



**BRANZ Appraised**  
Appraisal No. 1091 [2019]

**TEMPER CLOUD  
UNDERFLOOR  
INSULATION**

# Temper™ CLOUD

**Appraisal No. 1091 [2019]**  
Amended 09 January 2023

## BRANZ Appraisals

Technical Assessments of  
products for building and  
construction.



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## BRANZ

### BRANZ

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## Product

- 1.1 Temper Cloud Underfloor Insulation is manufactured from thermally bonded polyester fibres and is for use in suspended timber-framed floors.

## Scope

- 2.1 Temper Cloud Underfloor Insulation has been appraised for use 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, Temper Cloud 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] not less than 15 years and B2.3.1 [c] 5 years. Temper Cloud Underfloor Insulation meets these requirements. See Paragraph 8.1.

**Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1. Temper Cloud Underfloor Insulation meets this requirement.

**Clause H1 ENERGY EFFICIENCY:** Performance H1.3.2 E. Temper Cloud Underfloor Insulation contributes to meeting this requirements. See Paragraphs 14.1 and 14.2.

## Technical Specification

- 4.1 Temper Cloud Underfloor Insulation is manufactured from non-woven thermally bonded polyester fibers. The fibres are blended, carded, thermally bonded and formed into blankets. Temper Cloud Underfloor Insulation is available as set out in Table 1.

**Table 1: Temper Cloud Underfloor Insulation**

R-value	Nominal Thickness [mm]	Width* [mm]	Length [mm]	Density [g/m <sup>3</sup> ]
R1.5	100	450 or 510 or 600 or 650	Various	7.5
R1.8	115	450 or 510 or 600 or 650	Various	7.8

*[Note: Customised widths additional to those listed above can be provided by PIL Group Ltd. These must be to the same R-value, thickness and density requirements as the products above.]*

- 4.2 Temper Cloud Underfloor Insulation is white in colour and is packaged in black plastic compression bags with labelling in compliance with AS/NZS 4859.1.
- 4.3 Accessories used with Temper Cloud Underfloor Insulation, which are supplied by the insulation installer, are staples suitable to fix insulation.

## Handling and Storage

- 5.1 Temper Cloud 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 thermal resistance [R-value].

## Technical Literature

- 6.1 This Appraisal must be read in conjunction with:
- Temper Cloud Installation Instructions, Version 1.10.
- 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 Temper Cloud Underfloor Insulation is intended for use as thermal insulation to meet the requirements of the NZBC. Temper Cloud Underfloor Insulation can be used to meet the minimum schedule method R-values of the NZBC Verification Methods H1/VM1, H1/VM2, NZBC Acceptable Solutions H1/AS1 or H1/AS2. 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 Temper Cloud 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 Temper Cloud Underfloor Insulation is designed to be fitted between joists and stapled in place. Fixing centres vary with the joist centres and the manufacturer's instructions must be followed.
- 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 that 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 manufacturer's instructions and NZS 4246, refer to Paragraphs 10.1-10.3.

### Durability

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

### Serviceable Life

- 8.2 Where the building is maintained so that provisions of NZBC Clauses E2 and E3 are met and the insulation is not crushed or exposed to conditions that will diminish its thermal performance, then Temper Cloud Underfloor Insulation is expected to have a serviceable life of at least 15 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 Temper Cloud 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 Temper Cloud Underfloor Insulation from heat sources such as fireplaces, heating appliances, flues, chimneys and recessed luminaires. Part 7 of NZBC Verification Method C/VM1 and 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 Recessed luminaires shall be of type and installed in accordance with NZBC Acceptable Solutions C/AS1 or C/AS2, 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 complete ceiling system, including the surface lining product enclosing the Temper Cloud 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 or C/AS2.

### 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 Temper Cloud 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/AS2.
- 14.2 Temper Cloud 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 Requirement

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

### General

- 16.1 Installation of Temper Cloud 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 Temper Cloud 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 Temper Cloud 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 Temper Cloud Underfloor Insulation is designed to be a minimum of 40 mm wider than the joist cavity and excess material should be folded 20 mm down on each side. 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. It must be stapled along the length of the blanket at intervals of 100 mm. Temper Cloud Underfloor Insulation Technical Literature must be referred to for installation details.
- 16.5 A minimum of 100 mm gap must be maintained between Temper Cloud 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 Temper Cloud 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 BRANZ has carried out thermal resistance testing of Temper Cloud Underfloor Insulation in accordance with AS/NZS 4859.1.



### Other Investigations

- 19.1 An assessment of the durability of Temper Cloud 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 Temper Cloud 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 PIL Group 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 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 Materials for the thermal insulation of buildings.
- 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 18 January 2022

This Appraisal has been amended to update the Appraisal text.

#### Amendment No. 2, dated 09 January 2023

This Appraisal has been amended to update the regulations regarding NZBC H1 Energy Efficiency.



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In the opinion of BRANZ, **Temper Cloud 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 **PIL Group 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. **PIL Group 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 **PIL Group 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 **PIL Group Ltd** or any third party.

For BRANZ

**Chelydra Percy**

Chief Executive

Date of Issue:

9 December 2019