TREMCO
Construction Products Group

AlphaGuard BIO

Two Part, UV Resistant, Bio-Based, High Performance Polyurethane Waterproof System

PRODUCT DESCRIPTION

AlphaGuard BIO is an extremely high performing composite waterproofing system, designed with a focus on roofing restoration. AlphaGuard BIO has the ability to be installed over various existing roofing membranes in order to minimise tenant disruption and extend the life of the roof for an additional 20 years.

It cures to form a durable rubber membrane surface that provides a lasting and easy-to-clean waterproof coating. AlphaGuard BIO may be used to apply a seamless, monolithic waterproof membrane to concrete, primed metal, or existing roofing membrane surfaces.

FEATURES & BENEFITS

- Tested to AS4654.1 to ensure compliance with the NCC for external waterproofing in Australia.
- 100% solids ensure that the installed application thickness is the cured thickness the customer is paying for.
- Low VOC will minimise offensive odours to current tenants and applicators.
- Ability to be installed over existing membranes further minimises disruption and inconvenience to current tenants. AlphaGuard BIO can be installed onto existing bituminous roofing systems that have come to the end of their functional life.
- The White top coat provides high solar reflectance, reducing the building's operation costs and complying with Section J1.3(b) of the 2019 NCC.
- Excellent durability and UV resistance extend the useful life of the structure.
- Re-coatable and compatible with other Tremco sealants, which enhances waterproofing protection with full system compatibility.

USAGE/PURPOSE

AlphaGuard BIO is ideal for roof restoration, providing a continuous waterproof membrane with extensive durability in the harsh Australian environment.

SHELF LIFE

12 months when stored as recommended in original, unopened packaging.



STORAGE

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

PACKAGING

Base Coat: 15.1 L kit – Part A (12.1 L), Part B (3.0 L)
Top Coat: 11.7 L kit – Part A (8.3 L), Part B (3.4 L)

COLOUR

AlphaGuard BIO base coat: Grey
AlphaGuard BIO top coat – Grey, White

SPECIFICATION CLAUSE

The waterproofing membrane system is specified as AlphaGuard BIO, 100% solids, waterproofing system, comprised of a two - component, low VOC, Polyurethane base coat, and two-component, low VOC, aliphatic Polyurethane top coat.

TYPICAL PHYSICAL PROPERTIES

PROPERTY	TEST METHOD	AlphaGuard BIO Base Coat	AlphaGuard BIO Top Coat
Skin Time @ 23°C, 50% R.H.	ASTM D1640	3 - 4 Hours	3 - 4 Hours
Over-Coat Time @ 23°C, 50% R.H.	ASTM D1640	6 - 7 Hours	6 - 7 Hours
Low Temperature Flexibility (-31.7°C)	ASTM D522	12.7mm Mandrel Bend - Pass	12.7mm Mandrel Bend - Pass
Bond Strength	ASTM C794	Concrete -103.5N Ply- 220.7N	Concrete - 91.8N Ply- 95.4N
Cyclic Movement	CSIRO moving joint test	Pass	Pass
Elongation at Break	AS4654.1 Appendix A	43.90%	49%
Heat Ageing	AS/NZ S4858	4.69 Mpa, 42% Elongation	0.7 MPa, 33.4% Elongation
Temperature Resistance	AS4654.1 Clause 2.6	4.37 Mpa, 41.3% Elongation	2.3 Mpa, 34.1% Elongation
Ultraviolet Resistance	AS4654.1 Table A4	N/A Non Exposed	0.6 MPa, 20.9 % Elongation
Tensile Strength	AS4654.1 Table A4	4.63 MPa, 49% Elongation	2.3 MPa, 34.1% Elongation
Durability	AS4654.1 Table A4	Pass	Pass
Water Vapour Transmission Rate	ASTM E96	1.22 g/m²/24 Hours	6.84 g/m²/24 Hours
Reflectivity	ASTM C1549	N/A	84% (white)
Emissivity	ASTM C1371	N/A	87% (white)
Solar Reflective Index	ASTM E1980	N/A	105 (white)

LIMITATIONS

- ❑ Do not apply when ambient temperatures are below 5°C
- ❑ Do not adhere to polystyrene of any kind.
- ❑ Not for use over coal tar pitch, corrugated metal roof systems or silicone-based coatings and sealants.
- ❑ 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.
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 ALL METAL SURFACES

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

SUBSTRATE PREPARATION FOR EXISTING MEMBRANED SURFACES

1. Consult Tremco for project specific recommendations when applying the AlphaGuard BIO system over existing membraned surfaces.
2. Remove aggregate ballast or pavers to expose the existing membrane.
3. Physically abrade to remove any existing blisters, ridges, buckles and other substrate irregularities from the existing roofing membrane that would inhibit application of a uniform, waterproof coating.
4. Repair the existing membrane and/or substrate with the appropriate Tremco repair product to provide a sound and suitable substrate.
5. Clean the exposed substrate and existing, well adhered membrane free of contaminates that may inhibit adhesion of the AlphaGuard BIO system, such as: dirt, debris, oil, grease, other laitance. Use a pressure washer with minimum 2,000 psi water pressure.
6. Allow the substrate and existing membrane to dry thoroughly. Use of air compressors, leaf blowers, fans can be used to accelerate drying, provided they do not introduce dust or other debris that may be detrimental to membrane adhesion.

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.
- ❑ PermAFab: 100% stitchbonded, polyester fabric that offers an unusual combination of high strength properties with good elongation for excellent resistance against thermal stress.

USAGE

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

Table 1: Quick Reference Application Chart

PRODUCT	COVERAGE RATE		THICKNESS	
	m^2/L	m^2/Kit	WFT	DFT
Base Coat				
AlphaGuard BIO Base Coat (Un-reinforced)	0.83	12.58	1.2mm	1.2mm
AlphaGuard BIO Base Coat (Reinforced)	0.62	9.32	1.6mm	1.6mm
Top Coat				
AlphaGuard BIO Top Coat	1.67	19.50	0.6mm	0.6mm
Top Coat 2 (optional for slip resistance)				
AlphaGuard BIO Top Coat (Slip Resistant)	5.0	58.5	0.2mm	0.2mm

NOTE: TREMproof Aggregate: Approximately 0.3 to 2.2 kg of approved aggregate will be used with each Litre of AlphaGuard BIO Top Coat.

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.
- ❑ For applications over existing membranes, such as torch on bitumen, existing non-silicone liquid membrane, EPDM, PVC, TPA, TPO, or hypalon membrane. Consult Tremco CPG Australia for project specific recommendations.

DETAIL WORK

Note: *Do not apply sealant or coatings to a frosty, damp or wet surface or when substrate temperature is below 5°C or the surface temperature is above 43°C. Cure times as stated below are based upon standard ambient conditions of 24.3°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 25FC, 15mm wide over the backer rod/bond breaker tape. 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. MOVING JOINTS: Install a backer rod, 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 backer rod to the top of the concrete surface. Proper depth of sealant is as follows:
   a. For joints 6 mm to 12 mm wide, the depth to width ratio should be equal.
   b. Joints 12 mm wide or greater should have a sealant depth to width ratio of 1:2 The minimum joint size is 6 mm x 6 mm.
4. 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 Representative.
5. Allow sealant to cure overnight.
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 40 mm above the top edge of the sealant fillet to provide a neat termination of the vertical detail coat.
7. Prior to use, AlphaGuard BIO base coat – Part A, should be mixed with a spiral paint mixing paddle at a rate of 500 rpm for a minimum of 2 minutes to ensure a homogeneous mixture.
8. After AlphaGuard BIO base coat – Part A is thoroughly mixed, add the AlphaGuard BIO base coat – Part B. Mix until there are no visible striations.
9. Apply 1.2 mm thick detail coat of AlphaGuard BIO Base coat over the treated fillet and extend it to the tape on the vertical surface and 100 mm onto the horizontal surface. Feather-edge the terminating edge of the detail coat on the horizontal surface so it will not show through the finished coating.
10. Install 150 mm Tremco PermAFab reinforcement bandage into the wet AlphaGuard BIO Base coat, and ensure the reinforcement is fully encapsulated in membrane.
11. Apply a 1.2 mm thick detail coat of AlphaGuard BIO base coat 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.
12. Install 150 mm Tremco PermAFab reinforcement bandage into the wet AlphaGuard BIO Base coat, and ensure the reinforcement is fully encapsulated in the membrane.
13. Allow all detail coats to cure for a minimum of 4 to 6 hours depending on temperature and humidity.

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

AlphaGuard BIO Base Coat:

1. Prior to use, AlphaGuard BIO Base Coat – Part A should be mixed with a spiral paint mixing paddle at a rate of 500 rpm for a minimum of 2 minutes to ensure a homogeneous mixture.
2. After AlphaGuard BIO base coat – Part A is thoroughly mixed, add the AlphaGuard BIO base coat – Part B. Mix until there are no visible striations.
3. Apply AlphaGuard BIO base coat at rate of 0.62 – 0.82 m^2/L or 1.2 – 1.6 mm 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. AlphaGuard BIO base coat can be applied with a solvent-resistant, medium-nap (9.5 mm to 12.7 mm) roller sleeve.
4. Install Tremco PermAFab reinforcing fabric into the wet membrane, ensuring overlaps of 75 mm minimum. Fully encapsulate the reinforcing fabric in AlphaGuard BIO base coat. When applying AlphaGuard BIO over uncoated structural concrete, AlphaGuard BIO Base Coat can be applied without the need for reinforcement, with the exception of floor to wall junctions, roof penetrations, pipes, drains etc, which are required to be reinforced.
5. Allow AlphaGuard BIO base coat to cure a minimum of 6 hours and a maximum of 24 hours. Cure rates depend on temperature and humidity. Refer to the cure rate guidelines in the chart at the end of this document. If the AlphaGuard BIO 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.

AlphaGuard BIO Top Coat:

1. Prior to use, AlphaGuard BIO Top Coat – Part A should be mixed with a spiral paint mixing paddle at a rate of 500 rpm for a minimum of 2 minutes to ensure a homogeneous mixture.
2. After AlphaGuard BIO top coat – Part A is thoroughly mixed, add the AlphaGuard BIO top coat – Part B. Mix until there are no visible striations.
3. Apply AlphaGuard BIO top coat at rate of 1.67 m^2/L or 0.6 mm WFT to the entire area. AlphaGuard BIO top coat can be applied with a solvent-resistant, medium-nap (9.5 mm to 12.7 mm) roller sleeve.

AlphaGuard BIO Top Coat 2 (Slip Resistant):

1. Where a slip resistant finish on the AlphaGuard BIO top coat is required, an additional, sand seeded coat of AlphaGuard BIO Top Coat may be applied, in addition to the above top coat.
2. Prior to use, AlphaGuard BIO Top Coat – Part A should be mixed with a spiral paint mixing paddle at a rate of 500 rpm for a minimum of 2

minutes to ensure a homogeneous mixture.
3. After AlphaGuard BIO top coat – Part A is thoroughly mixed, add the AlphaGuard BIO top coat – Part B. Mix until there are no visible striations.
4. Apply AlphaGuard BIO top coat at rate of 5.0 m^2/L or 0.2 mm WFT thick to the entire area. AlphaGuard BIO top coat can be applied with a solvent-resistant, medium-nap (9.5 mm to 12.7 mm) roller sleeve.
5. Whilst AlphaGuard BIO top coat is wet, broadcast sand to create a non-slip finish.

CLEAN UP

1. Clean all adjacent areas to remove any stains or spills with Tremco Xylol.
2. Clean tools or equipment with, Tremco Xylol before materials cure.
3. 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°C 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. Deck 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	AlphaGuard BIO Base Coat	AlphaGuard BIO Top Coat
4.4° - 12.8°C	> 72 Hours	> 72 Hours
12.8° - 18.3°C	7 to 72 Hours	7 to 72 Hours
18.3° - 29.4°C	6 to 7 Hours	6 to 7 Hours
29.4°C	< or = 6 Hours	< or = 6 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. 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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