



BRANZ Appraised

Appraisal No. 307 [2019]

BUTYLCLAD, EPICLAD AND EPICLAD FBS ROOF MEMBRANES

Appraisal No. 307 [2019]

This Appraisal replaces BRANZ
Appraisal No. 307 [2013]

Amended 06 August 2021



BRANZ Appraisals

Technical Assessments of
products for building and
construction.



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Product

- 1.1 Butylclad, Epiclad and Epiclad FBS Roof Membranes are synthetic rubber waterproofing membranes designed to be used on roofs, decks, balconies, parapets and gutters.
- 1.2 These products are supplied as single-ply, flexible synthetic rubber sheet in roll form and installed as single layer systems.

Scope

- 2.1 Butylclad, Epiclad and Epiclad FBS Roof Membranes have been appraised for use as waterproofing membranes for buildings within the following scope:
 - scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; and,
 - with timber supporting structures designed and constructed in accordance with the NZBC; and,
 - with nominally flat or pitched roofs constructed to drain water to gutters and drain outlets complying with NZBC; and,
 - with substrates of plywood sheet; and,
 - with decks that have a maximum size of 40 m².
- 2.2 Butylclad, Epiclad and Epiclad FBS Roof Membranes have also been appraised for use as waterproofing membranes for external reinforced concrete and plywood roofs and decks for buildings within the following scope:
 - up to 3 storeys with a maximum height from ground to eaves of 10 m and with a floor plan area limited only by seismic and structural control joints; and,
 - with the reinforced concrete structure designed and constructed in accordance with the NZBC; and,
 - with timber supporting structures designed and constructed in accordance with the NZBC; and,
 - with nominally flat, curved or pitched roofs constructed to drain water to gutters and drain outlets complying with the NZBC.
- 2.3 This Appraisal is limited to roofs and decks within the following scope:
 - constructed to suitable falls [refer to Paragraphs 12.1–12.9]; and,
 - with no steps within a deck level, no integral roof gardens and no downpipes discharging directly onto a deck.
- 2.4 The design and construction of the substrate and movement and control joints is specific to each building, and therefore 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 trained applicators, approved by Viking Roofspec.

Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, Viking Butylclad, Epiclad and Epiclad FBS Roof 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 Butylclad, Epiclad and Epiclad FBS Roof Membranes meet this requirement. See Paragraph 9.1.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.1 and E2.3.2. Roofs, decks, balconies, parapets and gutters incorporating Viking Butylclad, Epiclad and Epiclad FBS Roof Membranes meet these requirements. See Paragraphs 12.1–12.9.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Viking Butylclad, Epiclad and Epiclad FBS Roof Membranes meet this requirement.

Technical Specification

4.1 Materials supplied by Viking Roofspec are as follows:

Membrane Type	Colour	Thickness [mm]	Roll Lengths [m]	Roll Widths [m]
Butylclad	Black or grey	1	25	1.35
	Black or grey	1.5	20	1.35
Epiclad	Black	1.14	15.2*	3, 6
	Black	1.5	15.2*	3, 6
Epiclad FBS	Black	1.14	15.2*	3
	Black	1.52**	15.2*	3

* Roll lengths of 30 m are available on indent

** Available on indent

- **Viking BMA [Butylclad Membrane Adhesive]** - a specially formulated, solvent-based adhesive for all Butylclad applications. Supplied in 20 L containers.
- **Viking Epiclad EPDM Adhesive** - a specially formulated, solvent-based adhesive for all Epiclad applications. Supplied in 20 L drums.
- **Carlisle FAST™ Adhesive Dual Cartridge** - a two-component, polyurethane adhesive used to bond the material to the substrate. Supplied as a dual cartridge with a total volume of 1.5 L.
- **BMA Solvent** - a toluene-based solvent used to clean substrates, or when mixed 50/50 with Viking BMA adhesive as a primer for all substrates. Supplied in 20 L drums.
- **Viking Lap Primer** - a primer to provide a clean surface for Epiclad EPDM and Butylclad prior to the application of lap and flashing tapes. Supplied in 1 L drums.
- **Viking Superseal Self Adhesive Lap Tape** - a self-adhesive blend of rubbers and inert fillers that can be used when lapping either Butylclad, Epiclad or Epiclad FBS. Supplied in 76 mm x 30 m lengths.
- **Viking Lap Sealant** - a tough, durable elastomeric joint sealant suitable for use over a wide range of external and internal building applications and sealing the edges of either Butylclad or Epiclad EPDM membrane. Supplied in a 300 ml cartridge.
- **Butylclad/Epiclad Flashing Tape** - a self-adhesive, semi-cured butyl tie gum that is very elastic for moulding or flashing of details work. Supplied as a 150 mm wide x 30.4 m roll.
- **Epiclad FBS Overlay Tape** - a self-adhesive tape that is used to overlay Epiclad FBS butt jointed sheets. Overlay tape can also be used for repair of Butylclad or Epiclad lap joints. Supplied as a 150 mm wide x 30.4 m roll.

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 trained installers. Dry storage must be provided for all products.

Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the Butylclad, Epiclad and Epiclad FBS Roof 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 Butylclad, Epiclad and Epiclad FBS Roof Membranes are for use on roofs and decks where an impervious waterproof membrane is required to prevent damage to building elements and adjoining areas.
- 7.2 The effective control of internal moisture must be considered at the design stage due to the impermeability of the membrane. Refer to BRANZ Good Practice Guide: Membrane Roofing.
- 7.3 Timber framing systems 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 that all sheet edges are fully supported.
- 7.4 When fully bonded to continuous substrates, Butylclad, Epiclad and Epiclad FBS Roof Membranes will be suitable for use on roofs, decks and balconies on buildings in NZS 3604 Wind Zones up to, and including, Extra High.
- 7.5 Butylclad, Epiclad and Epiclad FBS Roof Membranes have adequate resistance to wear caused by foot traffic associated with normal membrane installation and maintenance. Thicker grades will perform better on decks or other areas subject to regular foot traffic.
- 7.6 Where the products are likely to be subject to heavier use and there is the risk of damage, the membrane must be protected by covering with decking, pavers or by other suitable means.
- 7.7 Epiclad FBS membrane is particularly suited for over-cladding existing roofs, bitumen-based coverings and other situations where a higher level of preparation of the substrate to receive the membrane is not possible. Viking Roofspec should be consulted as to the suitability of an existing substrate prior to using Epiclad FBS membrane.

Substrates

Plywood

- 8.1 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.

Concrete

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

Durability

Serviceable Life

- 9.1 Butylclad, Epiclad and Epiclad FBS Roof Membranes, when subjected to normal conditions of environment and use, are expected to have a serviceable life of at least 20 years.



Maintenance

- 10.1 No maintenance of the membranes is normally required provided significant substrate movement does not occur.
- 10.2 In the event of damage to the membrane, the membrane must be repaired by removing the damaged portion and applying a patch as for new work.
- 10.3 Drainage outlets must be maintained to operate effectively.

Prevention of Fire Occurring

- 11.1 Separation or protection must be provided to the Butylclad, Epiclاد and Epiclاد FBS Roof 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

- 12.1 Roofs, decks and balconies 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 matches details in NZBC Acceptable Solution E2/AS1.
- 12.2 When installed in accordance with this Appraisal and the Technical Literature, Butylclad, Epiclاد and Epiclاد FBS Roof 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, deck, or balcony.
- 12.3 The minimum fall to roofs is 1 in 30, decks are 1 in 40 and gutters are 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 membrane.
- 12.4 Butylclad, Epiclاد and Epiclاد FBS Roof 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.
- 12.5 Roof and deck falls must be built into the substrate and not created with mortar screeds applied over the membrane.
- 12.6 Allowance for deflection and settlement of the substrate must be made in the design of the deck to ensure falls are maintained and no ponding of water can occur.
- 12.7 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 deck or balcony does not drain to an external gutter or spouting.
- 12.8 Penetrations and upstands of the membranes must be raised above the level of any possible flooding caused by blockage of deck drainage.
- 12.9 The design of details not covered by the Technical Literature is subject to specific weathertightness design and is outside the scope of this Appraisal.

Water Supplies

- 13.1 Butylclad, Epiclاد and Epiclاد FBS Roof Membranes have not been appraised for roofs used for the collection of potable water. Viking Roofspec must be consulted for advice if the roof is intended for the collection of potable water supplies.



Installation Information

Installation Skill Level Requirement

- 14.1 Installation of the membranes must be completed by trained applicators, approved by Viking Roofspec.
- 14.2 Installation of substrates must always be carried out in accordance with the Butyclad Epiclad and Epiclad FBS Roof 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 the timber substructure must be a maximum of 20% and plywood sheet 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.
- 15.4 Substrates must be primed with a 50/50 solution of Viking BMA and BMA Solvent and left to dry before the membrane is installed.

Membrane Installation

- 16.1 The membrane must be installed in accordance with the Technical Literature.
- 16.2 Plywood joints must be taped with 25 mm wide PVC pressure sensitive tape.
- 16.3 The membrane must be unrolled without tension onto the prepared substrate and allowed to 'relax' for at least 20 minutes prior to installation.
- 16.4 Adhesive must be applied to both the membrane and the substrate, one half at a time. When the adhesive is tack dry, the sheet is rolled onto the substrate. The process is then repeated for the other half of the sheet. All joints require lap bonding using Viking Superseal Lap Tape.

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 manufacturer's instructions.

Health and Safety

- 18.1 Safe use and handling procedures for the membrane systems are provided in the Technical Literature. The products must be used in conjunction with the relevant Material Safety Data Sheet for each membrane.

Basis of Appraisal

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

Tests

- 19.1 Tests have been carried out on the Butylclad membrane for material thickness, tensile strength, elongation at break, water absorption, water vapour permeance and heat ageing followed by tensile and elongation as detailed in NZBC Acceptable Solution E2/AS1, Paragraph 8.5.4 b). Results and test methods have been reviewed by BRANZ and found to be satisfactory.
- 19.2 Tests have been carried out on the Epiclad and Epiclad FBS membranes for tensile strength, elongation, tear resistance, factory seam strength, resistance to heat ageing, brittleness point, ozone resistance, water absorption, water vapour permeability and resistance to UV exposure.
- 19.3 The adhesives, primers and seam tapes used with Butylclad, Epiclad and Epiclad FBS Roof Membranes meet the intended performance requirements of NZBC Acceptable Solution E2/AS1, Paragraph 8.5.4 c).

Other Investigations

- 20.1 Site inspections have been carried out by BRANZ to assess the practicability of installation, and to examine the performance of Butylclad on installations completed as early as 1973.
- 20.2 The Technical Literature has been examined by BRANZ and found to be satisfactory.
- 20.3 Reported information on the performance of butyl and EPDM rubber and its resistance to accelerated and natural weathering, and the long-term field experience with butyl and EPDM rubber roof membranes in New Zealand and overseas has been examined.

Quality

- 21.1 The manufacture of the Butylclad membrane has been inspected by BRANZ, and details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.
- 21.2 The quality of manufacture of the Butylclad membrane is the responsibilities of Viking Roofspec.
- 21.3 The manufacture of the Epiclad and Epiclad FBS membranes has not been inspected by BRANZ but details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.
- 21.4 The quality of manufacture of Epiclad and Epiclad FBS membranes is the responsibility of Carlisle Syntec Systems Inc. Carlisle Syntec Systems Inc. has been assessed and accredited as meeting the requirements of BS EN ISO 9001: 2015 by BSI Management Systems.
- 21.5 The quality of supply of the products to the market is the responsibility of Viking Roofspec.
- 21.6 Quality on-site is the responsibility of the Viking Roofspec trained applicators.
- 21.7 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 manufacturer, Viking Roofspec and this Appraisal.



Sources of Information

- AS/NZS 1170:2002 Structural design actions.
- AS/NZS 2269:2012 Plywood – Structural.
- ASTM E96-02 Water vapour transmission of materials in sheet form.
- ASTM D297-93 Test methods for rubber products – chemical analysis.
- ASTM D746-79 Test method for brittleness temperature of plastics and elastomers by impact.
- ASTM D4637-87 Standard specification for vulcanized rubber sheet used in single-ply roofing.
- BRANZ Bulletin No. 585 Measuring Moisture in Timber and Concrete, June 2015.
- BRANZ Good Practice Guide: Membrane Roofing, 2nd Edition October 2015.
- BS 903:1989, Part A2 Method of testing vulcanized rubber. Determination of tensile cross grain properties.
- BS 903:1989, Part A3 Methods for testing vulcanized rubber. Determination of tear strength.
- NZS 3101:2006 The design of concrete structures.
- NZS 3109:1997 Concrete construction.
- 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 06 August 2021.

This Appraisal has been amended to reflect building code updates relating to fire.



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09 May 2019

BUTYLCLAD, EPICLAD AND
EPICLAD FBS ROOF MEMBRANES



In the opinion of BRANZ, **Butylclad, Epiclاد and Epiclاد FBS Roof 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:

09 May 2019