BRANZ Appraised
Appraisal No. 682 [2022]

TERRA LANA WOOL INSULATION

Appraisal No. 682 (2022)

Amended 21 March 2023

BRANZ Appraisals

Technical Assessments of products for building and construction.

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Product

1.1 Terra Lana Wool Insulation is a wool and polyester blend thermal insulating material for use in framed walls, ceilings and roofs of buildings.

Scope

2.1 Terra Lana Wool Insulation has been appraised as a thermal insulation 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, Terra Lana Wool 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 B2.3.1 (b) 15 years. Terra Lana Wool Insulation meets these requirements. See Paragraph 8.1.

Clause E3 INTERNAL MOISTURE: Performance E3.3.1. Terra Lana Wool Insulation contributes to meeting this requirement. See Paragraphs 13.1 and 13.2.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Terra Lana Wool Insulation meets this requirement.

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

Technical Specification

4.1 Terra Lana Wool Insulation is manufactured from a minimum 50% recycled fibre and is nominally 60% wool and 40% polyester fibre. The fibres are blended, carded and thermally bonded to produce blankets and segments. Terra Lana Wool Insulation is available as set out in Table 1.

Table 1: Terra Lana Wool Insulation

R-value	Nominal Thickness [mm]	Width [mm]	Length [mm]	Density [kg/m³]
Ceilings				
1.2	45	570	5,000	27.4
2.4	90	560	1,200	28.7
Skillion Roof				
3.6	140	560	1,200	26.3
6.4	240	570 or 605	1,200	29.8
Truss Roof				
3.6	180	435	1,200	14.4
Wall Insulation				
1.2	45	580	5,000	27.4
2.4	90	360 or 560	1,200	28.7
3.6	140	360 or 560	1,200	26.3

4.2 Terra Lana Wool Insulation is grey in colour and is compression packaged in clear pre-printed bags. Each package is supplied with labelling in compliance with AS/NZS 4859.1.

Handling and Storage

5.1 Terra Lana Wool Insulation 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 Compression packaged wool is subjected to a maximum combination of compression density and storage time, after which the product may not loft to its minimal thickness and therefore may not achieve its designed thermal performance.

5.3 Terra Lana Wool Insulation has a shelf life of three months. The manufacturer's advice must be sought if the material to be used has been packaged for more than three months.

Technical Literature

6.1 This Appraisal must be read in conjunction with:

- Terra Lana, Technical Datasheet, 1 March 2023.
- Terra Lana Wool Insulation, Installation Instructions, Version 1, 5th December 2022.

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 Terra Lana Wool Insulation is intended for use as thermal insulation to meet the requirements of the NZBC. Terra Lana Wool Insulation can be used to meet the minimum schedule method R-values of 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 Terra Lana Wool Insulation thermal resistance (R-value) has been determined by testing to AS/NZS 4859.1.

7.3 Terra Lana Wool Insulation is designed to be friction-fitted between wall, ceiling or roof framing. Terra Lana Wool Insulation can also be laid directly on a ceiling lining, over ceiling battens or joists/truss chords. In other horizontal situations, the insulation must be adequately supported by galvanized wire netting or some other suitable corrosion resistant material.

7.4 When insulation is installed in a double layer over new or existing insulation, the possibility of compression of the bottom layer must be avoided, or 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 insulation material 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.

7.6 Where the insulation is retrofitted in external timber-framed 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. Selecting specifically designed skillion roof insulation products with a controlled thickness can assist with this requirement.

7.9 Subject to the maximum compression density and storage conditions not being exceeded, all products covered by this Appraisal should recover to their nominal thickness within three months after being removed from their compressed bales.

7.10 Terra Lana Wool Insulation may increase in thickness due to high temperatures and therefore allowance for this must be made in ceiling spaces at the design stage.

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

7.12 The clearance requirements for heating appliances and downlights must be met and reference made to the manufacturer's instructions and NZS 4246.

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), Terra Lana Wool 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 fitting new insulation of an equivalent thermal rating. 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 Terra Lana Wool 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 luminaries shall be of the type specified and installed in accordance with NZBC Acceptable Solution 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 Terra Lana Wool Insulation has not been assessed for use in locations where a Fire Resistance Rating (FRR) is required. The completed wall and ceiling system, including the surface lining product enclosing the Terra Lana Wool Insulation from the adjacent occupied space, must achieve the internal surface finish requirements Group Number as specified in the relevant NZBC Acceptable Solutions C/AS1 and 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 lining manufacturer.

Internal Moisture

13.1 Buildings must provide an adequate combination of thermal resistance, ventilation and space heating 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 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 Acceptable Solution E3/AS1 than that to satisfy the energy efficiency provisions alone.

Energy Efficiency

14.1 Terra Lana Wool Insulation will contribute to meeting the requirement of NZBC Clause H1 Performance H1.3.1 (a) and H1.3.2 E by compliance with NZBC Verification Method H1/VM1 or NZBC Acceptable Solutions H1/AS1. Refer to Paragraphs 7.1–7.8.

14.2 Terra Lana Wool 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 Installation of Terra Lana Wool Insulation must be completed by an installer with an understanding of insulation installation.

General

16.1 Installation of Terra Lana Wool Insulation must be in accordance with the manufacturer's Technical Literature and this Appraisal. NZS 4246 should be used as a guide for installing insulation in residential buildings.

16.2 Terra Lana Wool 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 Terra Lana Wool 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 Terra Lana Wool Insulation can be cut to suit wall cavities and when fitted between ceiling or roof framing. 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 and butted tightly. The insulation must extend to the external wall top plate. The insulation must not be folded, tucked, or compressed. A close even fit provides the most efficient thermal performance. Whenever possible, the insulation should be fitted beneath wiring or plumbing.

16.5 The clearance requirements for heating appliances 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 Terra Lana Wool 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 Terra Lana Wool Insulation in accordance with AS/NZS 4859.1.

Other Investigation

19.1 An assessment of the durability of Terra Lana Wool Insulation has been made by BRANZ technical experts.

19.2 The manufacturer's Technical Literature including installation instructions have been reviewed by BRANZ and found to be satisfactory.

Quality

20.1 The manufacture of Terra Lana Wool 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 Terra Lana Products Ltd is responsible for the quality of the product supplied.

20.3 Quality of the 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 material 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 4246:2016 Energy efficiency – Installing 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 21 March 2023.

This Appraisal has been amended to include products in Table 1.

BRANZ

In the opinion of BRANZ, Terra Lana Wool 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 Terra Lana Products 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. Terra Lana Products 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 Terra Lana Products 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 Terra Lana Products Ltd or any third party.

For BRANZ

Chelydra Percy
Chief Executive

Date of Issue:
22 December 2022