



## BRANZ Appraised

Appraisal No. 520 [2013]

## NOVAFLEX AND POLIBIT ROOF AND DECK WATERPROOFING MEMBRANES

Appraisal No. 520 [2013]

Amended 02 March 2016



### BRANZ Appraisals

Technical Assessments of products for building and construction.



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## Product

- 1.1 Novaflex and Polibit Roof and Deck Waterproofing Membranes are waterproofing membranes for nominally flat, pitched and curved roofs, gutters, parapets and decks. The products are installed as double layer systems on roofs with mineral chip or paint finish and on decks with a mineral chip finish and protected by a raised deck system. On concrete roofs and decks the products are installed as a single layer and protected by paving slabs or screed.
- 1.2 The products are supplied as torch-on, reinforced, polymer-modified bitumen sheets in roll form.

## Scope

- 2.1 Novaflex and Polibit Roof and Deck Waterproofing 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 with respect to building height and maximum floor plan areas; and,
  - with building structures designed and constructed to meet the requirements of the NZBC; and,
  - with roof and deck supporting structures of timber framing with substrates of plywood or fibre cement sheet; and,
  - with substrates of suspended concrete slabs; and,
  - situated in NZS 3604 Wind Zones, up to, and including Extra High; and,
  - with decks that have a maximum area of 40 m<sup>2</sup>.
- 2.2 Novaflex and Polibit Roof and Deck Waterproofing Membranes have also been appraised for use as roof and deck waterproofing membranes on specifically designed buildings within the following scope:
  - with building structures designed and constructed to comply with the NZBC; and,
  - with roof and deck supporting structures of timber framing with substrates of plywood or fibre cement sheet; and,
  - with substrates of suspended concrete slab; and,
  - subjected to maximum wind pressures [Refer Paragraph 8.1]; and,
  - with the 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 Appraisal.*

- 2.3 Roofs and decks waterproofed with Novaflex and Polibit Roof and Deck Waterproofing Membranes must be designed and constructed in accordance with the following limitations:
- nominally flat, curved or pitched roofs, and decks constructed to drain water to gutters and drainage outlets complying with the NZBC; and,
  - constructed to suitable falls [Refer Paragraph 14.3 and 14.4]; and,
  - with no integral roof gardens; and,
  - no steps in level within the deck area, except into gutters; and,
  - no downpipes direct discharge to decks; and,
  - with the membranes on decks protected from physical damage and UV light by ceramic or stone tile finishes or timber, resting on approved pedestal support 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 Jaydex International Ltd Licensed and Trained Installers.

## Building Regulations

### New Zealand Building Code [NZBC]

- 3.1 **In the opinion of BRANZ, Novaflex and Polibit Roof and Deck Waterproofing 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. Novaflex and Polibit Roof and Deck Waterproofing Membranes meet this requirement. See Paragraph 10.1. Performance B2.3.1 [c], 5 years. Alumaticote, Enviroflect Aluminium, Colour-It, or Aquaseal meets this requirement. See Paragraph 10.2.
- Clause E2 EXTERNAL MOISTURE:** Performance E2.3.1 and E2.3.2. Novaflex and Polibit Roof and Deck Waterproofing Membranes meet these requirements. See Paragraphs 13.1 – 13.9.
- Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1. Novaflex and Polibit Roof and Deck Waterproofing Membranes meet 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. The membranes are an alternative to the membranes specified in NZBC Acceptable Solution E2/AS1, and an Alternative Solution subject to specific design for other buildings not covered within E2/AS1.

## Technical Specification

- 4.1 Materials supplied by Jaydex International Ltd are as follows:
- **Novaflex Membrane** - 3.0 or 4.0 mm thick modified bitumen, torch applied sheet waterproofing membrane with a sanded upper surface primarily used as a base layer in a double layer system. They are supplied in 1 m x 10 m rolls.
  - **Novar-WS FLL Membrane** - 4.0 mm thick modified bitumen, torch applied sheet waterproofing membrane with an upper layer of mineral chip [black diamond] and a lower face of thermo-fusible polyolefinic film with a special root resistant reinforcement. It is supplied in 1 m x 10 m rolls.
  - **Polibit Membrane** - 3.0 or 4.0 mm thick modified bitumen, torch applied sheet waterproofing membrane with an upper layer of either sand or mineral chip and a lower face of thermo-fusible polyolefinic film. The sand finished membrane can be used as a base layer of a double layer or as both layers in a double layer finish with UV protection. The mineral finish is used as a cap sheet in a double layer system. They are supplied in 1 m x 10 m rolls.
  - **Bitumen Primer** - Solvent-based cutback bitumen primer for substrates prior to the installation of the membrane. It is available in 20 litre containers.

- **Nova-Per** - Perforated [199 holes/m<sup>2</sup>], modified bitumen sheet membrane for use when partially bonded waterproofing system is required. This system allows equalising of pressure in order to avoid blisters, dimensional stability of the waterproofing system and reduction of possible fatigue in the completed membrane caused by cyclic movement or microcracking. It is supplied in 1 m x 30 m rolls.
- **Enviroflect Aluminium** - Water-based, bituminous aluminium paint for protecting sand finished membranes from UV attack. It is supplied in 5, 10 and 20 litre containers.
- **Colour-It** - Water-based coating for protecting sand finished membranes. It is supplied in Grey or Red in 10 and 20 litre pails.
- **Aquaseal Acrylic Glaze** - 100% acrylic polymer paint applied over Colour-It. It is supplied in 4 and 10 litre pails in a range of colours.

## Handling and Storage

- 5.1 Handling and storage of all materials whether on or off site is under the control of the Jaydex International Ltd 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 Novaflex and Polibit Roof and Deck Waterproofing 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 Novaflex and Polibit Roof and Deck Waterproofing Membranes are for use on roofs, gutters, parapets and decks where an impervious waterproof membrane is required to prevent damage to building elements and adjoining areas. The products can be used on new or existing buildings. Jaydex International Ltd should be consulted as to the suitability of any existing substrates prior to using Novaflex and Polibit Roof and Deck Waterproofing 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 BRANZ publication "Good Practice Guide - Membrane Roofing".
- 7.3 The 3.0 mm or 4.0 mm thick Novaflex membrane is designed for use on roofs, decks and gutters as the first layer of a double layer system and all areas requiring detailing such as upstands, protrusions, rainwater heads and outlets. The Polibit membrane can be used as the top layer of a double layer system, or as a single layer system, see Table 1.

### Structure

- 8.1 Novaflex and Polibit Roof and Deck Waterproofing Membranes fully bonded double layer systems are suitable for use in areas subject to maximum wind pressures of 6 kPa Ultimate Limit State.

### 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, 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. 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.

### Existing Construction

9.3 A thorough inspection of the substrate must be made to ensure it is in fit condition and does not contain any materials that will adversely affect the performance of the membrane.

9.4 Repairs must be undertaken, where applicable, 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.

**Table 1: Membrane Systems**

System	Area	Single Layer	Double Layer	Protection Required
Single layer sand finished system	Roof (concrete only)	4.0 mm top layer		Paving slabs or cement screeds
Double layer sand finished system	Roof		3.0 or 4.0 mm base layer with 3.0 or 4.0 mm top layer	Enviroflect Aluminium, Colour-It/Aquaseal or paving slabs
Double layer mineral finished system	Roof		3.0 or 4.0 mm base layer with 4.0 mm mineral chip top layer	Standard finish of material
Double layer mineral finished system	Deck		3.0 or 4.0 mm base layer with 4.0 mm mineral chip top layer	Ceramic or stone tile finishes or timber on a raised deck system
Single layer sand finished system	Deck (Concrete only)	4.0 mm		Paving slabs on approved pedestals

### Durability

#### Serviceable Life

- 10.1 Novaflex and Polibit Roof and Deck Waterproofing Membranes are expected to have a serviceable life of at least 15 years, provided they are designed, used, installed and maintained in accordance with this Appraisal and the Technical Literature.
- 10.2 Enviroflect Aluminium or Colour-It/Aquaseal is expected to have a serviceable life of at least 5 years provided it is used, installed and maintained in accordance with this Appraisal and the Technical Literature.

#### Chemical Resistance

10.3 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 petroleum-based products such as oils, greases and solvents.

### Maintenance

- 11.1 The membrane roof and systems, including any areas with a UV coating applied, must be regularly [at least annually] checked for damage, rubbish, debris or coating breakdown. Damage, such as small punctures and tears must be repaired and coatings reapplied as recommended by Jaydex International Ltd.
- 11.2 Special care must be taken when inspecting the membrane roof 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 Novaflex and Polibit Roof Waterproofing 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

- 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 in 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, Novaflex and Polibit Roof and Deck Waterproofing 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.
- 13.3 Roof and deck falls must be built into the substrate and not created with mortar screeds applied over the membrane.
- 13.4 The minimum fall to roofs is 1 in 30, decks 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.
- 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 Novaflex and Polibit Roof and Deck Waterproofing 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.
- 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.

### Water Supplies

- 14.1 Water is not contaminated by Novaflex and Polibit Roof and Deck Waterproofing Membranes and they comply with the provisions of NZBC G12.3.1. Novaflex and Polibit Roof and Deck Waterproofing Membranes have been tested against, and shown to comply with AS/NZS 4020.
- 14.2 The first 25 mm of rainfall from a newly installed Novaflex and Polibit Roof and Deck Waterproofing Membranes 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 a Novaflex and Polibit Roof and Deck Waterproofing Membranes membrane roof.
- 14.3 Though Novaflex and Polibit Roof and Deck Waterproofing Membranes have been shown to comply with AS/NZS 4020, 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

- 15.1 Installation of the membranes must be completed by Jaydex International Ltd Licensed and Trained Installers.
- 15.2 Installation of substrates must be completed by tradespersons with an understanding of roof and deck construction, in accordance with instructions given within the Jaydex International Ltd Technical Literature and this Appraisal.

### Preparation of Substrates

- 16.1 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.
- 16.2 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.
- 16.3 The moisture content of the plywood and timber substructure must be a maximum of 20% and the plywood and fibre cement 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.
- 16.4 Substrates must be primed with Bitumen Primer and left to dry [4-5 hours] before the membrane is installed.

### Membrane Installation

- 17.1 The membranes must be installed in accordance with the Technical Literature.
- 17.2 All roof, deck and wall junctions must have a 20 mm x 20 mm wooden fillet installed at the junction. Concrete substrate junctions must have a 20 mm x 20 mm cement mortar fillet installed. All external edges must be chamfered to a 5 mm radius to remove sharp edges.
- 17.3 The membranes must be unrolled without tension onto the prepared substrate and allowed to 'relax' for at least 30 minutes prior to installation.
- 17.4 The membranes are installed from the lowest point and each layer is installed across the roof or deck falls allowing a 75 mm side overlap and a 150 mm end overlap. The cap sheet layer of a double layer system must be offset against the base sheet layer.
- 17.5 Where pedestals are used there must be a separation layer between the pedestals and the finished membrane system.

### Inspections

- 18.1 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 Jaydex International Ltd instructions.

### Health and Safety

- 19.1 Safe use and handling procedures for Novaflex and Polibit Roof and Deck Waterproofing 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

20.1 The following is a summary of the testing and test reports on Novaflex and Polibit Roof and Deck Waterproofing Membranes:

- Istituto per le Tecnologie della Construzione (ITC) for tensile and elongation, tear resistance, flexibility at low temperature, resistance to static loading, resistance to dynamic loading, dimensional stability, flow resistance at elevated temperatures, adhesion of granules and watertightness.
- ICITE for polyester reinforcement, coating mass, tensile strength, elongation, tear strength, dimensional stability, low temperature flexibility, heat resistance, sliding resistance, watertightness, static and dynamic indentation, fatigue cycling, peel resistance, air pressure and tensile strength of joints.

The above test methods and results have been reviewed by BRANZ and found to be satisfactory.

### Other Investigations

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

### Quality

- 22.1 The manufacture of the 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.
- 22.2 BRANZ has taken note of Technical Assessments and certifications covering quality aspects associated with the product.
- 22.3 The quality of the supply of products to the New Zealand market is the responsibility of Jaydex International Ltd.
- 22.4 Quality on site is the responsibility of the Jaydex International Ltd Licensed and Trained Installers.
- 22.5 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 Jaydex International Ltd and this Appraisal.
- 22.6 Building owners are responsible for the maintenance of the membrane systems in accordance with the instructions of Jaydex International Ltd and this Appraisal.

### Sources of Information

- AS/NZS 1170: 2002 Structural design actions.
- AS/NZS 2269: 2008 Plywood – structural.
- BRANZ Good Practice Guide – Membrane Roofing, reprint October 2003.
- NZS 3101: 2006 The design of concrete structures.
- NZS 3604: 2011 Timber-framed buildings.
- NZS 4020: 2005 Testing of products for use in contact with drinking water.
- Compliance Document for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005 [Amendment 5, 1 August 2011].
- New Zealand Building Code Handbook Department of Building and Housing, Third Edition [Amendment 12, 10 October 2011].
- The Building Regulations 1992.

## Amendments

### Amendment No.1, dated 02 March 2016.

This Appraisal has been amended to update Section 14, Water Supplies.



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30 August 2013

NOVAFLEX AND POLIBIT ROOF  
AND DECK WATERPROOFING  
MEMBRANES



In the opinion of BRANZ, **Novaflex And Polibit Roof and Deck Waterproofing 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 **Jaydex International 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. **Jaydex International 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 **Jaydex International 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 **Jaydex International Ltd** or any third party.

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**For BRANZ**

**Chris Preston**

Chief Executive

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30 August 2013