



LOW SOLIDS SILICONE SYSTEM (VFI-991) OVER METAL

1. GENERAL SPECIFICATION:

1.01. General System Description

- A. The Low Solids Silicone System is recommended for substrates aged one year or treated, including anodized aluminum, pre-finished metal, galvanized steel, and existing steel (excluding siliconized and fluorocarbon finishes) with unlimited slope. **See section 2 for a list of materials used in the system.** Consult Volatile Free, Inc. (VFI®) for more information on restoring previously restored projects.
- B. Restoring with the Low Solids Silicone System will preserve and extend the useful life of the roof by protecting it from exposure to common degrading elements and weather conditions. The use of this system is restricted to circumstances where the roof surface is in sound condition but requires renewal due to the normal effects of aging and normal roof 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/building representative, 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, materials, equipment, and accessories necessary to repair, clean, and prepare existing metal surfaces. Install Volatile Free, Inc.'s primer and Low Solids Silicone System in accordance with this specification and the manufacturer's instructions. Reference the following sections for more detailed information.
 - 1. Environmental Requirements (1.06)
 - 2. Surface Preparation (3.02)
 - 3. Surface Wash (3.03)
 - 4. Priming (3.04)
 - 5. Seams, Cracks, Terminations, and Penetrations (3.05)
 - 6. Coating Application (3.06)



1.03. Approved Materials:

- A.** Primary waterproofing materials shall be the products of a single manufacturer and produced domestically. A coating supplier must have a minimum of 10 years of experience in the manufacture of a specified product. Private-label products or materials produced outside the US are not acceptable. Secondary products shall be recommended and approved by the primary manufacturer. The coating system shall have UL Listing, Miami-Dade NOA, and Florida Building Code approval. CRRC and ENERGY STAR approvals are also required where applicable (white topcoat).
- B.** Unspecified materials shall be submitted to the architect and owner/building representative 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.

1.04. Submittals:

A. Manufacturer:

- 1.** Provide VFI's published technical data sheets, safety data sheets, installation instructions, and certified data to support published ratings.
- 2.** Supply warranty paperwork in accordance with application rates and requirements.

1.05. 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.** Contractors shall be responsible for the 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 drum 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.

1.06. Environmental Requirements:

- A.** Install the coating materials under the following conditions:

 - 1.** When existing and forecasted weather conditions permit it.
 - 2.** Install VFI-991 above 40°F/4.5°C and VFI-#11 above 50°F/10°C.

2. PRODUCTS:

2.01. Materials:

A. All products listed are manufactured, supplied, or approved by VFI of Brookfield, WI.

1. Surface Cleaner: VFI-1009 Cleaning Detergent
2. Seam Tape: BR TAPE 4" or 6" Butyl Tape
3. Polyester Fabric: PF Mesh 4" or 6" Polyester Fabric
4. Primer: VFI-#11 9:1 Epoxy Primer
5. Flashing Grade: SEALGUARD VFI-993 Silicone Flashing Grade
6. Coating: SEALGUARD VFI-991 Silicone, in manufacturer's standard white
 - a. The system can be used with various premium and custom colors, but VFI does not guarantee color stability unless otherwise stated.

VFI-991 Mean Technical Requirements		
Solids	By Volume	64%
Tensile	ASTM D412	434 psi
Elongation	ASTM D412	246%
Permanent Set	ASTM D412	1% max
Tear Resistance	ASTM D624	41 pli
Water Vapor Permeability	ASTM E96 @20 MIL	9.9 perms

3. EXECUTION

3.01. Examination

- A.** Identify slope and drainage patterns.
- B.** Inspect for missing or loose fasteners.
- C.** Identify seam and flashing failures.
- D.** Inspect for rust and metal integrity/damage.

3.02. Surface Preparation

- A.** Remove large volumes of dirt, leaves, and other debris with a broom. Roof cements and cold-applied materials, detrimental to the adhesion and application of roofing materials, should be removed. Take care to remove all loose paint, rust, and scale.
- B.** Power wash as needed with a minimum pressure of 2,000 psi or mechanical abrasion.

- C. The existing metal roof and its structural components must be repaired. All damaged drains, vents, ducts, gutters, metal caps, flashing, or other penetrations must be replaced or modified.
- D. 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.
- E. Loose or backed-out fasteners must be tightened or replaced with oversized fasteners.

3.03. Surface Wash:

- A. Areas containing grease, oil, animal fats, or other surface contaminants shall be scrubbed with non-sudsing, biodegradable liquid detergent (VFI-1009).
- B. Use concentrated chlorine solution to treat areas of mildew, fungus, or algae.
- C. All cleaning agents must be rinsed off the roof. Allow the roof to dry before proceeding.

3.04. Priming

- A. Application levels of VFI-#11 9:1 Epoxy Primer:
 - 1. Minimal rust: 200 sq. ft. per gallon (0.5 gallons per square)
 - 2. Heavy rust: 100 sq. ft. per gallon (1 gallon per square)
- B. Allow the primer to dry for a minimum of 8 hours prior to coating. Cure time will vary depending on ambient temperature and humidity. No substrate should be exposed. The primer must be coated within 7 days after application. If the primer is not coated within 7 days, the primed surface should be cleaned and re-primed. The designed temperature is 50°F or above. Do not apply if rain is in the forecast before a topcoat can be applied.

3.05. Seams, Cracks, Terminations, and Penetrations:

- A. **Vertical Seams:** Reinforce all vertical (side-lap) seams that have not been factory crimped or resealed as required.
- B. **Horizontal Seams:**
 - 1. **Option 1:** Apply a base coat of SEALGUARD VFI-991 Silicone centered on the seam at a rate of 1 gal/sq. The base coat should be applied wide enough to support 6-inch-wide polyester fabric. Lay the fabric onto the wet coating, making sure there are no defects, including fish mouths, wrinkles, or bubbles, and the fabric is completely smooth. When the fabric is in place, wet it out with approximately 1 gal/sq of VFI-991.



2. **Option 2:** Apply VFI's reinforced self-adhering butyl tape. Cut the butyl tape to the desired length. Peel off the backing and center it over the seam, making sure it is fully adhered to the metal in all places and there are no wrinkles or bubbles. Apply 1.5 gal/sq of VFI-991 over the butyl tape.

C. Penetrations, Terminations, and Protrusions: Repair can be accomplished with SEALGUARD VFI-993 Silicone Flashing Grade. If additional reinforcement is needed, a base coat of VFI-991, polyester fabric, and a topcoat of VFI-991 may be used when following the above-mentioned application rates, standards, and procedures.

D. Exposed Mechanical Fasteners: Apply VFI-993 to completely encapsulate the fastener head and seal the base of the fastener to the metal roof.

3.06. Coating Application

- A. Ensure adhesion tests are completed and meet VFI requirements.
- B. Check wet film thickness during application with a mil gauge.
- C. Install SEALGUARD VFI-991 Silicone over the entire roof surface to achieve the desired warranty requirement in DFT (Dry film thickness):
 1. **21 mils minimum DFT for a 10-year warranty (2 gallons per square)**
 2. **26 mils minimum DFT for a 15-year warranty (2.5 gallons per square)**
- D. Recoat time is between 2 to 48 hours, depending on environmental conditions and cure speed. Longer recoat times may result in poor intercoat adhesion and delamination from surface contamination.
- E. No traffic shall be permitted on the coated surface for a minimum of one (1) day.
Damage to the surface by other trades shall not be the responsibility of the roofing contractor or Volatile Free, Inc.

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