
TWENTY YEAR SPECIFICATION FOR VFI 600 SERIES FLUID APPLIED ACRYLIC MEMBRANE WITH VFI-991 SILICONE TOP COAT FOR REHABILITATION OF CRIMPED METAL ROOFS

1 GENERAL:

1.01 General System Description

- A.** VFI-640 Acrylic Base Coat with VFI-991 Silicone Top Coat 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 coated projects.
- B.** Restoring with VFI 640 Acrylic Base Coat with VFI-991 Silicone Top Coat 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 areas of 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.
- E.** Conditions to check and corrections to consider are: The type of the existing system must be identified and all existing coatings must be well adhered and intact.

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 640 Acrylic Base Coat with 991 Silicone Top Coat 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.** Priming (3.03)
 - 6.** Install Acrylic/ Silicone Coating System. (3.04 - 3.08)

7. Fiberglass Skylight Renewal (3.09)

8. 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. A minimum of five years 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.
- C. VFI shall be a single source of the roofing system.
- D. The contractor's qualifications and equipment must be approved by VFI.
- E. 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 of five years manufacturing experience.
- F. Products used must have Miami Dade NOA or Florida Product Approval.

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 had been previously coated or other defects are present and deemed suspect by VFI, the applicator, or the owner's representative. 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 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 VFI-640 Acrylic Base Coat or VFI-991 Silicone Top Coat when the temperature is below 50° F.

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. All preexisting coatings must be fully adhered and existing systems must be identified.
- D. Install all materials to change the pitch or otherwise facilitate 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 finish structured 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 4" or 6" Fabric-Backed Butyl Tape provided by VFI
 2. Polyester Fabric: PF Mesh 6", 12", 20" or 40" non-woven polyester fabric provided by VFI
 3. Wash: VFI-1009 Cleaning Concentrate
 4. Rust Primer: VFI-1074
 5. Base Coating: VFI 640 Acrylic Base Coat, in manufacturer's standard base coat color.

This coating, shall meet the following mean technical requirements:

a. Solids:	by Volume	51%
b. Tensile:	ASTM D-2370	350 +/- 50 psi
c. Elongation:	ASTM D-2370	200% +/- 25%
d. Permeance	ASTM D-1653	27(wet), 13(dry)
e. Flexibility @ O° mandrel (pass/ fail)	ASTM D-522B	Pass

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f. Fungi Resistance (pass/ fail)	ASTM G-21	Pass
Accelerated Weatherability @ 1,000 Hrs. (pass/ fail)	ASTM D-4798	Pass

6. Top Coating: VFI-991 Silicone roof coating, in manufacturer's standard white color (unless otherwise specified by owner).

This coating shall meet the following mean technical requirements:

a. Solids:	by Volume	70% +/- 1
b. Tensile:	ASTM D-412	380 psi
c. Elongation:	ASTM D-412	250%
d. Permanent Set	ASTM D-412	1% max
e. Hardness Shore A	ASTM D-2240	60
f. Tear Resistance	ASTM D-624	40 pli
g. Water Vapor Perms	ASTM-E-96 @20MIL	5 perms

7. VFI-630 Flashing Grade Acrylic Coating
8. 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, VFI Acrylic/ Silicone Hybrid System 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 roof when necessary prior to making any repairs with coatings.**
- B. 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.
- C. 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 coatings, rust, and scale.
- D. Where rust has damaged the structural integrity of the metal panel, replace with new metal panels.

- E. 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 1/4" or less.
- F. If deflection between panels cannot be repaired to 1/4" or less, a polyethylene backer rod or spray applied polyurethane foam may be used to fill the gap.
- G. Loose or backed-out fasteners must be tightened or replaced with oversized fasteners.
- H. 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.
- I. Protruding nails must be replaced with screws. Care must be taken to use screws long enough to be effective.
- J. The installation of materials to change the pitch or otherwise facilitate water drainage has been completed.
- K. Open seams, cracks and cuts must be covered completely or repaired to encapsulate the defect prior to the cleaning process.

3.02 Surface Wash:

- A. Remove large volumes of dirt, leaves and other debris with a broom or blower. All defects must be repaired to prevent material from being blown under the membrane during the cleaning process.

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

- B. 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. For best results, 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)
- C. 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 all cleaning solution. Allow the substrate to completely dry prior to the application of any coating materials including primer.
- D. Areas containing grease, oil, animal fats or other surface contaminants shall be scrubbed with liquid degreaser or tri-sodium phosphate until clean.

- E. Use concentrated chlorine solution to treat areas of mildew, fungus, or algae.
- F. All cleaning agents must be rinsed off of 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. When primer is necessary, prime the entire roof prior to making any repairs with coatings.

3.03 Priming:

Roofs with no rust will not require a primer coat. For roofs with **minimal** rust, apply primer at **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 0.5 gallons per 100 sq. ft (8 wet mils, 3.5 dry mils) 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 primer to dry a minimum of 4 hours prior to silicone coating. Cure time will vary depending on ambient temperature and humidity. No substrate should be exposed. 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 Horizontal Seams, Terminations & Penetrations:

Reinforce all horizontal seams, 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.

1. **Option 1:** Apply VFI-640 Acrylic Base Coat 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 VFI-640 Acrylic Base Coat to encapsulate the fabric.
6" Fabric is packaged in 300 lineal foot rolls.
Each roll of 6" fabric will require 1 five gallon pail of VFI-640 Acrylic Base Coat to apply.
2. **Option 2:** Apply VFI's Fabric-Backed Butyl Tape (minimum 4"), centered over the existing seam. Apply VFI-630 Flashing Grade Acrylic Coating, in one coat, over the Fabric-Backed Butyl Tape taking care to extend the fabric 1" past edge of tape. Ensure that the edges of Fabric-Backed Butyl Tape are completely sealed.
Fabric-Backed Butyl Tape is packaged in 50 lineal foot rolls.
One roll of 4" Fabric-Backed Butyl Tape will require approximately 1 gallon of VFI-630 to apply.
One roll of 6" Fabric-Backed Butyl Tape will require approximately 1.5 gallons of VFI-630 to apply.
3. **Option 3:** For seams or gaps less than 1/4" apply VFI-630 Acrylic Flashing grade silicone to all primed seams, cracks, terminations, and around all penetrations. Using a brush, "push" the VFI-630 into the area to be treated, filling the gap and extending from the gap a minimum of 1" onto metal panel.

One gallon of VFI-630 will treat approximately 150 lineal feet of seams.

3.05 Exposed Mechanical Fastenes:

Apply VFI-630 Acrylic Flashing Grade to completely encapsulate the fastener head and seal the base of the fastener to the metal roof.

One gallon of VFI-630 will treat approximately 450 fasteners.

3.06 Damaged or Improperly Installed Vertical Crimp Metal:

Apply VFI's reinforced fabric-backed butyl tape (minimum size 4 inch) to damaged or improperly installed vertical crimp metal to encapsulate the crimp cap metal from the ridge to the eave. Cut butyl tape to desired length. Peel off backing and center over the crimp cap making sure it is fully adhered to the metal in all places. Form the butyl tape around the crimp corrugation taking care to eliminate as many wrinkles and voids as possible. When more than one length is required to encapsulate the crimp from ridge to eave, begin on the low side of the roof slope and work up overlapping lengths of butyl tape by a minimum of 3 inches. Apply VFI-630 Acrylic Flashing Grade over the butyl tape.

**4" fabric-backed butyl tape is packaged in 50 lineal foot rolls.
Each roll of 4" tape will require approximately 1 gallon of VFI-630 to apply.**

3.07 Ridge Closure:

Apply either polyethylene backer rod or spray applied polyurethane foam to fill the gap in the roof closure. Apply VFI-630 Acrylic Flashing Grade to encapsulate backer rod or spray polyurethane foam. Extend the Flashing Grade 2 inches past edges of backer rod or spray polyurethane foam.

3.08 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.

Apply two coats to the entire roof of *SEALGUARD* VFI-991 SILICONE coating system **at a total coverage rate of 2.7 gallons per 100 sq. ft. (43 wet mils, 30 dry mils)**

3.09 Fiberglass Skylight Renewal:

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.

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 of top coat will measure a minimum of 30 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 for a period of two years. 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 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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**SUSTAINABILITY.
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FLEXIBILITY.**

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:

Topcoat application rate required:

<u>Volatile Free Inc.</u>
Printed Name: _____
Title: _____
Date Approved: _____
Warranty Project # _____

<u>Applicator</u>
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 VFI-640 Acrylic Base Coat
With VFI-991 Silicone Top Coat.

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

Signature

DATE

TWENTY YEAR SPECIFICATION FOR ACRYLIC/ SILICONE HYBRID SYSTEM

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FLEXIBILITY.

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