



BRANZ Appraised
Appraisal No. 1012 [2018]

GREENWOOL UNDERFLOOR INSULATION

Appraisal No. 1012 [2018]
Amended 15 January 2020



GREEN SHEEP®

INSULATION & HOME COMFORT

BRANZ Appraisals

Technical Assessments of products for building and construction.



TEXTILE PRODUCTS

Textile Products 1971 Ltd

22 Miami Parade
Onehunga
Auckland
Tel: 09 636 6230
Email: sales@textile.co.nz
Web: www.textile.co.nz

Marketed By:

Green Sheep Limited

265 Wairoa Road
Te Puna
Tauranga
Tel: 0800 889 977
Email: enquiry@greensheep.co.nz
Web: www.greensheep.co.nz



BRANZ

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 Greenwool Underfloor Insulation is a polyester thermal insulating blanket for use in timber framed floors. It is available in R1.5 and are supplied in various widths to fit floor joist spacings.

Scope

- 2.1 Greenwool Underfloor Insulation has been appraised as a thermal insulating material for timber framed floors in new or existing domestic and commercial buildings.

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 **In the opinion of BRANZ, Greenwool Underfloor Insulation 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 and B2.3.1 [b] 15 years. Greenwool Underfloor Insulation meets these requirements. See Paragraph 8.1.

Clause E3 INTERNAL MOISTURE: Performance E3.3.1. Greenwool Underfloor Insulation will contribute to meeting this requirement. See Paragraphs 12.1 and 12.2.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Greenwool Underfloor Insulation meets this requirement and will not present a health hazard to people.

Clause H1 ENERGY EFFICIENCY: Performance H1.3.1 [a] and H1.3.2 E. Greenwool Underfloor Insulation will contribute to meeting these requirements. See Paragraphs 14.1 and 14.2.

Technical Specification

Wool Blend Insulation

- 4.1 Greenwool Underfloor Insulation is manufactured from non-woven thermally bonded polyester fibres. The fibres are blended, carded and thermally bonded to produce blankets which are then slit to the required width, compressed and packaged. Greenwool Underfloor Insulation is available as set out in Table 1.

Table 1: Greenwool Underfloor Insulation product range

R-value	Nominal thickness [mm]	Width [mm]	Length [mm]	Area [m ²]	Density [kg/m ³]
1.5	100	430	9,300	20.0	9.2
1.5	100	450	8,880	20.0	9.2
1.5	100	480	10,420	20.0	9.2
1.5	100	510	9,800	20.0	9.2
1.5	100	580	8,620	20.0	9.2
1.5	100	600	8,340	20.0	9.2
1.5	100	650	7,700	20.0	9.2

* Insulation must not be fitted into fully enclosed cavities that are less than the labelled insulation nominal thickness.

- 4.2 Greenwool Underfloor Insulation is white in colour and is compression packed in clear polythene bags with labelling in compliance with AS/NZS 4859.1.
- 4.3 Accessories used with Greenwool Underfloor Insulation, which are supplied by the insulation installer, are staples.

Handling and Storage

- 5.1 Greenwool Underfloor Insulation must be stored under cover and in dry conditions. Heavy objects must not be stacked on the packs. The packs must be stored in an orientation that avoids excessive compression of the product.
- 5.2 Compression packaged polyester can be subjected to a maximum combination of compression density and storage time after which the product may not achieve its designed thermal performance.
- 5.3 In general, insulation products are sensitive to the length of time they are stored under compression packaging. Product that does not recover to its nominal thickness may not achieve the stated R-value.

Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for Greenwool Underfloor Insulation. 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 Greenwool Underfloor Insulation is intended for use as thermal insulation to meet the requirements of the NZBC. Greenwool Underfloor Insulation R-value of 1.5 m²°C/W are designed to meet the minimum schedule method R-values of NZBC Verification Method H1/VM1 or NZBC Acceptable Solution H1/AS1. Greater construction R-values can be achieved where specific design is used. For construction R-values refer to the BRANZ House Insulation Guide. Product R-values and dimensions are given in Table 1.
- 7.2 Greenwool Underfloor Insulation thermal resistance [R-value] has been determined by testing to AS/NZS 4859.1, which is an acceptable method in NZBC Acceptable Solution H1/AS1.
- 7.3 Greenwool Insulation is designed to be fitted between joists with the sides folded down at right angles and fixed with staples.
- 7.4 Where the subfloor area is subject to wind such as in pole houses, or the subfloor does not have a closed perimeter, e.g. solid concrete, masonry ring foundation or a subfloor that is enclosed with a sheet material, the insulation must be protected with a suitable lining material.
- 7.5 The building envelope must be constructed to ensure the insulation remains dry during installation and throughout the life of the building.
- 7.6 The clearance requirements for heating appliances and downlights must be met and reference made to the manufacturers instructions and NZS 4246. See Paragraphs 10.1 - 10.3.

Durability

Serviceable Life

- 8.1 Where the building is maintained so that provisions of NZBC Clause E2 and E3 are met, and where the insulation is not crushed or exposed to conditions that will diminish its thermal performance [e.g. moisture], Greenwool Insulation can expect to have a serviceable life of at least 50 years. Support accessories must also be selected according to the required serviceable life.

Maintenance

- 9.1 Insulation that has become damp must be removed and the cause of dampness repaired. Cavities must be clean and dry before fitting new insulation of an equivalent thermal rating. NZS 4246 gives guidance on thermal insulation maintenance due to water damage.

Prevention of Fire Occurring

- 10.1 Separation or protection must be provided to Greenwool Underfloor Insulation from heat sources such as fire places, heating appliances, flues, chimneys and recessed luminaires. Refer to Part 7 of NZBC Acceptable Solution C/AS1 to C/AS6 and NZBC Verification Method C/VM1.

Downlights

- 10.2 Recessed luminaires shall be of type and be installed in accordance with NZBC Acceptable Solution C/AS1 to C/AS6 Section 7.4.
- 10.3 Insulation materials must maintain a clearance of 100 mm to undefined recessed luminaires in existing buildings.

Control of Internal Fire and Smoke Spread

- 11.1 The completed wall and ceiling system, including the surface lining product enclosing the Greenwool Underfloor Insulation from the adjacent occupied space, must achieve the Group Number for internal surface finish requirements as specified in the relevant NZBC Acceptable Solution C/AS1 to C/AS6.



External Moisture

- 12.1 The total building envelope must be weathertight and comply with the requirements of NZBC Clause E2 to ensure that the insulation remains dry in use.
- 12.2 The moisture content of the construction materials at the time of enclosing the insulation must meet the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 10.2 (a), or lower moisture content if required by the lining manufacturer.

Internal Moisture

- 13.1 Buildings must provide an adequate combination of thermal resistance, ventilation and space temperature to all habitable spaces, bathrooms, laundries and other spaces where moisture may be generated or may accumulate. This does not apply to Communal Non-residential, Commercial, Industrial Outbuildings or Ancillary buildings.
- 13.2 Roofs and walls of housing complying with the Schedule Method for Compliance with Clause H1.3.2 E will have adequate thermal resistance. Other buildings may require more thermal insulation to satisfy the requirements of NZBC Acceptable Solution E3/AS1 than that to satisfy the energy efficiency provisions alone.

Energy Efficiency

- 14.1 Greenwool Underfloor Insulation will contribute to meeting the requirements of NZBC Clause H1, Performance H1.2.1 (a) and H1.3.2 E by compliance with NZBC Verification Method H1/VM1 or NZBC Acceptable Solution H1/AS1. Refer to Paragraphs 7.1 - 7.7.
- 14.2 Greenwool Underfloor Insulation R-values have been determined by BRANZ testing to AS/NZS 4859.1 and are given in Table 1.

Installation Information

Installation Skill Level Requirements

- 15.1 Installation of Greenwool Underfloor Insulation must be completed by an understanding of insulation installation.

General

- 16.1 Installation of Greenwool Underfloor Insulation must be in accordance with the Technical Literature, installation instructions and this Appraisal. NZS 4246 should be used as a guide for installing insulation in residential buildings.
- 16.2 The product must be installed only when the building is enclosed and when the construction materials have achieved the required maximum moisture content or less.
- 16.3 Greenwool Underfloor Insulation must be released from the packaging and allowed to re-loft prior to installation. The time to loft will depend upon the length of time the product has been packaged and stored.
- 16.4 Greenwool Underfloor Insulation is supplied in roll from [see Table 1] to suit framing layouts. The insulation is designed to fit between the floor joists. There must be no gaps between subsequent installed insulation otherwise the thermal performance will be compromised. Care during installation is important to avoid gaps that can create convective heat loss.
- 16.5 The insulation should be folded down at right angles on either side and fixed with staples 50 mm from the underside of the flooring. The insulation is to be secured in place with staples along the edge of the insulation at 300 mm - 400 mm centres.
- 16.6 A minimum of 100 mm gap must be maintained between Greenwool Underfloor Insulation and plumbing, pipe work fittings. This gap will also ensure that there is adequate access for servicing.
- 16.7 The clearance requirements for heating appliances and downlights must be followed. Refer also to NZS 4246.



Inspections

16.8 The Technical Literature, this Appraisal and NZS 4246 must be referred to during the inspection of Greenwool Underfloor Insulation installations.

Health and Safety

17.1 Greenwool Insulation is easy to handle. NZS 4246 gives guidance for health and safety requirements such as personal protective clothing and installation hazard assessment.

Basis of Appraisal

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

Tests

18.1 BRANZ has carried out thermal resistance testing of Greenwool Underfloor Insulation in accordance with AS/NZS 4859.1.

Other Investigations

19.1 An assessment of the durability of Greenwool Underfloor Insulation has been made by BRANZ technical experts.

19.2 The manufacturer's Technical Literature and installation instructions have been reviewed by BRANZ and found to be satisfactory.

19.3 Site inspections have been undertaken by BRANZ to assess the practicability of installation.

Quality

20.1 The manufacture of Greenwool Underfloor Insulation has been examined by BRANZ, including methods adopted for quality control. Details of the manufacturing processes, and quality and composition of the raw materials used were obtained and found to be satisfactory.

20.2 Textile Products 1971 Ltd is responsible for the quality of the product supplied.

20.3 Quality of installation of the product on site is the responsibility of the installer.

20.4 Quality of maintenance of the building to ensure the insulation material remains dry is the responsibility of the building owner.

Sources of Information

- AS/NZS 4859.1: 2002 Materials for the thermal insulation of buildings.
- NZS 4246: 2016 Energy efficiency – Installing bulk thermal insulation in residential buildings.
- BRANZ House Insulation Guide, Fifth Edition 2014.
- Acceptable Solution and Verification Methods for New Zealand Building Code Energy Efficiency Clause H1, Ministry of Business, Innovation and Employment, Fourth Edition, (including Amendment 3, 1 January 2017).
- Ministry of Business, Innovation and Employment record of Amendments – Acceptable Solutions, Verification Methods and Handbooks.
- The Building Regulations 1992.

Amendments

Amendment No. 1, dated 28 June 2018.

This Appraisal has been amended to update the product range in Table 1.

Amendment No. 2, dated 15 January 2020.

This Appraisal has been amended to update the product specifications in Table 1



BRANZ Appraised
Appraisal No. 1008 [2018]

BRANZ Appraisal
Appraisal No. 1012 [2018]
15 June 2018

GREENWOOL UNDERFLOOR
INSULATION



In the opinion of BRANZ, **Greenwool Insulation** 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 **Textile Products 1971 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. **Textile Products 1971 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 **Textile Products 1971 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 **Textile Products 1971 Ltd** or any third party.

For BRANZ

Chelydra Percy

Chief Executive

Date of Issue:

15 June 2018