

## ENGINEERED BLOW-IN INSULATION SOLUTIONS FOR HIGH PERFORMANCE HOMES



# WHY ENGINEERED BLOW-IN INSULATION SOLUTIONS ARE THE ULTIMATE CHOICE FOR HIGH PERFORMANCE HOMES

The engineered blow-in glasswool solutions from Knauf Insulation have been designed to deliver a range of unrivaled benefits for homeowners that can be achieved with just one product:

- High thermal performance
- Acoustic performance
- Fire performance - non-combustible
- Energy efficiency
- Water resistance - silicone treated
- Performance for the lifetime of the building

At the design and planning stage, you have the perfect opportunity to maximise the thermal performance of your home by selecting the right product and insulation level. It is important to consider the performance of the insulation in relation to the construction type. This is true for insulation as not all products have the same performance once installed. Selecting the right insulation at the design and construction stage will future-proof the performance of the building and provide long-term comfort and energy efficiency.

Jet Stream® MAX blow-in insulation has been widely used around the world to achieve superior performance and unique insulation solutions. Since its introduction in Australia and New Zealand, it has been installed in hundreds of properties, and has been the product of choice for designers and homeowners trying to achieve a high thermal performance.



# Introducing Knauf Insulation



# Jet Stream<sup>®</sup> MAX

Jet Stream<sup>®</sup> MAX is a high performance, non-combustible, blow-in Glasswool insulation. When installed as part of a system it creates a thermal, acoustic and fire resistant barrier.

Gaps, voids and hard to reach areas around pipes, electrical wires and fixtures are easily accommodated by Jet Stream<sup>®</sup> MAX to limit thermal bridging and deliver high thermal performance.

Jet Stream<sup>®</sup> MAX provides a high performing solution in multiple applications.



**EXTERNAL WALLS**



**INTERNAL WALLS**



**CEILING**



**MID-FLOORS**



**ROOFS**

Knauf Insulation are leading the change in advanced insulation solutions for a better world. At Knauf Insulation, we are committed to helping our customers meet the increasing demand for energy efficiency and sustainability in their homes. Our mission is to challenge conventional thinking and create innovative insulation

solutions that shape the way we live and build in the future, with care for the people who make them, the people who use them and the world we all depend on.

With more than 40 years' experience in the insulation industry, Knauf Insulation represents one of the

fastest growing and most respected names in insulation worldwide. We have over 5,000 employees in more than 35 countries, and more than 37 manufacturing sites in 15 countries, continuously showing a strong and steady financial performance with a turnover close to €1.6 billion in 2016.



# What are the benefits of blow-in Glasswool insulation?



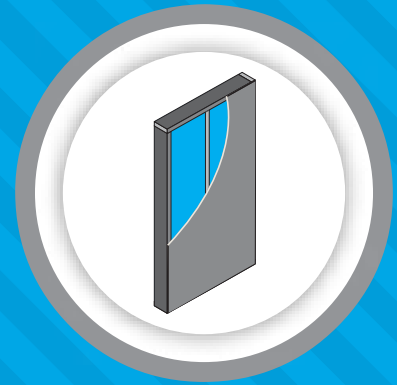
## Zero Waste

No offcuts or waste.



## High Thermal Performance

Ideal for deep wall cavities and cavities without nogs. Can achieve R-Value 9.0m<sup>2</sup>K/W in a 290mm thick wall.



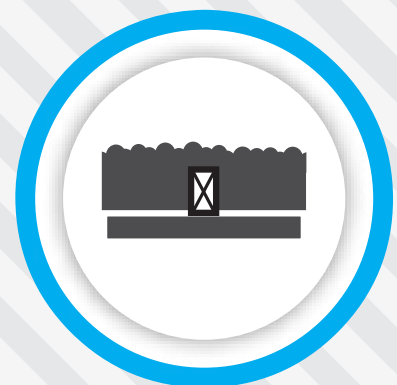
## Improved In-Service Performance

Fills all gaps, voids and eliminates any tucks and folds. The result is an improved in-service thermal and acoustic performance.



## No Water or Solvents

Jet Stream® MAX is installed dry and contains no water or solvents.



## Reduces Thermal Bridging

The unique installation method means a continuous thermal blanket, reducing thermal bridging and improving the systems thermal performance.



### Cost-Effective

Jet Stream® MAX is a cost-effective solution when compared to other materials.



### Low Smoke Development

Jet Stream® MAX has a smoke development rating of 0-1.



### Sustainable

Jet Stream® MAX is made using recycled glass.



### Durable

Jet Stream® MAX is non-corrosive and will not react with electrical cabling or sustain vermin, and will not rot, deteriorate, sag or settle over time.



### Non-Combustible

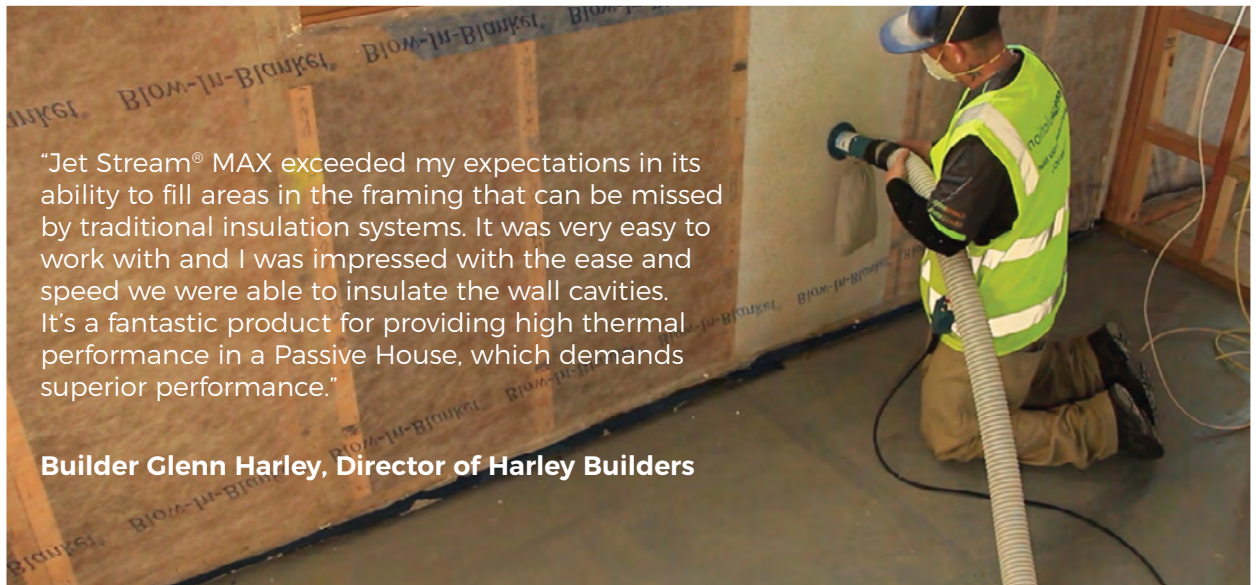
Jet Stream® MAX is non-combustible and does not require additives to make it fire resistant. It has a melting point of over 700°C.



### CodeMark™ Certified

Jet Stream® MAX is CodeMark™ certified, which confirms Building Code compliance and provides confidence to homeowners, Building Surveyors and Territorial Authorities.

# THE MARRIOTT HOUSE



"Jet Stream® MAX exceeded my expectations in its ability to fill areas in the framing that can be missed by traditional insulation systems. It was very easy to work with and I was impressed with the ease and speed we were able to insulate the wall cavities. It's a fantastic product for providing high thermal performance in a Passive House, which demands superior performance."

**Builder Glenn Harley, Director of Harley Builders**

## The Challenge

- Build the first Certified Passive House in Christchurch.
- Achieve a high level of insulation with low thermal bridging.
  - Deep 200mm I-Beam walls with no nogs that required a “full-fill” solution that would not settle or sag over time.

## The Specification

- Jet Stream® MAX R-Value 7.0m<sup>2</sup>K/W in the walls.

## The Solution

- Jet Stream® MAX was readily available and installed by Approved Installers.
- Highest thermal performance was achieved whilst maximising the space available.
- Jet Stream® MAX filled the entire wall void in one quick and easy installation.





# HAWK PLACE 'OFF-GRID' HOME

## The Challenge

- Due to the use of photovoltaic panels it was important to reduce the overall energy demand with high R-Value insulation with an excellent in service performance.

## The Specification

- Jet Stream® MAX R-Value 5.2m<sup>2</sup>K/W in the walls. DriTherm® cavity slab, R-Value 1.4m<sup>2</sup>K/W in the ceiling - in four layers to achieve R-Value 6.0m<sup>2</sup>K/W.

## The Solution

- Jet Stream® MAX provided a high thermal value and guaranteed in-service performance.
- Jet Stream® MAX was installed with no waste on site, which met strict Declare certification requirements.
- The walls were built with an internal service cavity, to reduce thermal bridging. Jet Stream® MAX was installed into both cavities at the same time, reducing labour, but at the same time providing a superior install. It was installed in wall frames off-set, which reduced thermal bridging and maximised the amount of insulation installed.







"We used Jet Stream® MAX as it enabled us to achieve the required high level of thermal performance in the largest structure on site, whilst keeping the wall thickness to a minimum. This contributed to our aim in achieving LBC Zero Energy certification for the project."

**Tricia Love, Sustainability and LBC consultant, Tricia Love Consultants Ltd.**

# CAMP GLENORCHY

## LIVING BUILDING CHALLENGE

### The Challenge

- To use at least 50% less energy than similar facilities. To operate at levels of thermal efficiency exceeding the requirements of the New Zealand Building Code.
- To be the most sustainable tourism accommodation facility in New Zealand by following the Living Building Challenge (LBC) of obtaining 'Zero Energy Building' certification.
- To meet the insulation requirements of multiple wall and cavity types.
- To overcome the challenges of a remote location and on-site product storage issues.

### The Specification

- Jet Stream® MAX R-Value 5.3m<sup>2</sup>K/W in walls and R-Value 6.5m<sup>2</sup>K/W in the ceilings.

### The Solution

- The use of Jet Stream® MAX ensured compliance with the strict Living Building Challenge certification process. Jet Stream® MAX is one of the few products available in New Zealand that meets these requirements. The zero waste install system and high thermal conductivities made it an excellent solution.
- Jet Stream® MAX fully-filled the deep wall cavities whilst providing an extremely high thermal conductivity. This helped improve the performance of the walls and enable the designers to meet their energy targets.
- Jet Stream® MAX is not restricted by cavity depth, making it versatile and the ideal solution for this project.
- The compact packaging meant the product could be delivered in one shipment and did not take up a lot of room on site.



# PRODUCT ASSURANCE

Our blow-in Glasswool has been used in high performance homes in extreme climates around the world including Russia, Scandinavia, Northern USA and Canada.



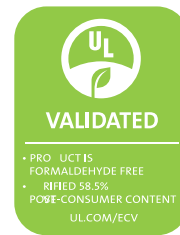
## Approved Installers

Jet Stream® MAX is only installed by trained and Approved Installers.



## CodeMark™ Certification

Jet Stream® MAX is CodeMark™ certified.



## GREENGUARD Certification

Jet Stream® MAX does not contain any binder or additives such as formaldehyde, which assists in improving the indoor air quality of a dwelling compared to older Glasswool technologies.



## Biosolubility

Jet Stream® MAX has EUCEB verification and is classified as non-hazardous.



## International Certification

Jet Stream® MAX is manufactured in accordance with ISO 9001:2008 and ISO 14001:2004, and has been tested to comply with many other overseas certification schemes.

**SAFE**



- Clean and safe installation
- Bio-soluble
- GreenGuard certified
- No added formaldehyde
- Non-combustible

# SUSTAINABILITY

By reducing energy consumption, it is estimated that insulation cuts pollution from power plants, slashing carbon dioxide emissions. In the average life of a building, insulation saves over 1500 times the energy used in its manufacture.

What's more, as well as energy savings, Jet Stream® MAX is a sustainable product and offers the following benefits:



## No Waste

The clean installation process for Jet Stream® MAX means there is no waste left over after installation.



## Made Using Recycled Glass

Jet Stream® MAX is made using up to 80% recycled glass.



## Environmental Impact

Jet Stream® MAX has a zero Ozone Depletion Potential (ODP) and is CFC/HCFC free.



## No Added Formaldehyde

Jet Stream® MAX does not contain petro-based chemicals, added formaldehyde or any artificial colours or dyes.



## Less Transport Transmission

Jet Stream® MAX has a compression ratio of over 150 times\* making it incredibly efficient for logistics.

\*When installed as a ceiling solution

# RECOMMENDED CONSTRUCTION DETAILS

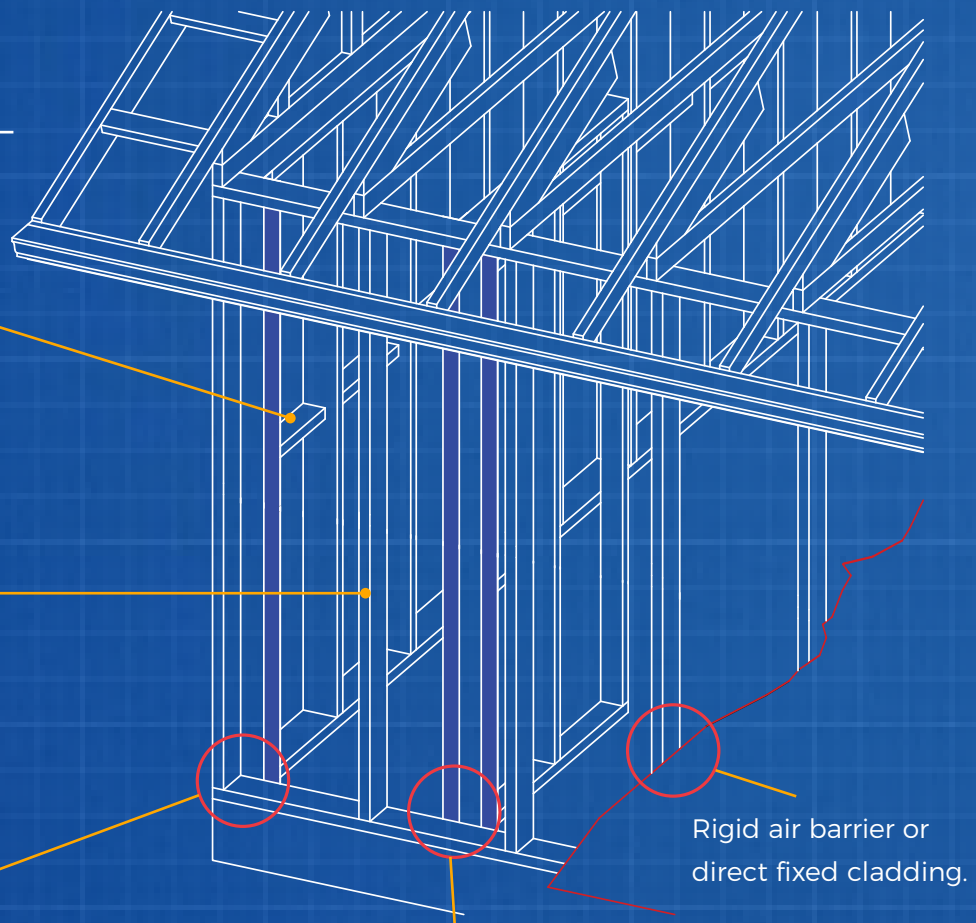
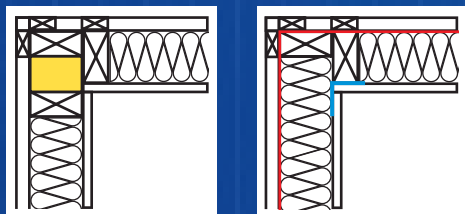
The following recommendations will assist in reducing thermal bridging and maximising the efficiency of Jet Stream® MAX.

## Walls

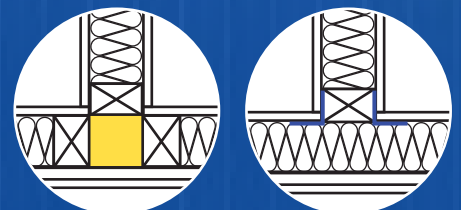
Include 90mm nogs pushed to the exterior of a 140mm stud. This allows for a continuous layer of insulation, which remains compatible with fixings for standard wall cladding systems.

If nogs are not required for fixing external cladding they can be removed, so Jet Stream® MAX can be installed continuously from floor to ceiling and help reduce thermal bridging.

Traditional corners can create voids, which are hard to insulate. In this instance, metal angles or clips can be used to fix the plasterboard to allow insulation to reach behind.



Traditional wall junctions can also create voids, which are difficult to insulate. With this scenario, metal angles or clips can be used to fix the plasterboard to allow insulation to reach behind.

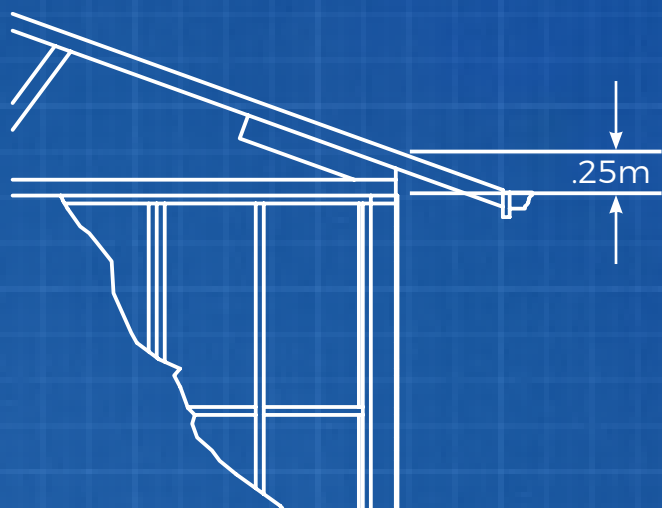


## Trussed ceilings

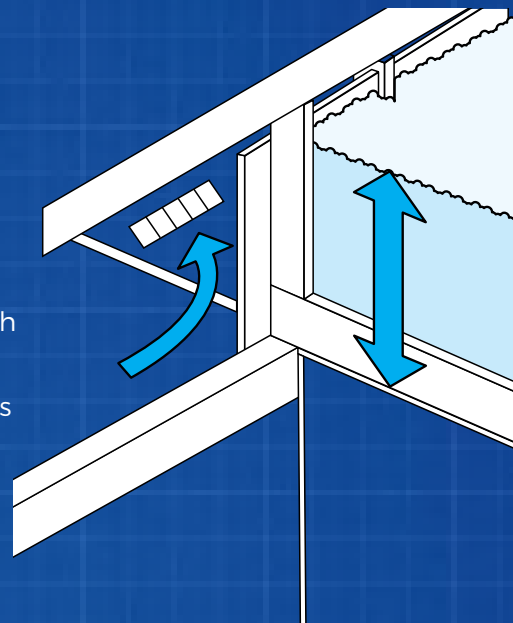
Although Jet Stream® MAX can be installed in normal trussed ceiling constructions, by specifying “raised heel energy

trusses” and adding baffles, Jet Stream® MAX can be installed to full depth over the top plate. It can be installed up to 500mm

or R-Value 10m<sup>2</sup>K/W and vents can be added to the eaves for controlled ventilation.



Raised heel truss (energy truss) which creates full roof insulation thickness over wall top plate.

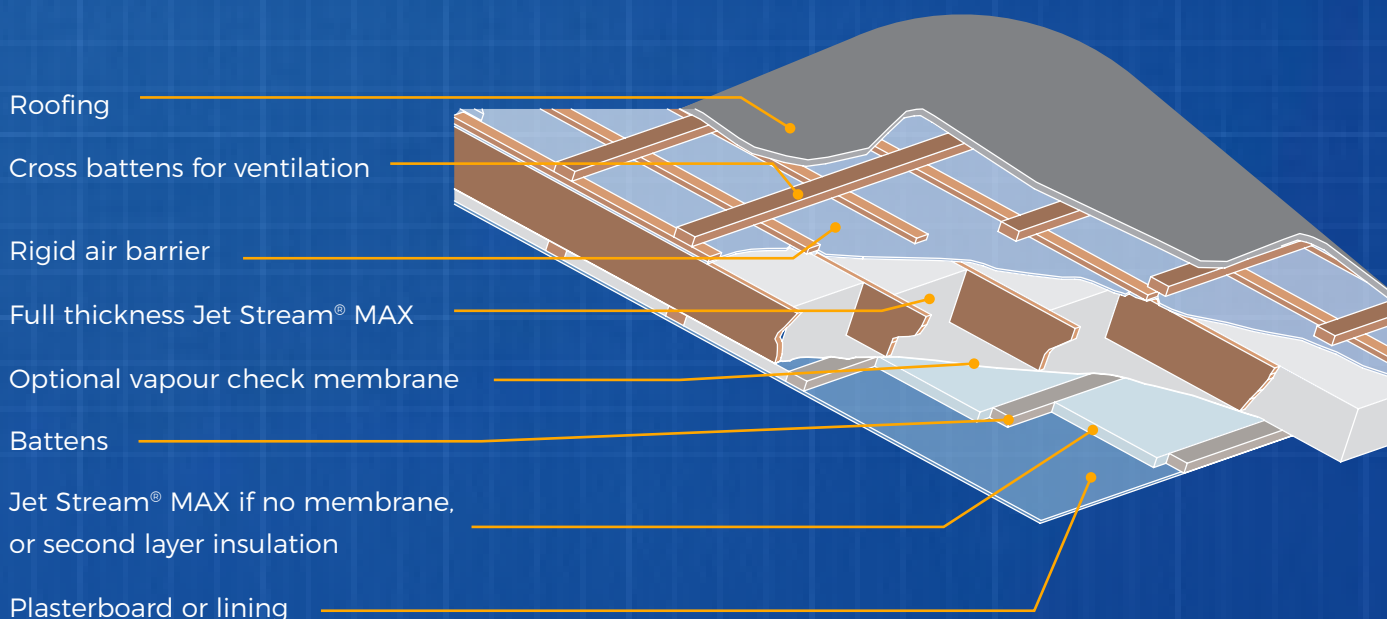


## Skillion roof

Many high performance homes have a skillion roof design, which creates thick cassettes of insulation. Suspended battens allow for effective plasterboard fixing and create an additional internal cavity

for ventilation ducting. If no internal membrane is used, Jet Stream® MAX can be installed into the void created by both the rafters and the battens in a single installation. A rigid air

barrier is required on top, and the addition of battens allows ventilation below the roofing.



# ACOUSTIC PERFORMANCE

Jet Stream® MAX is not only an ideal solution for thermal performance, it also improves acoustic performance. Jet Stream® MAX has been tested by Marshall Day Acoustics, a renowned acoustic consultancy, to verify the high acoustic performance. Specific IIC and STC ratings can be prepared by Knauf Insulation for your construction type.

Please send an email to [tech.nz@knaufinsulation.com](mailto:tech.nz@knaufinsulation.com) for further assistance.

	WITHOUT Insulation STC (Airborne Rating)	WITH Insulation STC (Airborne Rating)	DB Reducton
<b>Internal Wall</b>			
90mm timber frame with 10mm plasterboard (each side)	34	39	5
90mm timber frame with 13mm plasterboard (each side)	36	41	5
<b>Internal Wall Inter-Tenancy</b>			
90mm timber double stud frame with 13mm plasterboard (each side)	40	55	15
<b>Mid-floor (particleboard)</b>			
150mm with 13mm plasterboard ceiling	42	44	2
200mm with 13mm plasterboard ceiling	42	44	2
<b>Mid-floor (particleboard with 25mm timber ceiling battens)</b>			
150mm with 13mm plasterboard ceiling	34	37	3
200mm with 13mm plasterboard ceiling	34	37	3
<b>Mid-floor (fibre cement)</b>			
150mm with 13mm plasterboard ceiling	29	46	17
200mm with 13mm plasterboard ceiling	29	46	17
<b>Mid-floor (fibre cement with 25mm timber ceiling battens)</b>			
150mm with 13mm plasterboard ceiling	29	46	17
200mm with 13mm plasterboard ceiling	29	46	17

# THERMAL PERFORMANCE

Jet Stream® MAX can be installed at any thickness, with key applications below:

## EXTERNAL WALLS



**EXTERNAL WALLS**

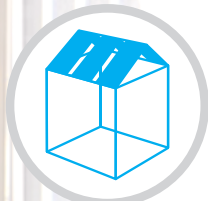
Nominal thickness (mm)	R-Value (m <sup>2</sup> K/W)
75	2.3
90	2.8
100	3.1
140	4.3
190	5.9
240	7.5
290	9.1

Installed density (28kg/m<sup>3</sup>)

## FLOORS AND SKILLION ROOFS



**MID-FLOORS**



**ROOFS**

Nominal thickness (mm)	R-Value (m <sup>2</sup> K/W)	
100	2.6	3.1
140	3.6	4.3
190	5.0	5.9
200	6.3	7.5

Installed density

(25kg/m<sup>3</sup>)

(28kg/m<sup>3</sup>)

## CEILINGS



**CEILINGS**

Nominal thickness (mm)	R-Value (m <sup>2</sup> K/W)
160	3.2
180	3.6
205	4.1
250	5.2
306	6.3
360	7.3
410	8.4
460	9.4
510	10.4

Installed density (8-9kg/m<sup>3</sup>)

# SPECIFICATION

Jet Stream® MAX is a compliant solution under the New Zealand Building Code. It is available for specifiers on Masterspec and Smartspec in a full range of applications, R-Values and thicknesses. Jet Stream® MAX is also available on Design Navigator for completing H1 calculations.

Available to download at [www.knaufinsulation.co.nz](http://www.knaufinsulation.co.nz)

**SMARTSPEC**



**masterspec**

**SPECIFIED**

4710K - Knauf Insulation systems  
4711K - Thermal insulation systems  
4721K - Acoustic insulation systems





# FREQUENTLY ASKED QUESTIONS

## What is thermal bridging?

A thermal bridge is where energy or heat can pass through an object more easily than its surroundings (i.e. an unprotected timber or steel beam). In a Certified Passive House, thermal bridges are calculated and then added up to ensure maximum thresholds aren't exceeded.

## Do I need a rigid air barrier for my walls?

Yes, Jet Stream® MAX needs a solid rear surface to be blown against. Rigid air barriers are becoming more common for high performance homes as they can improve protection against the elements during construction. They can also allow the building to be closed-in faster, improve the overall structural bracing and reduce the obligation to use plasterboard for bracing. Rigid air barriers can be made from fibre-cement, plywood, or OSB (oriented strand board).

## Can I buy the bags and install myself?

No. Jet Stream® MAX can only be installed by Approved Installers. We have a national network of installers, who have been specially trained to install Jet Stream® MAX.

## Is Jet Stream® MAX safe for the installers and home occupants?

Absolutely, Jet Stream® MAX has undergone rigorous and regular testing by third party, verified organisations and has EUCEB certification confirming bio-solubility.

## Can the loft area still be used for storage?

If you wish to use your loft as storage, it is best to install a walkway or platform over the insulation from plywood or similar. You should not walk on or store items on top of Jet Stream® MAX once it has been installed.

## Will the product slump or settle over time?

When installed correctly by Approved Installers, Jet Stream® MAX will not settle over time and will maintain the desired thermal performance for the lifetime of the building.

## Can the product 'blow' around in a ceiling space?

Be careful differentiating between uncontrolled wind movement, which will affect any bulk insulation, versus controlled ventilation to ensure any excess moisture can escape. In a normal environment Jet Stream® MAX will interlock and will not blow around or cause "drifts".

## What happens if I need to access a light fitting to replace it, or other devices in my loft?

Most LED lights can be replaced from in the home and don't require entering the loft, however, if you need to access an area you can sweep the product to one side and walk across the joists, and replace once completed.

## What happens when I need to move a light switch or plumbing just before lining with the plasterboard?

When installing insulation, it is best to coordinate with other sub-trades so they can complete their work first. It is recommended installation of the insulation is left immediately prior to installing the lining to prevent any damage to the insulation. In circumstances where this isn't feasible, a small section of lining can be removed and replaced with a piece of segment insulation.

## What is the purpose of the blow-in blanket (BIB)?

The BIB is an air permeable veil that is used to hold the product in place during the installation process.

# WALL INSTALL

Step-by-step installation of Jet Stream® MAX in timber frame walls.



The BIB (Blow-in Blanket) is stapled to the framing.



A hole is cut in the BIB for the hose.



The insulation is blown through the hole to fully-fill the cavity.



Visit [snugandsound.co.nz](https://snugandsound.co.nz) to watch the full install video.

# CEILING INSTALL

Step-by-step installation of Jet Stream® MAX in timber frame walls.



Insulation is blown into the ceiling space at a set density and blowing rate.



The R-Meter shows the thermal performance of the installed insulation.



Visit [snugandsound.co.nz](http://snugandsound.co.nz) to watch the full install video.



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