BRANZ Appraised
Appraisal No. 1091 [2025]

TEMPERTHERM POLYESTER UNDERFLOOR INSULATION

Appraisal No. 1091 (2025)

This Appraisal replaces BRANZ Appraisal No. 1091 (2019)

BRANZ Appraisals

Technical Assessments of products for building and construction.

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Product

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

Scope

2.1 TemperTherm Polyester 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, TemperTherm Polyester 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. TemperTherm Polyester Underfloor Insulation meets these requirements. See Paragraph 8.1.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. TemperTherm Polyester Underfloor Insulation meets this requirement.

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

Technical Specification

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

Table 1: TemperTherm Polyester Underfloor Insulation Product Range

R-value	Nominal Thickness (mm)	Width* (mm)	Length (mm)	Area Density (g/m^2)	Group Number Classification
Retro-Fit Underfloor Insulation					
R1.5	100	450, 510, 600, or 650	Various	750	1-S
R1.8	115	450, 510, 600, or 650	Various	900	1-S
R2.0	115	450, 510, 600, or 650	Various	1,000	1-S
Underfloor Insulation					
R2.6	140	370 or 420	Various	1,500	1-S
R2.8	140	370 or 420	Various	1,750	1-S
R3.0	165	370 or 420	Various	1,750	1-S
R3.2	140	370 or 420	Various	2,300	3
R3.4	140	370 or 420	Various	2,750	3
R3.6	165	370 or 420	Various	2,300	3
R3.8	165	370 or 420	1,200	3,400	3

[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 TemperTherm Polyester Underfloor Insulation is white in colour and is packaged in clear plastic compression bags with labelling in compliance with AS/NZS 4859.1.

4.3 Accessories used with TemperTherm Polyester Underfloor Insulation, which are supplied by the insulation installer, are staples suitable to fix insulation.

Handling and Storage

5.1 TemperTherm Polyester 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:

- Installation TemperTherm 100% Polyester Retrofit Underfloor Guide, IG:TTRUF:1.1_NOV24.
- Installation TemperTherm 100% Polyester Underfloor High Performance & New Build, IG:TTNBU:1.1_NOV24.
- Datasheet TemperTherm 100% Polyester Suspended Underfloor Blanket, DS:TSU:1.1_NOV24.

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 TemperTherm Polyester Underfloor Insulation is intended for use as thermal insulation to meet the requirements of the NZBC. TemperTherm Polyester 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 TemperTherm Polyester 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 TemperTherm Polyester 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 TemperTherm Polyester 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 heating appliances and downlights must be met and reference made to the manufacturer's instructions and NZS 4246, refer to Paragraphs 10.1 and 10.2.

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 TemperTherm Polyester 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 TemperTherm Polyester 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 TemperTherm Polyester 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 TemperTherm Polyester Underfloor Insulation from heat sources such as fireplaces, heating appliances, chimneys and recessed luminaires. 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.

Control of Internal Fire and Smoke Spread

11.1 TemperTherm Polyester Underfloor Insulation was assessed against NZBC Verification Method C/VM2 Appendix A. Products of 1,800 g/m^2 or below achieved a Group Number of 1-S and products between 1,800 g/m^2 and 4,800 g/m^2 achieved a Group Number of 3. Refer to Table 1 for product specific allocation of a Group Number. The complete ceiling system, including the surface lining product enclosing the TemperTherm Polyester 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 TemperTherm Polyester 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 TemperTherm Polyester 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 TemperTherm Polyester Underfloor Insulation Technical Literature and this Appraisal. All building work must be undertaken by competent and experienced tradespeople conversant with TemperTherm Polyester Underfloor Insulation.

General

16.1 Installation of TemperTherm Polyester 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 TemperTherm Polyester 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 TemperTherm Polyester 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 TemperTherm Polyester 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, with 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. TemperTherm Polyester Underfloor Insulation Technical Literature must be referred to for installation details.

16.5 A minimum of 100 mm gap must be maintained between TemperTherm Polyester 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 TemperTherm Polyester 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 TemperTherm Polyester Underfloor Insulation in accordance with AS/NZS 4859.1.

Other Investigations

19.1 An assessment of the durability of TemperTherm Polyester Underfloor Insulation has been made by BRANZ technical experts.

19.2 BRANZ has carried out a fire assessment to determine the Group Numbers of the products.

19.3 The manufacturer's Technical Literature has been reviewed by BRANZ and found to be satisfactory.

Quality

20.1 The manufacture of TemperTherm Polyester 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), January 2023.
- 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.

BRANZ

In the opinion of BRANZ, TemperTherm Polyester 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

Claire Falck
Chief Executive

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05 February 2025