|  |
| --- |
| Please find below our current Enviroclad alternative substrate fixing specification with Rhinobond.Our focus is to ensure that you have the right information and technical support required to make specifying our roofing and waterproofing solutions easy.If you require any of our CAD details you can find them on our website [www.vikingroofspec.co.nz](http://www.vikingroofspec.co.nz)For any further support please do not hesitate to contact us on 0800 729 799.Kind Regards,The team at Viking RoofspecVK_ROFS_4C_SL_TCD T: 0800 729 799 F: 0800 729 788info@vikingroofspec.co.nz[www.vikingroofspec.co.nz](http://www.vikingroofspec.co.nz) |

# 4422VE VIKING ENVIROCLAD MEMBRANE

**Alternative substrate fixing specification – RhinoBond**

## 1. GENERAL

 If you have pre-customised this work section using the "questions and answers" provided as part of the downloading process, it may be necessary to amend some clauses to suit the final project-specific version.

 The section must still be checked and customised to suit the project being specified, by removing any other irrelevant details and adding project-specific details and selections.

 This section relates to Viking **Enviroclad TPO** membrane mechanically fixed utilising Viking Roofspec **RhinoBond** mechanically fixing system **to** substrates providing analternative to plywood or concrete. It includes **Enviroclad TPO** membrane applied as a single layer membrane -suitable for industrial, commercial and residential roofing and decking applications

 Modify or extend the above description to suit the project being specified. For specific technical information contact Viking Roofspec on 0800 729799.

### 1.1 RELATED WORK

 Refer to the manufacturer/Supplier of the substrate for product and technical information.

 Modify to suit project specified and include cross references to other sections where these contain related work.

 Refer to 4422VR VIKING EPICLAD FBS RE-ROOFING MEMBRANE for retrofit of existing bitumen, malthoid, concrete or tongue and groove sarking, as a single-layer external waterproof membrane.

 Refer to 4422VB VIKING BUTYLCLAD AND EPICLAD MEMBRANE ROOFING for rubber sheets as a single-layer external waterproof membrane.

 Refer to 7411 RAINWATER SPOUTING SYSTEMS for rainwater disposal.

### 1.2 ABBREVIATIONS AND DEFINITIONS

 Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

 The following abbreviations apply specifically to this section:

 TPO Thermoplastic polyolefin

 Refer general section 1232 INTERPRETATION & DEFINITIONS for abbreviations used throughout the specification.

 **Documents**

### 1.3 DOCUMENTS

 Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

 NZBC Clause – B1 Structure

 B2 Durability

 E2 External Moisture

 F1 Hazardous Building Materials

 H1 Energy Efficiency

 Delete from the DOCUMENTS clause any document not cited. List any additional cited documents.

 The following are related documents and if referred to in the work section need to be added to the list of DOCUMENTS.

 [NZBC B2](http://www.masterspec.co.nz/redirect.aspx?pl=223)/AS1 Durability

 [NZBC E1](http://www.masterspec.co.nz/redirect.aspx?pl=227)/AS1 Surface water, 5.0 Roof gutters

 [NZBC F2](http://www.masterspec.co.nz/redirect.aspx?pl=236)/AS1 Hazardous building materials

 [AS/NZS 1604.3](http://www.masterspec.co.nz/redirect.aspx?pl=1183) Specification for preservative treatment - plywood

 [NZS 3101](http://www.masterspec.co.nz/redirect.aspx?pl=294) Concrete structures standard - the design of concrete structures

 [NZS 3604](http://www.masterspec.co.nz/redirect.aspx?pl=301) Timber-framed buildings

 Check with Viking Roofspec to ensure that you have the most up to date information.

### 1.4 MANUFACTURER/SUPPLIER DOCUMENTS

 Manufacturer's and supplier's documents relating to this part of the work:

 Viking Waterproofing Membrane Systems manual

 Viking **Enviroclad** Standard Details

 Viking **Enviroclad** Applicator Manual

 [BRANZ Appraisal 656](http://www.masterspec.co.nz/redirect.aspx?pl=220) – **Enviroclad TPO** Roofing Membrane

 Copies of the above literature are available from Viking Roofspec

 Web: [www.vikingroofspec.co.nz](http://www.vikingroofspec.co.nz)

 Email: info@vikingroofspec.co.nz

 Telephone: 0800 729 799

 Facsimile: 0800 729 788

 It is important to ensure that all personnel on site have access to accurate, up to date technical information on the many products, materials and equipment used on a project. In most cases individual products are not used in isolation, but form part of a building process. Also a particular manufacturer's and/or supplier's requirements for handling, storage, preparation, installation, finishing and protection of their product can vary from what might be considered the norm. Access to technical information can help overcome this potential problem.

 **Warranties**

### 1.5 WARRANTY - MANUFACTURER/SUPPLIER

 Provide a material manufacturer/supplier warranty:

 20 years: For Viking **Enviroclad TPO** Membrane

 - Provide this warranty on the Viking Roofing standard form.

 - Commence the warranty from the date of completion of fixing.

 Refer to the section 1237 WARRANTIES for additional requirements.

 Modify or expand the clause to suit project or manufacturer/supplier requirements.

### 1.6 WARRANTY - INSTALLER/APPLICATOR

 Provide an installer/applicator warranty:

 5 years: For **Enviroclad TPO**  membrane mechanically fixed utilising the Viking Roofspec **RhinoBond** Mechcanically fixing system and when installed by a Viking approved applicator

 - Provide this warranty in the Viking **Enviroclad** Membrane Product Warranty on standard form.

 - Commence the warranty from the date of completion of fixing.

 Refer to the section 1237 WARRANTIES for additional requirements.

 Modify or expand the clause to suit project requirements.

 Modify or expand the clause to suit project requirements.

 **Requirements**

### 1.8 QUALIFICATIONS

 Installation of the membrane to be carried out by Viking Approved Applicators. Installation of substrates must be completed by suitably qualified persons in accordance with instructions given in Manufacturers Technical Literature and [BRANZ Appraisal 656](http://www.masterspec.co.nz/redirect.aspx?pl=220) – **Enviroclad TPO** Roofing Membrane.

### 1.9 NO SUBSTITUTIONS

 Substitutions are not permitted to any specified Viking membrane waterproofing materials, or associated products, components or accessories.

 **Performance**

### 1.10 TEST

 Flood test horizontal applications with a minimum 50mm depth of water for 24 hours. Make good any lack of watertightness when the surface is completely dry.

 Not all applications can be checked. All gutters should be checked.

### 1.11 PERFORMANCE

 Accept responsibility for the weather-tight performance of the completed roofing system, including all penetrations through the roof and junctions with walls and parapets. All penetrations to comply with [NZBC,](http://www.masterspec.co.nz/redirect.aspx?pl=347) and Viking Roofspec specifications and Standard Details.

 Refer to later EXECUTION clause on co-operating with others on the installation of elements which penetrate or adjoin the roofing system; including walls and parapets, skylights, sundry elements fixed through the roofing surface, service pipework, etc.

## 2. PRODUCTS

 **Materials**

### 2.1 **ENVIROCLAD TPO** WATERPROOFING MEMBRANE

 Polyester reinforced thermoplastic polyolefin (TPO) membrane. Refer to SELECTIONS for size and colour options.

 Enviroclad is applied as a single ply sheet, 1.14mm thick or 1.5mm thick x 3.0 metres wide x 30.4 metres long; available in white or grey standard colour options.

 Enviroclad FBS is applied as a single ply sheet, 1.14mm thick with a 1.2mm thick polyester fleece backing x 3.6 metres wide x 30.4 metres long; available in white or grey standard colour options.

 2.2 Substrate. Refer to Manufacturer/Supplier details for fixings and spans.

 **Components**

### 2.3 RhinoBond Fastening plates (TPO coated) and screws.

.

 To fully adhere the membrane to the substrate.

 To fully adhere the membrane to the substrate.

### 2.5 **ENVIROCLAD** CUT EDGE SEALANT (CLEAR)

 Proprietary sealant for sealing exposed scrim on cut edges.

### 2.6 WATER CUT-OFF MASTIC

 Mastic Sealant for use at compression terminations, drains and beneath metal edging.

### 2.7 PT 304 SEALANT

 Universal UV stable sealant for use in exposed terminations. (e.g. chase sealing)

### 2.8 **ENVIROCLAD** WEATHERED MEMBRANE CLEANER

 Proprietary membrane cleaner.

### 2.9 **ENVIROCLAD** OUTSIDE AND INSIDE CORNERS

 Proprietary unreinforced moulded TPO flashings to be welded as internal and external corners.

### 2.10 **ENVIROCLAD** UNREINFORCED MEMBRANE

 Proprietary unreinforced TPO membrane. 300mm x 15.2m.

### 2.11 **ENVIROCLAD** T-JOINT COVERS

 Proprietary unreinforced TPO disks

### 2.12 **ENVIROCLAD** PIPE FLASHINGS

 Proprietary unreinforced moulded TPO flashings for sealing pipe penetrations.

### 2.13 **ENVIROCLAD** POURABLE POCKETS

 Proprietary unreinforced moulded TPO surrounds for encasing pipe penetrations.

### 2.14 **ENVIROCLAD** THERMOPLASTIC POURABLE SEALER

 Proprietary thermoplastic pourable sealer for filling of pourable pocket.

### 2.15 **SPLICE WIPES**

 Proprietary wipes for cleaning and drying membrane prior to welding.

 **Accessories**

### 2.16 VENTS

 Aluminium vent or TPO vent.

 Used for disbursement of vapours.

### 2.17 **ENVIROCLAD** WALKWAY ROLLS

 Proprietary non-slip TPO walkway mat. 792mm x 15m

 (Apply and weld in 3m sections)

 Used to protect areas of roof or deck exposed to frequent foot traffic.

### 2.18 **ENVIROCLAD** SCUPPER OUTLETS

 TPO fully weldable scuppers - 200 x 75 (E2 Compliant) or 100mm x 100mm or 100mm x 65mm outlets

2.19 LEAF AND GRAVEL GRATES

 For drains and scuppers.

 Available in a variety of shapes and sizes to suit pipes from 60mm to 200mm.

### 2.20 CLAMP RING ROOF DRAINS OR OVERFLOWS

 80mm, 100mm or 150mm clamp sealed drains and overflows

 Modify and add option here; these include

 - Surefix Roof Outlets, available with a clamping ring and grate or without

 - PVC roof drainage outlets, with grill or dome,

 - Enviroclad heat weldable TPO dropper 80mm

### 2.21 DRYLIGHT SKYLIGHT

 1220mm x 1220mm single piece reaction injection moulded skylight

### 2.22 DRYLIGHT FLASHING SLEEVE

 Single piece TPO proprietary flashing

2.23 **ENVIROCLAD** DROPPER OUTLETS

 Proprietary 80mm or 100mm TPO droppers

## 3. EXECUTION

 **Conditions**

 Refer to Viking Roofspec Technical Literature for detailed information and call 0800 729 799 for technical assistance.

### 3.1 GENERALLY

 All work and materials to comply with current Viking **Enviroclad** technical literature and standard details; and NZBC.

### 3.2 STORAGE

 Take delivery of **Enviroclad** membrane in rolls undamaged and include for site handling facilities where required. Store rolls horizontally only. Provide dry storage for all products. Stack off the ground on a level surface and with accessories.

### 3.3 WEATHER

 Lay **Enviroclad** membrane in fair weather, with ambient air temperature no less than 7°C.

### 3.4 EQUIPMENT

 Viking Roofspec Approved Applicators use the following equipment:

 - Induction welding tool

 - Magnetic heat sink poles

 - Hand welding machine

 - Robotic welding machine

 - Hand roller

 **Application - preparation**

### 3.5 PRELIMINARY WORK

 Ensure that preliminary work, including formation of falls, flashing rebates, grooves, ducts, provision of battens and fixing of vents and outlets to levels, is complete and properly constructed to enable the system to work as intended. The substrate to be smooth, clean, dry and stable.

 Check with the BCA to confirm requirements in addition to the NZBC.

### 3.6 ACCEPTANCE OF SUBSTRATE

 Confirm that the substrate, including outlets and projections, meets design specification, and Viking Roofspec conditions. Ensure the fall complies with [NZBC E2](http://www.masterspec.co.nz/redirect.aspx?pl=347).

 [NZBC E2](http://www.masterspec.co.nz/redirect.aspx?pl=347)/AS1 states the minimum slope for roofs is 2° and 1.5° for decks.

3.7 Substrate. Refer to Manufacturer/Supplier details for fixings and spans.

 Prepare the surface to leave smooth, clean, dry and free of debris.

 No timber fillets are to be used.

 Chamfer all external edges with a minimum radius of 5mm where the membrane is to be wrapped over.

 Provide falls to a minimum of those stated in [NZBC E2](http://www.masterspec.co.nz/redirect.aspx?pl=347)/AS1, 8.5.1, - 1:30 for roofs, 1:40

 for decks and 1:100 for gutters.

 Some BCA's require membrane falls greater than Code, check with the BCA and research the particular membrane roofing proposed and amend this basic clause accordingly.

 Contact Viking Roofspec on 0800 729 799 for recommended options.

 **Application - laying**

 Refer to Viking Roofspec Technical Literature for membrane installation requirements.

### 3.9 GENERAL

 Install to current application standards as detailed in Viking Roofspec Technical literature and Viking **Enviroclad** Applicators Manual.

### 3.10 Substrate Preperation

###  Substrate must be even without noticeable high spots or depressions, and must be free of accumulated water, ice or snow. Clear the substrate of debris and foreign material.

 Refer to the applicable Material Safety Data Sheets and Technical Data Bulletins for applicable cautions and warnings.

 **Secure Rhino Plates**

 1. Securely fix RhinoBond fixing plates (TPO coated) and screws. Strictly adhere to Viking Roofspecs mechanical fixing pattern. (Contact Viking Roofspec for this pattern)

 Note: Avoid fastener overdrive to prevent plate from deforming.

 B. **Membrane Placement, Attachment and Hot Air Welding**

 600319 SW Rhino Guide – 1/2012 4

### 3.11 POSITION & RELAX

 Membrane to be unrolled onto the prepared substrate and allowed to relax for 20 minutes prior to installation.

 Modify this clause to suit the project specified.

 Delete when using Enviroclad FBS membrane.

### 3.13 INSTALL MEMBRANE SHEETS – **ENVIROCLAD TPO** membrane

 1. Place Enviroclad membrane over the appropriate RhinoBond TPO coated Plates and allowing membrane to relax.

 2. Place RhinoBond Induction Tool centered over the RhinoBond Welding Plate (+/- 25mm) under the Enviroclad membrane.

 3. Elevate the temperature of plate from ambient to 205-260°C using induction tool.

 4. Immediately place Cooling Clamp on the membrane over the plate and leave in place for at least 60 seconds.

 5. Resume process ensuring membrane is attached to all plates.

 Delete when using Enviroclad FBS membrane.

 Delete when using Enviroclad membrane.

### 3.16 LAP JOINTS

 Install adjoining **Enviroclad** **TPO** membrane sheets in the same manner, overlapping edges to provide a minimum 40mm hot air weld.

### 3.17 HOT AIR WELD

 Clean all weld areas with Weathered Membrane Cleaner. Then weld the adjoining **Enviroclad TPO** membrane sheets (minimum width of weld is 40mm).

 djoining sheets of membrane are overlapped approximately 50mm and joined together with a minimum 40mm hot-air weld.

### 3.18 MEMBRANE CLEANER

 Ensure that all membrane, including accessories, to be welded is cleaned using Weathered Membrane Cleaner. Wipe the surface where the **Enviroclad TPO** membrane cleaner has been applied with a clean, dry HP Splice Wipe to remove cleaner residue prior to welding.

### 3.19 INSPECT

 Inspect and test joints all welds using a seam probe. Seal all cut reinforced membrane edges using Cut Edge Sealer, or a rolled membrane edge. Flood test with a minimum 50mm depth of water for 24 hours.

### 3.20 PENETRATIONS & JUNCTIONS

 Form and finish upstands, downturns, penetrations, outlets and vents to conform to current Viking Roofspec Standard Details. Confirm installation of all required flashings and terminations, to leave membrane watertight upon project completion.

.

### 3.21 VENTING – ROOF/DECK CAVITIES

###  Provide adequate ventilation per E2/AS1. If applying roof mounted proprietary vents, install a minimum one Viking roof vent for the first 40m² of flat roof area and one vent per 90m² thereafter. Check that the cavity is cross ventilated to allow air movement across the entire cavity.

 Modify this clause to suit the project specified. Refer to Viking Roofspec Technical Literature for venting requirements over concrete, plywood and other substrates as required.

 **Finishing**

### 3.22 FOOT TRAFFIC

 Keep foot traffic to a minimum after laying the membrane. Lay protection as required for foot traffic or later works.

 Traffic concentration points would include roof hatches, access doors, rooftop ladders and walkways. Traffic of once a month or more would be sufficient to justify walkway protection. Viking Roofspec supply protective walkway pads and rolls.

### 3.23 ACCESS BOARDS

 Provide access boards for later operations and remove when no longer needed.

### 3.24 ACCEPTANCE

 Inspect the completed work. Protect and maintain roofing until completion of the contract works.

### 3.25 SUBSEQUENT WORK

 Make good any damage. Repair to specification.

 **Completion**

### 3.26 CLEAN UP

 Clean up as the work proceeds.

### 3.27 LEAVE

 Leave work to the standard required by following procedures.

### 3.28 REMOVE

 Remove debris, unused materials and elements from the site.

## 4. SELECTIONS

 Substitutions are not permitted to the following, unless stated otherwise.

### 4.1 **ENVIROCLAD** MEMBRANE

 Location: ~ Roof

 Substrate: ~

 Brand/type: **Viking Enviroclad**

 Thickness: 1.14mm

 Size: 3.0 metre or 3.6 metres wide x 30.4 metres long

 Colour: ~

 Accessories: ~

 Options:

 Thickness: 1.14mm or 1.5mm

 Colour: Grey or white, tan available on indent

 Accessories: Viking Scupper

 Walkway rolls

 Viking Gravel/ Leaf Grates

 Roof outlets:- Surefix Roof Outlets, available with a clamping ring and grate or without

 - PVC roof drainage outlets, with grill or dome,

 - Enviroclad heat weldable TPO dropper 80mm

 Spun aluminium (Jetson) vent

### 4.2 **ENVIROCLAD** MEMBRANE

 Location: ~ Decks

 Substrate: ~

 Brand/type: **Viking Enviroclad**

 Thickness: 1.5mm

 Size: 3.0 metre or 3.6 metres wide x 30.4 metres long

 Colour: ~

 Accessories: ~

 Options:

 Thickness: 1.14mm or 1.5mm

 Colour: Grey or white, tan available on indent

 Accessories: Viking Scupper

 Walkway rolls

 Viking Gravel/ Leaf Grates

 Roof outlets:- Surefix Roof Outlets, available with a clamping ring and grate or without

 - PVC roof drainage outlets, with grill or dome,

 - Enviroclad heat weldable TPO dropper 80mm

 Spun aluminium (Jetson) vent

 Options:

 Thickness: 1.14mm or 1.5mm

 Colour: Grey or white

 Accessories: Viking Scupper

 Walkway rolls

 Viking Gravel/ Leaf Grates

 Roof outlets:- Surefix Roof Outlets, available with a clamping ring and grate or without

 - PVC roof drainage outlets, with grill or dome,

 - Enviroclad heat weldable TPO dropper 80mm

 Spun aluminium (Jetson) vent