



**BRANZ Appraised**  
Appraisal No. 975 [2017]

## **EARTHWOOL® GLASSWOOL: QUILTED UNDERFLOOR SEGMENTS**



**Appraisal No. 975 [2017]**

### **BRANZ Appraisals**

Technical Assessments of products  
for building and construction.



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## **Product**

- 1.1 Earthwool® glasswool: Quilted underfloor segments are an ECOSE Technology resin bonded glass wool fibre thermal insulating material, wrapped in a plastic film, for use in suspended timber framed floors. Earthwool® glasswool: Quilted underfloor segments are available in R1.5.

## **Scope**

- 2.1 Earthwool® glasswool: Quilted underfloor segments have been appraised as a thermal insulating material for suspended timber framed floors in new or existing domestic and commercial buildings.
- 2.2 Earthwool® glasswool: Quilted underfloor segments 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, Earthwool® glasswool: Quilted underfloor segments 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. Earthwool® glasswool: Quilted underfloor segments meet this requirement. See Paragraph 8.1.

**Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1. Earthwool® glasswool: Quilted underfloor segments meet 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. Earthwool® glasswool: Quilted underfloor segments will contribute to meeting these requirements. See Paragraph 14.1.

## Technical Specification

- 4.1 Earthwool® glasswool: Quilted underfloor segments are an ECOSE Technology resin bonded fibrous glass wool insulation wrapped in a plastic film. It is manufactured from recycled and/or virgin glass and ECOSE Technology resin and is formed into segments. Earthwool® glasswool: Quilted underfloor segments are available as set out in Table 1.

**Table 1: Earthwool® glasswool: Quilted underfloor segments product range**

R-value	Nominal Thickness [mm]	Length [mm]	Width [mm]	Nett Area [m <sup>2</sup> ]	Density [kg/m <sup>3</sup> ]
1.5	70	2700	470	19.0	10.5

- 4.2 Earthwool® glasswool: Quilted underfloor segments are brown in colour and are wrapped in a grey perforated plastic film along the bottom side, with brown plastic film on the other three sides. Earthwool® glasswool: Quilted underfloor segments are packaged in pre-printed plastic compression bags with labelling in compliance with AS/NZS 4859.1.
- 4.3 Accessories used with Earthwool® glasswool: Quilted underfloor segments, 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 Earthwool® glasswool: Quilted underfloor segments 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 Earthwool® glasswool: Quilted underfloor segments. 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 Earthwool® glasswool: Quilted underfloor segments are intended for use as thermal insulation to meet the requirements of the NZBC. Earthwool® glasswool: Quilted underfloor segments have a R-value of 1.5 m<sup>2</sup>C/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 Earthwool® glasswool: Quilted underfloor segments 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 Earthwool® glasswool: Quilted underfloor segments are 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 spacings 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 Earthwool® glasswool: Quilted underfloor segments are designed to be not significantly affected by wind wash in fully open subfloor situations due to the plastic film.



- 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 heating appliances and light fittings 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 Earthwool® glasswool: Quilted underfloor segments 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, Earthwool® glasswool: Quilted underfloor segments 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 Earthwool® glasswool: Quilted underfloor segments 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 Earthwool® glasswool: Quilted underfloor segments 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 Earthwool® glasswool: Quilted underfloor segments 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. Refer to Paragraphs 7.1 - 7.6.



## Installation Information

### Installation Skill Level Requirements

- 15.1 Installation of Earthwool® glasswool: Quilted underfloor segments must be completed by an installer with an understanding of insulation installation.

### General

- 16.1 Installation of Earthwool® glasswool: Quilted underfloor segments 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 Earthwool® glasswool: Quilted underfloor segments 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 Earthwool® glasswool: Quilted underfloor segments 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 Earthwool® glasswool: Quilted underfloor segments fit between the floor joists with the grey plastic film facing down. 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 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.
- 16.6 A minimum of 100 mm gap must be maintained between Earthwool® glasswool: Quilted underfloor segments and plumbing, pipework fittings. This gap will also ensure that there is adequate access for servicing.
- 16.7 The clearance requirements for heating appliances and light fittings must be followed. Refer also to NZS 4246.

### Open Raised Floor and Pole Houses

- 16.8 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

- 16.9 The Technical Literature, this Appraisal and NZS 4246 must be referred to during the inspection of Earthwool® glasswool: Quilted underfloor segments installations.

### 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 investigation carried out:

### Tests

- 18.1 BRANZ has carried out thermal resistance testing of Earthwool® glasswool: Quilted underfloor segments in accordance with AS/NZS 4859.1.

### Other Investigations

- 19.1 An assessment of the durability of Earthwool® glasswool: Quilted underfloor segments has been made by BRANZ technical experts.
- 19.2 Site inspections were carried out by BRANZ to examine the practicability of installation.
- 19.3 The manufacturer's Technical Literature and Installation Instructions have been reviewed by BRANZ and found to be satisfactory.
- 19.4 The fibre used to manufacture Earthwool® glasswool: Quilted underfloor segments is certified to the European Certification Board of Mineral Wool Products (EUCEB).

### Quality

- 20.1 The manufacture of Earthwool® glasswool: Quilted underfloor segments 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 Knauf Insulation Pty 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 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 Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.



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24 August 2017

EARTHWOOL® GLASSWOOL:  
QUILTED UNDERFLOOR  
SEGMENTS



In the opinion of BRANZ, **Earthwool® glasswool: Quilted underfloor segments** 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 **Knauf Insulation Pty 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. **Knauf Insulation Pty 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 **Knauf Insulation Pty 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 **Knauf Insulation Pty Limited** or any third party.

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For BRANZ

**Chelydra Percy**

Chief Executive

Date of Issue:

24 August 2017