sto european plaster systems

Aorangi House, Wellington - 5 GreenStar Headquarters for Beca Engineers by Studio Pacific Architecture

stoanz ltd | Energy Efficiency

With External Insulation Facade Systems from Sto

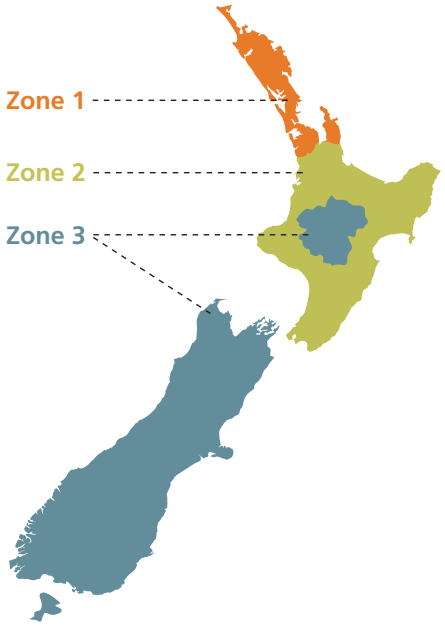
Energy Efficiency

Insulate New Zealand's future.

New requirements for better energy efficiency

In August 2007 the Department of Building and Housing announced major changes to Clause H1 of the Building Code, which deals with energy efficiency, thermal storage and insulation. The changes include, amongst other things, increased insulation requirements and the increased recognition of the appropriate use of thermal mass.
The changes affect all houses, and other buildings that have a floor area less than 300m2.

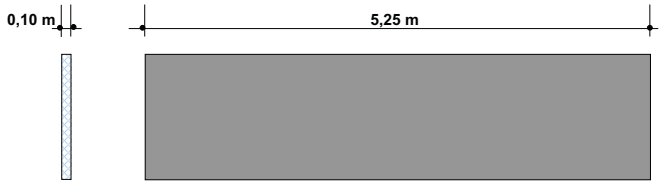
The new minimum insulation requirements, including double glazing for most new homes, are being introduced in stages to allow industry to gear up. The country is split into three zones and changes start taking effect from 31 October 2007. By October 2008, all new homes and major extensions across New Zealand will be required to meet the new insulation requirements.



Thermal Resistance R

Unit: [m².K/W]

Example: thickness required for the same R-value



Both building material layers have the same thermal resistance: R = 2,50 m².K/W

Thermal mass and solid masonry construction

Solid masonry construction: is where the thermal mass of the masonry or concrete wall is exposed to the inside of the building.
This means that any wall that uses insulation on the inside must be considered as a timber framed wall for insulation purposes.
That means higher R-values need to be taken into consideration.

(Refer to BRANZ Guideline August 2008 and Compliance Document Clause H1 - Third Edition: Page 19, Note 12 / Page 20, Note 11)

Thermal insulation and R-values

The R-Value, Unit : [m²*K/W]; is the resistance to heat flow of a given component of a building material. It means, the higher the R-Value, the greater the insulation provided.

Changes to the Building Code 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.

New R-values for different Zones

	R-values non-solid construction			R-values Solid construction		
Roof	2.9	2.9	3.3	3.5	3.5	3.5
Wall	1.9	1.9	2.0	0.8	1.0	1.2
Floor	1.3	1.3	1.3	1.5	1.5	1.5
Vertical glazing	0.26	0.26	0.26	0.26	0.26	0.26
Skylights	0.26	0.26	0.31	0.26	0.26	0.31

Sto Facades Insulation

The right step for a healthy living climate and cutting energy costs.

StoTherm Insulation System; Stanhope Gardens, London.

The attraction of Sto Facade Insulation systems

In a typical dwelling around 30% of the energy used to control the temperature is lost through the external walls. Sto Facade Insulation systems dramatically cut energy loss, thereby lowering energy bills, reducing CO^2 Emissions and providing long lasting protection for the entire building facade.

Used for new construction and building renovation, our facade insulation systems offer supreme performance coupled with an almost unlimited range of creative possibilities. Application is simple and quick. The result is a beautiful, seamless, energy efficient system based on 40 years of facade insulation experience tested in the harshest climates worldwide.
StoTherm facade insulation embodies the very essence of our belief in 'Building with conscience'.

Different materials are frequently combined with our systems to create unique effects. Sto offers a full range of exterior embellishments, allowing you to design buildings that blend in with existing structures or stand out as unique constructions.

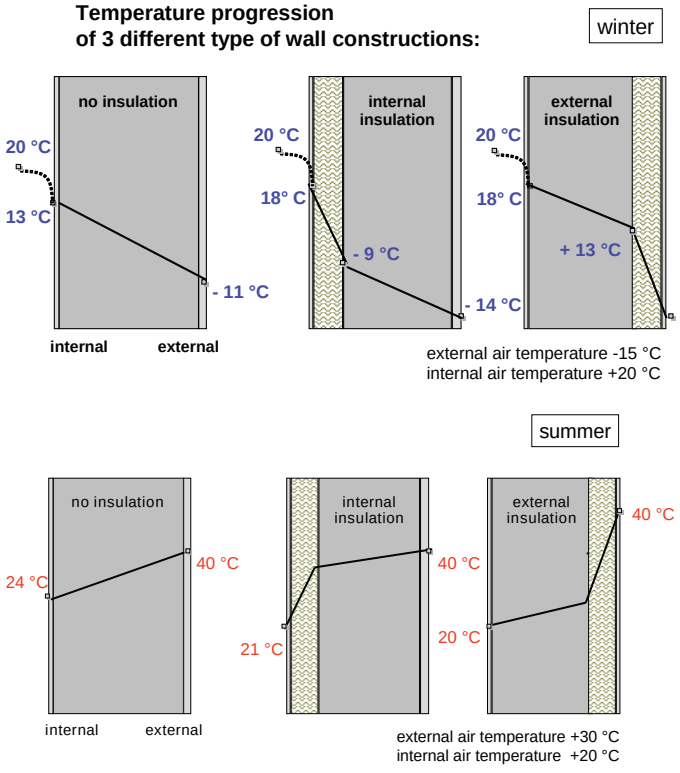
Insulation options – the physics behind the systems

Different insulation options have different effects on the physical properties of a building.

Sto's *External insulation* offers significant advantages; it offers a favourable temperature curve and shields the substrate from thermal shocks. There are no cold bridges and the existing heat retention capabilities of solid masonry walls are fully utilised, interstitial condensation can be eliminated irrespective of climate conditions. The internal wall temperature increases which reduces the risk of condensation, damp and mould.

While i*nternal insulation* allows a room to be heated quickly, that's about its only plus point. Its temperature curve is poor, and the external wall remains vulnerable to the elements. The heat retention capability of the existing wall is not utilised in winter, and it is susceptible to an internal dew point resulting in condensation, damp and mould. In summer the process is reversed with the masonry wall heating the interior environment.
Note: When insulating internally only, masonry walls need to meet the timber insulation requirements.

Temperature progression of 3 different type of wall constructions:



StoTherm Insulation System

And you are close to perfection.

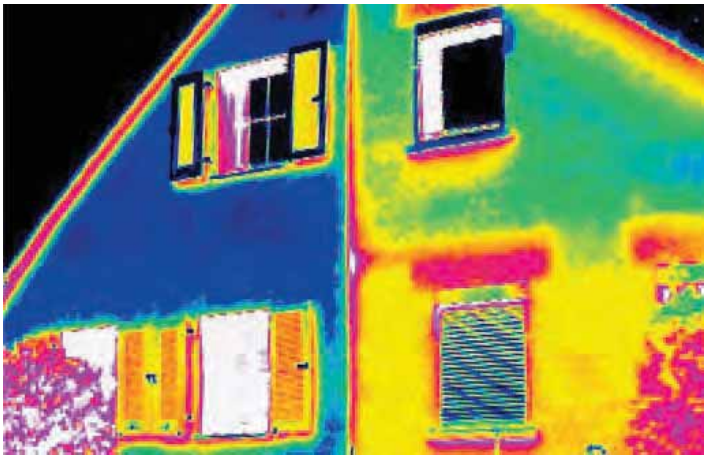


Image produced with a Thermographic Camera.

The proof of Thermal Insulation

With a Thermographic camera, which is a device that forms an image using infrared radiation, similar to a common camera that forms an image using visible light, the advantages of thermal insulation can even be shown.
The red colour shows heat losses on the facade. The right half of the house in the picture is not insulated, on the left half an insulation system has been installed.
Easy to recognise on the blue colour is that the insulated part has hardly any heat losses and no thermal bridging.
With a facade insulation system from Sto you'll be able to cut you energy cost and protect the environment at the same time.

Thermal bridging? - Not with Sto's technology of countersunk and capped anchors

A thermal bridge is created when materials that are poor insulators penetrate the system, allowing heat to flow through the path created, also visible as thermal marks on a facade.

Insulation around a bridge is of little help in preventing heat loss or gain due to thermal bridging; and in order to eliminate the problem insulation needs to be introduced over the bridge.

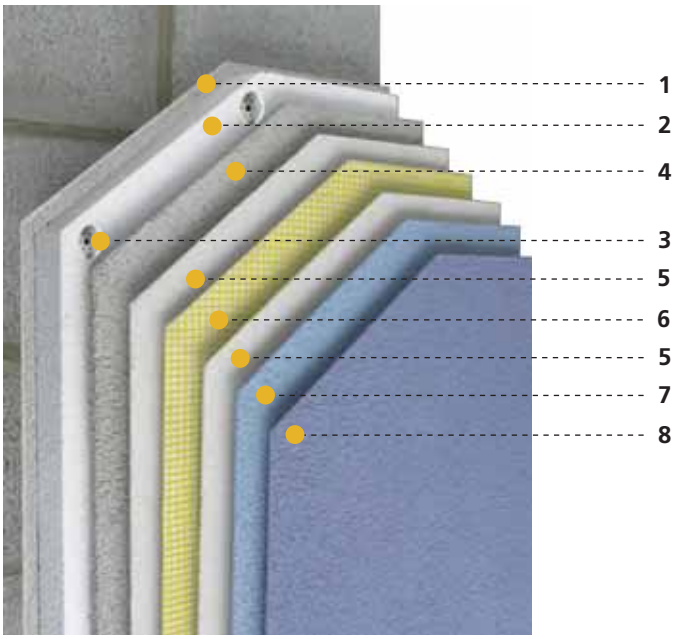
Sto has found a way to terminate this thermal bridge caused by the face fixed fixings and to avoid ugly spots appearing on the facade during cold weather.
The StoTherm Anchor designed for masonry and timber frame construction is screwed in with the ST Fixing Tool that cuts and compresses the StoTherm panel to a depth of 20mm, leaving the anchor securely fastened into the substrate.
After installation the anchors are then capped with ST Insulation (EPS) Caps, resulting in a covered anchor with no thermal bridging and a smooth homogeneous surface which is ready to be plastered.

Thermal bridges caused by fixings commonly used to fix EPS.

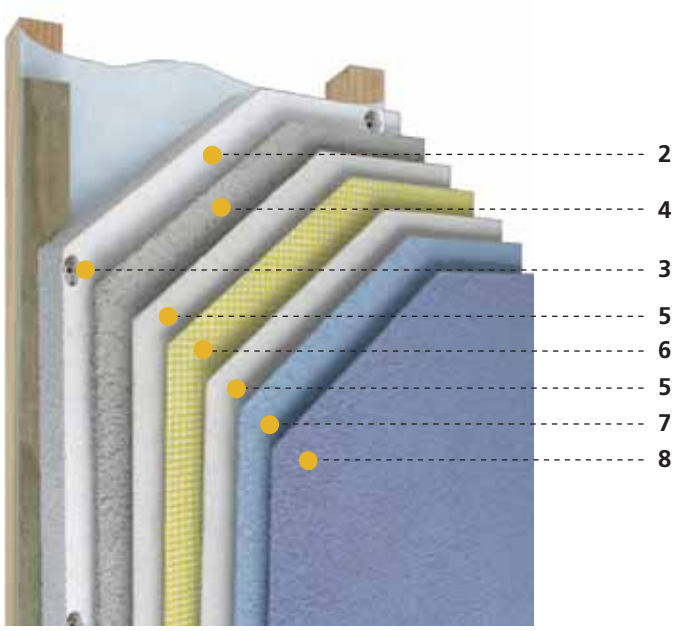
StoTherm Anchor installed on a masonry substrate.

Well-engineered down to the finest detail.

The StoTherm Insulation System has now been an international benchmark in the field of facade insulation for over 40 years. Its shock proof and impact resistance is up to 6 times higher than that of mineral cement based systems offering the utmost in fracture prevention. It consists of a co-ordinated systematic approach providing the optimum insulation requirements for concrete block and timber frame construction.



StoTherm Insulation System on masonry



StoTherm Insulation System on timber frame

Perfect interaction

1 Glue coat: Sto Adhesive Mortar

2 Insulation (EPS): StoTherm Panel
80/100mm self-extinguishing panel, manufactured to AS 1366 Pt 3 by an approved manufacturer. (Poly R-Value 1.95/2.44)

3 Screw Fixing: StoTherm Anchor
The anchors are installed countersunk and capped with ST Insulation Cap to avoid thermal bridging.

4 Basecoat: LevelLite 5/8 mm
Lightweight EPS bead mineral plaster with good build properties, water retention agents and machine application properties.

5 Reinforcement: StoArmat RFP
European manufactured and certified, strong, malleable, impact resistant, white reinforcing plaster in a pail. Contains a calibration grain ensuring correct mesh coat thickness. (No cement)

6 Plus: Sto European mesh
Easy to install, meets the highest requirements for crack, stress and alkalinity resistance.

7 Finishing render: Stolit range
European manufactured and certified, organically bound, strong, hard wearing, impact resistant, pre coloured finishing renders. (No cement)

8 Coating:
StoColor Maxicryl - matt facade paint
StoLastic Color - satin matt facade paint
European manufactured and certified durable facade paints available in a full range of colours.

StoSilco Color G - mineral silicone resin
European manufactured and certified self cleaning mineral paint with a breathable structure, in a full range of colours. Not recommended in dark or strong tints.

BRANZ appraisal 604 / 478

15 years system warranty

masterspec **4285 S - Insulation**

Stolit: Coloured finishing renders

Provide your facade with optimum protection.

Stolit: Organic finishing render
Stolit organic finishing renders are manufactured in Europe and certified around the world.
They have been in successful use for over 50 years on a variety of different substrates. During this time they have undergone a continual process of optimisation.

The perfect combination of properties:
Durable, strong, hardwearing, impact resistant, malleable, weather resistant, colour stable and highly resistant to micro-organism. They are designed with good vapour permeability to allow the building to breathe while still repelling liquid water. All renders are easy to apply and can be tinted from the StoColor System or matched to the colour of your choice, using the Sto spectrometer.

Stolit K 1.0 mm

Stolit K 1.5 mm

Coloured self gauging float finishing renders.

Stolit K 2.0 mm

Stolit K 3.0 mm

Coloured self gauging float finishing renders.

Stolit MP

Coloured fine float, sponge or light adobe finishing render.

Stolit MP Natural

Coloured fine finish float, sponge or light adobe sand speckled finishing render.

Whichever plaster you choose, it will be part of the tested and approved system and will provide optimum protection and durability.

The perfect finish: Competence in colour

Give your facade the look it deserves.

The well-aimed use of colour in a manner which complements the architecture is subject to specific laws. The StoColor System provides a clear framework and a systematic approach to colour design based on subtly nuanced colour concepts of high aesthetic appeal.

The StoColor System
Is a structured system offering great variety in a unique planning instrument for the use of colour. A total of 800 different colours establish a sound foundation for creative and pioneering colour concepts. The StoColor System eschews colorimetric logic in favour of human perception of colour. It is based primarily on the colours yellow, orange, red, violet, blue and green. These six sections are then mixed to form the 24 basic tones which correspond to the 24-part colour wheel. Each basic tone is assigned five colour rows which embody the principle of the same-colour triangle. This guarantees the StoColor System's high degree of functionality – designed in line with the aesthetic colour requirements in construction.

StoColor Maxicryl

European manufactured and certified, hard, durable, matt, acrylic facade paint for a natural look. Available in a full range of colours.

StoLastic Color

European manufactured and certified, elastic, durable, dirt resistant and vapour permeable satin matt facade paint for added durability. Available in a full range of colours.

StoSilco Color G

European manufactured and certified, self cleaning mineral silicone resin paint with a breathable structure in a full range of colours.

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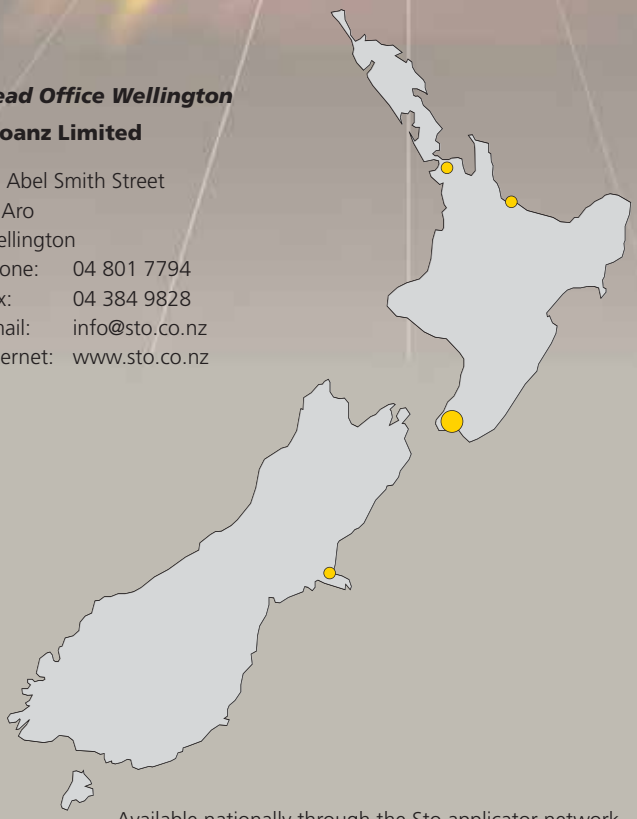

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Available nationally through the Sto applicator network.