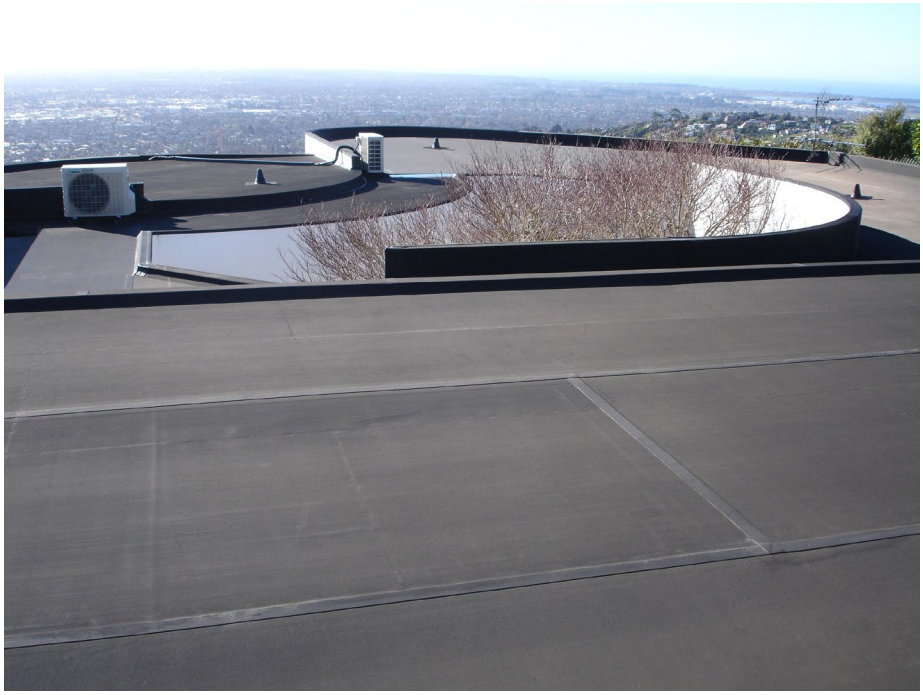
BRANZ Appraised
Appraisal No. 533 [2013]

epiSPAN® ROOF MEMBRANES



Appraisal No. 533 (2013)

This Appraisal replaces BRANZ Appraisal No. 533 (2006).

Amended 05 October 2016

BRANZ Appraisals

Technical Assessments of products for building and construction.

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Product

1.1 epiSPAN® Roof Membranes are synthetic rubber waterproofing membranes designed to be used on roofs, decks, balconies, parapets and gutters. epiSPAN® are based on an EPDM Rubber.

1.2 The products are supplied as a single-ply, flexible synthetic rubber sheet in roll form. The products are installed as single layer system.

Scope

2.1 epiSPAN® Roof Membranes have been appraised for use as waterproofing membrane 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 m^2.

2.2 epiSPAN® Roof Membranes have also been appraised for use as a waterproofing membrane for external reinforced concrete and plywood roofs, pedestrian decks and balconies 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 NZBC.

2.3 This Appraisal is limited to roofs, decks and balconies within the following scope:

- constructed to suitable falls [Refer Paragraph 12.1 – 12.9]; and,
- with no steps within the deck level, no integral roof gardens and no down pipe discharging directly onto the 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 approved applicators, trained by Sealco Waterproofing Systems Ltd.

Building Regulations

New Zealand Building Code (NZBC)

3.1 **In the opinion of BRANZ, epiSPAN® 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. epiSPAN® 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 epiSPAN® Roof Membranes meet these requirements. See Paragraphs 12.1 – 12.9.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. epiSPAN® Roof Membranes meet this requirement and will not present a health hazard to people.

3.2 This is an Appraisal of an **Acceptable Solution** in terms of New Zealand Building Code compliance and the products comply with NZBC Acceptable Solution E2/AS1, Paragraph 8.5. These products are also appraised as an Alternative Solution as outlined in Paragraph 2.2 and 2.3.

Technical Specification

4.1 Materials supplied by Sealco Waterproofing Systems Ltd are as follows:

- **epiSPAN® Roof Membrane** - A single-ply, flexible, synthetic EPDM based rubber membrane. It is available in the following dimensions:

Thickness	Width	Length	Colour
1.2 mm	1.6 m	25 m	Black
1.5 mm	1.6 m	25 m	Black
1.1 mm	3 m	15.2 m / 30.4 m	Black
1.5 mm	3 m	15.2 m / 30.4 m	Black
1.1 mm	6 m	15.2 m / 30.4 m	Black
1.5 mm	6 m	15.2 m / 30.4 m	Black

- **epiSPAN® Cover Tape** - A non-vulcanized EPDM butyl rubber tape which vulcanizes at the ambient temperature and is used for overflashing the epiSPAN® Roof Membranes to itself. It is supplied as a 2.0 mm thick, 100 mm wide and 10 m long roll.
- **epiSPAN® Underflashing Tape** - A non-vulcanized, butyl-type rubber tape used for detailing under the **epiSPAN®** membrane. It is supplied as a 1.5 mm thick, 100 mm wide and 10 metres long roll.
- **epiSEALANT** - A butyl-type sealant used for sealing termination flashings and sealing inside three way membrane junctions. It is supplied in 330 ml cartridges.
- **epiStick® Adhesive** - A single-part solvent based, modified chloroprene rubber adhesive for adhering the epiSPAN® membranes and associated tapes. It is applied by brush or roller at a coverage rate of 0.25 kg/m^2 on a substrate and 0.15 kg/m^2 on the membrane. It has an open time of 30-60 minutes and it is supplied in 20 kg cans.
- **epiSeam® Lap Tape** - A non-vulcanized butyl rubber tape which vulcanises at the ambient temperature and is used for all side and end laps. It is supplied in 0.8 mm thick, 50 mm wide and 20 metres long rolls with a clear backing foil.
- **epiColour** - A water-based coating used to provide additional colour options. It is supplied in 10 kg pails in colours of aluminium, green and grey.
- **DrainRITE®, FlowRITE® and VentRITE®** - A range of accessories for use as outlets, vents and safely channeling water from roofs and decks.

Handling and Storage

5.1 Handling and storage of all materials whether on or off site is under the control of the Sealco Waterproofing Systems Ltd approved applicators. 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 epiSPAN® 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 epiSPAN® 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 publication "Good Practice Guide to 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, epiSPAN® 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 epiSPAN® Roof Membranes are suitable in areas subject to maximum wind pressures of 4kPa Ultimate Limit State.

7.6 epiSPAN® Roof Membranes have adequate resistance to wear caused by foot traffic associated with normal light foot traffic. Thicker grades (1.2 and 1.5 mm) will perform better on decks or other areas subject to regular foot traffic.

7.7 Where a deck is an access route the slip resistance of the finish must comply with NZBC Acceptable Solution D1/AS1, Paragraph 2.

7.8 Where the products are likely to be subject to heavier use and there is the risk of damage, the membranes must be protected by covering with decking, pavers or by other suitable means.

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, Paragraph 8.5.3 and 8.5.5. Where specific design is used (i.e. outside the scope of 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 epiSPAN® 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 membrane 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 epiSPAN® Roof Membranes from heat sources such as fire places, heating appliances, flues and chimneys. Part 7 of NZBC Acceptable Solutions C/AS1 – C/AS6 and NZBC Verification Method C/VM1 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, epiSPAN® Roof Membranes will prevent the penetration of water and will therefore meet code compliance with 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 epiSPAN® 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 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 Water is not contaminated by epiSPAN® Roof Membranes.

13.2 The first 25 mm of rainfall from a newly installed epiSPAN® Roof Membrane roof must be discarded before drinking water collection starts. This is to remove residues which may have developed in the processes involved in the production of an epiSPAN® Roof Membrane roof.

13.3 Though epiSPAN® Roof Membranes will not contaminate water, it must be noted that all water collected off roof surfaces made from any material is considered to be non-potable due to possible contamination from other sources. Water collection in this way can only be considered potable if it has been passed through a suitable sterilization system. Sterilization systems such as this have not been assessed and are outside the scope of this Appraisal.

Installation Information

Installation Skill Level Requirement

14.1 Installation of the membranes must be completed by approved applicators, trained by Sealco Waterproofing Systems Ltd.

14.2 Installation of substrates must be completed by tradespersons with an understanding of roof, deck and balcony construction, in accordance with instructions given within the Sealco Waterproofing Systems Ltd Technical Literature and this Appraisal.

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 Concrete substrates must be primed and left to dry before the membrane is installed.

Membrane Installation

16.1 The membranes 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 membranes 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 touch dry, the sheet is rolled onto the substrate. The process is then repeated for the other half of the sheet. All side and ends laps are completed with epiSeam® Lap Tape. Refer Technical Literature for the correct product for all other detailing.

Inspections

17.1 The Technical Literature must be referred to during the inspection of membrane installations by building consent authorities and territorial authorities.

17.2 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 as per the Technical Literature.

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 epiSPAN® Roof Membranes. This testing covered 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 The adhesives, primers and seam tapes used with epiSPAN® Roof Membranes meet the performance requirements of NZBC Acceptable Solution E2/AS1, Paragraph 8.5.4 (c).

Other Investigations

20.1 Site visits have been carried out by BRANZ to assess the practicability of installation, and to examine the performance of epiSPAN® on installations.

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

20.3 Reported information on the performance of EPDM rubber and its resistance to accelerated and natural weathering, and the long-term field experience with EPDM rubber roof membranes in New Zealand and overseas has been examined.

Quality

21.1 The manufacture of the epiSPAN® Roof Membranes has not been examined by BRANZ, but details regarding the quality and composition of the materials were obtained by BRANZ and found to be satisfactory. BRANZ has taken note of product certification and compliance certificates covering quality aspects associated with these products.

21.2 The quality of supply of the products to the market is the responsibility of Sealco Waterproofing Systems Ltd.

21.3 Quality on site is the responsibility of the Sealco Waterproofing Systems Ltd approved applicators.

21.4 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, Sealco Waterproofing Systems Ltd 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.
- 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 3604: 2011 Timber-framed buildings.
- BRANZ Good Practice Guide – Membrane Roofing, October 2015.
- Acceptable Solutions and Verification Methods for New Zealand Building Code External Moisture Clause E2, Ministry of Business, Innovation and Employment, Third Edition July 2005 (including Amendment 5, 1 August 2011).
- Ministry of Business, Innovation an Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.

Amendments

Amendment No. 1, dated 29 April 2016

This Appraisal has been amended to update the Appraisal Holder and remove epiRoof® Roof Membranes.

Amendment No. 2, dated 05 October 2016

This Appraisal has been amended to update the Appraisal Holder.

BRANZ

In the opinion of BRANZ, epiSPAN® 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 Sealco Waterproofing Systems Ltd, 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. Sealco Waterproofing Systems Ltd:
   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 Sealco Waterproofing Systems Ltd.
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 Sealco Waterproofing Systems Ltd or any third party.

For BRANZ

Chelydra Percy
Chief Executive

Date of Issue:
23 December 2013