



BRANZ Appraised

Appraisal No. 734 [2021]

AUTEX GREENSTUF® UNDERFLOOR INSULATION

Appraisal No. 734 [2021]

This Appraisal replaces BRANZ
Appraisal No. 734 [2016]

Amended 19 August 2024



BRANZ Appraisals

Technical Assessments of
products for building and
construction.



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Product

- 1.1 Autex GreenStuf® Underfloor Insulation is a low-density, polyester thermal insulating blanket for use in timber-framed floors. It is available in two R-values: R1.5 and R1.8, and is supplied in three widths to fit standard floor joist spacings.

Scope

- 2.1 Autex GreenStuf® Underfloor Insulation has been appraised as a thermal insulating material for use with 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, Autex GreenStuf® 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: B2.3.1 (b) not less than 15 years and B2.3.1 (c) 5 years. Autex GreenStuf® Underfloor Insulation meets these requirements. See Paragraphs 8.1 and 8.2.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Autex GreenStuf® Underfloor Insulation meets this requirement.

Clause H1 ENERGY EFFICIENCY: Performance H1.3.1 (a) and H1.3.2 E. Autex GreenStuf® Underfloor Insulation contributes to meeting these requirements. See Paragraphs 14.1 and 14.2.

Technical Specification

4.1 Autex GreenStuf® Underfloor Insulation is manufactured from non-woven, thermally bonded, polyester fibres. The fibres are blended, carded and thermally bonded to produce blankets, which are machine slit to required widths and cut to length. Autex GreenStuf® Underfloor Insulation is available as set out in Table 1.

Table 1: Autex GreenStuf® Underfloor Insulation Product Range

R-value	Nominal Thickness [mm]	Width [mm]	Length [mm]	Product Weight [gsm]
1.5	100	450; 500; 600 or 650	8,900; 10,000; 8,340 or 10,300	750
1.8	100	450; 500; 550; 600 or 650	7,780; 8,750; 7,960; 7,290 or 9,000	1,025
2.6	140	500 or 600	6,250 or 7,500	1,650
2.9	140	380; 500; 580 or 600	7,020 or 8,500	1,850

4.2 Autex GreenStuf® Underfloor Insulation is green in colour and is packaged in green compression packed plastic bags with labelling in compliance with AS/NZS 4859.1.

4.3 Accessories used with Autex GreenStuf® Underfloor Insulation, which are supplied by the insulation installer, are zinc plated and stainless steel staples.

Handling and Storage

5.1 Autex GreenStuf® 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 insulation can be subjected to a maximum combination of compression density and storage time after which the product may not achieve its designed thermal performance [R-value].

Technical Literature

6.1 This Appraisal must be read in conjunction with:

- GreenStuf® Underfloor Data Sheet, GS_NZ_DS_Underfloor-Data-Sheet_May22_RC, May 2022.
- GreenStuf® Underfloor Install Instructions, GS_NZ_II_Underfloor Install Instructions_Feb23_RC, Feb 2023.

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 Autex GreenStuf® Underfloor Insulation is intended for use as a thermal insulation to meet the requirements of the NZBC. Autex GreenStuf® Underfloor Insulation R-values of 1.5 m²C/W and 1.8 m²C/W are designed to meet the minimum schedule method R-values of NZBC Verification Methods H1/VM1, H1/VM2, NZBC Acceptable Solutions H1/AS1 or H1/AS. 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 Autex GreenStuf® Underfloor Insulation R-values have been determined by testing to AS/NZS 4859.1.

7.3 Autex GreenStuf® Underfloor Insulation is designed to be retrofitted between joists and stapled in place. Fixing centres vary with the joist centres and the manufacturer's instructions must be followed.



- 7.4 Autex GreenStuf® Underfloor Insulation is suitable for use without additional lining material under floors which have an "enclosed perimeter foundation" as defined by NZS 4246, or a semi-enclosed perimeter foundation in accordance with NZS 3604 Paragraph 6.14.2. Where the subfloor area is fully open and therefore wind penetration is not reduced or eliminated, the insulation shall be protected by suitable lining material.
- 7.5 The building envelope must be constructed to ensure that the insulation remains dry during installation and throughout the life of the building.
- 7.6 The clearance requirements for downlights must be met and reference made to the manufacturer's instructions and NZS 4246.

Durability

- 8.1 The durability assessment of Autex GreenStuf® Underfloor Insulation to meet the requirements of the NZBC is based on the difficulty of access and replacement, and the ability to detect failure of the insulation, both during normal use and maintenance of the building.

Serviceable Life

- 8.2 Where the building is maintained so that the provisions of NZBC E2 and E3 Clauses are met, and where the insulation is not crushed or exposed to conditions that will diminish its thermal performance, Autex GreenStuf® Underfloor Insulation is expected 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 replacing with new Autex GreenStuf® Underfloor Insulation. 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 Autex GreenStuf® Underfloor Insulation 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.

Downlights

- 10.2 Insulation should maintain 100 mm clearance from all undefined recessed luminaires, treating them as a heat source. For insulation to abut or cover recessed luminaires, these must be clearly marked as being suitable for having insulation abutting or covering them and have been installed in accordance with NZBC Acceptable Solution G9/AS1.

Fire Affecting Areas Beyond the Fire Source

Control of Internal Fire and Smoke Spread

- 11.1 Autex GreenStuf® Underfloor Insulation has a Group Number of 1-S. When used in an occupied space, Autex GreenStuf® Underfloor Insulation may or may not need to be enclosed by an internal lining depending on the Risk Group. Refer to the relevant NZBC Acceptable Solution C/AS1 and C/AS2 for specific internal surface finish requirements.

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 installing and enclosing the insulation must meet the requirements of NZBC Acceptable Solution E2/AS1 Paragraph 10.2 a), or a lower moisture content if required by the flooring manufacture.

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.

Energy Efficiency

- 14.1 Autex GeenStuf® Underfloor Insulation will contribute to meeting the requirements of NZBC Clause H1 Performance H1.3.1 [a] and H1.3.2 E by compliance with NZBC Verification Methods H1/VM1, H1/VM2, NZBC Acceptable Solutions H1/AS1 or H1/AS.
- 14.2 Autex GreenStuf® Underfloor Insulation R-values have been determined by testing to AS/NZS 4859.1 and are given in Table 1.

Installation Information

Installation Skill Level Requirement

- 15.1 All design and building work must be carried out in accordance with Autex GreenStuf® Underfloor Insulation Technical Literature and this Appraisal. All building work must be undertaken by competent and experienced tradespersons conversant with Autex GreenStuf® Underfloor Insulation.

General

- 16.1 Installation of Autex GreenStuf® Underfloor Insulation must be in accordance with the Technical Literature and this Appraisal. NZS 4246 should be used as a guide for installing insulation in residential buildings.
- 16.2 Autex GreenStuf® Underfloor Insulation 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 Autex GreenStuf® 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 Autex GreenStuf® Underfloor Insulation is designed to be wider than the joist cavity and excess material should be folded down on each side and stapled at approximately 75 mm from the top, and along the length of the roll at intervals of 150 mm for 580 mm width, 200 mm for 500 mm width, and 300 mm for 480 mm width products. The insulation must be installed hard against the floor, ends neatly butted and the ends of joist runs sealed off so that the potential for gaps and convective heat loss is reduced. Autex GreenStuf® Underfloor Insulation Technical Literature must be referred to for installation details.
- 16.5 A minimum of 100 mm gap must be maintained between Autex GreenStuf® Underfloor Insulation and all plumbing pipes. This gap will also ensure that there is adequate access for servicing.
- 16.6 The clearance requirements for heating appliances, light fittings and downlights must be followed. Refer also to NZS 4246.

Inspection

- 16.7 The Technical Literature, this Appraisal and NZS 4246 must be referred to during the inspection of Autex GreenStuf® Underfloor Insulation.

Health and Safety

- 17.1 Refer to the Technical Literature and NZS 4246 for guidance on 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 Thermal resistance testing of Autex GreenStuf® Insulation in accordance with AS/NZS 4859.1 has been completed. The results have been reviewed by BRANZ technical experts.
- 18.2 BRANZ has carried out an assessment of the fire performance of Autex GreenStuf® Underfloor Insulation in accordance with NZBC Verification Method C/VM2 [ISO 9705].

Other Investigations

- 19.1 An assessment of the durability of Autex GreenStuf® Underfloor Insulation has been made by BRANZ technical experts.
- 19.2 The manufacturer's Technical Literature has 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 Autex GreenStuf® 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 Autex Industries Limited 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 the maintenance of the building to ensure the insulation remains dry is the responsibility of the building owner.

Sources of Information

- AS/NZS 4859.1:2018 Thermal insulation materials for buildings - Part 1: General criteria and technical provisions.
- BRANZ House Insulation Guide, Sixth Edition 2022.
- NZS 4246:2016 Energy efficiency - Installing bulk thermal insulation in residential buildings.
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

Amendments

Amendment No. 1, dated 09 March 2023

This Appraisal has been amended to reflect building code updates relating to NZBC H1 Energy Efficiency and to update Table 1.

Amendment No. 2, dated 19 August 2024

This Appraisal has been amended to update the design section Paragraph 7.4 in regard to requirements for lining of subfloor spaces.



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16 April 2021

AUTEX GREENSTUF®
UNDERFLOOR INSULATION



In the opinion of BRANZ, **Autex GreenStuf® Underfloor 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 **Autex Industries 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. **Autex Industries 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 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 **Autex Industries 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 **Autex Industries Limited** or any third party.

For BRANZ

Chelydra Percy

Chief Executive

Date of Issue:

16 April 2021