Mammoth®
MODERN INSULATION

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MAMMOTH.CO.NZ

INSITU WALL SYSTEM

AIRLAY INSULATION PERFORMANCE

NZGBC
TE KAUNIHERA HANGANGA TAUTAIAO

BRANZ Appraised
Appraisals 797 & 802
SELECTED PRODUCTS ONLY

Building Insulants
Licence No. 2510069

Red List Free

REDUCE REUSE RECYCLE

NEW ZEALAND MADE

TOITŪ CARBON ZERO
ISO 14064-1 ORGANISATION

50 YEAR WARRANTY
Mammoth MODERN INSULATION

THE IMPORTANCE OF INSITU PERFORMANCE

REAL LIFE **LAB TESTING**

The New Zealand Building Code energy efficiency requirements are based on the system performance of building components rather than individual elements, such as insulation.

Laboratory tested R-value for insulation products is used in the BRANZ House Insulation Guide to determine the total R-value of the building element such as wall, ceiling or floor. BRANZ House Insulation Guide states the following:

For any house construction, individual materials or components are combined to create a built system. However, the R-value of the built system (referred to as the construction R-value) is not the R-value of the single specific insulation material as is often commonly thought.

Instead, the construction R-value is a combination of the R-values of the individual components, including the effects of thermal bridging of the framing.

The laboratory tested R-value of wall insulation is not necessarily an accurate reflection on its 'real life' installed performance.

Any insulation should be designed for its intended purpose of application. That is particularly relevant to wall insulation that needs to have physical properties that enable it to be installed well.

In order to realise its true performance, wall insulation MUST:

1. **Maintain its nominal thickness when installed** – folds and creases reduce R-value proportionate to the rate of compression.

2. **Be self-supporting without the use of mechanical fixings**. Wall insulation should not sag or slump over time therefore resulting in a significant reduction in its performance.

3. **Be friction fitted** between dwangs and studs without any gaps in between. *"Gaps around the edge of wall insulation can reduce its effective R value by approximately 3% for every 1mm gap[1]."*

These three factors have proved to be a real challenge for traditional insulation materials.

[1] *BRANZ House Insulation Guide*

TEST METHODOLOGY AND RESULTS

PERFORMANCE **ASSURANCE**

Independently tested wall systems, featuring Mammoth® Airlay insulation, outperformed construction (system) R-values in the BRANZ House Insulation Guide.

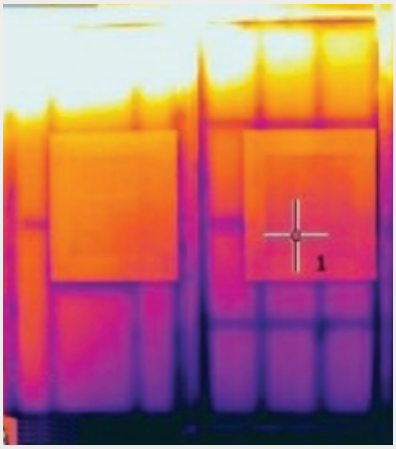
The independent testing of Mammoth Airlay insulation was conducted over the winter period: June - July 2014.

Measurements were made using heat flux transducers and associated software developed and calibrated by New Zealand's leading building research laboratory.

Test walls were 1.2m wide by 2.4m high with 90mm deep timber framing. The walls were installed in a research building and had three different types of cavity cladding:

- Timber weatherboard
- 12mm plywood sheet
- Brick veneer

Test equipment



Thermal image of test equipment

SYSTEM PERFORMANCE RESULTS

PEACE OF MIND – when performing H1 calculations, specify Mammoth Airlay Wall insulation with confidence, knowing that the wall construction R-value will outperform the calculated averages for equivalent systems.

System R-values: 90mm TIMBER FRAMED – cavity, 14.5% ratio of frame to total area

	Mammoth Airlay		BRANZ House Insulation Guide				
Insulation R-value	**R1.9**	**R2.0**	**R1.8**	**R2.0**	**R2.2**	**R2.4**	**R2.6**
Construction R-value							
– Brick Veneer Cladding	**2.25**	**2.25**	1.7	1.9	2.0	2.1	2.2
– Weatherboard Cladding	**2.15**	**2.20**	1.9	2.0	2.1	2.2	2.3
– Plywood Cladding	**1.95**	**2.05**	1.7	1.8	1.9	2.0	2.1

System R-values: 140mm TIMBER FRAMED – cavity, 14.5% ratio of frame to total area

	Mammoth Airlay	BRANZ House Insulation Guide			
Insulation R-value	**R2.8**	**R2.6**	**R2.9**	**R3.2**	**R3.5**
Construction R-value					
Brick Veneer Cladding	**3.05**	2.4	2.6	2.8	3.0
Weatherboard Cladding	**2.85**	2.6	2.8	2.9	3.1
Plywood Cladding	**2.75**	2.4	2.6	2.7	2.9

WHY WE TESTED OUR AIRLAY INSULATION

THE MAMMOTH **AIRLAY ADVANTAGE**

Mammoth Airlay insulation has unique properties which support superior installation and construction R-values.

It is easy to install as it is friction fitted between studs, joists and dwangs (nogs) creating a seamless, smooth fit without tucks, creases or gaps.

This seamless fit is the ultimate way to insulate – it supports higher thermal performance across the system by retaining its nominal thickness. Friction fitted, Airlay insulation is made using a unique manufacturing process whereby the fibres are completely randomised rather than layered.

This provides for differing structural properties of the product, enabling it to support itself within a cavity by simply squeezing it in place. It is suitable for floors, walls and confined ceiling spaces:

FLOOR : There is no need for staples, removing the danger of electric shock. Denser, less likely to be affected by wind wash.

WALL : Friction fitted between studs and dwangs (nogs), without creases, gaps or tucks.

ROOF : Designed for skillion (cathedral/chapel) or low sloped ceilings where the roof and ceiling run in close parallel.

It is increasingly understood that friction fit polyester insulation products lend themselves to superior thermal performance, although this term is also used broadly across a wide range of product types.

The nature of insulation produced on the Airlay plant is different to traditional polyester or fibreglass insulation and so was believed to perform exceptionally well in wall and underfloor systems.

To prove and document the performance of Mammoth Airlay insulation, New Zealand's leading building research laboratory was commissioned to undertake comprehensive independent insitu testing as detailed on the previous page.

Mammoth® Airlay insulation vs Carded insulation

Airlay insulation – randomised fibres

Carded insulation – traditional layering

A SUSTAINABLE CHOICE

MAMMOTH **ENVIRONMENTAL CREDENTIALS**

Our business is underpinned by a philosophy of creating better environments which extends to more than just the products we manufacture.

Our commitment to sustainability is incorporated in the way we operate the business, our manufacturing processes and the way we help our customers create warmer, healthier, more energy efficient environments - all while protecting the largest environment of all, our planet.

We feel it is important to consider the environment in all facets of our business and so measuring and monitoring our impact is the only way to understand how we can improve. Our measured carbon emissions will be offset, monitored and continually reduced through a variety of smarter business practices.

TOITŪ CARBON ZERO ISO 14064-1 ORGANISATION

Mammoth® polyester insulation is manufactured by NZ's first and only Toitu net carbonzero certified insulation manufacturing organisation.

Red List Free

All of our Mammoth polyester insulation products are Red List Free which means no formaldehyde or pesticides are added.

Mammoth products contain recycled polyester fibres. This fibre comes from recycled PET plastic.

ENVIRONMENTAL CHOICE NEW ZEALAND
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Most of our Mammoth insulation products are Environmental Choice certified.

MADE WITH UP TO 15,600 RECYCLED PLASTIC BOTTLES PER 100sqm*

Mammoth's thermal and acoustic insulation is made from 100% polyester and uses up to 15,600 recycled plastic bottles per 100 sqm*.

* The calculations for the number of bottles per 100sqm are based on 500ml PET bottles (16.2g).

NZGBC TE KAUNIHERA HANGANGA TAUTAIAO

Mammoth is a member of the NZ Green Building Council demonstrating commitment to green building practices in NZ.

REDUCE REUSE RECYCLE

Everything from Mammoth's packaging to product is 100% recyclable. Recycling plastic products the environment by reducing landfill waste.

Mammoth products are made in a zero waste production process. We practice continuous improvement and adoption of a 'reduce, reuse, recycle' philosophy in our fibre product manufacturing process.

ZERO OZONE DEPLETION

Mammoth 100% polyester insulation products have an ODP of zero, which means no ozone depleting substances are present in the product or used in the direct manufacture of the product.

Mammoth® MODERN INSULATION

WHY MAMMOTH?

REASONS TO INSULATE WITH MAMMOTH

- **SUSTAINABLE CHOICE**
  Our commitment to sustainability is paramount to us and is demonstrated in our Sustainability practices (see page 5).
- **NZ MADE**
  Mammoth insulation is made in NZ in our 3 manufacturing plants - 2 in the North and 1 in the South Island of NZ.
- **SOFT & NON-ITCH**
  Mammoth won't irritate your skin when you touch it - in fact it is made from the same material that you find in many pillows and duvets so no precautions are required for handling the product.
- **NON-TOXIC**
  Mammoth polyester fibres are heat-bonded together, removing the requirement for chemical binders such as glues or resins.
- **LIGHTWEIGHT & EASY TO HANDLE**
  Blankets can easily be torn to length or cut with specialised insulation saws or craft knives.
- **NON CORROSIVE**
  Will not affect electrical wiring underfloor.
- **FRICTION FITTED**
  Our unique Mammoth airlay self supporting insulation provides a smooth friction fit without gaps, creases, folds or tucks, segments simply squeeze between joists with no need for staples or strapping.
- **VARIOUS SIZES**
  Mammoth insulation is available in varying widths and lengths to suit most applications.
- **MOISTURE RESISTANT**
  Mammoth will continue to perform once dried out. It is also moisture, mould and mildew resistant.
- **ENERGY EFFICIENCY**
  Mammoth polyester insulation helps create a more energy efficient building, costing less to heat and cool.
- **INSTALLER NETWORK**
  Mammoth insulation has a nationwide network of qualified installers if you want a professional to install it in your building.
- **THERMAL PERFORMANCE MAXIMISED**
  Due to the manufacturing and design process, the installed product supports higher insitu thermal performance across a system.
- **HEALTHIER BUILDING**
  Choosing Mammoth polyester insulation helps reduce respiratory conditions as warmer homes are healthier homes.
- **A QUIETER SPACE**
  Superior insulation will also help to reduce noise to create a quieter indoor environment. Mammoth has a range of acoustic products to reduce noise between floors and between rooms.
- **MADE TO LAST**
  If installed correctly and adequately protected, Mammoth Insulation will perform for at least 50 years giving you confidence in your home or building's ongoing energy efficiency & health.
- **BRANZ APPRAISED**
  Most of Mammoth's thermal insulation and acoustic products are BRANZ appraised.
- **NZ GREEN BUILDING COUNCIL**
  Mammoth insulation contributes points to the material requirements for the Greenstar and Homestar rating tools.
- **HIGH PERFORMER BUILDING**
  Mammoth are members of High Performer Building who provide quality products for new constructions.

FROM WASTE TO WARMTH

Mammoth's thermal and acoustic insulation takes fibre made from recycled plastic bottles, which would otherwise be waste. This fibre is manufactured from the bottles into insulation that creates warmer, healthier homes and buildings.

Mammoth 100% polyester insulation uses up to 15,600 recycled plastic bottles per 100 sqm*.

** The calculations are based on 500ml PET bottles (16.2g). Refer to mammoth.co.nz for more details.*

MAMMOTH® PRODUCT RANGE

SPECIFICATIONS

	PRODUCT RANGE			Density (kg/m³)	Product R-value	Nominal thickness (mm)	Dimensions (mm)	Pieces (per pack)	Total area (m²)
CEILING	Ceiling Blanket	✓	✓	7.83	R1.8	115	870 x 11495	2	20.00
		✓	✓	7.57	R2.9	185	870 x 8620	2	15.00
		✓	✓	8.0	R3.2	200	870 x 8620	2	15.00
		✓	✓	8.0	R3.3	210	870 x 8620	2	15.00
		✓	✓	8.0	R3.6	225	870 x 7470	2	13.00
		✓	✓	8.33	R4.0	240	870 x 5750	2	10.00
	Double Layer (2x R2.9)	✓		7.57	R 5.8	370	870 x 8620	2	15*
	Double Layer (2x R3.2)	✓		8.00	R 6.4	400	870 x 8620	2	15*
	Double Layer (2x R3.3)	✓		8.00	R 6.6	420	870 x 8620	2	15*
	Double Layer (2x R3.6)	✓		8.00	R 7.2	450	870 x 7470	2	13*
	Double Layer (2x R4.0)	✓		8.33	R 8.0	480	870 x 5750	2	10*
	Skillion Sections		✓	32.87	R2.9	115	560 x 1200	3	2.02
			✓	32.87	R2.9	115	860 x 1200	5	5.16
			✓	15.15	R3.2	165	570 x 1200	5	3.42
			✓	15.15	R3.2	165	870 x 1200	4	4.18
			✓	19.39	R3.6	165	870 x 570	6	2.98
	Ceiling Batten			16.67	R1.0	45	580 x 12930	2	15
				42.22	R1.3	45	360 x 2400	9	7.78
				42.22	R1.3	45	560 x 2400	6	8.06
WALLS	Wall Sections	✓	✓	16.67	R1.9	90	360 x 760	9	2.46
		✓	✓	16.67	R1.9	90	560 x 760	6	2.55
		✓	✓	60.00	R2.0	70	360 x 760	12	3.28
		✓	✓	60.00	R2.0	70	560 x 760	8	3.40
		✓	✓	22.22	R2.0	90	360 x 760	9	2.46
		✓	✓	22.22	R2.0	90	560 x 760	6	2.55
		✓	✓	26.67	R2.2	90	360 x 760	9	2.46
		✓	✓	26.67	R2.2	90	560 x 760	6	2.55
		✓	✓	40.00	R2.5	90	360 x 760	9	2.46
		✓	✓	40.00	R2.5	90	560 x 760	6	2.55
		✓	✓	15.00	R2.8	140	360 x 760	18	4.92
		✓	✓	15.00	R2.8	140	560 x 760	12	5.10
		✓		20.70	R3.2	140	360 x 760	18	4.92
		✓		20.70	R3.2	140	560 x 760	12	5.10
	Wall Blanket	✓	✓	21.67	R2.2	90	360 x 9870	2	7.11
		✓	✓	21.67	R2.2	90	560 x 10800	1	6.05
		✓	✓	10.71	R2.6	140	380 x 8550	4	13.00
		✓	✓	10.71	R2.6	140	580 x 7470	3	13.00
	Masonry Wall Blanket			16.67	R1.0	45	580 x 12930	2	15.00
	Masonry Wall Sections			42.22	R1.3	45	360 x 2400	9	7.78
				42.22	R1.3	45	560 x 2400	6	8.06
UNDERFLOOR	Underfloor Sections	✓	✓	16.67	R1.9	90	370 x 1140	16	6.75
		✓	✓	16.67	R1.9	90	425 x 1140	16	7.75
		✓	✓	16.67	R1.9	90	475 x 1140	14	7.58
		✓	✓	16.67	R1.9	90	580 x 1140	12	7.93
		✓		15	R2.8	140	370 x 1140	10	4.21
		✓		15	R2.8	140	425 x 1140	10	4.84
		✓		15	R2.8	140	475 x 1140	10	5.41
		✓		15	R2.8	140	580 x 1140	8	5.28
	Double Layer (2x R1.9)	✓		16.67	R3.8	180	370 x 1140	16	6.75*
		✓		16.67	R3.8	180	425 x 1140	16	7.75*
		✓		16.67	R3.8	180	475 x 1140	14	7.58*
		✓		16.67	R3.8	180	580 x 1140	12	7.93*
	Underfloor Blanket	✓	✓	7.5	R1.5	100	450 x 11110	4	20
		✓	✓	7.5	R1.5	100	510 x 9804	4	20
		✓	✓	7.5	R1.5	100	600 x 11110	3	20
		✓	✓	7.5	R1.5	100	650 x 10256	3	20
		✓	✓	7.83	R1.8	115	450 x 11110	4	20
		✓	✓	7.83	R1.8	115	510 x 9804	3	20
		✓	✓	7.83	R1.8	115	600 x 11110	3	20
		✓	✓	7.83	R1.8	115	650 x 10256	3	20
	Carpark Panels			28.57	R1.7(NRC0.85)	70	2400 x 1200	4	11.52
				32.00	R2.5**	100	2400 x 1200	3	8.64

R Values marked in red are Airlay products.

To view our entire product range (including all our ceiling, wall, underfloor products as well as our acoustic range), please visit mammoth.co.nz

For any system - single or double layered - the joist depth must be greater than the insulation thickness.

** For Double Layering - Double the quantity of product is required. For instance, a 100m² area requires 200m² of product to achieve a double layer.*

*** Minimum order quantities (MOQs) apply.*

Mammoth®
MODERN INSULATION

CONTACT US

FOR MORE INFORMATION ON:

- Product range
- Free Measure and Quote
- Installation services
- Architect and Specifier requirements
- New Build requirements
- 50 year warranty information

Contact us on **0800 626 668**
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