APPLICATION INSTRUCTIONS

1. Purpose

1.1 The purpose of this document is to establish uniform procedures for applying TREMproof® PUMA in planters. The techniques involved may require modifications to adjust to job-site conditions. If you have any questions regarding your application, contact your local Tremco Field Sales Representative for specific design requirements. This document will provide instructions and troubleshooting for the application of TREMproof PUMA to qualify for the manufacturer's warranty.

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 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. TREMproof PUMA application requires a CSP 3-4.

2.2 For preparation of metal substrates, please follow The Society for Protective Coatings recommendations that are referenced in section 3.12.

3. Conditions for Substrates

Concrete Surfaces:

3.1 Concrete shall be water-cured and attain a 3000 PSI minimum compressive strength. The concrete must be below 6% moisture as measured using a Tramex CME 4 Moisture Meter prior to the coating application. 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 Excess moisture in the concrete can prevent the coating materials from forming as intended. To detect the presence of excess moisture, several tests may be employed:

- ASTM D4263- Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method
- ASTM F2170-02 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs
- Calcium Chloride Test

3.3 All concrete surfaces must be shotblast or mechanically abraded using appropriate Cup Grinding Wheel or Zec Wheel to provide required CSP prior to any coating application. For proper methods, refer to ICRI's Technical Guideline No. 310.2R-2013. For supplier information contact Tremco's Technical Service.

3.4 Concrete surface shall be properly cleaned so that the surface to receive the coating, sealant, or liquid applied flashing is free of all laitance, mold, paint, sealers, coatings, curing agents, loose particles, and other contamination or foreign matter which may interfere with the adhesion. Consult a Tremco Technical Service Representative for recommendations prior to installing materials.

3.5 Shrinkage cracks in the concrete surface which are 1/16" (1.5 mm) wide or greater shall be treated according to the instructions in Sections 5 and 7.

3.6 Structural cracks, regardless of width, shall be treated according to the instructions in Sections 5 and 7.

3.7 Spalled areas shall be cleaned and free of loose contaminants prior to repair. Due to the fact that jobsite conditions vary, it is recommended that you contact Tremco's Technical Service or your local Tremco Sales Representative for the best method of repair.

3.8 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.

3.9 Surfaces shall be made free of defects that may telegraph and show through the finished coating. Surfaces which are rough (flns, ridges, exposed aggregate, honeycombs, deep broom finish, etc.) shall be leveled and made smooth by applying a coat of sand-filled Tremco PUMA WC according to the instructions in Section 7.

3.10 For horizontal applications, follow good drainage practice to permit unimpeded water flow to drain(s) that are a type and number sufficient to allow water to thoroughly evacuate the membrane surface.

Drains should be detailed as instructed below:

- Cut a 1/4" wide x 1/4" 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.

3.11 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 and primer.

Metal Surfaces:

3.12 Follow standard SSPC-SP 10/NACE No. 2 Near White Blast Cleaning. A near-white metal blast cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dust, dirt, mill scale, rust, coating, oxides, corrosion products, and foreign matter.

4. Jobsite Materials

Recommended materials and their use are as follows:

- **Dymonic 100**: A one-part, moisture curing, gun grade polyurethane sealant for use in precast, masonry, expansion joints, control joints and for use in forming cants.

- **Tremco PUMA Primer**: A two-part, chemical-curing MMA primer for porous and non-porous surfaces.

- **Tremco PUMA BC**: A two-part, chemical-curing PUMA modified coating used as an elastomeric, waterproofing membrane for TREMproof PUMA.

- **Tremco PUMA BC LM**: A lower modulus version of Tremco PUMA BC, used as the waterproofing membrane for TREMproof PUMA for service temperatures below 32º F (0º C).

- **Tremco PUMA BC T**: A thixotropic version of Tremco PUMA BC, used for ramps, vertical rises, detailing and field applied cant beads.
6. Priming Concrete Surface

Note: When detailing cracks with Tremco PUMA BC, the surface must be primed but cracks are not to be filled with Tremco PUMA Primer.

6.1 Mix Tremco PUMA Primer for 1 to 2 min prior to the addition of Tremco PUMA Initiator.

6.2 Mix Tremco PUMA Primer thoroughly together with Tremco PUMA Initiator in accordance with Table 2 for 2 to 3 min.

6.3 Apply Tremco PUMA Primer at a minimum of 90 ft²/gal to yield 17 wet mils to the entire area to be coated. The recommended method of application is with a roller followed by a roller to backroll the material. Application below 17 wet mils will result in the primer not curing.

6.4 Once primer is rolled out evenly, lightly broadcast 0.3 to 0.6 mm (30-50 mesh)-sized silica sand into the primer at a rate of 0.7 lb/10 ft².

6.5 Allow Tremco PUMA Primer a minimum of 30 min to fully cure.

7. Detail Work – PUMA Products

Contact local sales representative for expansion joint detailing.

Defects, Patching and Sloping

7.1 Mix Tremco PUMA WC for 1 to 2 min prior to the addition of the silica sand.

7.2 Begin with 10 lb of sand for every gallon of Tremco PUMA WC. Additional sand can be added if a thicker consistency is desired.

7.3 Once Tremco PUMA WC and the sand are blended together, combine this mixture with the Tremco PUMA Initiator in accordance with Table 2 and mix thoroughly for 2 to 3 min. Amount of Tremco PUMA Initiator is dependent on ambient temperature. Please note the Vulkem Initiator addition is based in the ratio of Initiator to Tremco PUMA WC, not Initiator to Tremco PUMA WC with silica sand. Please see Table 2 for addition amounts.

7.4 For uneven spots and other defects in the surface, such as pitting or cratering, a thicker mix of Tremco PUMA WC and sand may be required. Trowel the material to create an even surface with the concrete.

7.5 Allow Tremco PUMA WC with sand mixture to cure a minimum of 45 min before proceeding to base coat application.

Horizontal to Vertical Transition

Note: Proceed to 7.9 if horizontal to vertical transitions were treated with Dymonic 100.

7.6 Mix the Tremco PUMA BC T for 2 to 3 min prior to the addition of the Tremco PUMA Initiator. Ensure that Tremco PUMA BC T is thoroughly mixed together with the Tremco PUMA Initiator in accordance with Table 2 for 2 to 3 min.

7.7 Apply a cant of Tremco PUMA BC T 1" (2.5 cm) wide at the juncture of all horizontal and vertical surfaces (such as curbs, wall sections, columns or penetrations through the deck). Tool Tremco PUMA BC T to form a 45° cant. Use sufficient pressure to force out any trapped air and to assure complete wetting of the surface. Remove excess material from the deck or wall surface. For a cant bead formed at a 45° angle in a horizontal to vertical transition, 1 gal of Tremco PUMA BC T for every 38.5 ft (11.74 m) is required.
Vulkem® EWS with PUMA Technology (Planters)

7.8 Apply a strip of tape (masking tape or duct tape) to the vertical sections, 2 to 3” above the Tremco PUMA BC T or Dymonic 100 cant to provide a neat termination of Tremco PUMA BC R.

7.9 Apply Tremco PUMA Primer over the Tremco PUMA BC T or Dymonic 100 cant before applying coating.

7.10 For penetrations, apply Tremco PUMA Primer over the cant, up the penetration to 1” below the top of the projected overburden. Allow primer to cure.

7.11 Following the primer application, mix Tremco PUMA BC R. Mix in Tremco PUMA Initiator in accordance with Table 2.

7.12 Apply the Tremco PUMA BC R mixture using a medium-nap roller to achieve a minimum thickness of 40 mils over the primer penetration. Spiked rollers are not required for change in plane.

7.13 Apply Tremco PUMA Primer over the Tremco PUMA BC R before coating over.

8. Base Coat Application

Note: In environmental conditions where large temperature swings exist, such as Northern US and Canada, Tremco PUMA BC LM can be used in lieu of Tremco PUMA BC.

When using more than one consecutive coat of Tremco PUMA BC or BC LM, please contact Tremco Technical Service for further details.

Vertical Surfaces

8.1 Mix Tremco PUMA BC R for 2 to 3 min prior to the addition of Tremco PUMA Initiator. Note: The application of PUMA BC R to the walls of the planter is the first step in applying base coat.

8.2 Tremco PUMA BC R is thoroughly mixed together with the Tremco PUMA Initiator in accordance with Table 2 for 2 to 3 min. Amount of Tremco PUMA Initiator is dependent on the ambient temperature. Please see Table 2 for addition amounts.

8.3 Apply the Tremco PUMA BC R at 25 ft²/gal to yield 65 wet mils (1.7 mm) thick to the walls of the planter. The recommended method is a medium nap roller.

8.4 Allow a minimum of 45 min to cure.

Horizontal Surfaces

8.5 Mix Tremco PUMA BC, BC R or BC LM for 1 to 2 min prior to the addition of Tremco PUMA Initiator.

8.6 Tremco PUMA BC, BC R or BC LM is thoroughly mixed together with the Tremco PUMA Initiator in accordance with Table 2 for 2 to 3 min. Amount of Tremco PUMA Initiator is dependent on the ambient temperature. Please see Table 2 for addition amounts.

8.7 Apply Tremco PUMA BC, BC R, or BC LM at 20 ft²/gal to yield 80 wet mils (2.0 mm) thick to the entire area. The recommended method is a metal notched rake.

8.8 Spike roll Tremco PUMA BC, BC R, or BC LM immediately to release all air bubbles from the coating.

8.9 Allow Tremco PUMA BC, BC R or BC LM a minimum of 45 min to cure.

9. Top Coat Application

9.1 Mix Tremco PUMA TC for 1 to 2 min prior to the addition of Tremco PUMA Initiator.

9.2 Thoroughly mix Tremco PUMA TC together with the Tremco PUMA Initiator in accordance with Table 2. Amount of Tremco PUMA Initiator is dependent on the ambient temperature. Please see Table 2 for addition amounts.

9.3 Apply Tremco PUMA TC at 15 mils (105 ft²/gal). The recommended method of application is with a roller.

9.4 Allow Tremco PUMA TC a minimum of 1 hr to cure.

10. Clean Up

10.1 Clean all adjacent areas to remove any stains or spills with Tremco PUMA Cleaner.

10.2 Clean tools or equipment with Tremco PUMA Cleaner.

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

11. Material Usage Guidelines

The Following is a guide to determine material usage:

Tremco PUMA Primer: When applied at 90 ft²/gal (2.21 M²/L) will yield a mil thickness of 17 wet mils.

Dymonic 100: For a 1” (25 mm) cant bead over a 1/4” (6 mm) backer rod, 1 case of sealant for every 48 lf (14.6 M) is required.

Tremco PUMA BC or BC LM: When applied at 20 ft²/gal (0.49 M²/L) will yield a mil thickness of 65 wet mils.

Tremco PUMA BC or BC LM: When applied at 20 ft²/gal (0.49 M²/L) will yield a mil thickness of 65 wet mils.

Tremco PUMA TC: When applied at 105 ft²/gal (2.58 M²/L) will yield a mil thickness of 15 wet mils.

Aggregate: Apply silica sand at a rate of 0.7 lb/10 ft² immediately after the Tremco PUMA Primer application.

12. 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 you contact your local Tremco Sales Representative or Tremco’s Technical Service.

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

12.2 When a deck contains too much moisture, the excess moisture may change into a vapor which then condenses at the concrete-membrane interface before the coating has cured, which will cause blisters or bubbles, which, in turn, will interfere with proper adhesion. If this should occur the blisters/bubbles can be cut out, allowing the moisture to escape. After moisture has escaped and the surface is dry, the area can be repaired.

12.3 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’s Technical Service should this occur.

12.4 Tremco PUMA products should only be applied when the UV index is less than 7 and substrate temperatures below 115°F.
## Table 1: Quick Reference Application Chart

<table>
<thead>
<tr>
<th>Layer</th>
<th>Product</th>
<th>Wet Mils</th>
<th>Cure Time</th>
<th>Square Feet Per Gallon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primer</td>
<td>Tremco PUMA Primer</td>
<td>17</td>
<td>30 min</td>
<td>90</td>
</tr>
<tr>
<td>Base Coat (Vertical)</td>
<td>Tremco PUMA BC R</td>
<td>65</td>
<td>45 min</td>
<td>25</td>
</tr>
<tr>
<td>Base Coat (Horizontal)</td>
<td>Tremco PUMA BC or BC LM</td>
<td>80</td>
<td>45 min</td>
<td>20</td>
</tr>
<tr>
<td>Top Coat</td>
<td>Tremco PUMA TC</td>
<td>15</td>
<td>1 hr</td>
<td>105</td>
</tr>
</tbody>
</table>

*Recommended coverage rates are approximate. Varying sand loading methods and surface profiles may increase the amount of material required to obtain uniform coverage rates.

## Table 2: Temperature Chart

<table>
<thead>
<tr>
<th>Temperature °F</th>
<th>Temperature °C</th>
<th>Grams or ounces/gallon</th>
</tr>
</thead>
<tbody>
<tr>
<td>68 to 95</td>
<td>20 to 35</td>
<td>75 g or 2.75 oz of initiator/gal resin</td>
</tr>
<tr>
<td>50 to 68</td>
<td>10 to 20</td>
<td>150 g or 5.5 oz of initiator/gal resin</td>
</tr>
<tr>
<td>32 to 50</td>
<td>0 to 10</td>
<td>300 g or 11 oz of initiator/gal resin</td>
</tr>
<tr>
<td>14 to 32°</td>
<td>-10 to 0°</td>
<td>450 g or 16 oz of initiator/gal resin</td>
</tr>
</tbody>
</table>

*Below 14°F (-10°C), please contact Tremco Technical Service for further details. Minimum 75 g of initiator per gallon required.