TREMCO

APPLICATION INSTRUCTIONS

VULKEM®
350FC/EWS HYBRID

Elastomeric, Waterproof Vehicular Traffic Deck Coating System

1. PURPOSE

1.1 The purpose of this document is to establish uniform procedures for applying the Vulkem® 350FC/EWS Hybrid Vehicular Traffic Deck Coating System. This document describes application procedures for the proper installation 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.

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 3-4.

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. 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 contaminates 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" 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 contaminants prior to repair. Because jobsite conditions vary, it is recommended that you Contact Tremco Technical Services 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, at 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 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 is available in SL (self-leveling) for horizontal applications.
- Tremco PUMA WC is a 2-component polyurethane-methacrylate (PUMA) wear coat. Tremco PUMA WC is applied after the Vulkem 350FC has cured. The wear coat is loaded with aggregate to give the system excellent impact, abrasion and chemical resistance.
- PUMA TC: A two-part, chemical-curing PMMA coating used to lock in aggregate and provide additional chemical and UV resistance to Vulkem EWS.
- PUMA BCLM. BCLM is an admix to the PUMA WC to increase impact resistance and elongation.
- Tremco PUMA Initiator+: A reactive catalyst in the form of a white powder used to cure all PUMA/PMMA resins.
- Tremco PUMA Cleaner: A one-part MMA cleaner for all tools such as mixing paddles, squeegees, spiked rollers and spatulas. Always use this cleaner for Vulkem EWS materials. Never use any kind of solvent to clean any of your tools as this will cause contamination and inhibit cure.
- Backer Rod: A closed-cell polyurethane back-up material used in expansion joints and at the base of cants to prevent three- sided adhesion and control the depth of the sealant.
- TREMprime® Non-Porous Primer: A one-part primer for use on smooth metal or plastic surfaces.
- Vulkem 191 Primer: A low VOC compliant, one-part porous and interlaminary primer for use in applying a fresh coat of Vulkem coating after preceding coat has been exposed for long periods of time.
- Aggregate: 16 or 18 nominal mesh silica sand which imparts a textured finish and contributes to slip and wear resistance.

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 92°F (33 °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 Install a minimum 1/2" (12.7mm) bead of Dymonic 100 at the juncture of all horizontal to vertical surfaces such as curbs, wall sections, columns, or penetrations through the deck. Tool the sealant bead to produce a 45° cant/cove. Use sufficient pressure to force out any trapped air and to assure complete wetting of the surface. Remove all excess sealant from the deck or wall joint. NOTE: Backer rod is only required for moving joints.

5.2 For moving joints up to 1/2" (12.7mm) wide, 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 the depth of the 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 to a maximum of 1” (25mm) 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).
- Joints larger than 1” (25mm) should be considered expansion joints. A preformed seal must be considered.
- 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 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” to 3” above the Dymonic 100 Sealant cant/cove 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 minutes. Part B must be well shaken prior to mixing with Part A. Empty contents of the curative, Part B into the base, Part A. Carefully mix the two components for 1 to 2 minutes, scrape down the sides of the pail and mix an additional 1 minute. Use care to not incorporate air into the product. This could potentially lead to the development of blisters during the coating application. For more 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 of the Vulkem 350FC 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 350FC 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.

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 5.5.

6.1 **350FC Base Coat:** Apply Vulkem 350FC at 80 ft²/gal or 20 wet mils 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. Do not apply in excess or allow to puddle. If backrolling is to take place, use a medium nap 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 recommendation.

6.4 **350FC Base Coat - Second Application:** Apply 350FC at 105 ft²/gallon or 15 wet mils over the previous coat of 350FC. Squeegee and backroll. Cast 16 to 18 mesh aggregate at 40 to 50/lbs per 100/sf. Do not backroll the aggregate. Allow the sanded 350FC to fully cure a minimum of 7 hours with no maximum time as long as the sanded coating is kept clean. Sweep and blow off excessive aggregate.

6.5 **PUMA WC:** Mix Tremco PUMA WC for 1 to 2 minutes. Add 0.5 gallons(2 liters) of PUMA BC LM per 6 gallons of PUMA WC and mix for another 30 seconds. Add the required amount of PUMA Initiator+ to the pail per Table 2 and continue mixing for 1 minute. Apply PUMA WC immediately after mixing and squeegee a minimum 64 ft²/gal at 25 wet mils minimum over the exposed aggregate in the 350FC and backroll. Cast 16 to 18 mesh aggregate at 50 to 60/lbs per 100/sf. Do not backroll the aggregate. Do not walk in or on exposed sanded areas while the coating is still curing. Allow PUMA WC to fully cure. Sweep and blow off excessive aggregate.

6.6 Before proceeding to the application of the PUMA TC, sweep or blow off any excess sand and proceed to Step 6.7

6.7 **PUMA TC:** Mix Tremco PUMA TC for 1 to 2 minutes. Add the required amount of PUMA Initiator+ to the pail per Table 2 and continue mixing for 1 to 2 minutes. Apply PUMA TC over the exposed silica aggregate in the PUMA WC with a micro notched or soft flat rubber squeegee and immediately backroll with a 3/8” or 1/2” saturated nap roller. Rollers must be saturated with PUMA TC so as not to roll dry. Calculate 25 to 29 wet mils (55 to 64 ft²/gallon) of PUMA TC for proper coverage of the silica aggregate. A variance in aggregate size is the reason for the coverage difference.
NOTE: 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.

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, Xylene, or PUMA cleaner before material cures.

7.3 Clean hands 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 mm) is required.
- Vulkem 350FC Base Coat: When applied at 80 ft²/gal will yield a thickness of 20 wet mils.
- Vulkem 350FC Base Coat. When applied at 105 ft²/gal will yield a thickness of 15 wet mils.
- PUMA WC applied at 64 ft²/gal will yield approximately 25 wet mils. Calculate coverage to compensate for aggregate profile loss. A larger friction aggregate will lower the coverage rate of the PUMA TC.
- PUMA TC finish coat. When applied 55-64 ft²/gal will yield 25-29 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 issues 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 vapor, which then condenses at the concrete-membrane interface before the coating has cured and may 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 with 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.

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.

11. PACKAGING

Vulkem 350FC: Total of 4.6 gal kit – Part A: 3.85 gal (14.6 L) in a 5-gal (18.9 L) pail, Part B: 0.71 gal (2.7 L) in a 1-gal pail.
Tremco PUMA WC (Wearcoat): 6 gal pails.
Tremco PUMA BC LM: 6 gal pails.
Tremco PUMA TC: 6 gal pails.
Tremco PUMA Initiator+: 10-lb in 3-gal pails, 25-lb in 6-gal pails, 25 75-g pouches in a box.
Tremco PUMA Cleaner: 6-gal pails.

TABLE 1: QUICK REFERENCE APPLICATION CHART

LAYER	PRODUCT	WET MILS	CURE TIME*	SQUARE FEET PER GALLON
Base Coat	Vulkem 350FC	20	3 to 4 hours	80
Intermediate binder layer	Vulkem 350FC	15	7 hours	105
Intermediate wear layer	PUMA WC + BC LM	25	1 hour	64
Top Coat	PUMA TC	25-29	1 hour	55-64

*Cure times are based on ideal ambient temperatures at 50% RH. 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

TABLE 2: Temperature Chart		Tremco PUMA Initiator+
TEMPERATURE °F	TEMPERATURE °C	GRAMS OR OUNCES/GALLON
68 to 95	20 to 35	37.5 g or 1.35 oz of initiator/gal resin
50 to 68	10 to 20	75 g or 2.7 oz of initiator/gal resin
32 to 50	0 to 10	150 g or 5.4 oz of initiator/gal resin
14 to 32	-10 to 0	225 g or 8 oz of initiator/gal resin

The prescribed amount of Initiator+ in Table 3 is the minimum amount required per gallon for that temperature range.