TREMCO

APPLICATION INSTRUCTIONS

VULKEM 350FC/950NF®

Low Odor/Fast Cure Pedestrian and Waterproofing System

1. PURPOSE

1.1 The purpose of this document is to establish uniform procedures for applying the Vulkem® 350FC/950NF Traffic Deck Coating System. This document describes application procedures for regular duty requirements. The techniques involved may require modifications to adjust to jobsite conditions. If you have any questions at all about your application, contact your local Tremco Field Sales Representative for specific design requirements.

1.2 This document will provide the necessary instructions and troubleshooting for the application of the Vulkem Traffic Deck Coating System to qualify for the manufacturer's warranty.

2. SCOPE

2.1 Investigation of the substrate should be performed to determine the type of surface preparation that will need to take place to achieve the appropriate surface profile required for the coating application. Depending on the condition of the concrete, one or more types of surface preparations may be required. Refer to ICRI's Technical Guideline No. 310.2R-2013 – Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair for best practices on selecting the appropriate method of concrete preparation. Thin film and high-build coating applications will require the surface profile, CSP 2-4.

3. CONDTIONS FOR CONCRETE SURFACES

3.1 Concrete shall be water-cured and attain a 4000 psi minimum compressive strength. Moisture content in the concrete must be lower than 4.5% as measured by a Tramex CME 4 Moisture Meter. Depending on concrete construction and job site location, additional concrete testing may be required. Please contact your local Tremco Sales or Technical Representative

3.2 Concrete shall be made free of any laitance which can usually be achieved by shotblasting (preferred method) or sandblasting the surface. For proper methods, refer to ICRI's Technical Guideline No. 310.2R-2013.

3.3 Concrete surface shall be properly cleaned so that the surface to receive the coating, sealant, or liquid-applied flashing is free of mold, paint, sealers, coating, curing agents, loose particles, and other contamination or foreign matter which may interfere with adhesion. Job site condidtions may require the use of a Vulkem primer.

3.4 Shrinkage cracks in the concrete surface that are 1/16" (1.6 mm) wide or greater shall be ground out to a minimum of 1/4" wide x 1/2" (6 mm to 12 mm) deep and treated according to the instructions in Section 5, Detail Work.

3.5 Structrual cracks regardless of width shall be ground out to a minimum 1/4" wide x 1/2" (6 mm x 12 mm) deep and treated according to the instructions in Section 5, Detail Work.

3.6 Spalled areas shall be cleaned and free of loose contaminations prior to repair. Because jobsite conditions vary, it is recommended that you contact Tremco Technical Service or your local Tremco Sales Representative for the best method of repair.

3.7 In the event of exposed reinforcing steel, it is recommended that the structural engineer of record be contacted for investigation of the condition and for the best method of repair.

3.8 Surfaces shall be made free of defects that may telegraph and show through the finished coating. Surfaces that are rough (fins, ridges, exposed aggregate, honeycombs, deep broom finish, etc.) shall be leveled and made smooth by applying a coat of sand-filled epoxy.

3.9 All drains shall be cleaned and operative. Drains shall be recessed lower than the deck surface. Surface shall be sloped to drain to provide positive drainage. Drains should be detailed as instructed below:

- Cut a 1/4" wide x 1/2" deep (6 mm x 12 mm) keyway into the concrete surface at any point where the coating will have an exposed terminating edge – that is, any point where the coating will end in an open area to subject to traffic, for example, at the end of a ramp, around drains and alongside expansion joints.

3.10 If the project is a restoration deck, old sealant and backing material shall be removed. The joint interface will require a thorough wire brushing, grinding, sandblasting, solvent washing and/or primer.

4. JOBSITE MATERIALS

4.1 Recommended materials and their use are as follows:

Dymonic® 100: A one-part, moisture-curing, gun grade polyurethane sealant for use in sealing cracks, control joints, drain detailing, and in forming cants.

Vulkem 350FC Base Coat: A two-part, low-odor, low-VOC, fast-curing, polyurethane coating used as the elastomeric waterproofing membrane of the system available in SL (self-leveling) for horizontal applications.

Vulkem 950NF Top Coat:. A two-part, aromatic, low odor, VOC compliant, high-solids polyurethane top coat providing a chemical-resistant, weatherproof wear surface.

Backer Rod: A closed-cell polyethylene back-up material used in expansion joints and at the base of cants to prevent threesided adhesion, and to control the depth of the sealant.

Vulkem Primer #171: A one-part, film-forming primer to be used on porous surfaces.

TREMprime® Non-Porous Primer: A one-part primer for use on metal surfaces.

Tremprime VB Plus:A two component, modified epoxy system designed to seal concrete and reduce moisture vapor transmission on concrete slabs with elevated levels of moisture.

Vulkem 191 Primer: A low VOC compliant one-part porous and interlaminary primer for use in applying a fresh coat of Vulkem coating or sealant after preceeding coat has been exposed for long periods of time.

Aggregate: 30-40 mesh (0.6 to 0.7 mm diameter) silica sand or alumina oxide, which imparts a textured finish and contributes to slip and wear resistance. NOTE: Aggregate may not be required for vertical applications.

Refer to the project manager for your specific job requirements.

5. DETAIL WORK

Note: Do not apply sealant or coatings to a frosty, damp or wet surface or when air or surface temperature is below 40 °F (4°C) or the surface temperature is above 110 °F (43 °C). Cure times as stated below are based upon standard ambient conditions of 75 °F (25 °C), 50% RH. A decrease in ambient temperature and humidity will significantly lengthen cure time.

5.1 Lay a 1/4" (6 mm) diameter backer rod into the corner at the juncture of all horizontal and vertical surfaces such as curbs, wall sections, columns, or penetrations through the deck. Apply bead of Dymonic 100 1” (2.5 cm) wide over the backer rod. Tool the sealant bead to form a 45° cant. Use sufficient pressure to force out any trapped air and to assure complete wetting of the surface. Remove excess sealant from the deck or wall joint. NOTE: Backer rod is only required for moving joints.

5.2 Install a backer rod, 1/8” to 1/4" (3 mm to 6 mm) diameter larger than the joint width to all prepared control joints. Set depth of backer rod to control the depth of the sealant. (Depth of sealant is measured from the top of the concrete surface). Proper depth of sealant is as follows:

- For joints 1/4" (6.4 mm) to 1/2" (12.7 mm) wide, the width to depth ratio should be equal.
- Joints 1/2" (12.7 mm) wide or greater that are not expansion joints should have a sealant depth of 1/2" (12.7 mm). The minimum joint size is 1/4" x 1/4" (6.4 mm x 6.4 mm).
- All cracks and joints shall be sealed with Tremco approved sealant, and tooled flush with the surface. Note: Expansion joints should not be coated over. A full line of expansion joint solutions is available from Tremco Construction Products Group companies. For treatment of expantion joints, contact your local Tremco Sales Representative.

5.3 Allow sealant to cure overnight.

5.4 Apply a strip of masking tape or duct tape to the vertical sections, 2” to 3” above the Dymonic 100 Sealant’s cant to provide a neat termination of the vertical detail coat.

5.5 Pre-mix the Vulkem 350FC base component Part A to assure no settlement of the material is in the bottom of the pail and the color of the material is consistent with no streaks or striations. Vulkem 350FC should be mixed with a spiral paint mixing paddle at a rate of 500 rpm for a minimum of 2-3 minutes. Open, mix and use one pail at a time. Part B must be well shaken prior to mixing with Part A. Empty contents of the curative, Part B into the base, Part A. Use care to not incorporate air into the product. This could potentially lead to the development of blisters during the coating applications. For recommendations on mixer options, contact Tremco Technical Services.

5.6 Apply 25-mil (.64 mm) thick detail coat of Vulkem 350FC over the treated cant, and extend it to the tape on the vertical surface and 4” (100 mm) onto the horizontal surface. Feather-edge the terminating edge fo the Vulkem 350FC detail coat on the horizontal surface so it will not show though the finished coating.

5.7 Apply a 25-mil (.64 mm) thick detail coat of Vulkem 350FC 6” (150 mm) wide, centered over all untreated cracks, all routed and sealed cracks, and over all cold joints. Feather in terminating edge of detail coat to keep these edges from showing through the finished coating.

6. COATING APPLICATION

NOTE: Recommended coverage rates are approximate. Sand loading methods and concrete surface profiles may increase amount of material required to obtain uniform coverage. Please refer to mixing instructions in Section 5.5.

6.1 BASE COAT: Apply Vulkem 350FC at 64 ft²/gal or 25 wet mils thick to the entire area to be coated, including overall detail coats, but excluding expansion joints. The recommended method of application is with a notched squeegee. Cross-rolling may follow in the event the coating needs to be leveled. Vulkem 350FC can also be applied with a clean, flat-bladed rubber squeegee. Do not apply in excess or allow to puddle. If backrolling is to take place, use a medium nap (≈ 3/8") roller.

6.2 Allow Vulkem 350FC to cure a minimum of 3-4 hr and a maximum of 24 hr. Cure rates depend on temperature. Refer to cure rate guideline in chart at the end of this document.

6.3 If the Vulkem 350FC 24 hr re-coat window is exceeded, cleaning and re-priming is required. Please contact Tremco Technical Services for recommendations.

6.4 Pre-mix the Vulkem 950NF base component Part A to ensure that no material settlement has occurred in the bottom of the pail, and to ensure the color of the material is consistent with no streaks or striations. Open, mix and use one pail at a time. When mixing Vulkem 950NF Part B must be well shaken prior to mixing with Part A. Empty contents of the curative, Part B into the base, Part A. Using an appropriate mixer and drill, carefully mix the two components for 1 to 2 minutes, scrape down the sides of the pail and mix an additional 1 to 2 minutes. Use care not to incorporate air into the product; this could potentially lead to the development of blisters during the coating application. For recommendations on mixer options, contact Tremco Technical Services. Boxing of pails is recommended for color consistency between different lots.

6.5 TOP COAT: There are two acceptable methods for installing the topcoat. They are as follows:

METHOD A

6.5.1 Apply the mixed Vulkem 950NF with a medium-nap, solvent-resistant roller sleeve at a rate of 133 ft²/gal (3.3 M²/L) to yield approximately 12 wet mils. Remove excess material from the roller by using a screen in the pail to avoid puddles or ponding.

6.5.2 Apply the Vulkem 950NF in sections that can be easily reached for backrolling. Immediately after applying the Vulkem 950NF, broadcast a 30 to 40 mesh (0.4 to 0.5 mm diameter) silica sand or aluminum oxide into the wet Vulkem 950NF and backroll to evenly distribute the aggregate. For a moderately textured finish, use 15 to 18 lb of sand/gal of Vulkem 950NF (1.8 to 2.2 kg/L). Backrolling is necessary regardless of how the sand is broadcast (i.e. hand, seed spreader, etc.) to ensure that all of the sand is completely encapsulated into the liquid.

6.5.3 The textured properties of the finished deck coating system aid in the system's wear and slip resistance. Tremco recommends a test patch be completed by the applicator and customer acceptance obtained prior to the application.

6.5.4 Do not open to foot traffic for a minimum of 12 hr following full cure of Vulkem 950NF.

METHOD B

6.5.5 Apply the Mixed Vulkem 950NF with a medium nap solvent resistant roller at a rate of 200 ft^2/gal (5 M^2/L) to yield 8 wet mils. Take care to apply an even coat without puddles or thick roller edge lines.

6.5.6 Broadcast to refusal the aggregate onto the wet surface of the Vulkem 950NF coat. Cover the entire surface leaving no wet spots.

6.5.7 Allow the Vulkem 951NF to cure overnight.

6.5.8 Sweep and vacuum off all loose, unbound aggregate.

6.5.9 Mix the Vulkem 950NF topcoat as specified in 6.4

6.5.10 Apply Vulkem 950NF with a medium nap solvent resistant roller sleeve at a rate of 200 ft^2/gal (5 M^2/L) to yield 8 wet mils. Take care to evenly apply the coating with no puddling. Remove excess material from the roller buy using a screen in the pail to avoid puddles or ponding of the material.

6.5.11 Allow the Vulkem 950NF to cure for 24 hr prior to pedestrian traffic or placement of deck furniture.

6.5.12 The textured properties of the finished deck coating system contribute to the system's wear resistance and slip resistance. Tremco recommends installing a test patch and gaining customer acceptance prior to installation.

7. CLEAN UP

7.1 Clean all adjacent areas to remove any stains or spills with Toluene or Xylene.

7.2 Clean tools or equipment with Toluene, or Xylene before material cures.

7.3 Clean hands by soaking in hot, soapy water then brushing with a stiff bristle brush.

8. MATERIAL GUIDELINES

Dymonic 100: For a 1" (25.4 mm) cant bead over a 1/4" (6 mm) backer rod, 1 case of sealant for every 48 lf (14.6 M) is required.
Vulkem 350FC Base Coat: When applied at 64 ft²/gal (1.6 M²/L), will yield a mil thickness of 25 wet mils.
Vulkem 950NF Top Coat: When applied at 133 ft²/gal (3.3 M²/L), will yield a mil thickness of 12 wet mils.
Due to the number of variables present related to aggregate broadcast method and topcoat application technique coverage rates may vary.

9. TROUBLESHOOTING

This section describes common industry application issues when certain environmental conditions exist. Below are some commonly seen issues and remedies. If any of these should occur, it is always recommended that you contact your local Tremco Sales Representative or Tremco Technical Service.

9.1 Tremco requires that any possible recoating job be reviewed and approved by your Sales and/or Technical Representative prior to installation.

9.2 For any restoration opportunity or application, compatibility and adhesion testing need to be completed in the field.

9.3 When a deck contains too much moisture, the moisture may change into a vapor, which then condenses at the concretemembrane interface before the coating and may cause blisters or bubbles, ultimately interfere with proper adhesion. If this should occur, the blisters can be cut out, allowing moisture to escape. After moisture has escaped and the surface is dry, the area can be repaired.

9.4 If the coating application has been installed at a thickness that is greater than directed in our installation instructions, pinholes, blisters or bubbles may occur in the coating. To avoid this occurance, the material should be applied in accordance with the installation instructions.

9.5 If the coating is applied in very hot ambient temperatures, the air in the small spaces between concrete particles increases in volume and forms blisters. Contact Tremco Technical Services should this occur.

9.6 If the previous coating application has not fully cured, solvent may become trapped between the coats and lead to large blisters that will most likely be tacky on the backside. Blisters may be cut out and repaired after the surface has been allowed to fully dry.
This section discusses the impact of applying these coatings outside the ideal temperature application range of 65 to 85 °F (18.3 to 29.4 °C) at 50% RH.

9.7 At temperatures lower than the ideal range, the material will become more viscous and it will cure at a slower rate. Refer to the chart below for approximate cure rates at varying temperatures.

10. WEATHER IMPACT ON COATING APPLICATIONS

10.1 Deck temperatures may affect cure rates even when ambient temperatures are high.

10.2 Enclosed areas may slow the cure rate of the coating because humidity levels tend to be low in these conditions due to the low exchange of air over the membrane.

10.3 In extremely dry conditions, with RH less than 50%, even when temperatures are high, cure rates can still be extended.

QUICK REFERENCE APPLICATION CHART

LAYER	PRODUCT	WET MILS	CURE TIME*	SQUARE FEET PER GALLON
Base Coat	Vulkem 350FC	25	3 to 4 hours	64
Top Coat for Method A	Vulkem 950NF	12	2 to 4 hours	133
Top Coat for Method B	Vulkem 950NF	8	2 to 4 hours	200

*Cure times are based on ideal ambient temperature at 50% RH. See chart below for ideal temperature range.

APPOXIMATE CURE TIMES IN HOURS AT 50% RH		
TEMPERATURE AT 50% RH	VULKEM 350FC	VULKEM 951NF
40°-55 °F 4.4°-12.8 °C	5 to 6 hours	48 to 72 hours
55°-65 °F 12.8°-18.3 °C	3 to 4 hours	6 to 8 hours
65°-85 °F 18.3°-29.4 °C	1.5 to 2.5 hours	2 to 4 hours
85 °F 29.4 °C	1.5 hours	< or = 2 hours

Variations in temperature and humidity can affect the cure rate of the coating. The above chart should be used as a guide only to determine the approximate rate of cure. Other factors can also influence the cure rate such as substrate temperature and enclosed environments. For more information about proper application procedures please refer to the Installation Instructions or contact Technical Services