



APPLICATION INSTRUCTIONS

VULKEM®
350/346/346

Elastomeric, Waterproof Traffic
Deck Coating System

1. PURPOSE

- 1.1 The purpose of this document is to establish uniform procedures for applying the Vulkem® 350/346/346 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.

2. SUBSTRATE PREP

- 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. 03732- Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings and Polymer Overlays 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. 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 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. 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 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.
- 3.5 Structural cracks regardless of width shall be ground out to a minimum 1/4" 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 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.

4. JOBSITE MATERIALS

- 4.1 Recommended materials and their use are as follows:
- 4.2 **Dymonic® 100:** A one-part, moisture-curing, gun grade polyurethane sealant for use in sealing cracks, control joints, drain detailing, and in forming cants.
- 4.3 **Vulkem 350 Base Coat:** A one-part polyurethane coating used as the elastomeric waterproofing membrane of the system available in an R (roller) grade and SL (self-leveling) for vertical and horizontal applications.
- 4.4 **Vulkem 346 Wear Coat:** A one-part, aliphatic polyurethane wear coat providing a chemical- and UV-resistant, color-stable, weatherproof wear surface.
- 4.5 **Vulkem 346 Top Coat:** A one-part, aliphatic polyurethane wear coat providing a chemical- and UV-resistant, color-stable, weatherproof wear surface.
- 4.6 **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.
- 4.7 **Vulkem Primer #171:** A one-part, film-forming primer to be used on porous surfaces.
- 4.8 **Tremco® Epoxy Primer:** A two-component (1:1) primer recommended for use as a porous primer and is also used as a compatible tie-in to create connectivity between TREMproof® below-grade waterproofing membranes, Vulkem® urethane coatings and ExoAir® air barrier membranes.
- 4.9 **TREMprimeVB 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.
- 4.10 **TREMprime® Non-Porous Primer:** A one-part primer for use on metal surfaces.
- 4.11 **TREMprime Multi-Surface Urethane Primer:** A low VOC, quick drying, two- part primer for use between urethanes and urethanes, wood, concrete, PVC and steel.
- 4.12 **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 preceding coat has been exposed for long periods of time.
- 4.13 **Aggregate:** 16-30 mesh silica sand or alumina oxide, which imparts a textured finish and contributes to slip and wear resistance.

5. DETAIL WORK

- 5.1 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.
- 5.2 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 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.
- 5.3 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
- 5.4 Allow sealant to cure overnight.
 - 5.5 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.
 - 5.6 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 min.
 - 5.7 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) onto 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.
 - 5.8 Apply a 25-mil (.64 mm) thick detail coat of Vulkem 350 Roller Grade 6" (150 mm) wide, centered over all untreated cracks, all routed and sealed cracks, and over all cold joints. Feather-edge terminating edge of detail coat to keep these edges from showing through the finished coating.
 - 5.9 Allow all detail coats to cure for a minimum of 4 to 6 hr depending on temperature and humidity.

6. COATING APPLICATION

- 6.1 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 5.5.
- 6.2 BASE COAT: Apply Vulkem 350 at 64 ft²/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.
- 6.3 Allow Vulkem 350 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.
- 6.4 If Vulkem 350 has been applied for 24 hours or longer (under ideal temperature conditions—see chart on the last page), the surface should be cleaned with a damp cloth of Xylene (do not saturate). The standard prime coat is Vulkem 191 Primer. If using Vulkem 191 Primer, it must be tacky without transfer at the time of topcoat application. If it fully dries and loses tack, it must be reprimed. Tremco Epoxy Primer may also be used as an interlaminary primer. We highly recommend consulting your local Tremco Sales Representative with any questions regarding appropriate priming.
- 6.5 Thoroughly mix the Vulkem 346 with an appropriate paddle mixer taking care not to trap air bubbles within the coating. Approximate mixing time should be 1 to 2 minutes. Scrape down the sides of the pail and mix for an additional 1 to 2 minutes.
- 6.6 WEAR COAT: Vulkem 346 Wear Coat is applied with a squeegee or medium-nap roller at the rate of 105 ft²/gal (2.6 M²/L) to yield approximately 15 wet mils (0.38 mm) thickness to driving lanes, ramps, turn areas and ticket areas
- 6.7 SILICA SAND ADDITION: There are two acceptable methods if applying the silica sand:
- 6.8 **Method A – Sand to Refusal**
- 6.9 Immediately following the application of the Vulkem 346 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 this first application to cure about 6 to 8 hr during ideal ambient temperatures and RH. Before proceeding with the second application, sweep or blow off any excess sand. Apply second application of Vulkem 346 over the entire deck at a rate of 105 ft²/gal (2.6M²/L) to yield approximately 15 wet mils (0.38 mm). Broadcast to refusal (flood coat) the material with 0.6 to 1.2 mm (16-30 mesh) sized silica sand. Allow this second application to cure about 6 to 8 hr during ideal ambient temperatures and RH. For a MEDIUM DUTY APPLICATION, proceed to Step 6.7 TOP COAT. Make sure the excess sand is removed prior to beginning Step 6.7.
- 6.10 For a HEAVY DUTY APPLICATION, apply an additional coat of Vulkem 346 to the entire deck to be coated including over the previously coated areas. Immediately broadcast the sand following the procedure in 6.6a. Before proceeding with the top coat application sweep or blow off any excess sand. Proceed to Step 6.7 TOP COAT. Make sure the excess sand is removed prior to beginning Step 6.7.

6.11 Method B - Backroll

- 6.12 Immediately following the application of the Vulkem 346 as indicated in 6.5, broadcast 0.6 to 1.2 mm (16-30 mesh) sized silica sand into the wet Vulkem 346. Broadcast the sand at a rate of 15 to 18 lb/gal (1.8 – 2.2 kg/L) of Vulkem 346. Backroll the sand into the coating to ensure all the aggregate is evenly distributed. Allow the first coat of Vulkem 346 to cure about 6 to 8 hr during ideal ambient temperatures and RH. Apply second application of Vulkem 346 over the entire deck at a rate of 105 ft²/gal (2.6 M²/L) to yield approximately 15 wet mils (0.38 mm). Broadcast the sand at a rate of 15 to 18 lb/gal (1.8 – 2.2kg/L) of Vulkem 346. Backroll the sand into the coating to insure all the aggregate is evenly distributed and allow to cure about 6 to 8 hr during ideal ambient temperatures and RH. For a MEDIUM DUTY APPLICATION, proceed to Step 6.7 TOP COAT.
- 6.13 For a HEAVY DUTY APPLICATION, apply an additional coat of Vulkem 346 over the entire surface of the deck to be coated including the previously coated areas. Immediately following the application of the Vulkem 346, repeat the procedure in 6.6c. Allow this additional coat of Vulkem 346 to cure about 6 to 8 hr during ideal ambient temperatures and relative humidity. Proceed to Step 6.7 TOP COAT.
- 6.14 Note: Differences in silica sand mesh size may be approved by your local Tremco sales or technical representative.
- 6.15 TOP COAT: Apply Vulkem 346 Top Coat with a medium-nap, solvent resistant roller sleeve at a rate of 89 to 107 ft²/gal or 15 to 18 wet mils depending on the silica method used.
- 6.16 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.
- 6.17 Tremco recommends a minimum of 72 hr after the final topcoat has cured before allowing vehicular traffic on the deck, but 5 days is preferable.

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 USAGE GUIDELINES

- 8.1 Dymonic 100: For a 1" (25.4 mm) cant bead over a ¼" (6 mm) backer rod, 1 case of sealant for every 48 lf (14.6 M) is required.
- 8.2 Vulkem 350 Base Coat: When applied at 64 ft²/gal (1.6 M²/L), will yield a mil thickness of 25 wet mils.
- 8.3 Vulkem 346 Wear Coat: When applied at 105 ft²/gal (2.6 M²/L), will yield a mil thickness of 15 wet mils.
- 8.4 Vulkem 346Top Coat: When applied at 89 to 107 ft²/gal (2.2 to 2.6 M²/L), will yield a mil thickness of 15 to 18 wet mils.
- 8.5 Aggregate: Approximately 15 to 18 lb of approved aggregate will be used with each gallon of Vulkem 346 as prescribed in Section 6.

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 **Tremco requires that any possible recoating job be reviewed and approved by your Sales and/or Technical Representative prior to installation.**
- 9.3 When a deck contains too much moisture, that 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.

- 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 occurrence, the material should be applied in accordance to the installation instructions.
- 9.5 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.
- 9.6 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.
- 9.7 **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.**
- 9.8 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	12 hr	64
Wear Coat #1 (drive lanes, ramps, turns, ticket areas)	Vulkem 346	15	6 to 8 hr	105
Wear Coat #2 (entire deck)				105
Top Coat	Vulkem 346	15 - 18	6 to 8 hr	87 - 109

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

APPROXIMATE CURE TIMES IN HOURS AT 50 % RH			
TEMPERATURES AT 50% RH	VULKEM 350	VULKEM 346	VULKEM 346
40°-55 °F 4.4°-12.8 °C	48 to 72 hr	40 hr	40 to 48 hr
55°-65 °F 12.8°-18.3 °C	24 to 48 hr	12 to 24 hr	12 to 24 hr
65°-85 °F 18.3°-29.4 °C	12 to 24 hr	6 to 8 hr	6 to 8 hr
85 °F 29.4 °C	< or = 12 hr	2 to 4 hr	2 to 4 hr

10.4 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.

10.5 V350346346-AI/0723

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