

THE SUPERIOR NATURAL HOME INSULATION



Exceptional dynamic performance, natural, healthy, cost effective, eco friendly and New Zealand made.

Back Ground

WOOL INSULATION

- Developed by WRONZ in the early 1990's
- Many wool yarn mills producing large quantities of recyclable fibre – clean and high quality
- Several methods of bonding were tested
- Melt bond technology was commercialized by Rahnex Wools of Kaiapoi
- Terra Lana originally the registered brand for Rahnex Wools
- 1999 Rahnex wools sold and Terra Lana Products Ltd formed
- Resin bonding technology was commercialized by WoolBlock in Nelson which later become Latitude Insulation



RECYCLED

The wool in Terra Lana is predominantly sourced as short length and odd colour fibre from yarn manufacturing that is uneconomic for the carpet manufacturers to reuse themselves

We recycle all our off cuts and Terra Lana can be recycled at the end of a homes life



Back Ground

Terra Lana

- Christchurch based manufacturing facility of approximately 4000m², 25 staff running 5 days per week, 24 hours per day
- Specialise in Ceiling, Wall and Floor insulation
- Other products, Mulch Mat, Pipe Lagging, Furniture Blanket, Animal Covers
- EnergySmart a trading entity of Terra Lana installing approximately 3500 houses of insulation per year
- James Gallagher, GM since July 2011



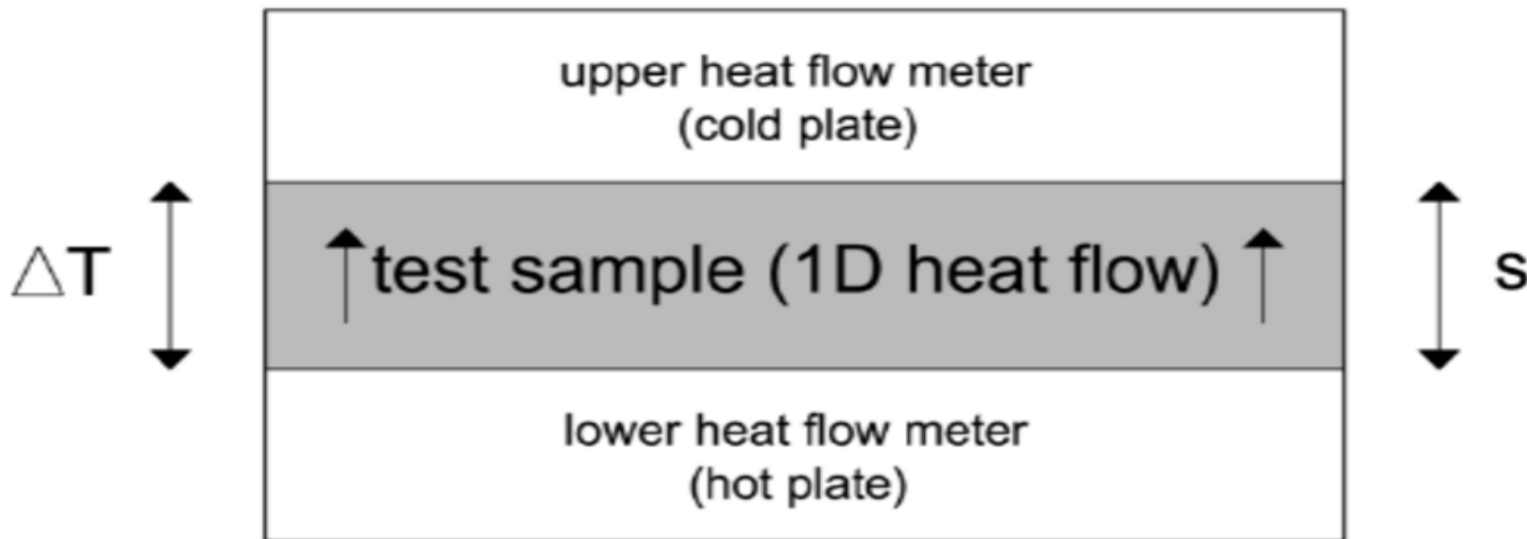
MORE THAN MERE R-VALUE

NZS4859.1 insulation test standard of New Zealand
Product is conditioned for 24 hours prior to testing

- Wool Insulation at 45C
- Glass fibre at 23C

Conductivity calculated once system reaches equilibrium

Wool takes much longer to reach equilibrium – resists change in temperature, but ultimately has no impact on R-value result



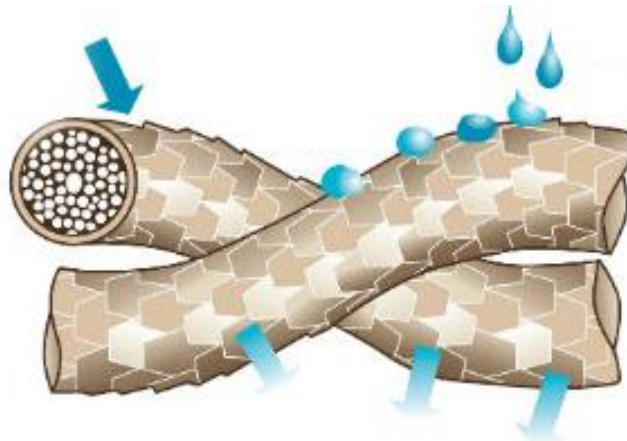
Exclusive Hydroscopic Advantage

WOOL BREATHES

- Wool fibre is hygroscopic ~ it can absorb and release moisture from the air. This phenomenon is known as 'breathing'
- Otago University research – negligible drop off of thermal resistance at saturation compared to bone dry
- A drier home is easier to heat, healthier and less prone to condensation, mould and mildew.
- **For every litre of water absorbed into and evaporated out of Terra Lana 0.628 kWh of energy is released or absorbed.**

Water Vapour
absorbed

Water Vapour
released



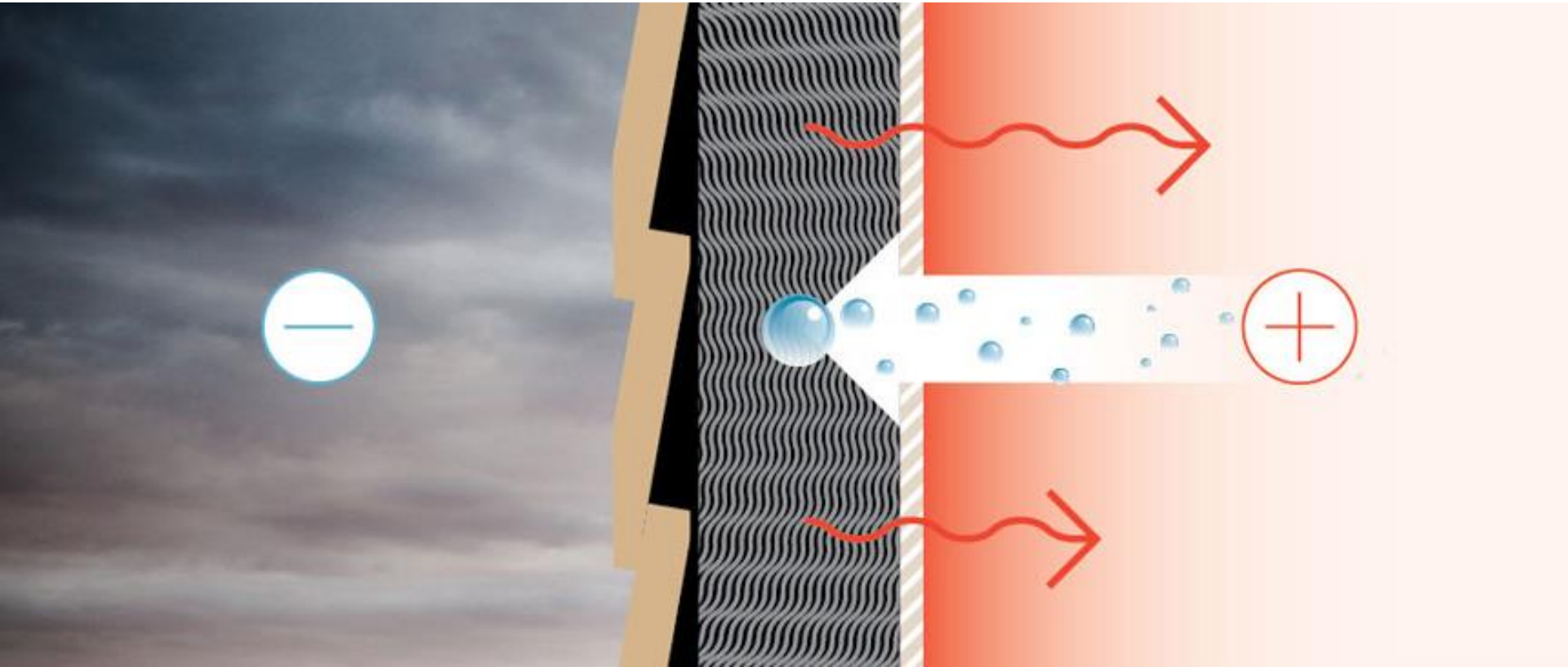
Water liquid
repelled



Relative Humidity Night Cycle

Terra Lana – Night Cycle

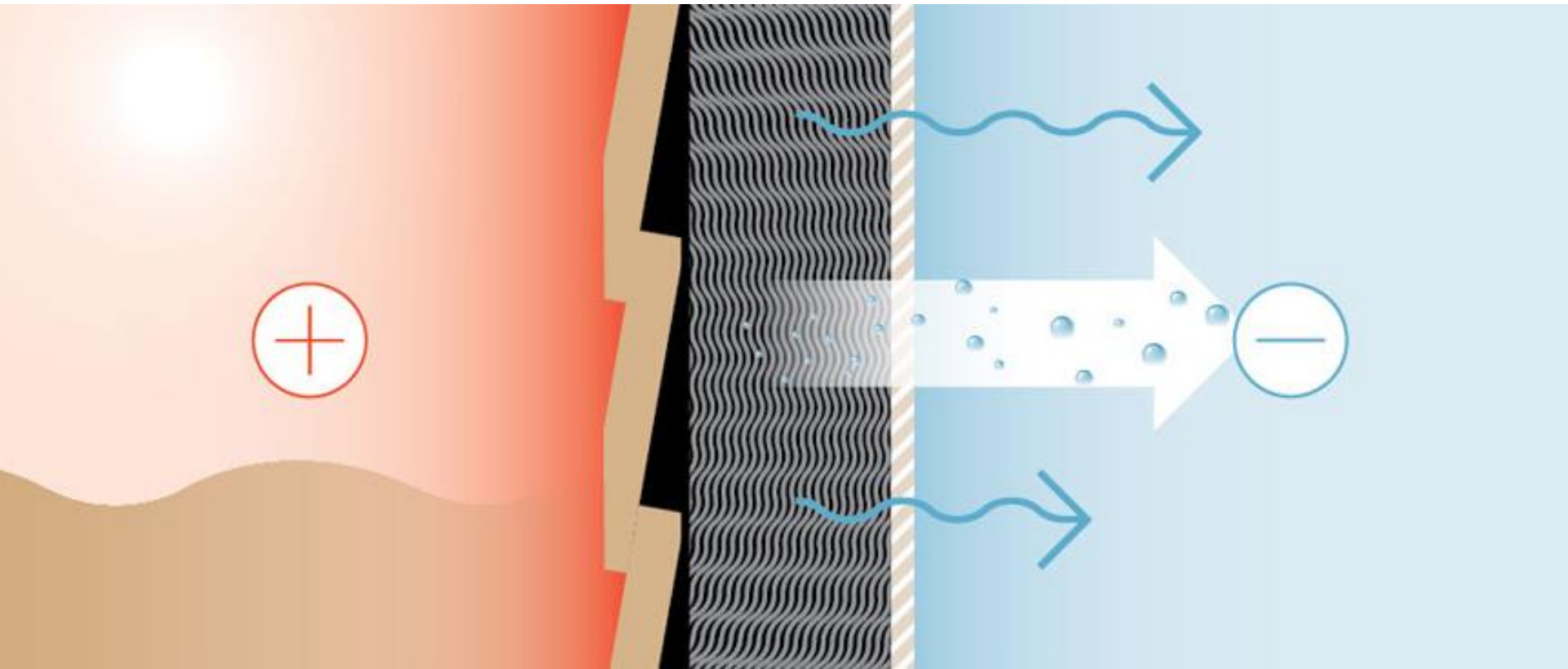
- Air temperature decreases,
- Relative humidity increases,
- Moisture is absorbed into wool fibre,
- Energy is released (heating)



Diurnal Relative Humidity Cycle

Terra Lana – Day Cycle

- Air temperature increases,
- Relative humidity decreases,
- Moisture is evaporated out of the wool fibre,
- Energy is absorbed (cooling)



Diurnal Cycle Conclusion

In a breatheable construction system Terra Lana:

- Acts like a very considerable thermal mass,
- Resist the change in temperature,
- Flattens out the peak highs and lows of temperature,
- Improve the comfort of homes,
- Reduce the energy required to heat and cool a home

The “breathing” phenomena is part of the reason why sheep can survive in climates of extreme heat and extreme cold.



Whole House Case (potential)

Insulation	Meters	GSM	Mass
Ceiling	R3.6 x 150m ²	2600	390 kg
Wall	R2.4 x 100m ²	2500	250 kg
Underfloor	R1.8 x 150m ²	1350	202.5 kg
Total			842.5 kg

So as temperature is decreasing, Terra Lana could absorb up to 33.7 litres of water (4%*) releasing **21.2 kWh of energy**

* AgResearch Client Report CLR 14-28 September 2014



Breatheability – moisture egress

Moisture will flow from high to low concentration much the same way heat does. Typically the air inside a home has more moisture than air outside a home.

The build up of moisture inside a home leads to condensation, mould and higher energy costs. Opening windows removes moist air but heat is also lost. Mechanical ventilators use energy and have ongoing maintenance costs.

Use Terra Lana in combination with vapour permeable materials to deliver significant performance benefits over many traditional construction systems



Moisture created by common household activities

Activity	Litres	5 person home
Cooking	3.0 per day	3
Clothes washing	0.5 per day	.5
Showers and baths	1.5 per day (per person)	7.5
Dishes	1.0 per day	1
Breathing, active	0.2 per hour (per person)	5 (5 hours)
Breathing, asleep	0.02 per hour (per person)	0.8 (8 hours)
Perspiration	0.03 per hour	2
Total Moisture Loading		20 ltrs



Terra Lana Recommends



- Magnum® Board ceiling liner
- Vapour permeable plastering system
- Biopin® permeable painting system

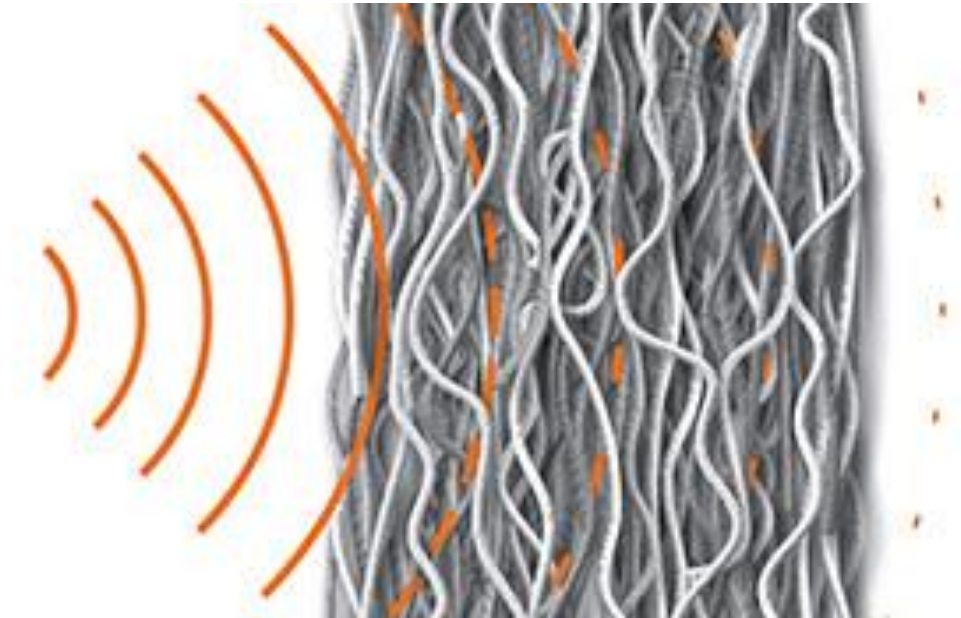
DURABLE

- Wool will last the life of a home without breaking down.
- To remain effective, insulation fibres must trap air and form pockets of still air. Tiny scales on the fiber surfaces hook them together so the wool stays fluffed up.
- The result – longer lasting insulating performance that doesn't slump over time.



Quieter

Wool has excellent acoustic insulating properties too, so it helps keeps the noise down through walls, floors and ceiling.



EASY & SAFE TO INSTALL

- Non-toxic,
- Non-irritating
- Protective clothing or mask not required
- Rips to length and can be cut to size at factory

NON TOXIC

The wool fibre in Terra Lana actually absorbs toxins such as formaldehyde out of the air around it. Wool molecules bind with formaldehyde molecules in such a way that the result is irreversible and reemission does not occur.



NEW ZEALAND MADE

A New Zealand product through and through, developed, owned and operated by entrepreneurial New Zealanders



Superior Fibre ~ Unique Advantages

Wool's complex structure gives added benefits as an insulation, performing beyond it's R value

Illness caused by common toxins in the home is well documented. Wool absorbs those toxic vapours while it also breathes ~ moderating humidity to reduce damp, moulds and mildew, leaving air drier, more comfortable, healthy and cheaper to heat than if just thermally insulated.

Terra Lana is extra dense and won't slip or slump over time ~ essential for maintained performance. Consider the costs of failed insulation and Terra Lana becomes an even more cost effective investment, backed by our 50 year warranty. BRANZ appraised.

Optimise performance & efficiency by specifying Terra Lana at your design planning stage.

Benefit for the life of your building with Terra Lana

Natural, Recycled & Sustainably Sourced

0800 485 262 | www.terralana.co.nz

**NATURE'S
COST~
EFFECTIVE
INSULATION**



WRAP YOUR HOME IN WOOL

