



Building with conscience.

# StoTherm for Timber or Steel Frame

Insulation Systems for Cavity Construction

Facade



With over 50 years of system development and testing, StoTherm external wall insulation systems provide energy-efficient facades, for both new-build and refurbishment projects. Wrapping the building in a thermally-resistant envelope; saving energy, preventing CO<sub>2</sub> emissions and providing a healthy living environment.



# Insulation for timber or steel frame construction

In a typical dwelling, around 30% of the energy used to heat or cool a room is wasted due to poorly insulated walls. StoTherm external wall insulation systems cut energy loss by wrapping the building in a thermally-resistant envelope, helping to reduce energy bills, prevent CO<sub>2</sub> emissions and provide a healthy living environment.

Exterior wall insulation systems embody our belief in, 'Building with conscience'.

Installing the right insulation harbours vast potential for new buildings. Furthermore, more than half of all houses that are over 30 years old are either inadequately insulated or lack any form of insulation at all. This leads to continual heat loss and vastly diminishes the quality of the home environment. As a rule, energy-efficient insulation actually saves more money than it costs – especially when installed during renovation work.

**Cover: North Methodist Church, Christchurch**  
Architect: Dalman Architects

**Right: Student Housing, Boston University, Sydney**  
Architect: Tony Owens Partners





# Insulate New Zealand's future

## Building healthy living environments

**High energy consumption comes at a high price – as becomes painfully apparent to many home owners when they take a look at their power bills. Many older buildings, as well as some newer ones, consume far more energy than they need to, because their insulation is not up to date.**

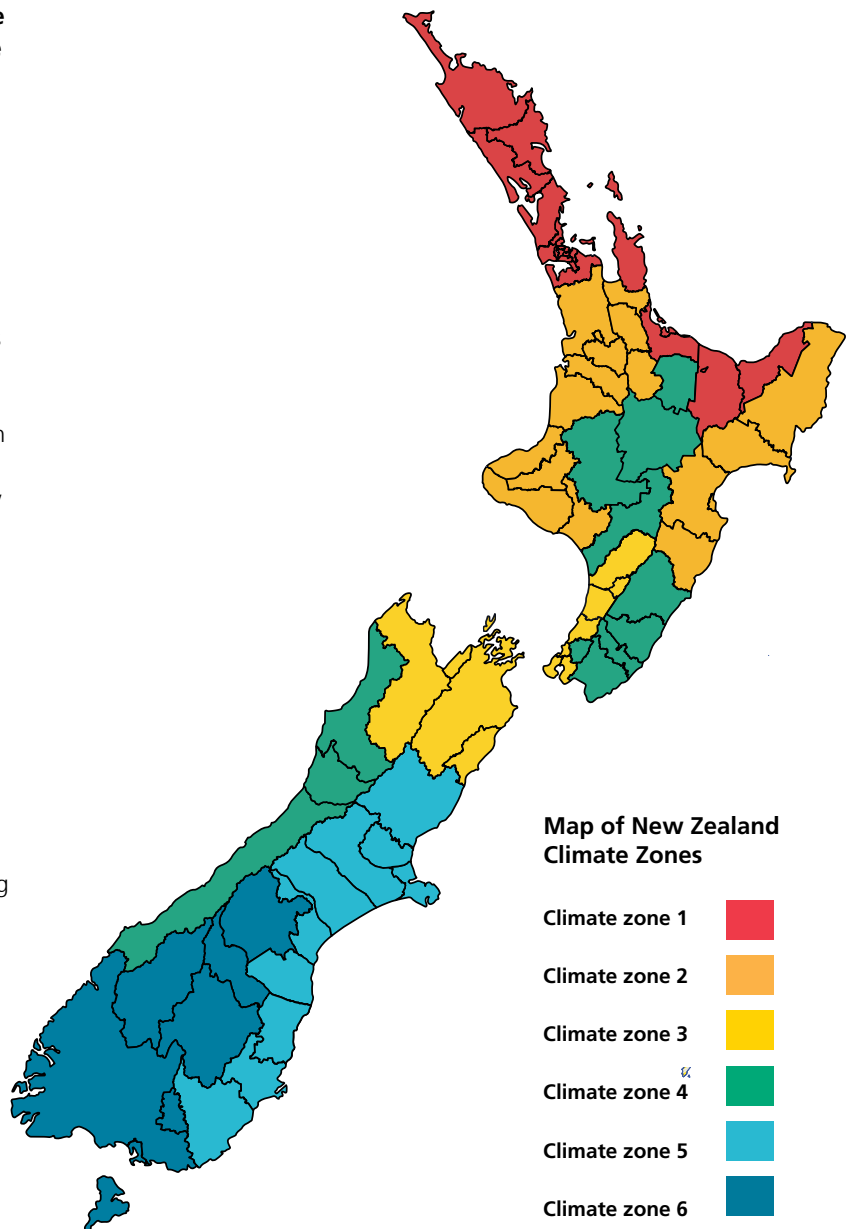
Apart from cutting costs, energy-efficient insulation helps protect the environment by reducing the amount of energy used, and helps to keep buildings warm, dry and healthy. High quality, professionally installed insulation also creates a pleasant indoor climate throughout the year. In the winter, insulation ensures a cosy and comfortable environment indoors, while in summer, maintaining a refreshingly cool interior.

This investment in the future benefits building owners and investors alike.

Two factors are decisive here:

1. Thermal resistance of building materials used.
2. Avoidance of "thermal bridges" which allow valuable heat to escape.

StoTherm external wall insulation systems for timber or steel frame construction consist of building materials with low thermal conductivity and minimal thermal bridging.



**R-values for different climate zones for unheated building elements for housing up to 300m<sup>2</sup>.**

Climate zone	1	2	3	4	5	6
Roofs	R6.6					
Walls	R2.0					
Slab floor	R1.5				R1.6	R1.7
Other floors	R2.5		R2.8	R3.0		
Windows & doors	R0.37	R0.46		R0.50		
Skylights	R0.46	R0.54		R0.62		

Note: There are separate R-values for buildings over 300m<sup>2</sup>, which are not presented in the table.

**Requirements for better energy-efficiency**

The Ministry of Business, Innovation and Employment (MBIE) has updated the Energy Efficiency (H1) requirements for insulating new homes and commercial buildings in the New Zealand Building code. Taking effect in May 2023, these changes support, amongst other benefits, increased insulation requirements, an increased recognition of the appropriate use of thermal mass, energy-efficiency and healthy living environments.

The country is split into six zones. All new homes and major extensions across New Zealand are required to meet the insulation requirements.

The requirements affect all houses and buildings up to 300m<sup>2</sup>, alongside separate R-value requirements for buildings over 300m<sup>2</sup>.

Changes to the building code regulations mean that new houses will need to achieve higher R-values. Typically, walls, windows and roofs will require insulation modelling so that the sum of the components achieves the required R-value.

**Martinborough House**  
Architect: DesignGroup Stapleton Elliott



# A comfortable home environment begins with the walls

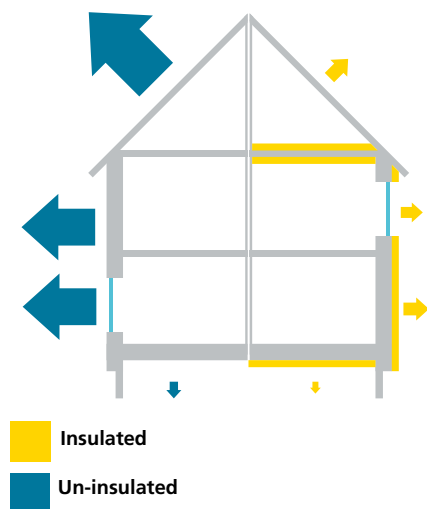
Sto provides for uniform ambient room temperatures

## Avoid thermal bridges to prevent the escape of expensive heat

Thermal bridges are points where more heat is able to escape to the outside environment than through the rest of the exterior envelope. This leads to increased heat losses, often accompanied by mould formation. Parts of structures which are frequently critical in this respect include, balconies; window frames; window lintels; wall penetrations and fittings; ceiling junctions; and corners in houses. Professional installed insulation reduces thermal bridging and subsequent structural damage.

## Annual heat losses for a detached house

Heat losses can be cut by almost 70% by installing modern windows and insulating the entire external envelope.





### Breakdown of energy consumption by private households

Heating and cooling costs make the largest proportion of private energy consumption.

- approx. 34% Heating and cooling
- approx. 29% Hot water
- approx. 29% Appliances, refrigeration and cooking
- approx. 8% Lighting

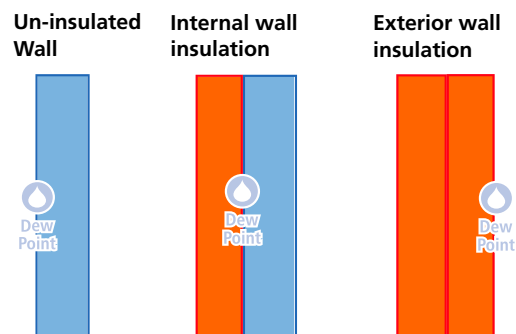


**The perceived ambient room temperature is a result from the heat of the room air and the temperature of the surrounding wall surfaces, including the ceiling and flooring. The cooler the walls, the higher the air temperature needs to be in order to ensure an ideal indoor climate. A professionally insulated facade produces a higher wall surface temperature than the rooms air temperature.**

### Mould – a threat to health and building environments

Cold air absorbs less moisture than warm air, which is a particular problem in homes in the winter, as moisture condenses on cold parts of the building. Wall areas, which are subject to dampness and moisture penetration as a result of thermal bridging, provide an ideal habitat for mould. This is harmful not only to the building environment but also to health. Moisture arises from all types of in-house activity, from cooking and baking, through to washing and showering, and even keeping house plants. In order to avoid exposing parts of structures to moisture penetration, it is necessary to eliminate thermal bridges at the planning stage. Proper heating and ventilation is also crucial.

Correctly installed exterior insulation systems protect walls, maintain a warm and dry substrate, and substrate temperature above the dew point. This effectively deals with dampness, mould growth and other environmental issues.



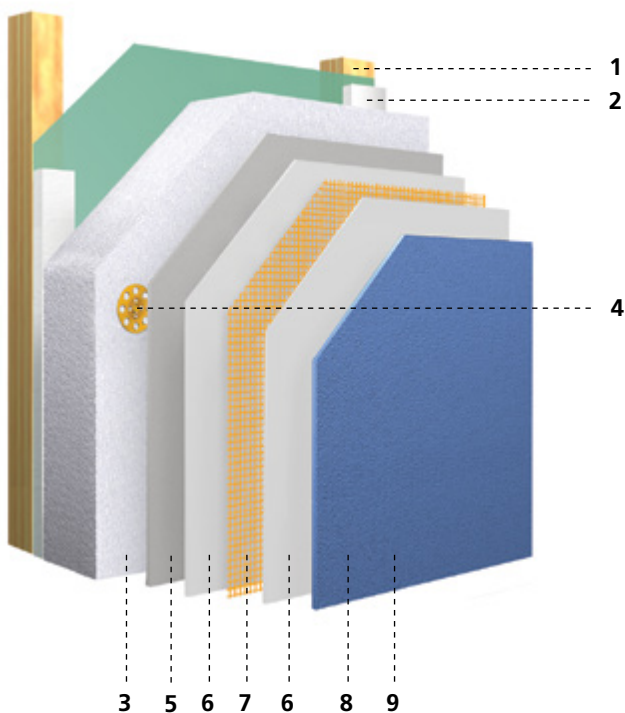
# StoTherm Armat Insulation System

Well-engineered down to the finest detail

Over 50 years of development and carefully chosen components have made StoTherm Insulation Systems a durable, functional and versatile choice for meeting building insulation requirements.

StoTherm Armat Insulation is a BRANZ appraised, high performance insulation and render system installed over timber or steel frame construction. The system includes StoTherm Panels, a mineral-basecoat render, followed by StoArmat synthetic render with fibreglass mesh, providing engineered reinforcement to reliably dissipate tensile, seismic and shear stress. Finished in your choice of Stolit coloured finishing render and StoColor facade paint or StoClear sealer.

Installations are carried out by a Sto Registered Contractor (Licensed Building Practitioner), with the added protection of a StoArmat 20 Year Warranty with StoService Assurance, ensuring the materials used and application meets building code standards, including a service plan for long-term security.



## StoTherm Armat Insulation System

### 1. Substrate: Timber/Steel Frame, Building Wrap

### 2. Cavity Batten

Sto EPS vented, self-adhesive cavity batten.

### 3. Insulation (EPS): StoTherm or StoTherm+ Panel

50/100mm self-extinguishing panel, manufactured to AS 1366 Pt 3 by an approved manufacturer.

### 4. Impact / Screw Fixing: StoTherm Anchor

### 5. Basecoat: StoLevell Novo / LevelLite Render

Lightweight, EPS bead mineral plaster with good build properties, water retention agents and machine application properties.

### 6. Reinforcement Render: StoArmat Render

An weather resistant, cement-free and breathable, high-impact render, with a crack resistance six times higher than that of standard cement-based plasters.

### 7. Mesh: Sto Glass Fibre Mesh

Easy-to-install, meets the highest requirements for crack, stress and alkalinity resistance.

### 8. Coloured Finishing Renders: Stolit Renders

Organically bound, highly weather resistant, strong, hard-wearing, impact-resistant, pre-coloured finishing renders.

### 9. Facade Coating: StoColor or StoClear

StoColor coating based on IQ Net Technology for functional facades or a StoClear sealer.



BRANZ Appraisal No. 478



StoArmat 20 Year Warranty



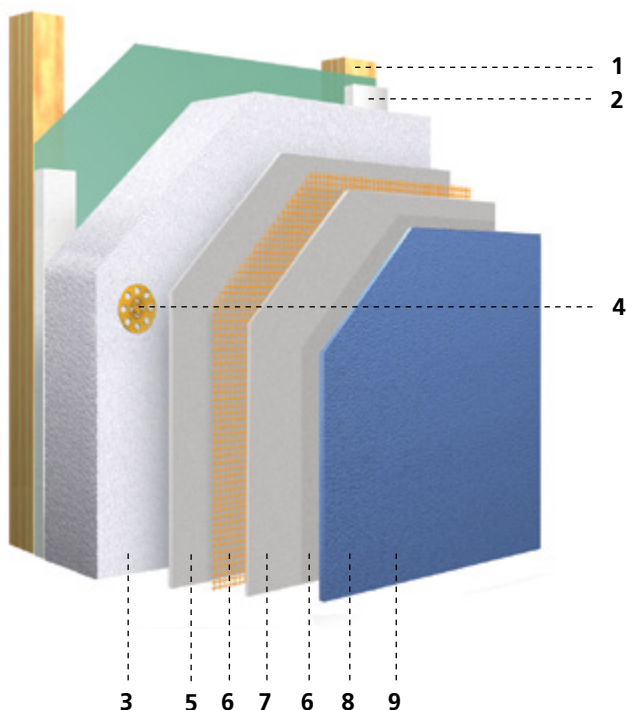
# StoTherm Miral Insulation System

Mineral based - similar to traditional New Zealand systems

**StoTherm Miral Insulation is a BRANZ appraised, high performance, cost-effective insulation and render system installed over timber or steel frame construction.**

The system includes StoTherm Panels, a mineral-basecoat render reinforced with fibreglass mesh, finished in your choice of Stolit coloured finishing render and StoColor facade paint or StoClear sealer.

All StoTherm builds are specified by Sto and implemented by a to Registered Contractor (Licensed Building Practitioner), with a Sto 15 Year Warranty with StoService Assurance, ensuring the materials used and application meets building code standards, including a service plan for long-term security.



## StoTherm Miral Insulation System

### 1. Substrate: Timber/Steel Frame, Building Wrap

### 2. Cavity Batten

Sto EPS vented self adhesive cavity batten.

### 3. Insulation: StoTherm or StoTherm+ Panel

50/100mm self-extinguishing panel, manufactured to AS 1366 Pt 3 by an approved manufacturer.

### 4. Impact / Screw Fixing: StoTherm Anchor

### 5. Basecoat: StoLevell Novo / Multiscreed Render

Lightweight mineral render with good adhesion and a calibration grain. Forms a traditional basecoat for EIFS systems.

### 6. Mesh: Sto Glass Fibre Mesh

Easy-to-install, meets the highest requirements for crack, stress and alkalinity resistance.

### 7. StoPlex W

Water-based, siloxane-enhanced sealer with water repellent and stability properties.

### 8. Coloured Finishing Renders: Stolit Renders

Organically bound, highly weather resistant, strong, hard-wearing, impact-resistant, pre-coloured finishing renders.

### 9. Facade Coating: StoColor

StoColor coating based on IQ Net Technology for functional facades.



BRANZ Appraisal No. 478



Sto 15 Year Warranty

# Stolit coloured finishing renders

Providing your facade with optimum protection

## A great combination of properties

Stolit organic finishing renders are manufactured in Germany incorporating the latest technology. They are certified globally and have been successfully applied to rendered substrates in every climatic zone for over 50 years.

The Stolit range, in a variety of grain sizes and textures, provides the perfect combination of properties; durable, hard-wearing, impact-resistant, malleable, breathable yet weather-resistant and highly resistant to microorganisms. Whichever finishing render is chosen, each one is part of a tested and approved system, providing optimum protection and durability.

In addition, Stolit coloured finishing renders are tinted, so the intensity of colour and everyday wear will not affect the appearance or stability of the rendered exterior facade.

## Tested protection and quality

Sto facade paints and clear sealers establish easy-to-maintain surfaces and an outer layer of the Sto protection system, fulfilling important building requirements in terms of maintenance and functionality.



**Sto has been conducting intensive research in the field of bionics for many years. The result: facade paint with iQ – Intelligent Technology where innovative surface functions provide clear added value.**



**Stolit K 1.0mm** - Coloured self-gauging float finishing render.



**Stolit K 1.5mm** - Coloured self-gauging float finishing render.

All Stolit renders are easy to apply and can be tinted using the StoColor System or matched to the colour of your choice using the Sto Spectrometer.



**Stolit K 2.0mm** - Coloured self-gauging float finishing render.



**Stolit MP** - Coloured fine finishing render that can be floated, sponged or applied as a light adobe render.



**Stolit K 3.0mm** - Coloured self-gauging float finishing render.



**Stolit MP Natural** - Coloured fine finishing render with grain look, that can be floated, sponged or applied as a light adobe render.



**Stolit Milano** - A coloured smooth render finish that can be applied and styled to duplicate the natural surface of precast concrete panel.



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