BRANZ Appraised

Appraisal No. 827 (2025)

ECOPLY ® BARRIER RIGID AIR BARRIER

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This Appraisal replaces BRANZ Appraisal No. 827 (2019)

BRANZ Appraisals

Technical Assessments of products for building and construction.

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WFTAO
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Product

1.1 The Ecoply® Barrier Rigid Air Barrier is sealed plywood sheets and tapes designed for use as a rigid wall underlay and air barrier (sheathing) behind cavity wall cladding systems. Ecoply® Barrier is also for use as a wall bracing system to resist wind and earthquake loads on timber-framed buildings.

Scope

2.1 Ecoply® Barrier has been appraised for use as a rigid wall underlay, air barrier and temporary weather-protecting sheathing on timber-framed buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; and,
- with absorbent and non-absorbent wall claddings installed over an 18 mm minimum drained and vented cavity; and,
- with masonry veneer in accordance with NZBC Acceptable Solution E2/AS1; and,
- situated in NZS 3604 Wind Zones up to, and including, Extra High.

2.2 Ecoply® Barrier has also been appraised for use as wall bracing systems for timber-framed buildings within the scope of NZS 3604.

Building Regulations

New Zealand Building Code (NZBC)

3.1 **In the opinion of BRANZ, Ecoply® Barrier, if used, designed, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet, or contribute to meeting the following provisions of the NZBC:**

Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.4. Ecoply® Barrier meets the requirements for loads arising from earthquake and wind [i.e. B1.3.3 (f) and (h)]. See Paragraphs 8.1-8.4.

Clause B2 DURABILITY: Performance B2.3.1 (a) not less than 50 years, B2.3.1 (b) 15 years and B2.3.2. Ecoply® Barrier meets these requirements. See Paragraphs 9.1-9.3.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. When used as part of the wall cladding system, Ecoply® Barrier contributes to meeting this requirement. See Paragraphs 12.1 and 12.2.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Ecoply® Barrier meets this requirement.

3.2 Ecoply® Barrier can be used to satisfy the bracing demand requirements of Section 5 of NZS 3604 which is an Acceptable Solution for compliance with NZBC Clause B1.

Technical Specification

4.1 The components and accessories for Ecoply® Barrier, which are supplied by Carter Holt Harvey Plywood Ltd are:

- **Ecoply® Barrier sheets** are 7 mm thick, 1,197 mm wide and 2,440 and 2,745 mm long structural plywood, manufactured from radiata pine in accordance with AS/NZS 2269, and H3.2 CCA treated in accordance with AS/NZS 1604.3. The sheets are coated on the front face and four edges with a beige polyester powder coating. Plywood sheets are marked Ecoply® Barrier for identification.
- **Ecoply® Sealing Tape** - 60 mm x 30 m tape for sheet joints.
- **Ecoply® Frame Flashing Tape** - 150 mm x 30 m and 200 mm x 30 m.
- **Ecoply® Sill Tape** - 150 mm x 20 m and 200 m x 20 m.

Tapes are marked Ecoply® and type for identification.

4.2 The components and accessories for the Ecoply® Barrier, which are supplied by the building contractor are:

- **Ecoply® Horizontal Jointer** - PVC horizontal 'Z' flashing supplied by E2 Flashing Solutions.
- **KAFLEX and ROFLEX Grommets** - a range of pipe and cable penetration seals consisting of a soft, flexible EPDM membrane, supplied by Pro Clima (NZ) Ltd.
- **Fasteners** - 50 x 2.8 mm flat head hand-driven nails, hot-dip galvanised or stainless steel. Paslode Impulse 50 x 2.8 mm round head gun-nails, hot-dip galvanised or stainless steel. Stainless steel nails must be ring shanked.

(Note: Hot-dip galvanising must comply with AS/NZS 4680 and stainless steel must be Grade 304 or 316.)

- **Bracing panel end stud connection** - GIB® HandiBrac® one-piece, 2 mm thick, galvanised steel angle bracket approximately 95 mm high, 65 mm long and 54 mm wide. The bracket is supplied with 5 Type 17 screws 14 g x 35 mm.
- **Timber floor end stud hold down** - 12 mm x 150 mm hot-dip galvanised coach screws.
- **Concrete floor end stud hold down** - cast-in bolts M12 x 150 mm minimum, or proprietary fixings with a minimum characteristic strength of 15 kN.

Handling and Storage

5.1 Handling and storage of all materials supplied by Carter Holt Harvey Plywood Ltd or the building contractor, whether on-site or off-site, is under the control of the building contractor. Ecoply® Barrier plywood sheets must be stacked flat, off the ground and supported on a level platform. They must be kept dry at all times either by storing under cover or providing waterproof covers to the stack. Care must be taken to avoid damage to edges, ends and surfaces. The Ecoply® Tapes must be protected from damage and weather and stored in clean, dry conditions away from direct exposure to sunlight. uPVC jointers must be protected from physical damage and should be stored flat and under cover.

5.2 Other accessories must be stored so they are kept clean, dry and undamaged.

Technical Literature

6.1 This Appraisal must be read in conjunction with:

- Ecoply® Barrier Specification and Installation Guide, September 2020, version, V2, 021122.

6.2 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 Ecoply® Barrier is intended for use as a rigid wall underlay and an air barrier fixed over timber-framed walls in order to support wind pressures and to act as a secondary barrier to wind-driven rain. With all joints sealed with Ecoply® Tapes, no flexible wall underlay is required over the Ecoply® Barrier plywood.

7.2 Commencing from installation, the Ecoply® Barrier, including the Ecoply® Tapes, must not be exposed to the weather for more than 180 days.

7.3 Ecoply® Barrier may be used as a temporary weather protecting sheathing to allow the insulation and internal lining of the building to proceed before the wall cladding is installed. To achieve temporary weathertightness, all joints, internal and external corners of the Ecoply® Barrier must be sealed, the roof cladding and soffit linings must be installed, the flexible sill and jamb flashing tape system must be installed around the window and door openings, and the window and door joinery must be installed complete with head flashings and air seals. The timber wall framing must have a maximum moisture content as specified by the internal lining system supplier at the time of the insulation installation and internal lining application.

7.4 Ecoply® Barrier is suitable for use under wall claddings as a rigid wall underlay in accordance with NZBC Acceptable Solution E2/AS1, Table 23 on timber-framed buildings. Refer to Table 1.

Table 1: NZBC E2/AS1, Table 23 Requirements

NZBC E2/AS1 Table 23 Rigid Wall Underlay Properties	Property Performance Requirement	Ecoply® Barrier Actual Property Performance
Vapour Resistance	≤ 7 MN s/g	2.2 MN s/g
Absorbency	≥ 100 g/m^2	1,451 g/m^2
Water Resistance	≥ 20 mm	Pass

Timber Treatment

7.5 Timber wall framing behind the Ecoply® Barrier must be treated as required by NZBC Acceptable Solution B2/AS1.

Timber Framing

7.6 Timber framing must be minimum 90 x 45 mm structural grade SG8 and must comply with NZS 3604 for buildings or parts of buildings within the scope limitations of NZS 3604. Buildings or parts of buildings outside the scope of NZS 3604 must be to a specific design in accordance with NZS 3603 and AS/NZS 1170, considering local factors. In all cases, studs must be at maximum 600 mm centres. Dwangs must be fitted flush between the studs at maximum 1,200 mm centres. *(Note: The timber framing must also be suitable for the selected wall cladding. Refer to the selected cladding system's Technical Literature for specific framing requirements.)*

7.7 Timber wall framing where the Ecoply® Barrier plywood sheets are joined must be nominal 50 mm width (i.e. 45 mm minimum finished width).

7.8 Timber framing must be kiln dried and as dry as practically possible at the time of the Ecoply® Barrier installation.

Ecoply® Barrier Set Out

7.9 All Ecoply® Barrier plywood sheet edges must be fully supported by framing.

7.10 Ecoply® Barrier must be installed vertically. At the base of the wall the plywood sheets must hang below the bottom plate a minimum of 25 mm, up to a maximum of 40 mm.

Ecoply® Barrier Plywood and Cladding Fixing

7.11 Ecoply® Barrier plywood sheets must be fixed at maximum 150 mm centres around the perimeter of each sheet and at maximum 300 mm centres to intermediate studs. In Extra High Wind Zones, the fixing centres on the intermediate studs must be closed up to maximum 150 mm centres. The fixings are at the same centres regardless of whether the Ecoply® Barrier plywood is being used for bracing or not.

7.12 The length of the selected wall cladding fasteners must be increased by a minimum of 7 mm to maintain the face load strength of the wall cladding system.

Structure

Mass

8.1 The mass of Ecoply® Barrier is approximately 4 kg/m^2. This mass must be added to the selected wall cladding system mass when determining the overall wall cladding mass in terms of NZS 3604.

Wind Zones

8.2 Ecoply® Barrier is suitable for use in all Wind Zones of NZS 3604 up to, and including, Extra High.

Bracing

8.3 The bracing units achieved (wind and earthquake) for the Ecoply® Barrier are given in Table 2. The Technical Literature gives details of edge and end fixing distances and provides comprehensive construction and panel hold-down details.

8.4 The bracing units are derived from the BRANZ P21 test method based on a wall height of 2.4 m. For greater wall heights the bracing rating is calculated by multiplying the appropriate value shown in Table 2 by 2.4 divided by the wall height in metres. Walls lower than 2.4 m shall be rated as if they were 2.4 m in high.

Table 2: Bracing Ratings for Ecoply® Barrier Structural Plywood Brace

Specification No.	Minimum Wall Length	Lining Requirements	Bottom Plate Hold-down and Fixing	BUs/m Wind	BUs/m Earthquake
EPBI	0.4 m	Ecoply® Barrier one side	GIB HandiBrac®*	80	95
	0.6 m			95	105
	1.2 m			120	135**
EP2	0.6 m	Ecoply® Barrier or Ecoply® each side	GIB Handibrac®	105	115
EPBS	0.4 m	Ecoply® Barrier one side	No additional fastening*	60	60
	0.6 m			60	65
	1.2 m			65	70
	2.4 m			80	90
EPBG	0.4 m	Ecoply® Barrier one side and 10 mm GIB® Standard plasterboard other side	GIB HandiBrac®	100	115
	1.2 m			150**	150**

Notes:

** Bottom plate fixed in accordance with the requirements of NZS 3604.*

*** Timber Floors - A limit of 120 BU/m applies to NZS 3604 timber floors.*

Penetrations for Services

8.5 Small openings for services of up to 90 x 90 mm may be placed no closer than 90 mm to the edge of the bracing element and service penetrations up to a maximum of 150 mm diameter may be placed no closer than 150 mm from the sheet edge, without affecting the bracing rating of the panel.

Connections

8.6 The Ecoply® Barrier Technical Literature contains a top plate hold down detail and a lintel tie down connection detail that are alternatives to the details given in NZS 3604.

Durability

9.1 Ecoply® Barrier meets code compliance with NZBC Clause B2.3.1 (a) not less than 50 years when used where the cladding durability requirement or expected serviceable life is not less than 50 years, e.g. behind masonry veneer, or where it is used as a bracing element, and code compliance with NZBC Clause B2.3.1 (b), 15 years where the cladding durability requirement is 15 years and the Ecoply® Barrier is not used as a bracing element.

Serviceable Life

9.2 Provided Ecoply® Barrier is not exposed to the weather or ultraviolet (UV) light for a total of more than 180 days, and provided the exterior cladding is maintained in accordance with the cladding manufacturer's instructions and the cladding remains weather resistant, the Ecoply® Barrier is expected to have a serviceable life of at least 50 years.

9.3 Areas of geothermal activity and coastal locations can be very corrosive to fasteners, especially coastal locations within distances of up to 500 metres of the sea including harbours, or 100 metres from tidal estuaries and sheltered inlets in some instances. These coastal locations are defined in NZS 3604 as Zone D and stainless steel fasteners must be used. For installation in NZS 3604 Corrosion Zones C and B, hot-dip galvanised steel fasteners complying with the requirements of NZS 3604 may be used.

Maintenance

10.1 Ecoply® Barrier will not normally require maintenance. However, if damage occurs to the cladding or lining protecting the sheathing or to the sheathing itself, then repairs or replacement must be carried out to ensure the integrity of the rigid air barrier.

Prevention of Fire Occurring

11.1 Separation or protection must be provided to the Ecoply® Barrier from heat sources such as fireplaces, heating appliances and chimneys. Part 7 of NZBC Acceptable Solution C/AS1 and NZBC Acceptable Solution C/AS2 provide methods for separation and protection of combustible materials from heat sources.

External Moisture

12.1 Ecoply® Barrier must be used behind claddings that meet the performance requirements of NZBC Clause E2.

12.2 Ecoply® Barrier, when installed in accordance with the Ecoply® Barrier Specification & Installation Guide and this Appraisal, will assist in the total cladding system's compliance with NZBC Clause E2.

Installation Information

Installation Skill Level Requirement

13.1 All design and building work must be carried out in accordance with the Ecoply® Barrier Technical Literature and this Appraisal by competent and experienced tradespeople conversant with the Ecoply® Barrier. Where the work involves Restricted Building Work (RBW), this must be completed by, or under the supervision of, a Licensed Building Practitioner (LBP) with the relevant Licence Class.

System Installation

Ecoply® Barrier Installation

14.1 Ecoply® Barrier plywood sheets may be cut using any circular saw or hand saw tool. Holes and cut-outs may be formed by using a hole saw.

14.2 Sheets must be dry prior to installation. Cut edges that are left exposed must be sealed in accordance with the Ecoply® Barrier Specification & Installation Guide prior to installation.

14.3 Prior to fixing Ecoply® Barrier plywood sheets, a check must be made to ensure all sheet edges will be supported by framing. At the base of the wall, the sheet must hang below the bottom plate by a minimum of 25 mm.

14.4 Ecoply® Barrier plywood sheets must be fixed to the timber framing with 50 x 2.8 mm hot-dip galvanised flat head clouts, or 50 x 2.8 mm ring shanked stainless steel nails. Nails may be either hand-driven or power-driven. Refer to Paragraph 7.11 for fixing centres and Paragraph 9.3 for material selection.

14.5 At vertical joints, Ecoply® Barrier must be installed with a 1.5-3 mm gap between the sheet edges. Sheets at horizontal joints between floor levels must be installed with a minimum 15 mm gap between the edges and must be supported over horizontal framing. All horizontal joints must be flashed with the Ecoply® Horizontal Jointer.

14.6 Any damaged areas of Ecoply® Barrier, or gaps around service penetrations, must be repaired by covering with Ecoply® Sealing Tape.

Joint Sealing Tape Installation

14.7 Ecoply® Barrier plywood sheets must be cleaned of dust and other surface contaminants prior the application of Ecoply® Sealing Tape to ensure adequate adhesion is achieved.

14.8 All vertical sheet joints, internal and external corners, penetrations or damaged areas and over driven nails must be covered with Ecoply® Sealing Tape. The manufacturer's instructions regarding the application temperatures for the joint sealing tape must be followed.

Flexible Sill and Jamb Tape Installation

14.9 The Ecoply® Sill Tape and Ecoply® Frame Flashing Tape must be installed in accordance with the Ecoply® Barrier Specification & Installation Guide. Particular attention must be paid to the installation of the sill and jamb tapes around window and door joinery openings to ensure all exposed timber wall framing in the opening is protected.

Inspections

14.10 The Ecoply® Barrier Specification & Installation Guide must be referred to during the inspection of the Ecoply® Barrier installations.

Health and Safety

15.1 Ecoply® Barrier must be handled in accordance with the Material Safety Data Sheet for H3.2 CCA treated Ecoply®.

15.2 When power tools are used for cutting or forming holes, health and safety measures as set out in the Ecoply® Barrier Specification & Installation Guide must be undertaken because of the amount of dust generated.

15.3 Safe use and handling procedures for the Ecoply® Barrier and the components that make up the cladding system are provided in the relevant manufacturers' Installation Guides.

Basis of Appraisal

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

Tests

16.1 Racking tests were carried out in accordance with BRANZ Technical Paper P21. The earthquake and wind bracing ratings were determined using the evaluation procedures outlined in BRANZ Technical Recommendation No. 10. The test results and laboratory methods have been reviewed by BRANZ and found to be satisfactory.

16.2 Testing has been carried out by BRANZ to determine the face load pressure resistance of Ecoply® Barrier.

16.3 Testing to determine the resistance of Ecoply® Barrier plywood to water vapour transmission in accordance with AS/NZS 4200.1 and resistance to water penetration in accordance with AS/NZS 4201.4 has been completed. The results have been reviewed by BRANZ and found to be satisfactory.

16.4 The Ecoply® Sealing Tape, Frame Flashing Tape and Sill Tape have been tested to BRANZ criteria to assess the tensile strength of control and UV aged material, nail sealability, water resistance of control and UV accelerated aged material and pliability. BRANZ has determined that the tapes are fit for purpose for the intended use. The adhesion to the Ecoply® Barrier plywood sheet has also been tested and found to be satisfactory.

Other Investigations

17.1 Structural and durability opinions were given by BRANZ technical experts.

17.2 An assessment was made of the durability of the Ecoply® Barrier Tapes by BRANZ technical experts.

17.3 BRANZ expert opinion on NZBC E2 code compliance for Ecoply® Barrier was based on evaluation of all details within the scope and as stated within this Appraisal. The details contained within the Ecoply® Barrier Specification & Installation Guide have been reviewed and an opinion has been given by BRANZ technical experts that the system will meet the performance levels of Acceptable Solution E2/AS1 for a rigid wall underlay.

17.4 Site inspections were carried out by BRANZ to assess the practicability of installation.

17.5 The Ecoply® Barrier Specification & Installation Guide has been examined by BRANZ and found to be satisfactory.

Quality

18.1 The manufacture of the Ecoply® Barrier plywood has been examined by BRANZ, including methods adopted for quality control. Details regarding the composition of the materials used were obtained by BRANZ and found to be satisfactory.

18.2 The quality of materials, components and accessories supplied by Carter Holt Harvey Plywood Ltd is the responsibility of Carter Holt Harvey Plywood Ltd. The quality control system for the manufacture of the plywood used for the Ecoply® Barrier has been assessed and registered as meeting the requirements of AS/NZS 2269 by the Engineered Wood Products Association of Australasia, Certificate No. 911.

18.3 The manufacture of Ecoply® Tapes has been examined on behalf of BRANZ, including methods adopted for quality control. Details of the quality and composition of the materials used were obtained and found to be satisfactory.

18.4 Quality of installation on-site of components and accessories supplied by Carter Holt Harvey Plywood Ltd and the building contractor is the responsibility of the installer.

18.5 Designers are responsible for the building design, and building contractors are responsible for the quality of installation in accordance with the instructions of Carter Holt Harvey Plywood Ltd.

Sources of Information

- AS/NZS 1170:2002 Structural design action - General principles.
- AS/NZS 2269:2012 Plywood - Structural.
- AS/NZS 4200.1:2017 Pliable building membranes and underlays - materials.
- AS/NZS 4201.4:1994 Pliable building membranes and underlays - Methods of test - Resistance to water penetration.
- NZS 3602:2003 Timber and wood-based products for use in building.
- NZS 3603:1993 Timber Structures Standard.
- 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.

BRANZ

In the opinion of BRANZ, Ecoply® Barrier Rigid Air Barrier is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to Carter Holt Harvey Plywood 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. Carter Holt Harvey Plywood 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 quality of work;
   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 Carter Holt Harvey Plywood 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 Carter Holt Harvey Plywood Ltd or any third party.

For BRANZ

Claire Falck
Chief Executive

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07 January 2025