TREMCO

Construction Products Group

Vulkem NEM Plus

One Part, Single Coat Application, Polyurethane Waterproofing Membrane

PRODUCT DESCRIPTION

Vulkem NEM Plus is an Australian made single component, moisture curing, high tensile strength and tough curing polyurethane membrane. Single coat application makes Vulkem NEM Plus ideal for internal and external areas where fast pace construction occurs.

USAGE/PURPOSE

Vulkem NEM Plus may be used to apply a seamless, monolithic waterproof membrane to a variety of substrates in areas such as:

- ❑ Showers
- ❑ Bathrooms
- ❑ Balconies
- ❑ Terraces
- ❑ Other areas which are to be tiled and protected from UV and traffic

FEATURES & BENEFITS

- ❑ Tested successfully to AS 4654.1 and AS4858 ensures it meets the requirements set forth by the National Construction Code of Australia.
- ❑ Class III membrane allows for high flexibility and movement accommodation.
- ❑ Single Coat horizontal application eliminates the risk of membrane delamination between layers.

PACKAGING

15L Pails

COLOUR

Grey

SHELF LIFE

12 months when stored as recommended in original unopened packaging.

STORAGE

Store in a dry cool place in an upright position in original unopened packaging.



LIMITATIONS

- ❑ Not to be used as a trafficable or UV stable waterproof membrane.
- ❑ Not to be used below grade.
- ❑ Do not apply to damp or contaminated surfaces.

SUBSTRATE PREPARATION FOR CONCRETE SURFACES

1. Concrete shall be water-cured and attain a 20 MPa minimum compressive strength. Moisture content in the concrete shall be lower than 4.5%, as measured using a Tramex CME Moisture Meter. Where the moisture content is 4.5% or above, a minimum of 2x coats of TREMproof 200EC primer will be required. 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 adhesion. Removal of laitance can be achieved through a variety of physical abrasion methods, such as shot blasting (preferred method), sandblasting or grinding. Where a physical abrasion method has been used, a minimum of 2x coats a suitable Tremco CPG Australia primer shall be applied.

TYPICAL PHYSICAL PROPERTIES

PROPERTY		TEST METHOD	Vulkem NEM Plus
Drying Time @23°C - 50% RH		ASTM D1640	4 Hours
Full Cure Time @ 23°C - 50% RH		ASTM D1640	24 Hours per coat
% Solids		By Volume	90%
% Solids		By Weight	86%
Bond Strength	Vulkem171 Primer	ASTM C794	Concrete Masonry - 62.49 N State result Plywood - 55.20 N State result
	TREMproof 200EC Primer		Concrete Masonry - 57.23 N State result Plywood - 68.14 N
Cyclic Movement		CSIRO Moving Joint Test	Pass, Class III
Elongation at Break		AS4654.1 Appendix A	771%
Temperature Resistance		AS4654.1 Clause 2.6	Pass, -15°C to 85°C
Tensile Strength		AS4654.1 Table A4	1.24 MPa
Durability		AS4858 Table A4	Pass
Durability		AS4654.1 Table A4	Pass
Water Vapour Transmission Rate		ASTM E96	10.83g/m^2/24 hours
Ultraviolet Resistance		AS 4654.1 Appendix A, Table A4	Pass
VOC Content, g/L		(APAS) – AP-D181*	<110

**Drying times will vary depending on ambient temperature and relative humidity. * The VOC content of the products is a weighted average of the VOC contents of all the raw materials in the formulation. It is determined by calculation using raw material data from suppliers*

3. Surfaces shall be made free of defects that may telegraph and show through the finished coating. All 90° transitions shall be modified to 45°, to eliminate sharp edges/corners. Surfaces that are rough (fins, ridges, exposed aggregate, honeycombs, deep broom finish, etc.) shall be levelled and made smooth by applying a coat of sand-filled epoxy using TREMprime EP.
4. 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.
5. 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.
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. 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.
8. 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.
9. All drains shall be cleaned and operative. Drains shall be recessed lower than the deck surface. The surface shall be sloped to a drainage point to provide positive drainage (refer to the relevant Australian Standards/NCC for required fall). 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 METAL SURFACES

All surfaces shall be sand-blasted to meet the requirements in AS1627.4, class 2.5 for "Near White Metal".

JOBSITE MATERIALS

Recommended materials and their uses are as follows:

- ❑ Vulkem 171: A one-part, film-forming primer to be used on porous surfaces.
- ❑ TREMprime EP: A 100% solids, two component epoxy primer recommended for use on porous substrates (concrete, brick, stone) and also as a compatible tie-in coat to create connectivity between otherwise incompatible membranes.
- ❑ TREMproof 200EC: A low-VOC, two-part, water based epoxy primer for use on porous substrates, such as wood and concrete to provide a vapour retarder. Also can be used on concrete based substrates to provide an efflorescence barrier.
- ❑ TREMprime Non-Porous Primer: A low-VOC primer for use in applying urethanes to non-porous substrates such as metal, PVC and glass.
- ❑ Vulkem 191 QD 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.
- ❑ 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 25FC: A one-part, fast curing, flexible fillet joint sealant for use in professional waterproofing applications.
- ❑ Vulkem 951NF: Two component, low VOC, UV stable, Aliphatic, polyurethane top coat.
- ❑ Vulkem 346: Single component, UV stable, Aliphatic, polyurethane top coat.

USAGE

The following is a guide to estimate material usage:

Product	Coverage Rate		Thickness	
Vulkem NEM Plus	0.87m^2/L	13m^2/Pail	1.15 mm WFT	1.0 mm DFT

** All coverage rates are approximate & vary with substrate condition.*

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 NonPorous Primer.

DETAIL WORK

- ❑ Shrinkage cracks in the concrete <1.6mm wide nominally can be detailed with a 150mm wide x 1mm WFT strip of Vulkem NEM Plus.
- ❑ Shrinkage and non-structural cracks >1.6mm wide must be appropriately prepared and filled prior to application of the Vulkem NEM Plus membrane.
  - ▪ Grind out cracks to a minimal 6mm wide x 12mm deep.
  - ▪ Remove all loose debris and concrete dust that may inhibit adhesion.
  - ▪ Apply closed cell polyethylene backer rod or bond breaker tape into joint to prevent 3 sided adhesion of the sealant.
  - ▪ Install appropriate Tremco polyurethane sealant, TREMflex 25FC or Dymonic 100 into the crack in the correct depth to width ratio.
  - ▪ Apply a 150mm wide x 1mm WFT strip of Vulkem NEM Plus un-reinforced.
- ❑ When tiling over joints, Tremco highly encourages that the joint is expressed through to the surface of the tiles. Between the tiles, fill the joint with the appropriate Tremco joint sealant. Depending on the tile composition, polyurethane or silicone sealant may be recommend. Contact Tremco for further assistance.
- ❑ Consult Tremco for advice on the treatment of movement/expansion joints.

METHOD OF APPLICATION

1. Vulkem NEM Plus 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. Minimum application requirements set forth by the NCC and relevant Australian standard (AS 3740 and AS4654.2) should be followed, as well as project specific detail requirements/recommendations by Tremco.
3. Using a medium-nap (9mm to 13mm) roller cover, apply Vulkem NEM

Plus at the following rates to the entire area to be coated, including over applications of Vulkem NEM Plus detail coats, but excluding expansion joints.

Application Coat	Coverage Rate	Thickness	
Waterproof Coat	0.87m^2/L	1.15 mm WFT	1.0 mm DFT

3. Allow Vulkem NEM Plus to cure a minimum of 4 hours between coats to reduce the risk of solvent entrapment between coats. Cure rates depend on temperature and humidity. Refer to cure rate guidelines in chart at the end of this document. If the Vulkem NEM Plus has been applied for 24 hours or longer, it should be cleaned with a damp cloth of Tremco Xylol (do not saturate) and prime with Vulkem Primer 191 QD. We highly recommend that you contact your local Tremco Representative with any questions on the appropriateness of priming.

CLEAN UP

- ❑ Clean all adjacent areas to remove any stains or spills with Tremco Xylol.
- ❑ Clean tools or equipment with Tremco Xylol before materials cure.
- ❑ 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, dry times could be extended significantly. As a result, Tremco recommends that the material is applied in accordance with 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, water 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. Also, additional application will dramatically reduce the rate the material cures and full cure will take dramatically longer than normal.

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 air flow tends to be minimal in these areas.
5. On high temperature substrates, or when the membrane is in direct sunlight, the Vulkem NEM Plus may blister as a result of vapour drive. For these applications, Tremco highly encourages using TREMproof 200EC primer as a vapour retarding primer to reduce the probability of these blisters occurring.

APPROXIMATE CURE TIMES IN HOURS AT 50% RH

The following is a guide to estimate cure time:

Temperature at 50% RH	Vulkem NEM Plus
4.4 - 12.8°C	24 to 96 Hours
12.8 - 18.3°C	6 to 24 Hours
18.3 - 29.4°C	4 to 6 Hours
29.4°C	< or = 4 Hours

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.

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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