TREMCO
Construction Products Group

Vulkem 350R/346

UV Resistant, Light to Moderate Pedestrian Foot Traffic Waterproofing System

PRODUCT DESCRIPTION

Vulkem 350R/346 is a UV stable waterproofing system, suitable for use with light to moderate pedestrian foot traffic. It is comprised of a tough curing, UV stable liquid polyurethane top coat and flexible polyurethane base coat. Different slip ratings can be achieved using the Vulkem 350R/346 system, by adding Tremco's various aggregates to the Vulkem 346 top coat.

USAGE/PURPOSE

Vulkem 350R/346 is suitable to be in areas such as:

- ❑ Podiums
- ❑ Recreational Areas
- ❑ Balconies
- ❑ Mechanical/Plant Rooms
- ❑ Lift/Stair Overruns
- ❑ Roofs
- ❑ Similar applications that require an elastomeric, slip resistant, light to moderate pedestrian foot traffic grade waterproofing system.

PACKAGING

- ❑ Vulkem 350R - Base Coat: 15L
- ❑ Vulkem 346 - Top Coat: 18.9L

COLOUR

- ❑ Vulkem 350R - Base Coat: Grey
- ❑ Vulkem 346* - Top Coat: Grey, Slate Grey

* Special colours are available upon request.



FEATURES & BENEFITS

- ❑ Tested to AS4654.1 to ensure compliance with the NCC for external waterproofing in Australia.
- ❑ Easy to clean, waterproof system.
- ❑ Single component, UV top coat and base coat provides additional time savings on site.
- ❑ Single component system provides an efficient use of material for small areas.
- ❑ Fast cure through time allows the area to be returned to use 12 hours after installation in most instances.
- ❑ Mildew- and fungus- resistance safeguards concrete surfaces against environmental contaminants.
- ❑ Excellent durability and UV resistance extend the useful life of pedestrian systems.
- ❑ Re-coatable and compatible with other Tremco sealants, which enhances waterproofing protection with full system compatibility.

TYPICAL PHYSICAL PROPERTIES

PROPERTY	TEST METHOD	VULKEM 350 R	VULKEM 346
Maximum VOC	Method 310	156 g/L	315 g/L
% Solids by Volume	ASTM D1353	81%	63%
Drying Time @23°C, 50% R.H.	ASTM D1640	12 hours	6 - 8 hours
Weathering	ASTM D822	N/A	No effect
Salt Spray Resistance	ASTM B117	N/A	No effect
Accelerated Aging	ASTM D573	No loss of elongation or tensile strength	No loss of elongation or tensile strength
Hardness	ASTM D2240	60 Shore A	85 - 95 Shore A
Abrasion Resistance (1,000 cycles)	ASTM D573	N/A	50mg – Pass
Bond Strength	ASTM C794	Concrete – 173 N Plywood – 148 N	Concrete Masonry – 42 N Plywood – 146 N
Cyclic Movement	CSIRO moving joint test	Pass	Pass
Elongation at Break	AS4654.1 Appendix A	535%	210%
Elongation	ASTM D412	N/A	120%
Heat Ageing	AS/NZ S4858	432% - Pass	20.80 MPa, 210%
Temperature Resistance	AS4654.1 Clause 2.6	373% Pass	Pass
Ultraviolet Resistance	AS4654.1 Table A4	N/A	18.99 MPa, 207%
Tensile Strength	AS4654.1 Table A4	1.50 MPa	21.95 MPa, 210%
Durability	AS4654.1 Table A4	Pass	Pass
Water Vapour Transmission Rate	ASTM E96	11.96 g/m^2/24hrs	26.0 g/m^2/24hours

** Drying times will vary depending on ambient temperature and relative humidity*

Vulkem 350R/346

UV Resistant, Light to Moderate Pedestrian Foot Traffic Waterproofing System

SPECIFICATION CLAUSE

The light to moderate pedestrian foot traffic membrane system is specified as Vulkem 350R/346, a UV resistant waterproofing system, comprised of a single component, moisture cured polyurethane base coat, and a single component, aliphatic polyurethane top coat.

SHELF LIFE

12 months when stored as recommended in original unopened packaging.

STORAGE

Store in original, undamaged packaging in a clean, dry, protected location.

LIMITATIONS

- ❑ Do not apply to wet or contaminated surfaces.
- ❑ Do not use without adequate ventilation.

SUBSTRATE PREPARATION FOR CONCRETE SURFACES

1. Concrete shall be water-cured and attain a 20 MPa minimum compressive strength. Moisture content in the concrete must be lower than 4.5% as measured using a Tramex CME Moisture Meter. Depending on concrete construction and job site location, additional concrete testing may be required. Please contact your local Tremco Representative.
2. Concrete shall be free of any laitance which may inhibit sufficient adhesion. Removal of laitance can be achieved through a variety of physical abrasion methods, such as, shot-blasting (preferred method) sandblasting or grinding.
3. Concrete surface shall be properly cleaned so that the surface to receive the coating, sealant or liquid-applied flashing is free of mould, paint, sealers, coatings, curing agents, loose particles, and other contamination or foreign matter that may interfere with the adhesion.
4. Shrinkage cracks in the concrete surface that are 1.6mm wide or greater shall be ground out to a minimum 6mm wide x 12mm deep and treated according to the instructions in "Detail Work" section.
5. Structural cracks regardless of width shall be ground out to a minimum 6mm wide x 12mm deep and treated according to the instructions in "Detail Work" section.
6. Spalled areas shall be cleaned free of loose contaminants prior to repair. Because jobsite conditions vary, it is recommended that you contact your local Tremco Representative. Depending on the substrate and depth of the spalled areas, a Eucocrete repair product will be recommended as the best method of repair.
7. In the event of exposed reinforcing steel, it is recommended that the structural engineer of record be contacted for investigation and for best repair method.
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 using TREMprime EP.
9. All drains shall be cleaned and operative. Drains shall be recessed lower than the deck surface. The surface shall be sloped to drain to provide positive drainage (1:100) as per AS4654.2. Drains should be detailed as instructed below:
    - Cut a 6mm wide x 12mm deep 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.
10. If the project is a restoration deck, old sealant and membrane material shall be removed. The joint interface will require a thorough wire brushing, grinding, sandblasting, solvent washing and/or primer.

SUBSTRATE PREPARATION FOR ALL METAL SURFACES

All surfaces shall be sand-blasted to meet the requirements in AS 1627.4, class 2.5 for "Near White Metal".

JOBSITE MATERIALS

Recommended materials and their uses are as follows:

- ❑ Vulkem 171 Primer: A one-part, film-forming primer to be used on porous surfaces.
- ❑ TREMprime EP Primer: A 100% solids, two component epoxy primer recommended for use on porous substrates and is also used as a compatible tie-coat to create connectivity between otherwise incompatible membranes.
- ❑ TREMproof 200EC Primer: A low-VOC, two-part water based epoxy primer to be used on high moisture concrete slabs (4.5% moisture or above as per a Tramex CME Moisture Meter).
- ❑ Vulkem 191QD Primer: A low-VOC compliant, one-part, interlaminar primer for use in applying a fresh coat of Vulkem coating or sealant after preceding coat has been exposed to rain or for periods of time greater than 24 hours.
- ❑ TREMprime Non-Porous Primer: A low-VOC primer for use in applying urethanes to non-porous substrates such as metal, PVC and glass.
- ❑ Dymonic 100: A one-part, exceptional movement (+100/-50%) moisture-curing, gun grade polyurethane sealant for use in precast, masonry, expansion joints, control joints and for use in forming cant/fillet bead.
- ❑ TREMflex 50: A one-part, high movement (+/-50%) moisture-curing, gun grade polyurethane sealant for use in precast, masonry, control joints and for use in forming cant/fillet bead.
- ❑ Tremflex 25FC: A one-part, fast curing, flexible fillet joint sealant for use in professional waterproofing applications.
- ❑ TREMproof Aggregate: Silica sand which imparts a textured finish.

USAGE

The following is a guide to estimate material usage: This does not account for material wastage on-site or reduced coverage due to substrate porosity/aggregate profile:

PRODUCT	COVERAGE RATE		THICKNESS	
Vulkem 350R	1.08m²/L	16.21m²/Pail	0.93mm WFT	0.75mm DFT
Vulkem 346	2.5m²/L	47.25m²/Pail	0.40mm WFT	0.25mm DFT

TREMproof Aggregate: Approximately 0.3 to 2.2 kg of approved aggregate will be used with each Litre of Vulkem 346.

PRIMING

Note: Do not apply primer, sealants or membranes to a frosty, damp or wet surface or when substrate temperature is below 10°C or the surface temperature is above 40°C. Cure times as stated below are based upon standard ambient conditions of 23°C, 50% RH. A decrease in ambient temperature and humidity will significantly lengthen the cure time.

- ❑ For low moisture (<4.5% moisture as per a Tramex CME Moisture Meter) porous substrates, Tremco suggests using Vulkem 171 Primer.
- ❑ For low moisture (<4.5% moisture as per a Tramex CME Moisture Meter) porous substrates with a poor finish, Tremco suggests using Vulkem TREMprime EP Primer.
- ❑ For high moisture (>4.5% moisture or above as per a Tramex CME Moisture Meter) porous substrates, Tremco suggests using TREMproof 200EC.
- ❑ For non-porous substrates, Tremco suggests using TREMprime Non-Porous Primer.

DETAIL WORK

Note: Do not apply sealant or coatings to a frosty, damp or wet surface or when substrate temperature is below 10°C or the surface temperature is above 40°C. Cure times as stated below are based upon standard ambient conditions of 23°C, 50% RH. A decrease in ambient temperature and humidity will significantly lengthen the cure time.

1. Best practice is to install closed-cell backer rod or bond breaker tape into the corner at the juncture of all horizontal and vertical surfaces such as floor to wall junctions, hobs columns, or penetrations through the deck. This is to prevent 3-sided adhesion of the sealant. NOTE: This is recommended by Tremco for all joints, however it is required for all expected moving joints.
2. Apply a bead of Dymonic 100/TREMflex 50, over the backer rod/bond breaker tape as per requirements of AS4654.2. Tool the sealant bead to form a 45° fillet. 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.
3. All cracks and joints shall be sealed with Tremco approved sealant, and tooled flush with the surface. NOTE: Expansion/movement joints should not be coated over. For treatment of expansion/movement joints, contact your local Tremco Representative.
4. Joint/Crack Treatment: Install a backer rod, 3mm to 6mm 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 backer rod to the top of the concrete surface). Proper depth of sealant is as follows:
   a. For joints 6mm to 12mm wide, the depth to width ratio should be equal.
   b. Joints 12mm wide or greater should have a sealant depth to width ratio of 1:2 The minimum joint size is 6mm x 6mm.
5. Allow sealant to cure.
6. Apply a strip of masking tape or duct tape to the vertical sections, at a height that complies with the requirements set forth in AS4654.2, but a minimum of 40mm above the top edge of the sealant fillet to provide a neat termination of the vertical detail coat.
7. Vulkem 350R should be mixed with a suitable electric paddle mixer at a rate of 500rpm for a minimum of 3 minutes, ensuring there is no settlement at the base of the drum.
8. Apply 0.93mm thick detail coat of Vulkem 350R over the treated fillet and extend it to the tape on the vertical surface and 100mm onto the horizontal surface. Feather-edge the terminating edge of the Vulkem 350R detail coat on the horizontal surface so it will not show through the finished coating.
9. Apply a 0.93mm thick detail coat of Vulkem 350R, 150mm 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.
10. Allow all detail coats to cure for a minimum of 4 to 6 hours depending on temperature and humidity.
11. Where movement is anticipated, Tremco suggests that a polypropylene bond breaker tape is placed over the detail coat over the treated joint prior to subsequent membrane 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.

COATING APPLICATION

Vulkem 350R BASE COAT:

1. Vulkem 350R should be mixed with a suitable electric paddle mixer at a rate of 500rpm for a minimum of 3 minutes, ensuring there is no settlement at the base of the drum.
2. Apply Vulkem 350R at rate of 1.08m^2/L or 0.93mm WFT 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 350R can be applied with a solvent-resistant, medium-nap (9.5mm to 12.7mm) roller sleeve.
3. Allow Vulkem 350R to cure a minimum of 12 hours and a maximum of 24 hours. Cure rates depend on temperature and humidity. Refer to cure rate guidelines in the chart at the end of this document. If the Vulkem 350R has been applied for 24 hours or longer during the ideal temperature application range, it should be cleaned with a damp cloth of Tremco Xylol (do not saturate it) and re-activated with Vulkem 191QD re-activation primer. We highly recommend that you contact your local Tremco Representative with any questions on the appropriateness of priming.

Vulkem 346 TOP COAT:

1. Vulkem 346 should be mixed with a suitable electric paddle mixer at a rate of 500rpm for a minimum of 3 minutes, ensuring there is no settlement at the base of the drum.
2. Apply Vulkem 346 at rate of 2.5m^2/L or 0.40mm WFT 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 350 can be applied with a solvent-resistant, medium-nap (9.5mm to 12.7mm) roller sleeve.
3. If a 'non-slip' finish is required, whilst Vulkem 346 is still wet, broadcast TREMproof Aggregate to achieve the required slip rating and backroll.
4. The textured properties of the finished deck coating system aid in the systems wear and slip resistance. Tremco recommends a test patch be completed by the applicator and customer acceptance obtained prior to the application.
5. Do not open to foot traffic for a minimum of 24 hours following full cure of Vulkem 346.

CLEAN UP

- ❑ Clean all adjacent areas to remove any stains or spills with Tremco Xylol.
- ❑ Clean tools or equipment with Tremco Xylol before material cures.
- ❑ Clean hands by soaking in hot, soapy water, then brushing with a stiff-bristle brush.

TROUBLESHOOTING

This section describes common industry application issues when certain environmental conditions exist and their remedies. If any of these should occur, it is always recommended that you contact your local Tremco Representative:

1. When a deck contains too much moisture, the moisture may change into a vapour, 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.
2. If the coating application has been installed at a thickness that is greater than our installation instructions, pinholes, blisters or bubbles may develop in the coating. To avoid this occurrence, the material should be applied in accordance to the installation instructions.
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 should this occur.
4. If the previous coating application has not fully cured, solvent may become trapped between the coats and lead to large blisters. When cut out, they may still be tacky on the underside. Blisters may be cut out and repaired after the surface has been allowed to fully dry.

WEATHER IMPACT ON COATING APPLICATION

This section discusses the impact of applying these coatings outside the ideal temperature application range of 18 to 30°C at 50% RH.

1. At temperatures lower than the ideal range, the material will become viscous and it will cure at a slower rate. Refer to the chart below for approximate cure rates at varying temperatures.
2. Storing materials at cooler or warmer temperatures than ideal, will affect the handling and curing characteristics of the materials.
3. Substrate temperatures may affect cure rates even when ambient temperatures are high.
4. 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.
5. In extremely dry conditions, even when temperatures are high, cure rates can still be extended.

Approximate Cure times in Hours at 50% RH.	Vulkem 350R	Vulkem 346
4.4°-12.8° C	24 to 72	48
12.8°-18.3° C	6 to 24	12 to 24
18.3°-29.4° C	4 to 6	6 to 8
29.4° C	< or = 4	2 to 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.

HEALTH & SAFETY PRECAUTIONS

The Safety Data Sheet (SDS) must be read and understood prior to use.

TECHNICAL SERVICE

Tremco CPG Australia Pty Ltd has a team of Representatives who provide assistance in the selection and specification of products. For more detailed information or service and advice, call Customer Service on (02) 9638 2755 or fax (02) 9638 2955.

GUARANTEE/WARRANTY

Tremco CPG Australia Pty Ltd products are manufactured to rigid standards of quality. Any product which has been applied (a) in accordance with Tremco CPG Australia written instructions and (b) in any application recommended by Tremco CPG Australia, but which is proved to be defective, will be replaced free of charge.

Any information provided by Tremco CPG Australia in this document in relation to Tremco CPG Australia's goods or their use is given in good faith and is believed by Tremco CPG Australia to be appropriate and reliable. However, the information is provided as a guide only, as the actual use and application will vary with application conditions which are beyond our control. Tremco CPG Australia makes no representation, guarantee or warranty relating to the accuracy or reliability of the information and assumes no obligation or liability in connection with the information. To the extent permitted by law, all warranties, expressed or implied are excluded.

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