BRANZ Appraised
Appraisal No. 1090 [2019]

TEMPER CLOUD INSULATION

Appraisal No. 1090 (2019)
Amended 09 January 2023

BRANZ Appraisals
Technical Assessments of products for building and construction.

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Product

1.1 Temper Cloud Insulation is a range of thermal insulating materials manufactured from thermally bonded polyester fibres. Temper Cloud Insulation is available in blanket and segment form to suit a wide range of thermal insulation requirements and framing set-outs in walls, ceilings and roofs of buildings.

Scope

2.1 Temper Cloud Insulation has been appraised as a thermal insulating material for framed or part-framed walls, ceilings and roofs of domestic and commercial buildings.

Building Regulations

New Zealand Building Code (NZBC)

3.1 **In the opinion of BRANZ, Temper Cloud 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 (b) 15 years. Temper Cloud Insulation meets these requirements. See Paragraph 8.1.

Clause E3 INTERNAL MOISTURE: Performance E3.3.1. Temper Cloud Insulation contributes to meeting this requirement. See Paragraphs 12.1 and 12.2.

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

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

Technical Specification

4.1 Temper Cloud Insulation is manufactured from thermally bonded polyester fibres. The fibres are blended, carded and thermally bonded to produce blankets and segments which are cut to the required size. Temper Cloud Insulation is available as set out in Table 1.

Table 1: Temper Cloud Insulation product range

R-value	Nominal Thickness (mm)	Width (mm)	Length (mm)	Density (kg/m^3)
Temper Cloud Insulation Ceiling Blanket				
R1.8	115	870	11,495	7.8
R2.4	145	870	8,620	8.0
R2.9	195	870	8,620	7.2
R3.3	200	870	8,620	8.0
R3.6	225	870	7,470	8.0
R4.0	240	870	5,750	16.6
Temper Cloud Insulation Wall Sections				
R2.0	90	360 or 560	760	22.2
R2.2	90	360 or 560	760	26.7
R2.5	90	360 or 560	760	40.0
R2.8	140	360 or 560	760	12.5

[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 Insulation is white in colour and is packaged in white compression polythene packaging with labelling in compliance with AS/NZS 4859.1.

Handling and Storage

5.1 Temper Cloud 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 Insulation is intended for use as thermal insulation to meet the requirements of the NZBC. Temper Cloud 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 Insulation R-values have been determined by testing to AS/NZS 4859.1, which is an acceptable method in NZBC Acceptable Solution H1/AS1.

7.3 Temper Cloud Insulation is designed to be friction-fitted between wall, ceiling or roof framing. Temper Cloud Insulation can also be laid directly over ceiling lining, or over ceiling battens or joist/truss chords. In other horizontal situations, it must be adequately supported by wire netting or some other suitable durable material.

7.4 When insulation is double layered over new or existing insulation, the possibility of compression of the bottom layer must be avoided or considered by reduction of R-values for the bottom layer of the formed system must be taken into account.

7.5 Where the insulation is installed in exterior walls, the nominal thickness must be selected to provide a snug close fit which touches all sides of the insulation cavity between the wall underlay and the interior wall lining. Temper Cloud Insulation must not be compressed into cavities less than the insulations nominal thickness.

7.6 Where the insulation is retrofitted in external walls without a wall underlay, and with direct-fixed claddings, the insulation must be at least 20 mm thinner than the framing to allow a gap of at least 20 mm between the insulation and the wall cladding. Horizontal straps must be stapled into the sides of the wall studs at 300 mm centres maximum as support before the insulation is installed. Refer also to NZS 4246, Section 5.4.2.

7.7 When the insulation is installed in a wall with a drained cavity, it is recommended that specific wall products with a controlled nominal thickness be used. Where the stud spacings are greater than 450 mm, an intermediate means of restraining the insulation from bulging into the cavity must be installed in accordance with NZBC Acceptable Solution E2/AS1 Paragraph 9.1.8.5.

7.8 To prevent moisture transfer and to provide roof ventilation, a separation of 25 mm minimum is required between the insulation and any rigid substrate or flexible roof underlay.

7.9 The building envelope must be constructed to ensure the insulation remains dry during installation and throughout the life of the building.

7.10 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

Serviceable Life

8.1 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, Temper Cloud Insulation can expect to have a serviceable life of at least 50 years.

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 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 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 Temper Cloud Insulation consists of thermally bonded polyester fibres, therefore the interior surface finish must achieve a Group Number of not more than 3 as described in NZBC Acceptable Solution C/AS1 Section 4.3 and C/AS2 Paragraph 4.17.2. Temper Cloud Insulation will not meet this requirement alone and will need to be enclosed by an interior surface lining so that the completed system achieves a Group Number of not more than 3.

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 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 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 Temper Cloud 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. Refer to Paragraphs 7.1-7.7.

14.2 Temper Cloud 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 Insulation Technical Literature and this Appraisal. All building work must be undertaken by competent and experienced tradespersons conversant with Temper Cloud Insulation.

General

16.1 Installation of Temper Cloud 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 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 Temper Cloud 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 Insulation is supplied in segment and blanket form (see Table 1) to suit framing layouts. The size must be selected to minimise the number of butt joints and to suit the spacing of framing members. The insulation must be neatly friction-fitted between framing members so that the potential for gaps and convective heat loss is reduced. In wall cavities the insulation must be neatly friction-fitted between framing members to prevent sagging. In ceilings or roofs, the insulation may be fitted between framing members or fitted over framing members. The insulation must extend to the external top plate. The insulation must not be folded, tucked or compressed. A close even fit provides the most efficient thermal performance. Wherever possible, the insulation should be fitted beneath wiring or plumbing.

16.5 The clearance requirements for heating appliances, light fittings and downlights must be followed. Refer also to NZS 4246.

Inspections

16.6 The Technical Literature, this Appraisal and NZS 4246 must be referred to during the inspection of Temper Cloud 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 Insulation in accordance with AS/NZS 4859.1

Other Investigations

19.1 An assessment of the durability of Temper Cloud 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 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 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.
- BRANZ House Insulation Guide (Sixth Edition), 2022.
- NZS 4214:2006 Method of determining the total thermal resistance of parts of buildings.
- 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 24 January 2020

This Appraisal has been amended to update Table 1 and include the R3.6 product.

Amendment No. 2, dated 19 January 2021

This Appraisal has been amended to include wall insulation products and to update Table 1.

Amendment No. 3, dated 18 January 2022

This Appraisal has been amended to update Table 1.

Amendment No. 4, dated 18 May 2022

This Appraisal has been amended to update Table 1.

Amendment No. 5, dated 09 January 2023

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

BRANZ

In the opinion of BRANZ, Temper Cloud 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

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9 December 2019