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## 1. PURPOSE

- 1.1 The purpose of this document is to establish uniform procedures for applying the Vulkem® 350/951NF/951NF Traffic Deck Coating System. This document describes application procedures for medium and heavy 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.

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## 2. SUBSTRATE PREPARATION

- 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 Guidelines No. 03732 – 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.

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## 3. CONDITIONS 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 CE 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. 03732.
- 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 the adhesion. Job site conditions 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 a minimum 1/4" wide x 1/2" deep (6 mm x 12 mm) and treated according to the instructions in Section 5, Detail Work.
- 3.5 Structural cracks regardless of width shall be ground out to a minimum 1/4" wide x 1/2" deep (6 mm x 12 mm) and treated according to the instructions in Section 5, Detail Work.
- 3.6 Spalled areas shall be cleaned and free of loose contaminants 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 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.

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## 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 350 Base Coat:** A one-part polyurethane coating used as the elastomeric waterproofing membrane of the system available in a R (roller) grade and SL (self-leveling) for vertical and horizontal applications.

**Vulkem 951NF Wear Coat:** A two-part, aliphatic, low odor, VOC compliant, high-solids polyurethane wear coat providing a chemical- and UV-resistant, color-stable, weatherproof wear surface.

**Vulkem 951NF Top Coat:** A two-part, aliphatic, low odor, VOC compliant, high-solids polyurethane wear coat providing a chemical- and UV-resistant, color-stable, weatherproof wear surface.

**Backer Rod:** A closed-cell polyethylene back up material used in expansion joints and at the base of cants to prevent three-sided 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 VB Plus Primer:** A two component, modified epoxy primer designed to seal concrete and reduce moisture vapor transmission on concrete slabs with elevated levels of moisture.

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

**TREMprime Multi-Surface Urethane Primer:** A low VOC, quick drying, two-part primer for use between urethanes and urethanes, wood, concrete, PVC, and steel.

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

**Aggregate:** 16-30 mesh silica sand or alumina oxide, which imparts a textured finish and contributes to slip and wear resistance.

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## 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 the cure time.

- 5.1 Lay a 1/4" (6 mm) diameter backer rod into the corner at the juncture of all horizontal and vertical surface such as curbs, wall sections, columns, or penetrations through the deck. Apply a 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. For treatment of expansion 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" or 3" above the Dymonic 100 sealant's cant to provide a neat termination of the vertical detail coat.
- 5.5 Prior to use, Vulkem 350 should be mixed with a spiral paint mixing paddle at a rate of 500 rpm for a minimum of 5 minutes.
- 5.6 Apply 25-mil (.64 mm) thick detail coat of Vulkem 350 Roller Grade over the treated cant and extend it to the tape on the vertical surface and 4" (100 mm) on the horizontal surface. Feather-edge the terminating edge of the Vulkem 350 Roller Grade detail coat on the horizontal surface so it will not show through the finished coating.
- 5.7 Apply a 25-mil (.64 mm) thick detail coat of Vulkem 350 Roller Grade 6" (150 mm) wide centered over all untreated cracks and over cold joints. Feather-edge terminating edge of detail coat to keep these edges from showing through the finished coating.
- 5.8 Allow all detail coats to cure for a minimum of 4 to 6 hr depending on temperature and humidity.

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## 6. COATING APPLICATION

NOTE: Recommended coverage rates are approximate. Sand loading methods and concrete surface profiles may increase the amount of material required to obtain uniform coverage. Please refer to mixing instructions in Section 5.6.

- 6.1 BASE COAT: Apply Vulkem 350 at 64 ft<sup>2</sup>/gal or 25 wet mils (.64 mm) thick to the entire area to be coated, including over all 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 350 can be applied with a solvent-resistant, medium-nap (3/8" to 1/2" [9.5 mm to 12.7 mm]) roller sleeve.
- 6.2 Allow Vulkem 350 to cure a minimum of 12 hr. Cure rates depend on temperature and humidity. Refer to cure rate guideline in chart at the end of this document.
- 6.3 If the Vulkem 350 has been applied for 24 hr or longer during the ideal temperature application range (see chart on last page or document), it should be cleaned with a damp cloth of Xylene (do not saturate it). Prime coat it with Vulkem 191 Primer. We highly recommend that you contact your local Tremco Sales Representative with any questions on the appropriateness of priming.
- 6.4 Pre-mix the Vulkem 951NF base component, Part A, to assure no settlement of the material is at the bottom of the pail and the color of the material is consistent with no streaks or striations. Open, mix and use one pail at a time. Part B must be we 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 to not 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.
- 6.5 WEAR COAT: Vulkem 951NF wear coat is applied with a squeegee or medium-nap roller at the rate of 133 ft<sup>2</sup>/gal (3.3 M<sup>2</sup>/L) to yield approximately 12 wet mils (0.30 mm) thickness to the entire deck.
- 6.6 SILICA SAND ADDITION: There are two acceptable methods of applying the silica sand.

### Method A – Sand to Refusal

- 6.6.1 Immediately following the application of the Vulkem 951NF as indicated in 6.5, broadcast to refusal (flood coat) the material with 0.6 to 1.2 mm (16-30 mesh) sized silica sand. Allow application to cure about 2 to 4 hr during ideal ambient temperatures and RH. Before proceeding, sweep or blow off any excess sand. For a MEDIUM DUTY APPLICATION, proceed to Step 6.7 TOP COAT. For a HEAVY DUTY APPLICATION, proceed to Step 6.6.2.
- 6.6.2 For a HEAVY DUTY APPLICATION, apply an additional coat of Vulkem 951NF to the driving lanes, ramps, turn areas, and ticket areas. Immediately broadcast the sand following the procedure in 6.6.1. Before proceeding with the top coat application sweep or blow off any excess sand. Proceed to Step 6.7 TOP COAT.
- 6.6.3 Immediately following the application of the Vulkem 951NF as indicated in 6.5, broadcast 0.6 to 1.2 mm (16-30 mesh) sized silica sand into the wet Vulkem 951NF. Broadcast the sand at the rate of 15 to 18 lb/gal (1.8 to 2.2 kg/L) of Vulkem 951NF. Backroll the sand into the coating to ensure all the aggregate is evenly distributed. Allow Vulkem 951NF to cure about 2 to 4 hr during ideal ambient temperatures and RH. For a MEDIUM DUTY APPLICATION, proceed to Step 6.7, TOP COAT. For a HEAVY DUTY APPLICATION, proceed to Step 6.6.4.
- 6.6.4 For a HEAVY DUTY APPLICATION, apply an additional coat of Vulkem 951NF to the diving lanes, ramps, turn areas and ticket areas. Immediately following the application on the Vulkem 951NF, repeat the procedure in 6.6.3. Allow this additional coat of Vulkem 951NF to cure about 2 to 4 hr during ideal ambient temperatures and RH. Proceed to Step 6.7 TOP COAT.

Note: Differences in silica sand mesh size may be approved by your local Tremco sales or technical representative.

- 6.7 TOP COAT: Apply Vulkem 951NF Top Coat with a medium-nap, solvent-resistant roller sleeve at a rate of 133 ft<sup>2</sup>/gal or 12 wet mils depending on the silica sand method used.
- 6.8 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.
- 6.9 Tremco recommends a minimum of 24 hr after the final topcoat has cured before allowing vehicular traffic on the deck, but 3 days is preferable.

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## 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 hand by soaking in hot, soapy water then brushing with a stiff bristle brush.

## 8. MATERIAL USAGE 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 350 Base Coat:** When applied at 64 ft<sup>2</sup>/gal (1.6 M<sup>2</sup>/L), will yield a mil thickness of 25 wet mils.
- Vulkem 951NF Wear Coat:** When applied at 133 ft<sup>2</sup>/gal (3.3 M<sup>2</sup>/L), will yield a mil thickness of 12 wet mils.
- Vulkem 951NF Top Coat:** When applied at 133 ft<sup>2</sup>/gal (3.3 M<sup>2</sup>/L), will yield a mil thickness of 12 wet mils.
- Aggregate:** Approximately 15 to 18 lb of approved aggregate will be used with each gallon of Vulkem 951NF as prescribed in Section 8.

## 9. TROUBLESHOOTING

- 9.1 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.
- 9.2 When a deck contains too much moisture, the moisture may change into a vapor, which then condenses at the concrete-membrane interface before the coating has cured and may cause blisters or bubbles, ultimately interfering 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. For any restoration opportunities or application, compatibility and adhesion testing need to be completed in the field.
- 9.3 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 occurrence, the material should be applied in accordance to the installation instructions.
- 9.4 If the coating is applied in very hot ambient temperatures, the air in the small spaces between the concrete particles increases in volume and forms blisters. Contact Tremco Technical Services should this occur.
- 9.5 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.**
- 9.6 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 APPLICATION

- 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 350	25 mils	12 hr	64
Wear Coat (Drive lanes, ramps, turns, ticket areas)	Vulkem 951NF	12 mils	2 to 4 hr	133
Wear Coat (Entire deck)	Vulkem 951NF	12 mils	2 to 4 hr	133
Top Coat	Vulkem 951NF	12 mils	2 to 4 hr	133

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

\*\*Recommended coverage rates are approximate. Sand loading methods and concrete profiles may increase the amount of material used to obtain a uniform coverage.

## APPROXIMATE CURE TIMES IN HOURS AT 50% RH

TEMPERATURE AT 50% RH	VULKEM 350	VULKEM 951NF	VULKEM 951NF
40-55 °F 4.4-12.8 °C	48 to 72	40 to 48	40 to 48
55-65 °F 12.8-19.3 °C	24 to 48	3 to 6	3 to 6
65-85 °F 18.3-29.4 °C	12 to 24	2 to 4	2 to 4
85 °F 29.4 °C	< or = 12	< or = 2	< or = 2

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.

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