



BRANZ Appraised
Appraisal No.430 [2008]

BRANZ Appraisals

Technical Assessments of products
for building and construction

BRANZ APPRAISAL No. 430 (2008)

This Appraisal replaces Appraisal
No. 430 (2003) dated 14 November
2003.

Amended 23 December 2009.

NOVATHERM POLYESTER THERMAL INSULATION

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Product

1.1 Novatherm is a range of polyester fibre insulation used as thermal insulating material in walls, roofs, floors and ceilings of buildings.



Scope

2.1 Novatherm has been appraised as a thermal insulation material for walls, ceilings, roofs, and under floors of buildings within the following scope:

- framed or part-framed domestic and commercial buildings where the insulation remains dry during its serviceable life.

2.2 Novatherm must be installed in accordance with the manufacturer's Technical Literature to meet the stated thermal performance rating of the insulation. See Paragraph 6.1.

Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, Novatherm 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 B2,3,1(b) 15 years. Novatherm will meet this requirement. See Paragraph 8.1.

Clause E3 INTERNAL MOISTURE: Performance E3.3.1. Novatherm will contribute to meeting this requirement. See Paragraphs 12.1 – 12.2.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Novatherm 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. Novatherm will contribute to meeting these requirements. See Paragraphs 13.1 – 13.8.

3.2 This is an Appraisal of an **Acceptable Solution** in terms of New Zealand Building Code Compliance. Novatherm thermal resistance (R-Value) has been determined by AS/NZS 4859.1 which is an acceptable method.

Technical Specification

Polyester Insulation

4.1 Novatherm is manufactured from non-woven thermally bonded polyester fibres. The fibres are blended, carded and thermally bonded to produce blankets, which are machine slit to the required width and cut to length. The blankets are then compression packed into plastic bags.

4.2 The product is available as set out in Table 1.

Table 1: Product Range

Product Type	Size (mm)	Thickness (mm)	Blankets per bag	Area per bag (m ²)
R1.8	11500 x 870	115	2	20
R2.6	11500 x 870	165	2	20
R2.8	8620 x 870	175	2	15
R3.2	8620 x 870	200	2	15
R3.6	7470 x 870	225	2	13

Note: Insulation must not be fitted into sealed cavities that are less than the labeled insulation nominal thickness.

4.3 Novatherm Insulation is white in colour and is packaged in a double layer clear tube compression packaging.

Each packet is supplied with labelling in compliance with AS/NZS 4859.1

4.4 Accessories used with Novatherm which are supplied by the Insulation Installer are :

- Plastic strapping – Where plastic strapping is used to control the insulation material from movement that would affect the performance of the thermal insulation, strapping that meets the requirements of NZBC Clause B2 DURABILITY: Performance B2.3.1(a) 50 years, must be used.
- Plastic strapping fixings – Plastic strapping fixings such as hot dipped galvanised clouts or zinc plated staples that meet the requirements of NZBC Clause B2 DURABILITY: Performance B2.3.1(a) 50 years.

Handling and Storage

5.1 Novatherm must be stored under cover 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. The longer they are stored, the longer it will take for them to recover to their natural loft after unpacking.

5.3 Although the recovery is accelerated by temperatures above 35°C, Novatherm may not recover its full loft, and therefore its R-value, if it is stored for more than 6 months in its compression pack.

Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for Novatherm. 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 Novatherm Insulation is designed to be used as thermal insulation to meet the energy efficiency and other NZBC insulation requirements, or to provide greater ratings when required by the designer, when installed in building walls, roofs, ceilings and floors.

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

7.3 To prevent moisture transfer to Novatherm Insulation, a separation (minimum 25 mm) is required between Novatherm Insulation and any flexible roof underlay. Where there is a rigid sheathing or roofing substrate such as plywood, provided there is no design requirement for roof space ventilation, a separation between Novatherm Insulation and the sheathing or substrate is not required.

7.4 The clearances specified in the installation instructions, or specified by the manufacturer of heating appliances and recessed light fittings must be met. The use of recessed light fittings may, therefore, reduce the thermal performance of insulated ceilings. This factor must be taken into account in the assessment of compliance with NZBC Clause H1 Energy Efficiency.

7.5 Where the insulation material is not laid directly on a ceiling lining or over ceiling battens or joists, it must be adequately supported by galvanised wire netting or some other suitable corrosion resistant material.

7.6 When the insulation is installed in a wall with a drained cavity 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.

7.7 Where the insulation is installed in exterior walls, it is preferable for the insulation material nominal thickness to be selected to provide a snug close fit of the insulation between building wrap and the interior wall lining (reference note Paragraph 4.2).

Durability

Serviceable Life

8.1 Where the building is maintained so that 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, (e.g. moisture), then it can expect to have a serviceable life of at least 50 years. Novatherm must be installed in a dry, protected construction cavity.

Maintenance

9.1 The building must be maintained weatherproof at all times. If, during normal routine maintenance it is discovered that moisture has entered the building envelope, or that dampness has occurred because of leaking plumbing or some other source, then that source must be repaired immediately. Wet or damp insulation must be removed and then replaced with new insulation of an equivalent thermal rating. Cavities must be clean, dry and free of all contaminants and mould before fitting new insulation. NZS 4246 Paragraph 3.3 gives guidance on thermal insulation maintenance due to water damage.

Outbreak of Fire

10.1 Novatherm must be separated or protected from sources of heat such as chimneys, fireplaces, flues and fuel burning appliances in accordance with the requirements of NZBC Acceptable Solution C/AS1 Part 9.

External Moisture

11.1 The total building envelope must comply with the requirements of NZBC E2 to ensure that the insulation remains dry in use.

11.2 The moisture content of the construction materials at the time of enclosing the insulation must meet the requirements of NZBC Acceptable Solution E2/AS1, or lower moisture content if required by the lining manufacturer.

Internal Moisture

12.1 Buildings other than communal non-residential, commercial, industrial, outbuildings or ancillary buildings, must be constructed with an adequate combination of thermal resistance, ventilation, and space temperature must be provided to all habitable spaces, bathrooms, laundries and other spaces where moisture may be generated or may accumulate.

12.2 Roofs and walls 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 E3/AS1 than that to satisfy the energy efficiency provisions alone.

Energy Efficiency

Building Thermal Envelope

13.1 NZBC Verification Method H1/VM1 can be used for housing, communal residential, communal non-residential and commercial buildings.

Modelling of housing and smaller buildings

13.2 The modelling method described in NZS 4218 section 3.3 (as modified by NZBC Verification Method H1/VM1 Paragraphs 1.1.2 and 1.1.3) is a Verification Method for NZBC Clause H1.3.1(a) for the following types of buildings:

- a) Housing, regardless of total floor area (the method is also a means of compliance with Clause H1.3.2 E, which applies only to housing), and
- b) Small buildings other than housing having a net lettable area no greater than 300 m².

Building performance index for housing

13.3 Compliance with NZBC Clause H1.3.2 E (Building Performance Index or BPI) satisfies Clause H1.3.1(a).

Modelling of large buildings other than housing

13.4 The modelling method described in NZS 4243.1 section 4.4 is a Verification Method for NZBC Clause H1.3.1(a) for buildings other than Housing having a net lettable area greater than 300 m².

Determining thermal resistance

13.5 The thermal resistance (R-values) of building elements may be verified by using NZS 4214.

The BRANZ 'House Insulation Guide' Third Edition provides thermal resistances of common building elements and is based on calculations from NZS 4214.

Building Thermal Envelope

13.6 NZBC Acceptable Solution H1/AS1 can be used for housing, communal residential, communal non-residential and commercial buildings.

Housing and Small Buildings

13.7 Construction in accordance with NZS 4218 sections 3.1 or 3.2 (as modified by NZBC Acceptable Solution H1/AS1 Paragraphs 2.1.3 and 2.1.4) satisfies NZBC H1.3.1 (a) for housing of any size and all buildings having a net lettable area no greater than 300 m².

13.8 Construction in accordance with NZS 4218 sections 3.1 or 3.2 (as modified by NZBC Acceptable Solution H1/AS1 Paragraphs 2.1.3 and 2.1.4) satisfies NZBC H1.3.2 E for housing of any size, including the external walls of multi-unit dwellings. (Note that common walls between household units of multi-unit dwellings need not comply with NZS 4218.)

Installation Information

Installation Skill Level Requirements

14.1 Installation of Novatherm must be completed by an installer with an understanding of insulation installation, in accordance with the instructions given within the Technical Literature, Installation Instructions and this Appraisal.

General

15.1 Installation of Novatherm must be in accordance with the manufacturer's Technical Literature, Installation Instructions and this Appraisal. Installation is to be carried out by trained installers only. NZS 4246 should be used as a guide for installing insulation in residential buildings.

15.2 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, to ensure the insulation does not become wet.

15.3 Novatherm 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.

15.4 Novatherm is manufactured in roll sizes to allow product to be torn to length to suit wall floor and ceiling framing spaces. (See Table 1)

15.5 Novatherm tears across the roll to fit into cavities where required.

15.6 Where Novatherm is cut to fit wall cavities, the wall cavities must be completely filled to prevent sagging and thermal convection.

15.7 The insulation must be neatly fitted between framing members and linings and staple fixed so that the potential for gaps and convective heat loss is reduced. The material must not be folded, tucked or compressed. A close, even fit provides the most efficient thermal performance.

15.8 The insulation must be continuous across the entire roof or ceiling plane between top plates of external walls, and fitted either between or over rafters, ceiling joists or truss chords. Wherever possible the insulation should be fitted beneath wiring or plumbing.

15.9 Where recessed light fittings are fitted, installation of the insulation material and the light fittings must be in accordance with NZBC C/AS1 Paragraph 9.4. If a gap in the insulation material is required around light fittings, the effectiveness of the thermal envelope will be diminished when the insulation does not form a continuous envelope.

Inspections

15.10 The Technical Literature must be referred to during the inspection of Novatherm installations by the building consent authorities and territorial authorities.

Health and Safety

16.1 Novatherm is easy to handle. NZS 4246 gives guidance for 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

17.1 BRANZ has carried out thermal resistance testing of Novatherm in accordance with AS/NZS 4859.1: 2002.

Other Investigations

18.1 An assessment of the durability of Novatherm has been made by BRANZ technical experts.

18.2 The manufacturer's Technical Literature and Installation Instructions have been reviewed by BRANZ and found to be satisfactory.

18.3 Site inspections have been undertaken by BRANZ to assess the practicability of installation.

Quality

19.1 The manufacture of Novatherm 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.

19.2 Insulpro Manufacturing (NZ) Ltd is responsible for the quality of the product supplied.

19.3 Quality of installation of the product on site is the responsibility of the installer.

19.4 Quality of maintenance of the building to ensure the insulation material remains dry is the responsibility of the building owner.

Sources of Information

- AS/NZS 4859.1: 2002 Materials for the thermal insulation of buildings.
- BRANZ House Insulation Guide, Third Edition 2007.
- NZS 4218: 2004 Energy efficiency – housing and small building envelope.
- NZS 4243: 1996 Energy efficiency – large buildings.
- NZS 4246: 2006 Energy efficiency – Installing Insulation In Residential Buildings
- Compliance Document for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition, July 2005.
- Compliance Document for New Zealand Building Code Energy Efficiency Clause H1, Department of Building and Housing, Third Edition, August 2007.
- New Zealand Building Code Handbook, Department of Building and Housing, Third Edition, May 2007.
- The New Zealand Building Regulations 1992, up to, and including June 2007 Amendment.

Amendment No. 1, dated 1 October 2008.

The Appraisal has been amended to update reference to NZBC Clause H1 made effective 30 September 2008.

Amendment No. 2, dated 23 December 2009.

The Appraisal has been amended to update the product range table.



BRANZ

In the opinion of BRANZ, **Novatherm Polyester Thermal 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 **Insulpro Manufacturing (NZ) 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. **Insulpro Manufacturing (NZ) 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.
3. 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.
4. 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 **Insulpro Manufacturing (NZ) Ltd**.
5. 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.
6. BRANZ provides no certification, guarantee, indemnity or warranty, to **Insulpro Manufacturing (NZ) Ltd** or any third party.

For BRANZ

C Preston
Chief Executive

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