

## Product Overview

Complies with E2 as an Alternative Solution. BRANZ Appraised - Certificate No. 864



**BRANZ Approved**  
Appraisal No.864 [2016]

**masterspec**  
Ref No. 4421 SB

# Viking General Membrane Mercury FC Below-Ground DPM Torch-on Membrane

## Technical Statement

### Product Description

The Viking Mercury FC Membrane is a modified-bitumen, torch-on, damp-proof membrane (DPM) waterproofing system for vertical and horizontal tanking applications. It is primarily applied to the outside of a sub-structure of a building (such as a foundation or basement) to prevent water ingress.

Other forms of tanking where Mercury FC can be used include under floor slabs, behind masonry walls, the lining of substrates of in situ or precast concrete; retaining walls, cellars, lift shafts, tunnels, plaza decks, roof gardens and planter boxes.

Viking Mercury FC comprises of a 4mm thick reinforced-polyester and fibreglass SBS (Styrene butadiene styrene) modified-bitumen membrane which is torch-applied for maximum adhesion to a compatibly primed surface. The inherent reinforcement in the sheet maximises the tensile strength necessary to deal with latitudinal movement of the substrate. The Mercury FC system consists of the membrane, bituminous primer, bituminous gum, protection boards and drainage boards, Mercury FC has a cold flexibility down to -20 degrees Celsius. Being 4mm thick, it possesses very high puncture resistance as well as very high chemical resistance. Mercury FC resists hydrostatic pressure and is mechanically strong.

Mercury FC comes in rolls 4mm thick x 1.0m wide x 10m long. It is BRANZ Appraised No.864 (2016) and holds a 20-year product warranty. Viking Roofspec is an active member of the Waterproofing Membrane Association Inc. (W.M.A.I.); an incorporation of companies whose goal is to lift the standard of waterproofing in New Zealand.

The W.M.A.I. is formulating a "Tanking Code of Practice" for the Department of Building and Housing.

### Scope of use

Viking Mercury FC DPM Membrane has been appraised as a DPM for use:

- On buildings subject to non-specific design under floor slabs complying with NZS 3604 and behind concrete masonry basement walls and under floor slabs complying with NZS 4229; and,
- On buildings subject to specific design with substrates of in situ or precast concrete complying with NZS 3101 or concrete masonry complying with NZS 4230; and, Where subsoil drainage and free draining granular backfill has been placed behind basement walls.

Viking Mercury FC DPM Membranes must be adequately protected against damage during backfill and in service.

## New Zealand Building Code (NZBC)

The product will, if employed in accordance with the supplier's installation and maintenance requirements, assist with meeting the following provisions of the building code:

- Clause B1 Structure: Performance B1.3.1
- Clause B2 Durability: Performance B2.3.1, B2.3.1(a), B2.3.2, B2.3.2(a)
- Clause E2 External moisture: Performance E2.3.3
- Clause F2 Hazardous building materials: Performance F2.3.1

## Supporting Evidence

The product has and can make available, the following additional evidence to support the above statements:

### Product Criteria

#### Design requirements

Product specification and incorporation of Viking Mercury FC Membranes into the building design shall be carried out by a designer/architect/engineer or a building professional who:

- Is qualified to design the buildings covered under the 'Scope' of use of this product.
- Has ready access to the technical specifications including installation details and standards referenced in the BRANZ Appraisal No. 864 (2016) where the design limitations are outlined for the scope of this PTS.

Accessories in the Viking Mercury FC system include bituminous primer (20L), bituminous gum, protection boards and drainage boards.

#### Installation requirements

- Installation shall be carried out by a Viking Roofspec trained and licensed installer.
- Installation shall be undertaken in accordance with all relevant technical information related to the selected installation method, including information contained within the BRANZ Appraisal No. 864 (2016).

#### Maintenance requirements

- Annual inspections must be made of the membrane's top edge seal and protection, the backfill capping, and the drainage pipe to ensure all are functioning as originally designed.
- If required, the drainage pipe must be cleared to remove any sediment or silt build-up. The slope of the backfill capping must be maintained at all times.
- Long term properties of the material may be affected by contact with petroleum-based products such as oils, greases and solvents.

#### Warranties

The Viking Mercury FC system is backed by a 20-year product warranty.

## Company Product Information

### Environmental

Bitumen is a bi-product of the oil refining process. Torch-on membranes provide a constructive use of this waste product. The robust nature of a modified bitumen membrane system will ensure sustainability through longevity.

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Visit nextgen or masterspec for the online version of our specification.

### CAD Details

Please visit our website [www.vikingroofspec.co.nz](http://www.vikingroofspec.co.nz) or our masterspec listing for our latest CAD Roofing details.

### Viking Mercury FC Physical Properties

Mercury FC		
Property	Test Method	Test Results
Watertightness (metodo B)	EN 1928:2000	Pass
External fire performance	EN 1350-5	F roof
Reaction to fire	EN 13501-1	EUROCLASSE F
Shear resistance of joint		
- heat lap	EN 12317-1	650
- side lap		400
Tensile properties		
- maximum longitudinal tensile strength		750 N/50 mm
- maximum transversal tensile strength		500 N/50 mm
- longitudinal elongation		35%
- transversal elongation		40%
Resistance to impact	EN 12691	1000 mm
Resistance to static loading	EN 12730	15 kg
Resistance to tearing (nail shank)		
- longitudinal	EN 12310-1	140 N
- Transversal		140 N
Dimensional stability	EN 1107-1	0.5%
Flexibility at low temperature	EN 1109	-20°C
Flow resistance at elevated temperature	EN 1110	120°C
Artificial ageing by long term exposure to elevated temperature	EN 1269 + EN 1110	110°C
Water vapour transmission properties		$\mu=20.000$



## BRANZ Appraised

Appraisal No.864 [2014]

BRANZ Appraisals

Technical Assessments of products  
for building and construction

## BRANZ APPRAISAL No. 864 (2014)

## VIKING BITUCLAD 4 DPM MEMBRANE

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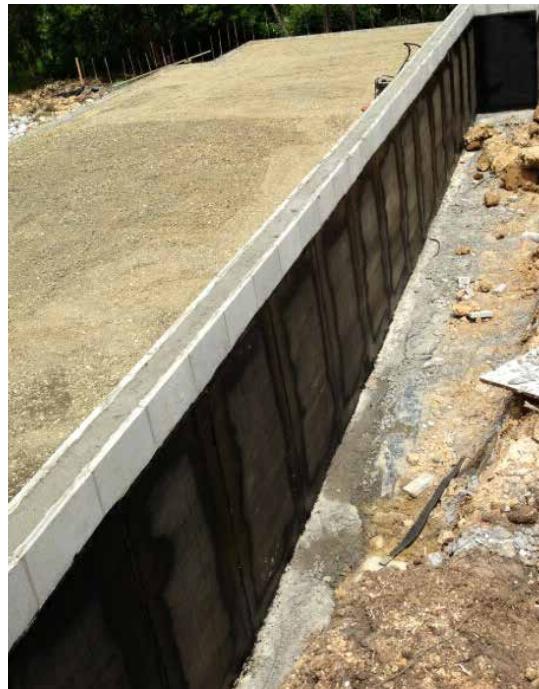
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Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

## Product

1.1 Viking Bituclad 4 DPM Membrane is a modified bitumen torch-on damp-proof membrane for basement retaining walls and floors.



## Scope

2.1 Viking Bituclad 4 DPM Membrane has been appraised as a DPM for use:

- on buildings subject to non-specific design under floor slabs complying with NZS 3604 and behind concrete masonry basement walls and under floor slabs complying with NZS 4229; and,
- on buildings subject to specific design with substrates of insitu or precast concrete complying with NZS 3101 or concrete masonry complying with NZS 4230; and,
- where subsoil drainage and free draining granular backfill has been placed behind basement walls.

2.2 Viking Bituclad 4 DPM Membrane must be adequately protected against damage during backfilling and in service.

2.3 The product must be installed by Viking Roofspec approved installers.

## Building Regulations

### New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, Viking Bituclad 4 DPM Membrane if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet the following provisions of the NZBC:

**Clause B2 DURABILITY:** Performance B2.3.1 (a) not less than 50 years. Viking Bituclad 4 DPM Membrane meets this requirement. See Paragraph 11.1.

**Clause E2 EXTERNAL MOISTURE:** Performance E2.3.3. Viking Bituclad 4 DPM Membrane meets this requirement. See Paragraphs 13.1 - 13.3.

**Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1. Viking Bituclad 4 DPM Membrane meets this requirement and will not present a health hazard to people.

3.2 This is an Appraisal of an **Alternative Solution** in terms of New Zealand Building Code compliance.

## Technical Specification

Materials supplied by Viking Roofspec are as follows:

- **Viking Bituclad 4 DPM Membrane** - is an APP modified bitumen torch-on membrane for use as a below ground DPM. It is supplied in a roll 4 mm thick x 1.0 m wide x 10 m long.
- **Tanking Primer** - is a fast drying, solvent based contact adhesive. It is supplied in 5 US gallon pails.
- **Tanking Primer WB** - is a fast drying, water based contact adhesive. It is supplied in 5 US gallon pails.

## Handling and Storage

5.1 Handling and storage of all materials whether on or off site is under the control of the installer. Dry storage must be provided for all products and the membranes must be protected from sunlight and UV radiation. Rolls of membrane must be stored on end.

## Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for Viking Bituclad 4 DPM Membrane. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

## Design Information

### Substrate Design

#### Retaining Wall

7.1 Substrate design must be in accordance with the NZBC to a relevant standard, such as NZS 3101 for concrete, and NZS 4229 or NZS 4230 for concrete masonry.

#### Concrete Slab-on-ground

7.2 The membrane must be laid on a minimum of 75 mm thickness of site concrete for slab-on-ground applications. The structural concrete slab placed over the membranes must be a minimum of 100 mm thick.

#### General

7.3 The substrate must have a surface finish that is smooth, clean and free from defects or irregularities which may damage the membrane or allow water to be trapped behind the membrane.

### Control Joints

8.1 Where control or construction joints are formed in the substrate, Viking Roofspec must be consulted for use of the membrane over these joints.

### Backfilling and Drainage

9.1 The membrane must be protected against damage by the placement of a protection material between the membrane and the granular fill.

9.2 The minimum requirement for backfilling is that a granular, free-draining material is used with the top of the backfill capped with an impervious clay fill that may be covered with topsoil if required. The impervious capping and topsoil must slope with a minimum of 1:30 fall away from the wall.

9.3 A subsoil drainage system must be used which includes a minimum of a 100 mm diameter pipe with openings to collect water, a geotextile filter fabric or other filter material to prevent silting of the pipe, an access for cleaning the subsoil pipe, be a minimum of 200 mm below the floor level and have a minimum 1:200 fall to drainage outlet.

9.4 After backfilling, the installation is completed with a flashing in accordance with the details contained within the Technical Literature to protect the upper edge of the membrane.

## Durability

### Serviceable Life

10.1 Viking Bituclad 4 DPM Membrane is a suitable DPM material (Modified bituminous sheet), and is expected to have a serviceable life of at least 50 years provided it is installed and maintained in accordance with this Appraisal and is continually protected from sunlight and ultra-violet (UV) radiation.

## Maintenance

11.1 Annual inspections must be made of the membrane's top edge seal and protection, the backfill capping, and the drainage pipe to ensure all are functioning as originally designed.

11.2 If required, the drainage pipe must be cleared to remove any sediment or silt build-up. The slope of the backfill capping must be maintained at all times.

## External Moisture

12.1 Viking Bituclad 4 DPM Membrane, when installed in accordance with this Appraisal and the Technical Literature, will prevent water vapour from penetrating to the interior face of basement retaining walls and floors in spaces where moisture may cause damage. The membrane has a vapour flow resistance of not less than 90 MN s/g.

12.2 The membrane is a torch-on membrane and can be used to form sealed joints and to seal penetrations. The top edge of the membrane must be finished to the wall as set out in the Technical Literature and protected.

12.3 Building designers must ensure junctions with other membranes, such as at the floor/wall junction, form a waterproof joint. These junctions have not been assessed and are outside the scope of this Appraisal.

## Installation Information

### Installation Skill Level Requirement

13.1 Installation of the membranes must be completed by Viking Roofspec approved installers.

### System Installation

#### Substrate Preparation

14.1 All surfaces must be checked to ensure they are dry, clean, smooth and free from sharp edges, loose or foreign materials, oil, grease or other deleterious material that may affect adhesion or may damage the membranes.

#### Priming

14.2 All substrates must be primed before application of the membrane. The supplier of the membrane, Viking Roofspec should be contacted to confirm the most suitable primer. Application instructions for the primers are contained in the technical data sheets.

## Membrane Installation - Walls

14.3 The membrane must be installed in accordance with the Technical Literature. Sheet edges and ends must be overlapped. Internal and external corners must be reinforced with an extra layer of membrane 300 mm wide. Protection material must be installed before backfilling. Backfilling must commence immediately after the membrane is installed to ensure it is not left exposed to sunlight or UV radiation.

## Membrane Installation - Floors

14.4 The membrane must be installed in accordance with the Technical Literature. Sheet edges and ends must be overlapped. The membrane must be inspected for damage and any damage must be repaired. The membrane must not be exposed to UV radiation for any longer than 14 days before the structural concrete slab is placed.

## Inspections

14.5 The Technical Literature and the installation company's Quality Control sheets must be referred to during the inspection of the membrane installation.

## Health and Safety

15.1 Safe use and handling procedures for the membranes are provided in the Technical Literature.

## Basis of Appraisal

The following is a summary of the technical investigations carried out:

## Tests

16.1 The following testing of Viking Bituclad 4 DPM Membrane has been undertaken by various organisation for elongation, tear resistance (nail shank), low temperature pliability, water vapour transmission, watertightness, dimensional stability, flow resistance at elevated temperature before and after aging, resistance to impact, resistance to static load, tensile strength, shear resistance and watertightness after aging and chemicals.

Test methods and results have been reviewed by BRANZ and found to be satisfactory.

## Other Investigations

17.1 A durability opinion has been given by BRANZ technical experts.

17.2 Practicability of installation has been assessed by BRANZ and found to be satisfactory.

17.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

## Quality

17.1 The manufacture of the membrane and primers has not been examined by BRANZ, but details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory. BRANZ has taken note of the product certification covering quality aspects associated with the product.

17.2 The quality of materials supplied to the market is the responsibility of Viking Roofspec.

17.3 Quality of installation on site is the responsibility of the Viking Roofspec approved installer.

17.4 Designers are responsible for the building design, and building contractors are responsible for the quality of construction of substrate systems in accordance with the instructions of Viking Roofspec.

17.5 Building owners are responsible for the maintenance of the membrane system in accordance with the instructions of Viking Roofspec.

## Sources of Information

- Nzs 3101: 2006 Concrete structures standard.
- Nzs 3604: 2011 Timber-framed buildings.
- Nzs 4229: 1999 Concrete masonry buildings not requiring specific engineering design.
- Nzs 4230: 2004 Design of reinforced concrete masonry structures.
- Acceptable Solutions and Verification Methods for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005 (including Amendment 6, 14 February 2014).
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.



## Viking Mercury FC Membrane System Product Warranty

Viking Roofspec offers this Warranty for the Viking Membrane System for 20 years from the Warranty Commencement Date ("Warranty Period").

1. Viking Roofspec warrants that the Membrane System will, subject to the terms set out below, retain its waterproofing for the Warranty Period provided that the Membrane System has been properly installed by a Viking Approved Applicator in accordance with all Viking Roofspec specifications current at the time of installation, including, but not restricted to the technical data and standard details as listed on the Viking Roofspec Website at [www.vikingroofspec.co.nz](http://www.vikingroofspec.co.nz) and training provided by Viking Roofspec ("Viking Specifications").
2. This Warranty covers only materials supplied by Viking Roofspec as the Membrane System, including the membrane and primer provided materials were new and unused at the time of installation and have not been disturbed thereafter.
3. Warranty Commencement Date \_\_\_\_\_  
(Date of completion of Membrane System installation)
4. The Membrane System  
 Membrane type: Viking Mercury FC
5. The Building  
 Project address \_\_\_\_\_  
 Tanking application \_\_\_\_\_  
 Installed by \_\_\_\_\_
6. This Warranty covers only the waterproofing properties of the Membrane System. Viking Roofspec will not be liable for any failure of the Membrane System or damage resulting from any failure that has been caused in part or in whole by the Membrane System not being installed in accordance with the Viking Specifications. Viking Roofspec does not give any warranty as to the suitability of any installer and will not, in any circumstances be liable for the actions or omission of any installer. Viking Roofspec requires that all Viking Approved Applicators provide a separate Workmanship Warranty covering any defects in the installation of the Membrane System.
7. The Membrane System is not warranted against, and Viking Roofspec shall not be liable for loss of waterproofing properties or damage caused by:
  - objects penetrating the sheeting, or mechanical damage;
  - chemical or substance;
  - any shifting or altering of the building after installation;
  - the failure of other Building components;
  - the lack of adequate protection for the membrane
  - the lack of adequate drainage;
  - environmental factors including pollutants and biological agents, contaminated water or contaminated earth;
  - accident or intentional or negligent acts, misuse, abuse, vandalism or civil disobedience or the like; or
  - Acts of God which include, but are not limited to, acts of nature without human intervention, such as earthquakes, storms, floods, and explosions.

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8. In addition to the above limitations, this Warranty will be void and Viking Roofspec will not be liable under it if;
  - any alteration or repair is made on or through the Membrane System (including, but not limited to: structures, fixtures or utilities) without prior written authorisation from Viking Roofspec;
  - any alteration or repair is made to the Membrane System by a person other than a Viking Approved Applicator;
9. Viking Roofspec shall not be liable under this Warranty (or any implied warranties which are not excluded under clause (15) for any consequential, indirect or special loss or damage of any kind whatsoever, or loss of profits, whether under contract, tort or otherwise.
10. Viking Roofspec's liability is in any circumstances limited to (at the option of Viking Roofspec) either;
  - providing for the repair of the original Membrane System,
  - or providing a credit to be applied towards the purchase of a new Membrane System, calculated *pro rata*, based upon the number of remaining months of the unexpired Warranty Period, using the current material prices for the Membrane System. The maximum *pro rata* value allowed by Viking Roofspec for repair or credit shall not exceed the original purchase price of the product supplied.
11. The obligations under this Warranty shall only be enforceable against Viking Roofspec upon completion of the installation of the Membrane System; completion of the installation contract; and once payment in full has been received for the product supplied.
12. Should any defect occur which requires a remedy under the terms of this Warranty, then the defect must be notified to Viking Roofspec in writing within fourteen (14) days of discovery. By notifying Viking Roofspec you authorise Viking Roofspec to investigate the Warranty claim to assess whether it falls within the terms of this Warranty. Should our investigation of the claim find that the cause is outside the terms of this Warranty, then you acknowledge and agree that Viking Roofspec may charge you its reasonable investigation costs. You agree to provide Viking Roofspec free access to the Membrane System in order to investigate or to affect repairs under this Warranty during normal business hours.
13. Any remedial work required under this Warranty shall be as determined by Viking Roofspec and shall be carried out in accordance with the Viking Specifications by a contractor nominated by Viking Roofspec. Viking Roofspec does not accept liability for delay in sourcing repair materials.
14. Nothing in this Warranty shall require Viking Roofspec to shift any earth, hardfill, structure fixtures, plant, equipment, flashings or other items so as to allow access to part of any Membrane System to be repaired or replaced. Neither shall Viking Roofspec be liable for any costs involved in such shifting or reinstallation.
15. This Warranty represents the limit of Viking Roofspec's liability for the Membrane System. All other warranties, express or implied, are hereby excluded to the maximum extent permitted by applicable law.
16. Notwithstanding any other provisions of this Warranty, nothing in this Warranty is intended to limit any condition, warranty, right or remedy available under or imposed by any applicable legislation including, for the avoidance of doubt but without limitation, the Building Act 2004, the Fair Trading Act 1986 and the Consumer Guarantees Act 1993) except to the extent permitted by such legislation.



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17. This Warranty shall be governed according to the laws of New Zealand and any disputes shall be decided in the courts of New Zealand.

Warranty Workmanship no \_\_\_\_\_

Viking Warranty No \_\_\_\_\_

For Viking Roofspec \_\_\_\_\_

Date issued \_\_\_\_\_

*Sample*



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