



**SPECIFY WITH
CONFIDENCE**

BRANZ Appraisals

**Technical Assessments of
products for building and
construction**

**BRANZ
APPRAISAL
CERTIFICATE
No. 430 (2003)**

**NOVATHERM
POLYESTER
INSULATION**

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Quality
Endorsed
Company



Product

- *This Certificate relates to Novatherm Polyester Insulation, which is a blanket thermal insulation material.*
- *Novatherm has been appraised for use as thermal insulation material for roofs and ceilings of buildings.*
- *The product must be used and installed in accordance with the instructions of Insulpro Manufacturing (NZ) Ltd contained in their 'General Installation Instructions' leaflet supplied within each bag of insulation material. This document is referenced throughout this Certificate as the 'Installation Instructions'.*



Building Regulations

1. New Zealand Building Code (NZBC)

In the opinion of BRANZ, Novatherm Polyester Insulation if used, designed, installed and maintained in accordance with the statements and conditions of this Certificate, 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. See Section 5.

Clause E3 INTERNAL MOISTURE: Performance E3.3.1. See Section 10.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. The product will not present a health hazard to people.

Clause H1 ENERGY EFFICIENCY: Performance H1.3.1 and H1.3.2. See Section 11.

Readers are advised to check the validity of this Certificate by referring to the Valid Certificates listing on the BRANZ website, or by contacting BRANZ.

Product Information

2. Description

2.1 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.

2.2 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)
R2.4	11500 x 870	145	2	20
R2.5	11500 x 870	160	2	20
R3.0	8600 x 870	180	2	15
R3.2	8600 x 870	180	2	15

2.3 The bags are a clear plastic twin layer type, with the product label loosely inserted between the two layers. The label indicates the R-value, length of the blanket, split width of each of the two blankets in the bag, thickness, coverage and batch number. Installation instructions are printed on the reverse side of the label.

3. Handling and Storage

3.1 Novatherm must be stored under cover and in dry conditions. Heavy objects must not be stacked on the bags.

3.2 In general, polyester-based 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. 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.

Design Information

4. General

4.1 Novatherm 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 roofs and ceilings.

4.2 The building envelope must be constructed to meet the requirements of the NZBC. The insulation must remain dry during installation and throughout the life of the building.

4.3 To minimise the risk of moisture transfer to the insulation, roofs must be constructed to maintain a minimum airspace of 25 mm between the insulation and the roofing membrane or other roof elements, except where a solid substrate is used under the roof cladding material. (Note: some roofing may require ventilation clearance). Polyester products may 'grow' in thickness well beyond their out-of-pack thickness when installed in situations of high heat build up, such as in skillion type roofs. This excessive 'growth' needs to be accommodated within the roof design to maintain the minimum 25 mm gap.

4.4 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.

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

5. Durability

5.1 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.

5.2 Novatherm is resistant to vermin attack as polyester fibres are not a food source.

6. Maintenance

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 and any wet or damp insulation must be removed and then either replaced with new insulation of an equivalent thermal rating, or dried, re-lofted if needed and reinstated. Insulation that has been dried must be inspected prior to reinstallation to verify that it has not deteriorated. Any loss in insulation thickness will result in loss of R-value.

7. Outbreak of Fire

7.1 Novatherm must be separated 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.

8. Spread of Fire

When tested in accordance with AS 1530.3 Novatherm Polyester Insulation achieved the Fire Indices listed in Table 2.

Table 2. Fire Indices

Ignitability Index	0
Spread of Flame Index	0
Heat Evolved Index	0
Smoke Developed Index	3

9. External Moisture

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

9.2 The moisture content of the construction materials at the time of enclosing the insulation must meet the requirements of NZBC Acceptable Solution E2/AS1 Paragraph 6.0.2, or lower moisture content if required by the lining manufacturer.

10. Internal Moisture

10.1 Novatherm can be used in ceilings and roofs of buildings to meet the requirements of NZBC Acceptable Solution Paragraph 1.1.1(d) for internal moisture control.

10.2 In order for the whole building to meet the requirements of NZBC Clause E3, a combination of adequate thermal resistance to the rest of the building elements and ventilation to

the building must be provided. NZBC Acceptable Solutions E3/AS1 and G4/AS1 respectively, provide means of compliance.

10.3 By following the installation instructions, the minimum R-value of 1.5 m²°C/W in NZBC Acceptable Solution E3/AS1 Paragraph 1.1.1(d) for framed roof or ceiling construction will be met.

10.4 It is not generally recommended to use vapour barriers in ceilings, except to prevent condensation in areas of high humidity such as may be found in buildings containing swimming pools, saunas, spa pools, wet processes and the like. In these situations advice must be sought from qualified experts.

10.5 The effects of thermal bridging must be taken into account in the thermal design of roof and ceiling systems, particularly with the use of steel framing.

11. Energy Efficiency

11.1 Novatherm will assist in meeting the thermal design requirements of buildings as set out in NZS 4218.

11.2 The building envelope for Housing must be designed and constructed to ensure the Building Performance Index (BPI) does not exceed 0.13 kWh in a warm location, and 0.12 kWh in a cool location. A building envelope meeting the requirements of one of the compliance methods of NZS 4218 will be acceptable for Housing.

11.3 For buildings other than Housing, and of less than 300m², a building envelope meeting the requirements of one of the compliance methods of NZS 4218 will be acceptable. For buildings larger than 300 m², reference should be made to NZS 4243 for energy efficiency in non-residential buildings.

11.4 BRANZ Bulletin No. 357 describes the general requirements for insulating houses to meet NZBC Clause E3 and H1. Examples of thermal performance of specific types of construction are also given in the BRANZ House Insulation Guide.

11.5 Where Novatherm is used in flat ceilings of buildings with conventionally pitched roofs with sheet steel claddings, and ceiling linings of standard 10 mm plasterboard, the approximate R-values as set out in Table 3 will be achieved.

Table 3: Approximate R-values of Roofs with Flat Ceilings

Position in Ceiling	Insulation Type	Approximate Roof Construction R-values
Fitted neatly between 100 x 50 mm ceiling framing members	R2.4	R2.0
	R2.5	R2.1
	R3.0	R2.2
	R3.2	R2.3
Close butted and fitted over 100 x 50 mm ceiling framing members	R2.4	R2.6
	R2.5	R2.7
	R3.0	R3.2
	R3.2	R3.4

12. General

12.1 Novatherm is manufactured from 100% polyester, which is easy to handle and soft to touch. However, it is recommended that a dust mask be worn when handling the product to provide protection from loose fibres and dust that may be disturbed.

12.2 Novatherm must be installed in accordance with the installation instructions. To ensure the insulation does not become wet, it must be installed only when the building is enclosed and when the construction materials have achieved the required maximum moisture content or less.

12.3 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 (See Section 3.2).

12.4 The insulation must either be neatly friction fitted between framing members and linings, or fitted over framing members and butted tightly 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.

12.5 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.

12.6 Novatherm must be torn or cut to fit into cavities where required. It can easily be torn across the width of the piece. If it is necessary to cut the product the best method is to use sharp scissors or shears.

12.7 Where recessed light fittings are installed, the installation of the insulation material and light fittings must take account of the electrical safety requirements of the New Zealand Electrical Code of Practice (NZECP) 54: 2001. 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. Further guidance on the selection of recessed light fittings and their installation can be found in the NZECP.

Basis of Appraisal

The following is a summary of the technical investigations carried out.

13. Tests

13.1 BRANZ has carried out thermal resistance testing of Novatherm Polyester Insulation in accordance with ASTM C518-91.

13.2 Tests to determine the Fire Hazard Properties of Novatherm Polyester Insulation were carried out by Applied Physics Laboratory in accordance with AS 1530.3.

14. Other Investigations

14.1 An assessment has been made of the durability of Novatherm Polyester Insulation by BRANZ technical experts.

14.2 Account has been taken of the reported history and in-service performance of polyester insulation materials in both New Zealand and overseas for the past 20 years.

14.3 The installation instructions and other supporting technical data have been reviewed by BRANZ and found to be satisfactory.

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

15. Quality

15.1 The manufacture of Novatherm Polyester Insulation has been examined by BRANZ. Details of the manufacturing processes, and quality and composition of the raw materials used were obtained and found to be satisfactory.

15.2 The quality control systems for the manufacture of Novatherm Polyester Insulation have been assessed by BRANZ and found to be satisfactory.

15.3 The manufacturer is responsible for the quality of the product supplied.

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

16. References

- AS 1530 - 1989: Part 3 Simultaneous determination of ignitability, flame propagation, heat release and smoke release.
- BRANZ Bulletin No. 357 Thermal insulation of houses.
- BRANZ House Insulation Guide, May 1995.
- New Zealand Building Code Handbook and Approved Documents, Building Industry Authority, 1992.
- NZECP 54: 2001 – New Zealand Electrical Code of Practice for the Installation of Recessed Luminaires and Auxiliary Equipment, Ministry of Consumer Affairs, April 2001.
- NZS 4218: 1996 Energy efficiency – housing and small building envelope.
- NZS 4243: 1996 Energy efficiency – large buildings.
- The Building Regulations 1992, up to, and including April 2003 Amendment.



In the opinion of BRANZ, Novatherm Polyester Insulation is fit for purpose and will comply with the Building Code to the extent specified in this Certificate provided it is used, designed, installed and maintained as set out in this Certificate.

The Appraisal Certificate is issued only to the Certificate Holder, Insulpro Manufacturing (NZ) Ltd, and is valid until further notice, subject to the Conditions of Certification.

Conditions of Certification

1. This Certificate:
 - 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. The Certificate Holder:
 - 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. The product and the manufacture are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ.
4. BRANZ makes no representation 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 the Certificate Holder.
5. Any reference in this Certificate to any other publication shall be read as a reference to the version of the publication specified in this Certificate.

For BRANZ

R I Burnett

M E Reed

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