



BRANZ Appraised
Appraisal No. 948 [2022]

VIKING GM TORCH ON MEMBRANES

Appraisal No. 948 (2022)

This Appraisal replaces BRANZ
Appraisal No. 948 (2017)

Amended 15 December 2022



BRANZ Appraisals

Technical Assessments of products
for building and construction.



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Product

- 1.1 Viking GM Torch On Membranes consist of three double-layer membrane systems (Gemini APP, Lybra SBS and Phoenix Super APAO). The membrane products (both base and cap sheets) are manufactured from fibreglass/polyester composite reinforced modified bitumen.

Scope

- 2.1 Viking GM Torch On Membranes have been appraised as roof and deck waterproofing membranes on buildings within the following scope:
 - the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; or,
 - the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regard to building height and maximum floor plan areas when subject to specific design; and,
 - with building structures designed and constructed to meet the requirements of the NZBC; and,
 - with substrates of plywood, concrete slab or Strandsarking® (roofs only); and,
 - with minimum falls for plywood roofs of 1:30, concrete substrates of 1:60 and decks of 1:40; and,
 - with decks that have a maximum area of 40 m²; and,
 - situated in NZS 3604 Wind Zones up to, and including, Extra High.
- 2.2 Viking GM Torch On Membranes have also been appraised for use as roof and deck waterproofing membranes on specifically designed buildings within the following scope:
 - subject to specific structural and weathertightness design; and,
 - with substrates of plywood, concrete slab or Strandsarking® (roofs only); and,
 - situated in specific design wind pressures (refer to Paragraph 8.1) and,
 - with the weathertightness design of junctions for each specific structure being the responsibility of the building designer.
- 2.3 Roofs and decks waterproofed with Viking GM Torch On Membranes must be designed and constructed in accordance with the following limitations:
 - nominally flat or pitched roofs and decks constructed to drain water to gutters and drainage outlets complying with the NZBC; and,
 - with no steps within the deck level, no integral roof gardens and no downpipes directly discharging to the decks; and,
 - with the deck membrane continually protected from physical damage by a pedestal protection system.
- 2.4 The design and construction of the substrate and movement and control joints is specific to each building, and therefore is the responsibility of the building designer and building contractor and is outside the scope of this Appraisal.
- 2.5 The membranes must be installed by Viking Roofspec licensed and trained installers.

Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, Viking GM Torch On Membranes, 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 (b) 15 years. Viking GM Torch On Membranes meet this requirement. See Paragraph 10.1.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.1 and E2.3.2. Viking GM Torch On Membranes meet these requirements. See Paragraphs 13.1-13.9.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Viking GM Torch On Membranes meet this requirement.

Technical Specification

4.1 Materials supplied by Viking Roofspec are as follows:

- Gemini APP Base 3 mm – an APP-modified, non-woven polyester/fibreglass composite reinforced, torch-on bitumen membrane used a base sheet in a double layer system. It is coloured black and supplied in rolls 3 mm thick, 1 m wide and 10 m long.
- Gemini APP Cap 4 mm Ceramic – an APP-modified, non-woven polyester/fibreglass composite reinforced, torch-on bitumen membrane used a cap sheet in a double layer system. It is available in various ceramic chip colours and supplied in rolls 4 mm thick, 1 m wide and 10 m long.
- Lybra SBS Base 3 mm – a SBS-modified, non-woven polyester/fibreglass composite reinforced, torch-on bitumen membrane used a base sheet in a double layer system. It is coloured black and supplied in rolls 3 mm thick, 1 m wide and 10 m long.
- Lybra SBS Cap 4 mm Ceramic – a SBS-modified, non-woven polyester/fibreglass composite reinforced, torch-on bitumen membrane used a cap sheet in a double layer system. It is available in various ceramic chip colours and supplied in rolls 4 mm thick, 1 m wide and 10 m long.
- Phoenix Super APAO Base – an APAO-modified, non-woven polyester/fibreglass composite reinforced, torch-on bitumen membrane used a base sheet in a double layer system. It is coloured black and supplied in rolls 4 mm thick, 1 m wide and 10 m long.
- Phoenix Super APAO Cap Ceramic – an APAO-modified, non-woven polyester/fibreglass composite reinforced, torch-on bitumen membrane used a cap sheet in a double layer system. It is available in various ceramic chip colours and supplied in rolls 4 mm thick, 1 m wide and 10 m long.
- Halley Tech P 3 mm – a SBS-modified, non-woven polyester/fibreglass composite reinforced, self-adhesive bitumen membrane used a base sheet in a double layer system. It is coloured black and supplied in rolls 3 mm thick, 1 m wide and 10 m long.
- Halley P 4.5 kg Mineral – a SBS-modified, non-woven polyester/fibreglass composite reinforced, self-adhesive bitumen membrane used a base sheet in a double layer system. It is coloured black and supplied in rolls 4 mm thick, 1 m wide and 10 m long.
- Easy Paste - a multi-purpose water-based bituminous primer. It is supplied in 5, 10 and 20 kg pails.

Handling and Storage

5.1 Handling and storage of all materials, whether on-site or off-site, is under the control of the Viking Roofspec licensed and trained installers. Dry storage must be provided for all products and the rolls of membrane must be stored in an upright position.



Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the Viking GM Torch On Membranes. 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

General

- 7.1 The Gemini APP, Lybra SBS and Super Phoenix APAO Viking GM Torch On Membranes are fully bonded, double layer, torch-on waterproofing systems for use on non-trafficable roofs, decks, balconies, gutters and parapets. The membrane systems are used where an impervious waterproof membrane is required to prevent damage to building elements and adjoining areas, on new or existing buildings. Viking Roofspec must be consulted as to the suitability of any existing substrates prior to using Viking GM Torch On Membranes.
- 7.2 The effective control of internal moisture must be considered at the design stage due to the impermeability of the membranes. Refer to the BRANZ Good Practice Guide: Membrane Roofing.
- 7.3 All the systems require a protection system for when anything other than irregular maintenance foot traffic is expected. Viking Roofspec should be consulted for the best system to meet the design requirements.
- 7.4 Decks must always be protected by a pedestal protection system or Viking Decoupling System.
- 7.5 Refer to Viking Roofspec for deck foot traffic protection system specifications.

Structure

- 8.1 Viking GM Torch On Membranes, as fully bonded double layer systems, are suitable for use in areas subject to maximum wind pressures of 6 kPa Ultimate Limit State (ULS).

Substrates

Plywood

- 9.1 Plywood must be treated to H3 (CCA treated). LOSP treated plywood must not be used. Plywood must comply with NZBC Acceptable Solution E2/AS1, Paragraphs 8.5.3 and 8.5.5. Where specific design is used (i.e. outside the scope of NZBC Acceptable Solution E2/AS1) the plywood thickness and fixing size may increase and centres may decrease to meet specific wind loadings. Timber framing must comply with NZS 3604, or where specific engineering design is used, the framing shall be of at least equivalent stiffness to the framing provisions of NZS 3604, or comply with the serviceability criteria of AS/NZS 1170. In all cases, framing must be provided so that the maximum span of the substrate as specified by the substrate manufacturer is met and all sheet edges are fully supported.

Concrete

- 9.2 Concrete substrates must be to a specific engineering design meeting the requirements of the NZBC, such as concrete construction to NZS 3101.

Strandsarking®

- 9.3 Strandsarking® must be installed in accordance with the manufacturer's instruction and BRANZ Appraisal No. 946.

Existing Construction

- 9.4 Consult Viking Roofspec before overlaying any existing torch-on roofs. All Viking Roofspec instructions and inspection checks must be completed before overlaying can begin.
- 9.5 Repairs must be undertaken, where applicable, as per 'Viking Technical Note: Re-Roofing', to ensure the substrate is sound, the joints are sealed, and the flashings are sound. Plywood substrates must be checked for screw fixings, and if necessary, refixed as for new plywood. Not all existing substrates are able to be overlaid, consult Viking Roofspec if in doubt.

Durability

Serviceable Life

- 10.1 Viking GM Torch On Membranes are expected to have a minimum durability of at least 15 years, with an expected serviceable life of 25 years, provided they are designed, used, installed and maintained in accordance with this Appraisal and the Technical Literature.

Chemical Resistance

- 10.2 Industrial air pollutants and windborne salt deposits should not significantly affect the durability of the membranes. However, the long term properties of the material may be affected by contact with low molecular weight petroleum distillates.

Maintenance

- 11.1 The membrane roof and deck systems must be regularly (at least annually) checked for damage, rubbish and debris. Damage, such as small punctures and tears must be repaired as recommended by Viking Roofspec.
- 11.2 Special care must be taken when inspecting the membrane roof and deck systems to ensure the continuing prevention of moisture ingress, and repairs must be undertaken where required.
- 11.3 Drainage outlets must be maintained to operate effectively.

Prevention of Fire Occurring

- 12.1 Separation or protection must be provided to the Viking GM Torch On Membranes from heat sources such as fireplaces, heating appliances and chimneys. Part 7 of NZBC Verification Method C/VM1 and Acceptable Solution C/AS1, and Acceptable Solution C/AS2 provide methods for separation and protection of combustible materials from heat sources.

External Moisture

- 13.1 Roofs and decks must be designed and constructed to shed precipitated moisture. They must also take account of snowfalls in snow prone areas. A means of meeting code compliance with NZBC Clause E2.3.1 is given by the Technical Literature which aligns with details in NZBC Acceptable Solution E2/AS1.
- 13.2 When installed in accordance with this Appraisal and the Technical Literature, Viking GM Torch On Membranes will prevent the penetration of water and will therefore meet code compliance with NZBC Clause E2.3.2. The membranes are impervious to water and will give a weathertight roof.
- 13.3 The minimum fall for plywood roofs is 1 in 30, for concrete substrates is 1:60, for decks 1 in 40 and for gutters 1 in 100. All falls must slope to an outlet. Inadequate falls will allow moisture to collect and increase the risk of deterioration of the membranes. (Note: Where possible, a fall of 1 in 60 in the gutters is preferred).
- 13.4 Roof and deck falls must be built into the substrate.
- 13.5 Allowance for deflection and settlement of the substrate must be made in the design of the roof to ensure falls are maintained and no ponding of water can occur.
- 13.6 Viking GM Torch On Membranes are impermeable, therefore a means of dissipating construction moisture must be provided in the building design and construction to meet code compliance with NZBC Clause E2.3.6.



- 13.7 Drainage flanges must be used for any outlet and must be fitted with a grate or cage to reduce potential sources of blockages. An overflow must be provided where the roof does not drain to an external gutter or spouting.
- 13.8 Penetrations and upstands of the membranes must be raised above the level of any possible flooding caused by the blockage of roof drainage.
- 13.9 The design of details not covered by the Technical Literature is subject to specific weathertightness design and is outside the scope of this Appraisal.

Installation Information

Installation Skill Level Requirement

- 14.1 Installation of the membranes must be completed by licensed and trained installers, approved by Viking Roofspec.
- 14.2 Installation of substrates must always be carried out in accordance with the Viking GM Torch On Membranes Technical Literature and this Appraisal by, or under the supervision of, a Licensed Building Practitioner (LBP) with the relevant Licence Class.

Preparation of Substrates

- 15.1 Substrates must be dry, clean and stable before installation commences. Surfaces must be smooth and free from nibs, sharp edges, dust, dirt or other materials such as oil, grease or concrete formwork release agents. All surface defects must be filled to achieve an even and uniform surface.
- 15.2 The relative humidity of concrete substrates must be 75% or less before membrane application. The concrete can be checked for dryness by using a hygrometer, as set out in BRANZ Bulletin No. 585.
- 15.3 The moisture content of the plywood and timber substructure must be a maximum of 20% and the plywood sheets must be dry at time of membrane application. This will generally require plywood sheets to be covered until just before the membrane is laid, to prevent rain wetting.

Membrane Installation

- 16.1 The installation of this membrane system is very complex and limited to trained installers only. The Viking Roofspec Technical Literature should be referred to in all instances for the correct procedures.

Inspections

- 17.1 Critical areas of inspection for waterproofing systems are:
 - Construction of substrates, including crack control and installation of bond breakers and movement control joints.
 - Moisture content of the substrate prior to the application of the membrane.
 - Acceptance of the substrate by the membrane installer prior to application of the membrane.
 - Installation of the membrane to the suppliers instructions.

Health and Safety

- 18.1 Safe use and handling procedures for Viking GM Torch On Membranes are provided in the Technical Literature. The products must be used in conjunction with the relevant Material Safety Data Sheets for each membrane.

Basis of Appraisal

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

Tests

- 19.1 The following is a summary of the testing of Viking GM Torch On Membranes undertaken by various organizations:
- Tensile strength, elongation, tear strength dimensional stability, low temperature flexibility, heat resistance, unrolling at low temperatures, sliding resistance, watertightness, static and dynamic indentation, fatigue cycling, peel resistance and testing on joints in accordance with MOAT 27 and 56.
 - BRANZ has reviewed the information and have found it to be satisfactory.

Other Investigations

- 20.1 A durability opinion has been provided by BRANZ technical experts.
- 20.2 Installation of the membranes has been assessed by BRANZ for practicability and found to be satisfactory.
- 20.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

Quality

- 21.1 The manufacture of the Viking GM Torch On Membranes 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.
- 21.2 BRANZ has taken note of technical assessments and certifications covering quality aspects associated with the products.
- 21.3 The quality of supply of the product to the market is the responsibility of Viking Roofspec.
- 21.4 Quality on-site is the responsibility of the Viking Roofspec licensed and trained installers.
- 21.5 Designers are responsible for the substrate design, and building contractors are responsible for the quality of construction of substrate systems in accordance with the instructions of the substrate supplier, Viking Roofspec and this Appraisal.

Sources of Information

- AS/NZS 1170:2002 Structural design action - General principles.
- AS/NZS 2269:2012 Plywood - Structural.
- BRANZ Bulletin No. 585 - Measuring Moisture in Timber and Concrete.
- BRANZ Good Practice Guide: Membrane Roofing, October 2015.
- NZS 3101:2006 The design of concrete structures.
- NZS 3604:2011 Timber-framed buildings.
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

Amendments

Amendment No. 1, dated 25 August 2022

This Appraisal has been amended to update Appraisal scope information.

Amendment No. 2, dated 15 December 2022

This Appraisal has been amended to add Halley P membranes and to update existing construction information.



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23 March 2022

VIKING GM TORCH ON
MEMBRANES



In the opinion of BRANZ, **Viking GM Torch on Membranes** are fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided they are used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to **Viking Roofspec**, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
 - a) relates only to the product as described herein;
 - b) must be read, considered and used in full together with the Technical Literature;
 - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
 - d) is copyright of BRANZ.
2. **Viking Roofspec**:
 - a) continues to have the product reviewed by BRANZ;
 - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
 - c) abides by the BRANZ Appraisals Services Terms and Conditions;
 - d) warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
 - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
 - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
 - c) any guarantee or warranty offered by **Viking Roofspec**.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to **Viking Roofspec** or any third party.

For BRANZ

Chelydra Percy
Chief Executive

Date of Issue:
23 March 2022