



BRANZ Appraised

Appraisal No. 621 [2014]

THE TEKTON® WEATHERIZATION SYSTEM

Appraisal No. 621 [2014]

This Appraisal replaces BRANZ Appraisal No. 621 [2008] issued 8 October 2008.



BRANZ Appraisals

Technical Assessments of products for building and construction.



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Product

- 1.1 The Tekton® Weatherization System consists of Tekton® Building Wrap, One Piece Sill Tape, Super Stick Tape or Protecto Sill System [flexible flashing tapes], Tekton Seam Tape and TRADE-SEAL. The system is used behind wall cladding systems and around framed joinery openings as a secondary weather resistant barrier for walls.

Scope

- 2.1 The Tekton® Weatherization System has been appraised for use on buildings within the following scope:
- constructed with timber framing in accordance with the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; or,
 - constructed with steel framing subject to specific engineering design, with the building height and floor plan area in accordance with scope limitations of NZBC Acceptable Solution E2/AS1; and,
 - with absorbent wall claddings directly fixed to frame complying with NZBC Acceptable Solution E2/AS1 or covered by a valid BRANZ Appraisal that specifies a flexible wall underlay and a flexible flashing system; or,
 - with absorbent and non-absorbent wall claddings installed over an 18 mm minimum drained cavity complying with NZBC Acceptable Solution E2/AS1 or covered by a valid BRANZ Appraisal that specifies a flexible wall underlay or a rigid wall underlay with flexible underlay over and flexible flashing system; or,
 - with masonry veneer in accordance with NZBC Acceptable Solution E2/AS1 for timber framed buildings or specific design for steel framed buildings; and,
 - situated in NZS 3604 Wind Zones up to and including Very High where the flexible wall underlay is directly fixed to the frame, and up to and including Extra High where the underlay is used over rigid wall underlays.

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, the Tekton® Weatherization System 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. The Tekton® Weatherization System meets this requirement. See Paragraphs 9.1 - 9.2

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. The Tekton® Weatherization System contributes to exterior walls meeting this requirement. See Paragraphs 12.1 and 12.2.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. The Tekton® Weatherization System meets 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.

Technical Specification

- 4.1 System components supplied by Marshall Innovations Limited are as follows:
- **Flexible wall underlay** - Tekton® Building Wrap is a synthetic breather-type building membrane available in rolls 2740 mm wide and 37 m long or 1370 mm wide and 37 m long. The product is manufactured from coated spun bonded polypropylene.
 - **Flexible flashing tape [1]** - One Piece Sill Tape is a polyethylene faced, modified SBS rubberised asphalt, self-adhesive flashing tape. It is available in rolls 150 mm wide, 20 m long and 1 mm thick.
 - **Flexible flashing tape [2]** - Super Stick is a multi-layered silver polyester faced, copolymer, self-adhesive tape. The tape is supplied in rolls of 75 mm x 22.86 m, 150 mm x 22.86 m and 230 mm x 22.86 m.
 - **Flexible flashing tape [3]** - Protecto Sill System comprises Protecto Wrap Detail Tape, Protecto Wrap Sill Tape and Protecto Tak spray on primer. Both the tapes are based on modified SBS rubberised asphalt and Protecto Tak is a solvent based spray on adhesive primer. Protecto Wrap Detail Tape is supplied as a 150 mm wide, 15 m long and 1.0 mm thick roll, Protecto Wrap Sill Tape is supplied as a 50, 150, 200 mm wide, 30 m long and 0.5 mm thick roll and Protecto Tak is supplied in 369 g can.
 - **TRADE-SEAL** is an EPDM sleeve bonded to a carrier material of spun-bonded high density polyethylene film 150 micron thick. The carrier material is backed with a self-adhesive layer. The TRADE-SEAL is available with various diameter EPDM sleeve sizes to accommodate different size wall penetrations.
 - **Adhesive tape** - Tekton Seam Tape is a thin polypropylene joining adhesive tape, available in rolls 48 mm wide and 50 m long.

Handling and Storage

- 5.1 All products must be kept clean and dry at all times prior to use by storing under cover so that they are protected from the weather and damage. Rolls of Tekton® Building Wrap must be stored on end.

Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the Tekton® Weatherization System. 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 Studs must be provided at maximum 600 mm centres. Dwaings must be fitted flush between studs at maximum 1200 mm centres.

General

- 7.2 The Tekton® Weatherization System is intended for use behind wall cladding systems and at joinery openings as a secondary defence against water penetration into framing cavities and is intended for use as an alternative to conventional wall underlays.
- 7.3 The system will also provide a degree of temporary weather protection during construction. However, it will not make the building weathertight and some wetting of the underlying structure is always possible before the building is closed-in, the building must be closed-in and made weatherproof before moisture sensitive materials such as wall or ceiling linings and insulation materials are installed.
- 7.4 The Tekton® Weatherization System is also suitable for use as an air barrier to walls that are not lined, such as attic spaces at gable ends, as called up in NZBC Acceptable Solution E2/AS1, Paragraph 9.1.4 [c]. Refer to Table 1.
- 7.5 TRADE-SEAL when used with Tekton® Building Wrap, provides an alternative solution to the pipes and services penetrations specified in NZBC Acceptable Solution E2/AS1, Paragraph 9.1.9.3 and Figure 68.

Table 1: NZBC E2/AS1 Table 23 Requirements

NZBC E2/AS1 Table 23 Wall Underlay Properties	Property Performance Requirement	Actual Property - Tekton® Building Wrap
Absorbency	$\geq 100 \text{ g/m}^2$	Classified as non-absorbent [see Paragraph 7.7]
Vapour Resistance	$\leq 7 \text{ MN s/g}$	1.15 MN s/g
Water Resistance	$\geq 20 \text{ mm}$	Pass
pH of Extract	≥ 6 and ≤ 9	9.78 [Note 1]
Shrinkage	$\leq 0.5\%$	0.10%
Mechanical	Edge tear and tensile strength	Edge tear: Machine direction = 228 N Cross direction = 186 N Tensile strength: Machine direction = 4.4 kN/m Cross direction = 3.9kN/m
Air Barrier	Air resistance: $\geq 0.1 \text{ MN s/m}^3$	$\geq 0.1 \text{ MN s/m}^3$

Note 1: Further testing of Tekton® Building Wrap was completed to determine the effect of the high pH level on the wall underlay and materials it is likely to come into contact with during its serviceable life. The testing confirmed that the high pH had no adverse effects on the wall underlays performance, or the performance of other materials.

- 7.6 The Tekton® Weatherization System is suitable for use under wall cladding as a wall underlay system as called up in NZBC Acceptable Solution E2/AS1, Table 23 on timber framed buildings, except that it must not be used with non-absorbent wall claddings in direct fixed installations. Tekton® Weatherization System is suitable for use under cavity based wall claddings as a non-absorbent synthetic wall underlay system as called up in NZS 2295, Table 2.4 on steel framed buildings.

- 7.7 In cavity installations where the cavity battens are installed at greater than 450 mm centres, the wall underlay must be supported between the battens to prevent the wall underlay bulging into the cavity space when bulk insulation is installed in the wall frame cavity in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.5.
- 7.8 When the Tekton® Weatherization System is used in conjunction with LOSP (light organic solvent preservative) treated timber, the solvent from the timber treatment must be allowed to evaporate (generally at least one week) prior to the installation of the system.

Structure

- 8.1 The Tekton® Weatherization System is suitable for use in all Wind Zones of NZS 3604 up to, and including, Very High when used as a flexible building underlay, and all Wind Zones of NZS 3604 up to, and including, Extra High when used as an overlay for rigid building underlays.

Durability

Serviceable Life

- 9.1 The system meets code compliance with NZBC Clause B2.3.1 [a], not less than 50 years where the cladding durability requirement or expected serviceable life is not less than 50 years, e.g. behind masonry veneer, and code compliance with NZBC Clause B2.3.1 [b], 15 years where the cladding durability requirement is 15 years. This is provided the system is not exposed to the weather for a total time of more than 60 days. The products also must not be exposed to the weather or UV light at any time in service.
- 9.2 The exterior cladding must be maintained weathertight at all times for the Tekton® Weatherization System to have a serviceable life equal to that of the cladding.

Control of Internal Fire and Smoke Spread

- 10.1 The Tekton® Weatherization System has an AS 1530 Part 2 flammability index of 0 and therefore meets the requirements of NZBC Acceptable Solutions C/AS2 to C/AS6, 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. It may therefore be used with no restrictions in all buildings.

Prevention of Fire Occurring

- 11.1 Separation or protection must be provided to the Tekton® Weatherization System 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 The system is used to assist the control of moisture behind wall claddings by ensuring moisture which may occasionally penetrate the wall cladding is directed back to the exterior of the building.
- 12.2 The system is suitable for use with wall claddings complying with NZBC Acceptable Solution E2/AS1 or a valid BRANZ Appraisal, and where exposed up to, and including Extra High winds as defined by NZS 3604.

Installation Information

Installation Skill Level Requirements

- 13.1 Installation must always be carried out in accordance with the Technical Literature and this Appraisal, by a competent tradesperson with an understanding of the wall underlays and weatherization system installation.

System Installation

- 14.1 The system must be installed in accordance with NZBC Acceptable Solution E2/AS1, or when used with BRANZ Appraised wall claddings, in accordance with any instructions given in the Appraisal, along with the instructions given in the Technical Literature.

- 14.2 Tekton® Building Wrap building wrap must be fixed first to the external face of the timber or steel wall framing over all openings in the framing then cut and dressed into all sides of the openings.
- 14.3 Openings are dressed with lengths of One Piece Sill, Super Stick or Protecto Sill System Tapes where required and adhered to the Tekton Building Wrap. The tape is 'fanned' around the corners onto the face of the Tekton Building Wrap and folded over the outside edge of the opening framing. All surfaces must be clean and dry prior to the installation. *[Please Note: Super Stick requires two layers on the sill.]*
- 14.4 Any other components of the cladding system or joinery installation, such as sill trays, other flashings or seals should be installed as instructed by the cladding or joinery manufacturer. Note that these components, including cladding systems and joinery have not been assessed and are outside the scope of this Appraisal.

Inspections

- 14.5 The Technical Literature must be referred to during the inspection of Tekton® Weatherization System 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 Tekton® Building Wrap by Scion: Folding strength of paper in accordance with AS/NZS 1301.423; edge tear resistance and tensile strength in accordance with AS/NZS 4200.1 and air resistance in accordance with BS 6538-3.
- 15.2 The following tests have been carried out on Tekton® Building Wrap by BRANZ: Absorbency in accordance with AS/NZS 4201.6, Vapour transmission in accordance with ASTM E 96B, Shrinkage in accordance with AS/NZS 4201.3, Water barrier in accordance with AS/NZS 4201.4 and pH of extract in accordance with AS/NZS 1301.421.
- 15.3 Tests have been carried out on the One Piece Sill, Protecto Wrap Detail Tape, Super Stick and Protecto Wrap Sill Tapes in accordance with ICC Evaluation Service Criteria for Flashing Materials, AC148 [2001]. The results have been reviewed by BRANZ experts and found to be satisfactory.
- 15.4 Peel adhesion testing of the One Piece Sill, Protecto Wrap Detail Tape, Super Stick and Protecto Wrap Sill Tapes, Tekton Seam Tape and TRADE-SEAL on the Tekton® Building Wrap has been completed by BRANZ.

Other Investigations

- 16.1 Durability opinions have been given by BRANZ technical experts.
- 16.2 Practicability of installation has been assessed by BRANZ and found to be satisfactory.
- 16.3 The Technical Literature from Marshall Innovations Ltd has been examined by BRANZ and found to be satisfactory.

Quality

- 17.1 The manufacture of products covered by this Appraisal 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. BRANZ has taken note of product certifications covering quality aspects associated with these products.
- 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 Tekton® Weatherization System 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 4200.1: 1994 Pliable building membranes and underlays - materials.
- AS/NZS 4201.3: 1994 Pliable building membranes and underlays - Methods of test - Shrinkage.
- BS 6538-3: 1987 Method for determination of air permeance using the Garley apparatus.
- NZS 2295: 2006 Pliable, Permeable Building Underlays.
- NZS 3604: 2011 Timber-framed buildings.
- Acceptable Solutions and Verification Methods for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005 [Amendment 6, 14 February 2014].
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.
- AC 148 [2001] Acceptance criteria for flashing materials ICBO Evaluation Service Inc. July 2001



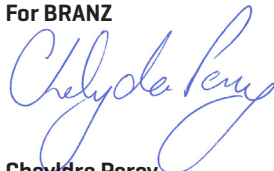
In the opinion of BRANZ, **The Tekton® Weatherization System** is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

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



Cheydra Percy
Chief Executive

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11 December 2014