



**BRANZ Appraised**

Appraisal No.533 [2006]

BRANZ Appraisals

Technical Assessments of products  
for building and construction

**BRANZ  
APPRAISAL  
CERTIFICATE  
No. 533 (2006)**

**epiROOF® ROOF  
MEMBRANE**

**Waterproofing Systems Ltd**  
P O Box 1113  
Palmerston North

Ph: 06 357 9148  
Fax: 06 357 9410  
[www.waterproofing.co.nz](http://www.waterproofing.co.nz)



**BRANZ Limited**  
Private Bag 50 908  
Porirua City  
New Zealand  
Tel: +64 4 237 1170  
Fax: +64 4 237 1171  
[www.branz.co.nz](http://www.branz.co.nz)

**BRANZ Pty Ltd**  
P O Box 830  
Brookvale  
NSW 2100  
Australia  
Tel: +61 2 9938 6011  
Fax: +61 2 9938 6911  
[www.branz.com.au](http://www.branz.com.au)



## Product

1.1 epiROOF® Roof Membrane is a synthetic rubber waterproofing membrane designed to be used on roofs, decks, balconies, parapets and gutters. epiROOF® is based on an EPDM Rubber.

1.2 This product is supplied as a single-ply, flexible synthetic rubber sheet in roll form. This product is installed as a single layer system.



## Scope

2.1 epiROOF® Roof Membrane has been appraised for use as a waterproofing membrane to roofs and decks 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<sup>2</sup>.

2.2 epiROOF® Roof Membrane has also been appraised for use as a waterproofing membrane 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 NZBC.

2.3 epiROOF® Roof Membrane has also been appraised for use as a roof and deck waterproofing membrane on specifically designed buildings within the following scope:

- with building structures designed and constructed to comply with NZBC; and,
- with roof and deck supporting structures of timber framing and substrates of plywood; and,
- with substrates of suspended concrete slab; and,
- subject to maximum wind pressures (refer Paragraph 7.5); and,
- with weathertightness design of all junctions being the subject of specific design by the designer.

*Note: The design of these junctions has not been appraised by BRANZ and is outside the scope of this Certificate.*

2.4 This Appraisal is limited to roofs and decks 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.

2.5 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 Certificate.

2.6 The membranes must be installed by trained applicators, approved by Waterproofing Systems Ltd.

## Building Regulations

### New Zealand Building Code (NZBC)

**3.1 In the opinion of BRANZ, Waterproofing Systems Ltd epiROOF® Roof Membrane System, if designed, used, installed and maintained in accordance with the statements and conditions of this Certificate, will meet the following provisions of the NZBC:**

**Clause B2 DURABILITY:** Performance B2.3.1 (b) 15 years. epiROOF® Roof Membrane System meets 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 epiROOF® Roof Membrane System meets these requirements. See Paragraphs 12.1 – 12.9.

**Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1. epiROOF® Roof Membrane System meets this requirement and will not present a health hazard to people.

3.2 This Certificate appraises 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 Waterproofing Systems Ltd are as follows:

### epiROOF® Roof Membrane

- A single-ply, flexible, synthetic EPDM based rubber membrane. It is available in 1.0, 1.2 and 1.5 mm thickness in black and 1.2 and 1.5 mm thickness in grey. The rolls are all 1.2 metres wide and come in two

lengths, the 1.0 and 1.2 mm thick product is 25 metres long and the 1.5 mm thick product is 20.8 metres long.

### epiROOF® Cover Tape

- A non-vulcanized EPDM butyl rubber tape which vulcanizes at the ambient temperature and is used for overflashing the epiROOF® Roof membrane to itself. It is supplied as a 2.0 mm thick, 100 mm wide and 10 m long roll.

### epiROOF® Underflashing Tape

- A non-vulcanized, butyl type rubber tape used for detailing under the epiROOF® membrane. It is supplied as a 1.5 mm thick, 100 mm wide and 10 metres long roll.

### NEOSeal

- A butyl-type sealant used for sealing termination flashings and sealing inside three way membrane junctions. It is supplied in 330 ml cartridges.

### epiBOND®

- A two-part solvent based, modified chloroprene rubber adhesive for adhering the epiROOF® membrane and associated tapes. It is applied by brush or roller at a coverage rate of 0.25 kg/m<sup>2</sup> on a substrate and 0.15 kg/m<sup>2</sup> on the membrane. It has an open time of 30-60 minutes and it is supplied in 15 kg cans.

### epiTAPe® 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.

### NEOPrime

- A solvent based chloroprene primer, designed for use on concrete substrates only. Applied by brush or roller at a coverage rate of 0.2 kg/m<sup>2</sup> and it is supplied in 15 kg pails.

### Bond breaker tape

- A PVC pressure sensitive tape used over plywood sheet joints as a bond breaker to minimise stressing caused at the joint. It is supplied as 25 mm wide tape.

### NEOColour Coating

- A water-based coating used to provide additional colour options for epiROOF®. It is supplied in 15 kg pails in colours of aluminium, green and grey.

## Handling and Storage

5.1 Handling and storage of all materials whether on or off site is under the control of the Waterproofing Systems Ltd 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 epiROOF® Roof Membrane. The Technical Literature must be read in conjunction with this Certificate. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Certificate must be followed.

## Design Information

### General

7.1 epiROOF® Roof Membrane is 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 NZS 4203. 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, epiROOF® Roof Membrane will be suitable for use on roofs, decks and balconies on buildings in NZS 3604 Building Wind Zones, up to and including 'Very High'.

7.5 epiROOF® Roof Membrane is suitable in areas subject to maximum wind pressures of 10kPa Ultimate Limit State.

7.6 epiROOF® Roof Membrane has 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 membrane 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 epiROOF® Roof Membrane when subjected to normal conditions of environment and use, is 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.

### Outbreak of Fire

11.1 The membranes must be protected from heat sources such as flues and chimneys in accordance with the requirements of NZBC Acceptable Solution C/AS1 Part 9 for the protection of combustible materials.

### 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 Certificate and the Technical Literature, epiROOF® Roof Membrane 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 40, decks are 1 in 60 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 epiROOF® Roof Membrane is 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 Certificate.

### Water Supplies

13.1 epiROOF® Roof Membrane has not been appraised for compliance with the provisions of NZBC G12.3.1. Waterproofing Systems Ltd 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 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 Waterproofing Systems Ltd Technical Literature and this Certificate.

## 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. 424.

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 with NEOPrime 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 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 epiTAPE® 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 epiROOF® Roof Membrane by Chemical Evaluation and Research Institute (CERI, Japan). 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 epiROOF® Roof Membrane 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 epiROOF® 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 epiROOF® Roof membrane has not been inspected by BRANZ, but details regarding the quality and composition of the materials were obtained by BRANZ and found to be satisfactory.

21.2 The manufacturer in Japan has been certified as meeting the requirements of ISO 9001: 2000 and JIS Q 9001: 2000 by BVQI Japan Company Limited, Certificate No. 166757.

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

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

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 manufacturer, Waterproofing Systems Ltd and this Certificate.



## Sources of Information

- AS/NZS 2269:1994 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: 1995 The design of concrete structures.
- NZS 3109: 1987 Specification for concrete construction.
- NZS 3604: 1999 Timber framed buildings.
- NZS 4203: 1992 Code of practice for general structural design and design loadings for building.
- BRANZ Good Practice Guide – Membrane Roofing, Reprint October 2003.
- Compliance Document for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005.
- New Zealand Building Code Handbook and Approved Documents, Building Industry Authority, 1992.
- The Building Regulations 1992, up to, and including October 2004 Amendment.



**In the opinion of BRANZ, the epiROOF® Roofing Membrane is fit for purpose and will comply with the Building Code to the extent specified in this Certificate provided it is used, designed, installed and maintained as set out in this Certificate.**

**The Appraisal Certificate is issued only to the Certificate Holder, Waterproofing Systems Ltd, and is valid until further notice, subject to the Conditions of Certification.**

### Conditions of Certification

1. This Certificate:
  - 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. The Certificate Holder:
  - 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.
3. The product and the manufacture are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ.
4. BRANZ makes no representation 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 the Certificate Holder.
5. Any reference in this Certificate to any other publication shall be read as a reference to the version of the publication specified in this Certificate.

For BRANZ

P Robertson  
Chief Executive

Date of issue: 21 December 2006