



BRANZ Appraised
Appraisal No. 1050 [2019]

ECOINSULATION UNDERFLOOR INSULATION



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BRANZ Appraisals

Technical Assessments of products
for building and construction.



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Product

- 1.1 **ecoinsulation**® Underfloor Insulation consist of a range of underfloor insulation manufactured from ECOSE Technology resin boned glass wool fibres, for use in suspended timber framed floors. The following **ecoinsulation** Underfloor Insulation products are covered by this Appraisal:
- **ecoinsulation** Thermal Underfloor [Wrapped] Insulation – the insulation is completely wrapped in a plastic film to provide a barrier to air movement under the floor.
 - **ecoinsulation** Faced Thermal Underfloor Insulation – the insulation is faced with a wind-wash barrier, which provides protection to air movement under the floor.

Scope

- 2.1 **ecoinsulation** Underfloor Insulation have been appraised as a thermal insulating material for suspended timber framed floors in new or existing domestic and commercial buildings.
- 2.2 **ecoinsulation** Underfloor Insulation are suitable for use under floors which have an enclosed perimeter foundation as defined in NZS 4246. It is also suitable for use where the subfloor area is not enclosed and is subject to wind, such as in open raised floors and pole houses.

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 **In the opinion of BRANZ, ecoinsulation 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(b) 15 years and B2.3.1(c) 5 years. **ecoinsulation** Underfloor Insulation meets this requirement. See Paragraphs 8.1 and 8.2.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. **ecoinsulation** 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. **ecoinsulation** Underfloor Insulation will contribute to meeting these requirements. See Paragraph 14.1.

Technical Specification

- 4.1 **ecoinsulation Underfloor Insulation** is an ECOSE® Technology resin bonded fibrous glass wool insulation. It is manufactured from recycled and/or virgin glass and ECOSE® Technology resin and is formed into segments. **ecoinsulation Underfloor Insulation** are available as set out in Table 1.
- 4.2 **ecoinsulation Thermal Underfloor (Wrapped) Insulation** is formed into segments and is completely wrapped in a plastic film. **ecoinsulation Faced Thermal Underfloor Insulation** is formed into blankets and is faced with a glass woven matt. **ecoinsulation Underfloor Insulation** is available as set out below

Table 1: ecoinsulation Underfloor Insulation product range.

| R-value | Nominal Thickness (mm) | Length (mm) | Width (mm) | Nett Area (m ²) | Density (kg/m ³) |
|--------------------------------------------------------------|------------------------|-------------|------------|-----------------------------|------------------------------|
| ecoinsulation Thermal Underfloor (Wrapped) Insulation | | | | | |
| 1.5 | 70 | 2700 | 470 | 19.0 | 10.5 |
| ecoinsulation Faced Thermal Underfloor Insulation | | | | | |
| 1.8 | 75 | 10,000 | 500 | 10 | 10.5 |
| 1.8 | 75 | 10,000 | 600 | 12 | 10.5 |

- 4.3 **ecoinsulation Underfloor Insulation** are brown in colour and are packaged in pre-printed plastic compression bags with labelling in compliance with AS/NZS 4859.1.
- 4.4 Accessories used with **ecoinsulation Underfloor Insulation**, which are supplied by the insulation installer are staples suitable to fix insulation for enclosed perimeter and stainless steel staples for use in open raised floors and pole houses.

Handling and Storage

- 5.1 **ecoinsulation Underfloor Insulation** must be stored under cover, away from direct sunlight 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 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 Appraisal listing on the BRANZ website for details of the current Technical Literature for **ecoinsulation 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 **ecoinsulation Underfloor Insulation** is intended for use as thermal insulation to meet the requirements of the NZBC. **ecoinsulation Underfloor Insulation** R-values of 1.5 m²C/W and 1.8 m²C/W and are designed to meet the minimum schedule method R-values of NZBC Verification Method H1/VM1 or NZBC Acceptable Solution H1/AS1. For construction R-values, refer to BRANZ House Insulation Guide. Product dimensions are given in Table 1.
- 7.2 **ecoinsulation 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 **ecoinsulation Thermal Underfloor [Wrapped] Insulation** is designed to be fitted between joists with the plastic tabs folded down at right angles on either side and fixed with staples. The segments are manufactured 470 mm wide to suit joist spacing's of up to 515 mm centres. If the spacing between the joists is less than 470 mm, the additional insulation can be compressed.
- 7.4 **ecoinsulation Faced Thermal Underfloor Insulation** is designed to be friction-fitted between the floor joists with the excess material folded down evenly on either side and fixed with staples. The rolls are manufactured to suit joist spacings up to 600 mm centres. The width of the roll must be a minimum 50 mm greater than the width of the cavity.
- 7.5 **ecoinsulation Underfloor Insulation** is designed to be not significantly affected by wind wash in fully open subfloor situations due to the plastic film or facing.
- 7.6 The building envelope must be constructed to ensure that the insulation remains dry during installation and throughout the life of the building.
- 7.7 The clearance requirements for heating appliances and downlights must be met and reference made to the manufacturer's instructions and NZS 4246.

Durability

- 8.1 Assessment of durability to meet the NZBC is based on difficulty of access and replacement, and the ability to detect failure of **ecoinsulation Underfloor Insulation** both during normal use and maintenance of the building.

Serviceable Life

- 8.2 Where the building is maintained so that the provisions of the NZBC E2 and E3 Clauses are met, and where the insulation is not crushed or exposed to conditions that will diminish its thermal performance, **ecoinsulation Underfloor Insulation** can expect to have a serviceable life of at least 15 years.

Maintenance

- 9.1 Insulation that has become damp must be removed and the cause of dampness repaired. Flooring and framing must be clean and dry before fitting new insulation with 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 **ecoinsulation Underfloor Insulation** from heat sources such as heating appliances and light fittings. Refer to Part 7 of NZBC Acceptable Solution C/AS1 to C/AS6 and NZBC Verification Method C/VM1.

Control of Internal Fire and Smoke Spread

- 11.1 Where the completed floor system is above an occupied space, the system, including the surface lining product enclosing the **ecoinsulation 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 installing and enclosing the insulation must meet the requirements of the NZBC Acceptable Solution E2/AS1 Paragraph 10.2(a), or a lower moisture content if required by the flooring 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.



Energy Efficiency

- 14.1 **eco**insulation Underfloor Insulation will contribute to meeting the requirements of NZBC Clause H1 Performance H1.3.1 [a] and H.3.2 E by compliance with NZBC Verification Method H1/VM1 or NZBC Acceptable Solution H1/AS1.

Installation Information

Installation Skill Level Requirements

- 15.1 Installation of **eco**insulation Underfloor Insulation must be completed by an installer with an understanding of insulation installation.

General

- 16.1 Installation of **eco**insulation 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 **eco**insulation 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 **eco**insulation Underfloor Insulation must be released from the packaging and allowed to re-loft prior to the installation. The time to loft will depend upon the length of time the product has been packaged and stored.
- 16.4 There must be no gaps between subsequent installed segments otherwise the thermal performance will be compromised. Care during installation is important to avoid gaps that can create convection heat loss.
- 16.5 A minimum of 100 mm gap must be maintained between **eco**insulation Underfloor Insulation and plumbing, pipework fittings. This gap will also ensure that there is adequate access for servicing.
- 16.6 The clearance requirements for heating appliances and light fittings must be followed. Refer also to NZS 4246.

ecoinsulation Thermal Underfloor [Wrapped] Insulation

- 17.1 **eco**insulation Thermal Underfloor [Wrapped] Insulation fits between the floor joists with the grey plastic film facing down.
- 17.2 The segments are to be secured in place with staples along the plastic tabs at a minimum of 200 mm centres. The plastic tabs should be folded down at right angles on either side and fixed with staples 65 mm from the underside of the flooring. One side of the segment is secured before pulling the plastic film taut and securing the other side. When abutting to blocking, the segments should be installed 50 mm longer in order to create a turn down, which is fixed with staples.

ecoinsulation Faced Thermal Underfloor Insulation

- 18.1 **eco**insulation Faced Thermal Underfloor Insulation is friction-fitted between the joists with the black facing facing down.
- 18.2 The underfloor roll is to be secured in place with staples along the turndowns at 200 mm centres. Secure one side of the roll before gently pulling the roll taut and securing the other side. Ensure there are no air gaps between the insulation and the floor. When abutting to blocking, the roll should be installed 75 mm longer in order to create a turn down, which is fixed with staples.

Open Raised Floor and Pole Houses

- 19.1 The segments must be secured in place with stainless steel staples along the plastic tabs at a minimum of 100 mm centres. The abutted insulation should be taped with a suitable adhesive tape.

Inspections

- 20.1 The Technical Literature, this Appraisal and NZS 4246 must be referred to during the inspection of **eco**insulation Underfloor Insulation installations.



Health and Safety

- 21.1 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 investigation carried out:

Tests

- 22.1 BRANZ has carried out thermal resistance testing of **eco**insulation Underfloor Insulation in accordance with AS/NZS 4859.1.

Other Investigations

- 23.1 An assessment of the durability of **eco**insulation Underfloor Insulation has been made by BRANZ technical experts.
- 23.2 Site inspections were carried out by BRANZ to examine the practicability of installation.
- 23.3 The manufacturer's Technical Literature and Installation Instructions has been reviewed by BRANZ and found to be satisfactory.
- 23.4 The fibre used to manufacture **eco**insulation Underfloor Insulation is certified to the European Certification Board of Mineral Wool Products [EUCEB].

Quality

- 24.1 The manufacture of **eco**insulation 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 obtain and found to be satisfactory.
- 24.2 Eco Insulation Systems Ltd is responsible for the quality of the product manufactured.
- 24.3 Quality of installation of the product on site is the responsibility of the installer.
- 24.4 Quality of maintenance of the building to ensure the insulation remains dry and in place 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, Firth Edition 2014.
- Acceptable Solutions and Verification Methods for New Zealand Building Code Energy Efficiency Clause H1, Ministry of Business, Innovation and Employment, Fourth Edition Amendment 3, 1 January 2017.
- Ministry of Business, Innovation and Employment Records of Amendments - Acceptable Solutions and Verification Methods and Handbooks.
- The Building Regulations 1992.



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12 March 2019

**ECOINSULATION UNDERFLOOR
INSULATION**



In the opinion of BRANZ, **ecoinsulation 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 **Eco Insulation Systems 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. **Eco Insulation Systems 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 **Eco Insulation Systems 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 **Eco Insulation Systems Ltd** or any third party.

For BRANZ

Chelydra Percy

Chief Executive

Date of Issue:

12 March 2019