

INSITU WALL SYSTEM

AIRLAY INSULATION PERFORMANCE

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".*

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



TEST METHODOLOGY AND RESULTS

PERFORMANCE ASSURANCE

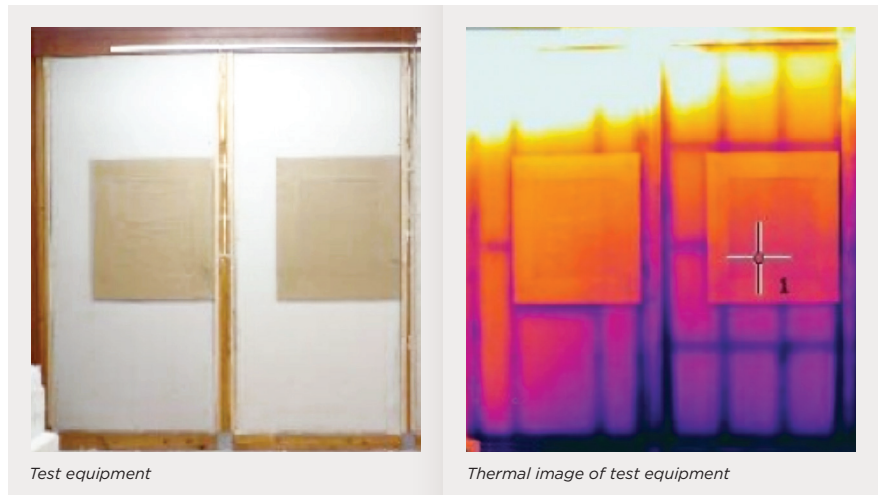
Independently tested wall systems, featuring Mammoth™ Airlay insulation, outperformed construction (system) R-values in the BRANZ House Insulation Guide.

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



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

Insulation R-value	Mammoth Airlay		BRANZ House Insulation Guide				
	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

Insulation R-value	Mammoth Airlay R2.8	BRANZ House Insulation Guide			
		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 slope ceilings where the roof and ceiling run in close parallel.



Mammoth™ Airlay insulation vs Carded insulation



Airlay insulation – randomised fibres



Carded insulation – traditional layering

InZone Industries Ltd has the only Airlay insulation manufacturing plant in Australasia which produces medium and high density thermal and acoustic insulation products.

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.

FROM WASTE TO WARMTH

Mammoth insulation take fibre made from plastic bottles, which would otherwise be waste, and manufacture the fibre from the bottles into polyester insulation that creates warmer, healthier homes and buildings.



ENVIRONMENTAL CREDENTIALS

MAMMOTH A SUSTAINABLE CHOICE



Environmental Choice

Many of our Mammoth products have Environmental Choice certification. Environmental Choice is the official environmental labelling programme.

This programme, which commenced in 1992, operates independently from the government but the label is government owned and endorsed. Since 1992, the government has financially supported the scheme, both directly and indirectly.



carbonZero

We have been proudly awarded the World's first insulation manufacturer to be carbonZero certified.

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.



Red List Free

All Mammoth polyester insulation products have achieved the highest certification status under the Living Building Challenge's Declare programme and are the world's first polyester insulation products **Red List Free**.

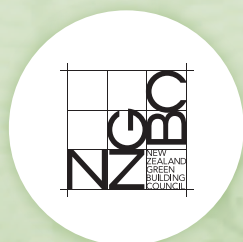
WHAT IS RED LIST FREE?

The Living Building Challenge developed a Red List of prohibited materials under the Declare programme, to provide transparency around building products. Declare is a 'nutrition label' for the international building industry and is a voluntary self-disclosure programme aiming for healthier and more ecological products in construction. Red List Free products are shown to be free from Declare's red list ingredients.



Ozone Depleting Potential

Mammoth insulation products manufactured from 100% polyester have an Ozone Depleting Potential (ODP) of zero, meaning no ozone depleting substances are present in the product or used in direct manufacture of the product.



Green Building Council

HOMESTAR: Mammoth Modern Insulation is a long-time supporter of Homestar, a comprehensive, independent national rating tool, run by the not-for-profit Green Building Council, that measures the health, warmth and efficiency of New Zealand houses. A home is rated on a scale from 6 to 10. We support the movement towards creating better, warmer and more energy efficient and comfortable homes. Mammoth Modern Insulation contributes to points under Homestar.

GREEN STAR : Green Star NZ is a comprehensive environmental rating system for buildings and awards points across nine categories. Green Star is a way for the property and construction sectors to design, construct, certify and operate projects in a healthier, greener, more sustainable, efficient and productive way. Mammoth Modern Insulation contributes to points under Green Star.

Further information is available at nzgbc.org.nz

ABOUT MAMMOTH™

14 REASONS TO INSULATE WITH MAMMOTH

Mammoth Modern Insulation is a new generation of polyester insulation which helps create warmer, drier, healthier buildings.



- 1 SOFT & NON-ITCH** – It 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.
- 2 EASY TO INSTALL** – There is no need to cover up in overalls, masks and goggles to handle Mammoth insulation – unless you're avoiding dirt & spiders. It also comes in blanket or sections for ease of install.
- 3 FRICTION FITTED** – Our unique Mammoth Airlay insulation has a natural spring-back aspect which means it can be installed under-floor without the need for staples or strapping and in walls without gaps, tucks or creases.
- 4 ENERGY EFFICIENCY** – Mammoth polyester insulation helps create a more energy efficient building, costing less to heat and cool.
- 5 RECYCLABLE** – Mammoth insulation is manufactured in a near zero waste production process and is fully recyclable.
- 6 RECYCLED PLASTIC BOTTLES** – Mammoth insulation is manufactured using fibres from recycled plastic bottles, so you can feel good about doing your bit to protect the environment and keep waste out of landfill.
- 7 INSTALLER NETWORK** – Mammoth insulation has a nationwide network of qualified Installers if you want a professional to install it in your building.
- 8 MOISTURE RESISTANT** – Should Mammoth polyester insulation get wet, once the water source ceases, it will dry and thermal performance will not be compromised.
- 9 THERMAL PERFORMANCE MAXIMISED** – Due to the manufacturing and design process, the installed product supports higher insitu thermal performance across a system.
- 10 NON-TOXIC** – Our polyester fibres are free from insecticides and glues. Instead Mammoth polyester fibres are heat-bonded together, removing the requirement for chemical binders.
- 11 HEALTHIER BUILDING** – Choosing Mammoth polyester insulation helps reduce respiratory conditions as warmer homes are healthier homes.
- 12 A QUIETER SPACE** – Superior insulation will also help to reduce noise to create a quieter indoor environment.
- 13 MADE TO LAST** – If installed correctly and adequately protected Mammoth Insulation will perform for at least 50 years* giving you confidence of your home's ongoing energy efficiency & health.
- 14 MADE IN NEW ZEALAND** – Mammoth insulation is manufactured in our two New Zealand plants, one in East Tamaki, Auckland and the other in Milton.



* Terms and conditions apply

MAMMOTH™ PRODUCT RANGE

SPECIFICATIONS

PRODUCT RANGE				PRODUCT R-VALUE	NOMINAL THICKNESS (mm)	DIMENSIONS (mm)	PIECES (per pack)	TOTAL AREA (m²)	
CEILING	Ceiling Blanket	✓	✓	1.8	115	870 x 11495	2	20.00	
		✓	✓	2.9	185	870 x 8620	2	15.00	
		✓	✓	3.2	200	870 x 8620	2	15.00	
		✓	✓	3.6	225	870 x 7470	2	13.00	
		✓	✓	4.0	240	870 x 5750	2	10.00	
	Skillion Sections		✓	2.9	115	560 x 1200	3	2.02	
			✓	2.9	115	860 x 1200	5	5.16	
			✓	3.2	165	570 x 1200	5	3.42	
			✓	3.2	165	870 x 1200	4	4.18	
	WALLS	Wall Sections	✓	✓	1.9	90	360 x 760	8	2.46
✓			✓	1.9	90	560 x 760	6	2.55	
				2.0	70	360 x 760	12	3.28	
				2.0	70	560 x 760	8	3.40	
✓			✓	2.0	90	360 x 760	9	2.46	
✓			✓	2.0	90	560 x 760	6	2.55	
✓			✓	2.2	90	360 x 760	9	2.46	
✓			✓	2.2	90	560 x 760	6	2.55	
✓			✓	2.5	90	360 x 760	9	2.46	
✓			✓	2.5	90	560 x 760	6	2.55	
✓			✓	2.8	140	360 x 760	18	4.92	
✓			✓	2.8	140	560 x 760	12	5.10	
Wall Blanket**			✓	✓	2.2	90	360 x 9870	2	7.11
			✓	✓	2.2	90	560 x 10800	1	6.05
		✓	✓	2.6	140	380 x 8550	4	13.00	
		✓	✓	2.6	140	580 x 7470	3	13.00	
Masonry Wall Blanket				1.0	45	580 x 12930	2	15.00	
Masonry Wall Sections				1.3	45	360 x 2400	9	7.78	
				1.3	45	560 x 2400	6	8.06	
UNDERFLOOR		Underfloor Blanket	✓		1.5	100	450 x 11110	4	20.00
	✓		✓	1.5	100	510 x 9804	4	20.00	
	✓			1.5	100	600 x 11110	3	20.00	
	✓			1.8	115	450 x 11110	4	20.00	
	✓		✓	1.8	115	510 x 13070	3	20.00	
	✓			1.8	115	600 x 11110	3	20.00	
	Underfloor Sections	✓	✓	1.9	90	370 x 1140	16	6.75	
		✓	✓	1.9	90	425 x 1140	16	7.75	
		✓	✓	1.9	90	475 x 1140	14	7.58	
		✓	✓	1.9	90	580 x 1140	12	7.93	
	Carpark Panels			1.4**	55	2400 x 1200	4	11.52	
				1.7 (NRC 0.85)	70	2400 x 1200	4	11.52	
				2.0**	90	2400 x 1200	4	11.52	
				2.5**	100	2400 x 1200	3	8.64	

ACOUSTIC

PRODUCT RANGE	NRC	PRODUCT TYPE	NOMINAL THICKNESS (mm)	DIMENSIONS (mm)	PIECES (per pack)	TOTAL AREA (m²)
Acoustic Soundblanket		1100gsm	90	600 x 11110	3	20.00

* BRANZ House Insulation. ** Not a stock item, MOQs apply.

R Values marked in red are Airlay products.

To view our entire product range, including all our ceiling, wall and underfloor products, visit mammoth.co.nz

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**
or visit **mammoth.co.nz**

