



BRANZ Appraised
Appraisal No. 1071 [2019]

HYDRA ROOF UNDERLAY

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BRANZ Appraisals

Technical Assessments of
products for building and
construction.



Marshall Innovations Limited

PO Box 9411
Greerton
Tauranga
Tel: 07 543 0948
Web: www.mwnz.com



BRANZ

1222 Moonshine Rd,
RD1, Porirua 5381
Private Bag 50 908
Porirua 5240,
New Zealand
Tel: 04 237 1170
branz.co.nz



Product

- 1.1 HYDRA Roof Underlay is a heavy duty, spun bonded, self supporting, fire retardant, non woven fabric laminated with a breathable coating for use under roof claddings. Marshall HYDRA Roof Underlay is coloured blue and printed with HYDRA logo on the top face and light blue on the bottom face.

Scope

- 2.1 HYDRA Roof Underlay has been appraised for use as a roof underlay on buildings within the following scope:
 - the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area; and,
 - with masonry tile roof cladding; or,
 - with metal tile and profiled metal roof cladding; and,
 - situated in NZS 3604 Wind Zones up to and including Extra High
- 2.2 HYDRA Roof Underlay has also been appraised for use on buildings subject to specific weathertightness design. Building designers are responsible for the building design and for the incorporation of HYDRA Roof Underlay into their design in accordance with the declared properties and the instructions of Marshall Innovations Limited

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, HYDRA Roof Underlay, if designed, used, 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 B2 DURABILITY: Performance B2.3.1 [a], not less than 50 years, B2.3.1 [b] 15 years and B2.3.2 HYDRA Roof Underlay will contribute to meeting this requirement. See Paragraphs 9.1 to 9.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. When used as part of the roof cladding system, HYDRA Roof Underlay will contribute to meeting this requirement. See Paragraphs 12.1 and 12.2.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. HYDRA Roof Underlay meets this requirement and will not present a health hazard to people.

Technical Specification

- 4.1 HYDRA Roof Underlay is a heavy duty, spun bonded, polyolefin, self supporting, fire retardant, non woven fabric laminated with a breathable coating for use under roof claddings. HYDRA Roof Underlay is coloured blue on top face and light blue on the bottom face.
- 4.2 The product is supplied in rolls 1.25 m wide x 20 m or 40 m long.
- 4.2 Accessories used with HYDRA Roof Underlay which are supplied by the installer are:
 - Fixings - stainless steel staples, clouts, screws or proprietary underlay fixings, or other temporary fixings attach the roof underlay to the framing.

Handling and Storage

- 5.1 Handling and storage of the product, whether on or off site, is under the control of the installer. The rolls must be protected from damage and weather. They must be stored on end, under cover, in clean, dry conditions and must not be crushed.

Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for HYDRA Roof Underlay. 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

Timber and Steel Framing

- 7.1 Timber and steel roof framing must be provided in accordance with the requirements of the NZBC and the roof cladding manufacturer.

General

- 7.2 HYDRA Roof Underlay is intended for use as an alternative to conventional kraft paper roof underlays, which are fixed over timber or steel framed roofs in order to limit the entry of wind into the roof cavity, and to assist in the moisture management of the roof cladding system.
- 7.3 The material also provides a degree of temporary weather protection during early construction. However, the product will not make the roof weathertight and some wetting of the underlying structure is always possible before the roof cladding is installed. Hence, the entire building must be closed-in and made weatherproof before moisture sensitive materials such as ceiling linings and insulation materials are installed.
- 7.4 HYDRA Roof Underlay is suitable for use under roof claddings on buildings as a roof underlay as called up in NZBC Acceptable Solution E2/AS1, Table 23. Refer to Table 1 for the material properties of HYDRA Roof Underlay.

Table 1: NZBC E2/AS1 Table 23 Requirements

NZBC E2/AS1 Table 23 Roof Underlay Properties	Property Performance Requirement	Results
Absorbency	≥ 150 g/m ²	Pass
Vapour Resistance	≤ 0.5 MN s/g	Pass
Water Resistance	≥ 100 mm	Pass
pH of Extract	≥ 5.5 and ≤ 9	Pass
Shrinkage	≤ 0.5%	Pass
Mechanical	Edge tear and tensile strength	Edge tear [Average] Machine Direction > 166 N Cross Direction > 117 N Tensile Strength [Average] Machine Direction > 6.1kN/m Cross Direction > 4.3kN/m

- 7.5 HYDRA Roof Underlay is suitable for use in residential and commercial roofs with roof pitches of minimum 3°. The product must not span unsupported more than 1200 mm in one direction. Spans greater than 1200 mm require additional support such as galvanised wire mesh or safety mesh.
- 7.6 At roof pitches of 10° or more, HYDRA Roof Underlay may be run horizontally or vertically.
- 7.7 At roof pitches less than 10° [minimum 3°], HYDRA Roof underlay may be run horizontally, or vertically if installed over a roof underlay support.
- 7.8 Refer to Table 2 for a summary of the roof underlay support requirements.

Table 2: Roof Underlay Support Requirements

Roof Pitch	Span	Roof Underlay Support Required?	
		Horizontally Installed	Vertically Installed
10° or more	Greater than 1200 mm	Yes	Yes
	1200 mm or less	No	No
Less than 10° [Minimum 3°]	Greater than 1200 mm	Yes	Yes
	1200 mm or less	No	Yes

Structure

- 8.1 HYDRA Roof Underlay is suitable for use in all Wind Zones of NZS 3604 up to, and including, Extra High.

Durability

- 9.1 HYDRA Roof Underlay meets code compliance with NZBC Clause B2.3.1 [a], not less than 50 years for roof underlays used where the roof cladding durability requirement or expected serviceable life is not less than 50 years, e.g. behind masonry roof tile cladding, and code compliance with NZBC Clause B2.3.1 [b], 15 years for roof underlays used where the roof cladding durability requirement is 15 years.

Serviceable Life

- 9.2 Provided it is not exposed to the weather or ultra-violet light for a total of more than 14 days, and provided the roof cladding is maintained in accordance with the cladding manufacturer's instructions and the roof cladding remains weather resistant, HYDRA Roof Underlay is expected to have a serviceable life equal to that of the roof cladding.

Control of Internal Fire and Smoke Spread

- 10.1 HYDRA Roof Underlay has an AS 1530 Part 2 flammability index of not greater than 5 and therefore meets the requirements of NZBC Acceptable Solutions C/AS2, Paragraph 4.17.8 b), for the surface finish requirements of suspended flexible fabric used as an underlay to exterior cladding that is exposed to view in occupied spaces.

Prevention of Fire Occurring

- 11.1 Separation or protection must be provided to the HYDRA Roof Underlay from heat sources such as fireplaces, heating appliances and chimneys. Part 7 of NZBC Acceptable Solution C/AS1, C/AS2, and NZBC Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

External Moisture

- 12.1 HYDRA Roof Underlay must only be used under roof claddings that meet the requirements of the NZBC, such as those covered by NZBC Acceptable Solution E2/AS1, or roof claddings covered by a valid BRANZ Appraisal.
- 12.2 HYDRA Roof Underlay, when installed in accordance with the Technical Literature and this Appraisal, will assist in the total cladding system's compliance with NZBC Clause E2.

Installation Information

Installation Skill Level Requirements

- 13.1 All design and building work must be carried out in accordance with the HYDRA Roof Underlay Technical Literature and this Appraisal by competent and experienced tradespersons conversant with roofing underlays. 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 License class.

Underlay Installation

- 14.1 HYDRA Roof Underlay must be fixed at maximum 300 mm centres to all framing members with large-head clouts 20 mm long, 6-8 mm stainless steel staples, self drilling screws or proprietary underlay fixings. The membrane must be pulled taut over the framing before fixing.
- 14.2 HYDRA Roof Underlay may be run horizontally or vertically. The roof underlay must extend from the ridge and overhang the fascia board by 20-25 mm. Refer Table 2.
- 14.3 Vertical laps must be no less than 150 mm wide. Horizontal laps must also be no less than 150 mm, with the direction of the lap ensuring that water is shed to the outer face of the underlay. End laps must be made over framing and be no less than 150 mm wide.
- 14.4 When fixing the product in windy conditions, care must be taken due to the large sail area created.
- 14.5 Any damaged areas of HYDRA Roof Underlay, such as tears, holes or gaps around service penetrations, must be repaired. Damaged areas can be repaired by covering with new material lapping the damaged area by at least 150 mm and taping, or by taping small tears.

Inspections

- 14.6 The Technical Literature must be referred to during the inspection of Marshall Roof Underlay installations.

Basis of Appraisal

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

Tests

- 15.1 The following tests have been carried out on HYDRA Roof Underlay in accordance with NZBC Acceptable Solution E2/AS1, Table 23: tensile strength, edge-tear resistance and resistance to water vapour transmission in accordance with AS/NZS 4200.1, shrinkage in accordance with AS/NZS 4201.3, resistance to water penetration in accordance with AS/NZS 4201.4, surface water absorbency in accordance with AS/NZS 4201.6 and pH of extract in accordance with AS/NZS 1301.421s. A range of these tests were completed before and after HYDRA Roof Underlay was exposed to ultra-violet light.
- 15.2 The Flammability Index of HYDRA Roof Underlay has been evaluated in accordance with AS 1530.2.

Other Investigations

- 16.1 A durability opinion has been given by BRANZ technical experts.
- 16.2 An evaluation of the expected performance of HYDRA Roof Underlay in direct contact with metal roof cladding has been completed by BRANZ.
- 16.3 The practicability of installation of HYDRA Roof Underlay has been assessed by BRANZ and found to be satisfactory.
- 16.4 The Technical Literature, including installation instructions, has been examined by BRANZ and found to be satisfactory.

Quality

- 17.1 The manufacture of HYDRA Roof Underlay has been examined by BRANZ, including methods adopted for quality control. Details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.
- 17.2 The quality of supply to the market is the responsibility of Marshall Innovations Limited
- 17.3 Building designers are responsible for the design of the building, and for the incorporation of the roof underlay into their design in accordance with the instructions of Marshall Innovations Limited.
- 17.4 Quality of installation is the responsibility of the installer in accordance with the instructions of Marshall Innovations Limited.

Sources of Information

- AS 1530.2: 1993 Test for Flammability of Materials.
- AS/NZS 1301.421s: 1998 Determination of the pH value of aqueous extracts of paper, board and pulp - cold extraction method.
- AS/NZS 2275: 2006 Pliable, permeable building underlays
- AS/NZS 4200.1: 1994 Pliable building membranes and underlays - materials.
- AS/NZS 4201.3: 1994 Pliable building membranes and underlays - Methods of test - Shrinkage.
- AS/NZS 4201.4: 1994 Pliable building membranes and underlays - Methods of test - Resistance to water penetration.
- AS/NZS 4201.6: 1994 Pliable building membranes and underlays - Methods of test - Surface water absorbency.
- 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.



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In the opinion of BRANZ, **HYDRA Roof Underlay** 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 **Marshall Innovations Limited**, 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. **Marshall Innovations Limited:**
 - 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 **Marshall Innovations Limited**.
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 **Marshall Innovations Limited** or any third party.

For BRANZ

Chelydra Percy

Chief Executive

Date of Issue:

18 November 2019