry mils)**. For roofs with minimal rust, apply **at the rate of 0.5 gallons per 100 sq. ft. (8 wet mils, 3.5 dry mils)**. When applying on roofs that have pronounced rust, **apply two coats at the rate of 0.5 gallons per 100 sq. ft. each coat- total coverage rate of 1.0 gallons per 100 sq. ft.** (make sure first coat of primer is dry to the touch prior to second primer application). Allow it to dry a minimum of 12 hours prior to silicone coating. Cure time will vary depending on ambient temperature and humidity. No substrate should be exposed. Primer must be coated within 7 days after application. If primer is not coated within 7 days, the primed surface should be cleaned and re-primed and allowed to sit for at least 12 hours prior to continuing with coating. The designed substrate temperature is for 50°F or above. Stop the application a minimum of two hours before rain or when the dew point would be reached.

3.04 Seams, Cracks, Terminations & Penetrations:

Reinforce all vertical (side-lap) seams, horizontal seams, ridge caps, valleys, roof terminations and flashings, around drains, scuppers and skylights, the base of all vents, conduits, HVAC equipment and other protrusions using one or more of the following methods.

Option 1: Apply *SEALGUARD* VFI-991 SILICONE in one coat to all primed seams, cracks, terminations, and around all penetrations. Install minimum 6" polyester fabric into wet coating then apply another coat of *SEALGUARD* VFI-991 SILICONE to encapsulate the fabric.

6" fabric is packaged in 300 lineal ft. rolls.

Each roll of 6" fabric will require 1 five gallon pail of VFI-991 to apply.

Option 2: Apply VFI's Butyl Seam Tape, centered over the existing seam. Apply *SEALGUARD* VFI-990 SILICONE in one coat, on all seams, terminations and around all penetrations.

6" Fabric-Backed Butyl Tape is packaged in 50 lineal foot rolls.

Each five gallon pail of VFI-990 will coat 150 lineal ft. of 6" Fabric-Backed Butyl Tape.

Option 3: For seams or gaps less than 1/4" apply *SEALGUARD* VFI-993 Flashing grade silicone to all primed seams, cracks, terminations, and around all penetrations. Using a brush, "push" the VFI-993 into the area to be treated, filling the gap and extending from the gap a minimum of 1" onto metal panel.

1 gallon of VFI-993 will treat approximately 150 lineal feet of seams.

3.05 Exposed Mechanical Fasteners:

Apply *SEALGUARD* VFI-993 Flashing Grade Silicone to completely encapsulate the fastener head and seal the base of the fastener to the metal roof.

One gallon of VFI-993 will treat approximately 450 fasteners.

3.06 Coating Application:

- A. Keep material temperature at or above 65°F (18°C). Recoat time is between 4 to 48 hours. Longer recoat times may result in poor intercoat adhesion and delamination unless the surface is again rinsed free of potential contaminants.
- B. Care should be taken to sufficiently coat the underside of ribs.
- C. All edges and penetrations should have an additional coat applied at the same rate as below.
 - 1. Apply two coats to the entire roof of *SEALGUARD* VFI-990 SILICONE coating system **at a combined coverage rate of 2.5 gallons per 100 sq. ft. (40 wet mils, 38 dry mils)**

3.07 Fiberglass Skylight Renewal

- A. Apply *SEALGUARD* VFI-994 Clear SILICONE **at a rate of .75 gallons per 100 sq. ft. (12 wet mils, 11 dry mils)** over the skylight surface with a medium nap roller or brush. Allow the Skylight Renewal to cure for a minimum of 24 hours. After it is cured, apply a second coat at the identical application rate.

3.08 Traffic areas and walkways

- A. **Option 1:**
 - Low Impact-* Apply *SEALGUARD* VFI-990 SILICONE Walk Pad **at a rate of 30-35 wet mils (1.9-2.2 gal/ 100 sq. ft.)**. Broadcast Walk Pad granules supplied by Volatile free, Inc. **at 40lbs per 100 sq. ft.**
 - High Impact-* Apply *SEALGUARD* VFI-990 SILICONE Walk Pad **at a rate of 40-45 wet mils. (2.5-2.81 gal/ 100 sq. ft.)**. Broadcast Walk Pad granules supplied by Volatile Free, Inc. **at 60lbs per 100 sq. ft.**
- B. **Option 2:** Add reinforcing fibers supplied by Volatile Free, Inc. to *SEALGUARD* VFI-990 SILICONE Walk Pad until desired consistency is achieved. **Apply product at a rate of 64 wet mils. (4 gal/ 100 sq. ft.)**. Broadcast VFI supplied Walk Pad granules **at 60lbs per 100 sq. ft.**
- C. **After the Walk Pad has cured, sweep away any loose or excess granules.**

NOTE: VFI recommends adding a loss factor due to wind, surface profile and overspray. It is the responsibility of the contractor to calculate the correct amount of material to achieve the required dry film mils as per specification.

4 FIELD QUALITY CONTROL:

4.01 Inspection:

- A. **Coating Thickness:** The finished dry film thickness will measure a minimum of 38 mils.
- B. **No traffic shall be permitted on the coated surface for a minimum of three (3) days.** Damage to the surface by other trades shall not be the responsibility of the roofing contractor or Volatile Free, Inc.

- C. Defects:** There shall be no delamination, lifting blisters, pinholes, voids, or membrane defects of any kind.
- D. Variations:** Any variations from specified procedures or limits found by the contractor, representatives of VFI, or the owner, shall be immediately corrected by the contractor at their own expense.

4.02 Job Site Clean-up:

- A.** Clean up all debris, excess materials and equipment and remove from site.

5 WARRANTY:

5.01 Requirements:

- A.** VFI warrants that the material supplied will meet or exceed physical properties as published.
- B.** The contractor shall warrant that all work performed will be free from defects in materials and workmanship. Upon notice of defect in writing to the contractor, the contractor shall make necessary repairs or replacements of the defective work in question.
- C.** A leak-free warranty by VFI is available for commercial projects. The contractor must make application to VFI in accordance with the published warranty policy prior to start of work, to qualify the project for a no leak warranty.

5.02 Inspection by Manufacturer:

- A.** A final inspection of the roof will be conducted by VFI's Technical Representative to confirm the watertight integrity of the installation of the Roofing System.

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WARRANTY SPECIFICATION/AFFIRMATION OF SIGNATURES

Type of Warranty:

- A. Volatile Free, Inc. Twenty Year Warranty shall be issued within thirty (30) days of final payment and successful roof inspection.

Substrate selected:

Primer application rate required:

Application method:

Basecoat application rate required: NA

Topcoat application rate required:

Volatile Free Inc.

Printed Name:

Title:

Date Approved:

Warranty Project #

Applicator

Printed Name:

Title:

Company:

Address:

City, State:

Telephone:

Please sign and date below to acknowledge that you read and understand the TWENTY YEAR SPECIFICATION FOR SEALGUARD VFI-990 SILICONE.

PLEASE SEND THIS SIGNED COPY TO VOLATILE FREE, INC.; 19500 JANACEK COURT, BROOKFIELD, WI 53045 OR FAX: 262-787-0500

Signature

DATE