



BRANZ Appraised

Appraisal No.797 [2014]

BRANZ Appraisals

Technical Assessments of products
for building and construction

**BRANZ
APPRAISAL
No. 797 (2014)**

This Appraisal replaces Appraisal
No. 430 (2008) and Appraisal No. 797
(2012).
Amended 25 May 2015

**MAMMOTH™
INSULATION**

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Product

1.1 Mammoth™ Insulation is a range of polyester fibre thermal insulating material for use in framed walls, ceilings and roofs of buildings.



Mammoth™
MODERN INSULATION



Scope

2.1 Mammoth™ Insulation has been appraised as 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, Mammoth™ 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. Mammoth™ Insulation will meet this requirement. See Paragraph 8.1.

Clause E3 INTERNAL MOISTURE: Performance E3.3.1. Mammoth™ Insulation will contribute to meeting this requirement. See Paragraphs 13.1 and 13.2.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Mammoth™ Insulation 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. Mammoth™ Insulation will contribute to meeting these requirements. See Paragraphs 14.1 and 14.2.

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

Technical Specification

4.1 Mammoth™ Insulation is manufactured from non-woven thermally bonded polyester fibres. The fibres are blended, carded and thermally bonded to produce sections and blankets, which are machine slit to the required width and cut to length. Mammoth™ Insulation is available as set out in Table 1.

Table 1: Mammoth™ Insulation Product Range

R-value	Nominal thickness (mm)	Width (mm)	Length (mm)	Nett Area (m ²)	Density (kg/m ³)
Mammoth™ Ceiling Insulation					
1.8	115	870	11495	10.0	7.8
1.8	115	870	11495	20.0	7.8
2.8	175	870	8620	15.0	8.0
2.9	185	870	8620	7.5	7.6
2.9	185	870	8620	15.0	7.6
3.0	185	870	8620	15.0	7.7
3.2	200	870	8620	15.0	7.6
3.2	200	870	8620	7.5	7.6
3.6	225	870	7470	13.0	8.0
3.6	225	870	7470	6.5	8.0
4.0	240	870	5750	5.0	8.3
4.0	240	870	5750	10.0	8.3
Mammoth™ Skillion Roof Airlay Insulation					
2.9	115	560	1200	2.0	33.0
2.9	115	860	1200	5.1	32.9
3.2	165	570	1200	3.4	15.2
3.2	165	870	1200	4.1	15.2
Mammoth™ Wall Airlay Sections Insulation					
1.9	90	370	800	2.3	16.7
1.9	90	580	800	2.7	16.7
2.0	90	360	760	2.4	22.2
2.0	90	560	760	2.5	22.2
2.2	90	360	760	2.4	25.5
2.2	90	560	760	2.5	25.5
2.8	140	360	760	4.9	15.0
2.8	140	560	760	5.1	15.0
Mammoth™ Wall Sections					
2.0	90	380	1160	7.1	16.7
2.0	90	580	1160	7.4	16.7
2.2	90	360	1160	5.9	21.7
2.2	90	560	1160	5.9	21.7
2.5	90	360	760	2.4	35.0
2.5	90	560	760	2.5	35.0
Mammoth™ Wall Blanket					
2.2	90	360	9870	7.1	21.7
2.2	90	560	10800	6.0	21.7
2.6	140	380	8550	13.0	10.7
2.6	140	580	7470	13.0	10.7
3.0	140	580	5475	10.0	14.6

4.2 Mammoth™ Insulation is off-white in colour and is packaged in clear compression packaging with labelling in compliance with AS/NZS 4859.1.

Handling and Storage

5.1 Mammoth™ 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 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 R-value.

Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for Mammoth™ Insulation. 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 Mammoth™ Insulation is intended for use as thermal insulation to meet the requirements of the NZBC. Mammoth™ Insulation can be used to meet the minimum schedule method R-values of the NZBC Verification Method H1/VM1 or NZBC Acceptable Solution H1/AS1. 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 Mammoth™ Insulation blanket and section products are designed to be friction-fitted between wall, ceiling or roof framing. Mammoth™ Insulation can also be laid directly over ceiling lining, over ceiling battens or joists. Other than Mammoth™ Skillion Roof Airlay Insulation, in other horizontal situations, it must be adequately supported by galvanised wire netting or some other suitable corrosion resistant material.

7.3 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. For products that are over lofting and 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.

7.4 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.

7.5 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.

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

7.7 The clearance requirements for heating appliances and downlights must be met and reference made to the manufacturers instruction and NZS 4246. See Paragraph 10.1.

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, then Mammoth™ 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 refitting the insulation after drying or replacing with new Mammoth™ 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 Mammoth™ Insulation from heat sources such as fire places, heating appliances, flues and chimneys. Refer to Part 7 of NZBC Acceptable Solution C/AS1 - C/AS6 and NZBC Verification Method C/VM1.

Downlights

10.2 Recessed luminaires shall be of type and be installed in accordance with Paragraph 7.4 of NZBC Acceptable Solutions C/AS1 to C/AS6 and NZBC Verification Method C/VM1.

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 Mammoth™ Insulation has a Group Number of 3. Where used in an occupied space, Mammoth™ Insulation may or may not need to be enclosed by an internal lining depending on the Risk Group. Refer to the relevant NZBC Acceptable Solutions C/AS1 - C/AS6 for specific internal surface finish requirements.

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 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 Mammoth™ 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 Method H1/VM1 or NZBC Acceptable Solution H1/AS1. Refer to Paragraphs 7.1 - 7.7.

14.2 Mammoth™ 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 Requirements

15.1 Installation of Mammoth™ Insulation must be completed by an installer with an understanding of insulation installation.

General

16.1 Installation of Mammoth™ Insulation must be in accordance with the Technical Literature, Installation Instructions 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 Mammoth™ 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 Mammoth™ Insulation is supplied in section and blanket form (see Table 1) and allows the product to be cut or torn to suit wall cavities and when fitted between roof or ceiling 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 and thermal convection. In ceiling 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 Mammoth™ Insulation installations.

Health and Safety

17.1 Mammoth™ Insulation is safe 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

18.1 BRANZ has carried out thermal resistance testing of Mammoth™ Insulation in accordance with AS/NZS 4859.1.

Other Investigations

19.1 An assessment of the durability of Mammoth™ Insulation has been made by BRANZ technical experts.

19.2 The manufacturer's Technical Literature and Installation Instructions have 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

19.1 The manufacture of Mammoth™ 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.

19.2 Insulpro Manufacturing Limited 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 Maintenance of the building 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, Fifth Edition 2014.
- BRANZ Bulletin Number 525 Preventing moisture problems in timber-framed skillion roofs.
- NZS 4214: 2006 Method of determining the total thermal resistance of parts of buildings.
- 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 Energy Efficiency Clause H1, Department of Building and Housing, Third Edition, August 2007.
- Ministry of Business, Innovation and Employment Records of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.

Amendment No. 1, dated 25 May 2015.

This Appraisal has been amended to update Mammoth™ Insulation Product Range in Table 1 and to clarify downlight requirements.



BRANZ

In the opinion of BRANZ, Mammoth™ 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 Limited, 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 Limited:
 - 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 Insulpro Manufacturing Limited.
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 Insulpro Manufacturing Limited or any third party.

For BRANZ

C Percy
Chief Executive

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