July 2023

PRODUCT DATA SHEET

Roofspec Viking
Taking care of detail

Viking Enviroclad

Version: EV-PDS-V1.0

Introduction:

This Data Sheet serves as an in-depth reference guide for Viking Roofspec Licensed Installers who are already familiar with Viking Roofspec's systems and are responsible for Viking roof-system installations. The guide provides detailed information on precautions, best uses, and application procedures specifically tailored to ensure the correct installation of the Viking Enviroclad TPO System.

Viking Enviroclad TPO is a reinforced membrane that represents a premium solution for new roof/deck construction and re-roofing applications. It is a single-ply thermoplastic polyolefin (TPO) sheet designed to deliver exceptional performance and longevity. The Enviroclad TPO system employ advanced polymerization technology, which combines the flexibility of ethylene-propylene (EP) rubber with the heat weldability of polypropylene.

An outstanding feature of Enviroclad TPO membranes is the incorporation of OctaGuard XT™, an industry-leading weathering package. This cutting-edge technology enables Enviroclad TPO to withstand extreme weatherability testing that simulates exposure to severe climates. This ensures that the membrane can endure harsh environmental conditions over an extended period. The physical properties of the membrane are further enhanced by a strong polyester fabric encapsulated between the TPO-based top and bottom plies. This combination imparts high breaking and tearing strength, as well as exceptional puncture resistance from the polyester mesh scrim. Moreover, the membrane exhibits elongation properties that allow for building movement, making it forgiving in situations where structural shifts occur.

During installation, the Enviroclad TPO membrane's relatively smooth surface facilitates a total surface fusion weld. This welding process ensures a consistent, watertight, and monolithic roof assembly, minimizing the risk of leaks or water penetration. Additionally, the membrane's environmentally friendly composition makes it a safe choice for installation.

The Enviroclad TPO System offers flexibility in terms of installation methods. It can be fully bonded or mechanically fixed, providing options to suit different project requirements. The system is formulated without liquid plasticizers, chlorine, or chlorine-containing ingredients, making it a reliable and sustainable choice for roofing projects. It is also suitable for the collection of potable water, ensuring water safety. Furthermore, the system boasts high UV resistance, safeguarding against the detrimental effects of prolonged sun exposure. The heat-welded, strong vulcanized seams of the Enviroclad TPO System contribute to its maximum durability and superior watertightness, offering long-lasting protection for the building envelope.

The versatility of the Enviroclad TPO System extends to its applicability in various building types. It is suitable for both commercial and residential buildings, providing a robust and reliable roofing solution. The system can be applied over an existing surface, making it an ideal choice for re-roofing projects. The Enviroclad FBS (Fleece-Backed System) or RhinoBond technology can be utilized to ensure a secure and efficient installation. Additionally, the system is well-suited for low-slope and pitched roofs, internal gutters and parapets, as well as balconies, decks, and roof gardens. With no limitations within New Zealand, the Enviroclad TPO System can be specified and used in all Climate Zones as defined in NZBC H1/AS1, as well as all Exposure Zones defined in NZS3604, providing flexibility and adaptability to different geographical areas.

To enhance the performance of Enviroclad decks, Viking Roofspec advises incorporating a traffic floating deck surface on pedestals. Viking Buzon Screwjack Pedestals, accessible through the provided link, are recommended for this purpose.

Properties

Enviroclad TPO Membrane Colour	Membrane Roll Width in Meter	Membrane Roll Length in Meter	Membrane sheet Thickness mm
White	3m / 3.6m	30.4 m	1.14mm / 1.52mm
Grey	2.44m/ 3m / 3.6m	30.4 m	1.14mm / 1.52mm
Patina Green	3m	30.4 m	1.14mm
Rock Brown	3m	30.4 m	1.14mm
Slate Gray	3m	30.4 m	1.14mm
Medium Bronze	3m	30.4 m	1.14mm
Iron Sand	3m	30.4 m	1.14mm
2.44m and 3.6m Rolls are only sold per roll, all 3m wide rolls are sold by cut length or roll			

Enviroclad TPO Membrane Colour	Light Reflectance Values (L.R.V)	Solar Reflectance Index (SRI)
White	87.63%	99%
Grey	32.70%	53%
Patina Green	23.93%	25%
Rock Brown	21.07%	26%
Slate Gray	20.16%	42%
Medium Bronze	11.60%	29%
Iron Sand	9%	9%
(Note: L.R.V is a Numeric value for visible light reflected by a surface. Whereas SRI is the measure of the roofs ability to reflect solar heat)		

Viking Enviroclad Colour	Resene Colour Name	Resene Colour Code
White	Resene Half Black White	N94-004-096
Grey	Resene Jumbo	N64-001-095
Patina Green	Resene Paddock	G56-028-117
Rock Brown	Resene Slate Brown	BR53-028-056
Slate Gray	Resene Triple Stonehenge	BR50-014-072
Medium Bronze	Resene Double Mondo	BR38-014-074
Iron Sand	Resene Colorsteel Ironsand	N36-003-056
Colour Codes are the closest Colour Match to the membrane and in some cases not an exact match		

Physical Properties	Test Method	Property of Unaged Sheet	Property after ASTM D573 aging 128 days @ 240°F
Tolerance on nominal thickness, %	ASTM D751	± 10	
Thickness over scrim, in. (mm) - 45-mil - 60-mil	ASTM D6878 Optical Method (avg. of 3 areas)	typical 0.018 (0.457) ± 10% 0.024 (0.610) ± 10%	Criterion – no visible cracks after bending aged test specimen around 3"-diameter mandrel
Breaking strength, lbf (kN)	ASTM D751 Grab Method	225 (1.0) min. 45-mil 320 (1.4) typical 45-mil 250 (1.1) min. 60-mil 360 (1.6) typical 60-mil	225 (1.0) min.45-mil 320 (1.4) typical 45-mil 250 (1.1) min. 60-mil 360 (1.6) typical 60-mil
Elongation at break of fabric, %	ASTM D751	25 typical	25 typical
Tearing strength, lbf (N) 8" by 8" ~~in~~.specimen	ASTM D751 B Tongue Tear	55 (245) min. 130 (578) typical	55 (245) min. 130 (578) typical
Brittleness point, °F (°C)	ASTM D2137	-40 (-40) max. -50 (-46) typical.	
Linear Dimensional Change (shrinkage), % -After 6 hours at 158°F (70°C)	ASTM D1204	+/-0.5 max. - 0.2 typical	
Ozone resistance, 100 pphm, 168 hours	ASTM D1149	No cracks	No cracks
Resistance to water absorption -After 166 hrs immersion 158 °F (70 °C) -Change in mass, %	ASTM D471 (top surface only)	4.0 max. 2.0 typical ± 3.0 max	
Resistance to microbial surface growth, -rating (1 is very poor, 10 is no growth)	ASTM D3274 2 yr S. Florida	9-10 typical	
Field seam strength, lbf/in. (kN/m) -Seam tested in peel	ASTM D1876	25 (4.4) min. 60 (10.5) typical	
Water vapor permeance, Perms	ASTM E96	0.10 max. 0.05 typical	
Puncture resistance, lbf (kN) (see supplemental section for additional puncture data)	FTM 101C	250 (1.1) min. 45-mil 325 (1.4) typical 45-mil 300 (1.3) min. 60-mil 350 (1.6) typical 60-mil	
Resistance to xenon-arc weathering 2 Requirement 10,080 kJ/m² at 340nm -Xenon-Arc, 17640 kJm² total radiant -exposure, visual condition at 10x	ASTM D6878 ASTM G155 0.70 W/m² 80 °C B.P.T	No cracks No loss of breaking or tearing strength	
Maximum sustained temperature		not to exceed 70°C	

1. *Aging conditions are 28 days at 240 °F (116 °C) equivalent to 400 days at 176 °F (80 °C) for breaking strength, elongation, tearing strength, ozone and puncture resistance.*
2. *Approximately equivalent to 14,000 hours exposure at 0.35 W/m² irradiance B.P.T. is black panel temperature.*

Installation

*Refer to Enviroclad Applicator Handbook

1. Were possible Ensure the roof is free of obstructions such as penetrations or plinths to minimise cuts and joins so that the sheets can be laid in one piece. Any penetrations should be carried out and flashed after the membrane has been laid. Refer to the accessories section of this manual for flashing materials.
2. Ensure that water does not flow beneath any completed sections of the membrane by completing all flashings, terminations, and welds by the end of each day.
3. Sweep / blow or preferably vacuum all loose debris from the substrate. This is most important for the finished appearance of a single ply membrane.
4. Using a chalk line, mark out the roof and position individual sheets prior to adhering to the substrate.
5. Fold back the sheet to reveal half of the underside. Sheets can be folded either length or width ways. When the width of a sheet runs over a ridge, creasing can be avoided by folding the sheet back along its length.
6. Thoroughly stir (min 5 minutes) the Enviroclad adhesive. With an 8–10 mm medium nap 23cm roller, apply an even coating of adhesive to the exposed underside of the membrane and to the adjoining substrate.
7. Allow the adhesive to dry until tacky and it will not stick to a dry finger.
8. Alternative option of CavGrip III spray applied adhesive. Apply to both the substrate and the underside of the Enviroclad membrane.
9. Carefully and evenly roll the glued membrane onto the glued substrate, avoiding creases wrinkles and air pockets.
10. Brush down the bonded section of membrane immediately with a soft bristle broom, applying downward pressure to remove any trapped air.
11. Fold back the unglued half of the sheet and repeat the above bonding procedure.
12. Install adjoining sheets in the same manner, overlapping edges a minimum of 50mm to provide for a minimum 40mm hot air weld.
13. Clean edges to be welded using Weathered Membrane Cleaner, (refer to Membrane Cleaning process).
14. Weld the Enviroclad sheets a minimum of 40mm with a welding machine

    (Refer to Membrane Welding process in the Enviroclad Applicator Handbook).

The four key factors of a successful weld are.

- clean material
- heat
- speed
- compression

Test Welds

- Perform a test weld at least at the start of work each morning and afternoon.
- Cut out a test sample from the test weld approximately one inch wider and longer than the width of the seam (cut across the welded seam).
- Peel the test sample apart after it has thoroughly cooled (approximately 10 minutes) and examine for a consistent 40mm wide minimum weld. Delaminating of the membrane from the scrim reinforcement is an indication of a properly welded seam.
- Identify the following seam problems to assure seam quality: Discoloured or melted membrane – Increase speed or decrease temperature setting if membrane discolours or exhibits melting (membrane begins to flow).
- Voids and wrinkles - A proper welded seam has no voids or wrinkles and must be at least 40mm wide. Refer to Seam Probing procedures outlined below for proper inspection of seam deficiencies. 6. Avoid excessive heat when welding sheet membrane and

accessories. This can accelerate the migration of the oil out of the membrane, causing it to become brittle over time and turn white.

Precautions

- Ensure that the adhesive is not too thinly applied. Coverage should be a maximum of 2 square metres per litre for both surfaces. A 19-litre container will adhere 38 square meters of installed Enviroclad.
- Enviroclad adhesive should be applied at a minimum 10ºC. Due to solvent flash off, condensation may form on freshly applied adhesive when the ambient temperature is near dew point. If condensation occurs the application of the adhesive should be stopped, until the temperature and conditions are favourable. Then a fresh coat of adhesive can be applied over the previously coated surface.
- In colder condition use CavGrip III down to 3.5 degrees Celsius. Note the canister will need to be kept at 23 degrees Celsius for fluid application.
- Take care not to apply any adhesive to the membrane edges to be welded. As a precaution, mark the underside of the membrane with a chalk line.
- Don't place hot or sharp objects directly on the membrane.
- Don't leave any running heat-gun or torch directly pointed at any membrane if not specifically using the tool for laps or detailing.
- Don't apply adhesive to membrane where it will be welded for laps or detailing. Clean thoroughly if some exist.
- Don't use incompatible components or materials for the membrane job you're installing.
- Don't use any cleaner other than Viking Weathered Membrane Cleaner for Enviroclad.
- Don't use solvents to thin Enviroclad adhesives as there are no compatible solvents.
- Don't turn-off any welding heat guns or robotic tools without cooling down first.

Storage

Handling and storage of all materials whether on or off site is under the control of the Viking Roofspec Licensed and Trained Installers. Dry storage must be provided for all products, do not let products get crushed under weight of stacking pallets on top of each other.

Notes

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