

Underfloor Insulation

Underfloor insulation reduces heat loss, draughts and dampness. Floor temperatures can increase substantially which is especially important for people with poor circulation or reduced mobility, or for children and babies who live closer to the floor!

How much insulation should I have?

R-values are used to rate the insulation of building materials. The higher the R-value the better the insulation. No matter where you live in New Zealand, the Building Code requires the new-build flooring to have a minimum R-value of **1.3**.¹ In general the higher the R value the less heat loss through the floor. However, most gains will be made by insulating to the current building code or slightly above.

Which material should I use?

1. Foils

Reflective foils are the cheapest option and work in three ways.

- a) Radiated heat from the floorboards is reflected back;
- b) The foil captures a cushion of still air which acts as an insulator; and
- c) Draughts blowing up through the floor boards are reduced.

Foil products are usually stapled and strapped to the floor joists, and must be installed to minimise any potential for air movement between the foil and the floor boards. Foils provide some protection from rising damp and provide adequate insulation from draughts and external air temperatures as long as the foil is intact and joins are taped securely to stop draughts. However, some foils are easily damaged (cats and plumbers are two of the main culprits) and the insulating properties tend to reduce over time as the upper-facing surface loses its shine. Foils must be installed with extreme care, as there have been some fatalities from stapling through them into electrical wiring under the house. Because of these issues, foils are no longer used under the government-subsidised programmes

The main foil options include:

¹ For timber framed houses only. For solid construction houses, the minimum R-value required by the Building Code is **R 1.5**

- Double-sided aluminium foil (e.g. Tasman insulation 421 and 424) available from major building hardware stores.
- Silversark – a plastic-reinforced single-sided foil (available from EcoInsulation 0800 777 111). Tough and rip resistant.
- Aircell and Astrofoil: Double-sided foil with air bubbles between the layers (essentially silversided bubble wrap. Tough and rip resistant. Offers slightly higher R-values than thin foils. Stockists include Eco Insulation, Packaging House, and Negawatt Resources.

Costs for foil are around \$8.00/m² - \$14.00m² installed. Foils have an R-value of about **1.1**.

2. Polystyrene sheets

Polystyrene is a more expensive, but more durable option than foil. The sheets must be fitted accurately so that they sit snugly between the joists - any gaps will lower the insulating effect. As polystyrene reacts with the PVC of electrical wiring, causing it to become brittle over time, it is also important that an air gap is left between the polystyrene sheets and the wiring or that the wiring is enclosed in a protective sheath.

The best known brand of polystyrene insulation, Expol, costs about \$16/m² installed and has an R-value of **1.5**. Check the expol website (www.expol.co.nz) or call 0800 86 33 73 for suppliers and installers in your area. "Palace Sheets" is similar product available from Poly Palace (0800 723 223).

3. Polyester batts

You can also get stiff polyester batts which push up between the floor joists and which are held in place by friction. The batts come in a variety of widths and can be folded down one side and wedged between the floor joists to create a friction fit. The R rating is 1.4, compared to the R rating of 1.5 for Expol sheets. However, because it is difficult to get an exact fit with the polystyrene sheets the insulation provided by the polyester batts is very comparable.

Novafloor (manufactured by Insulpro 0800 100 007), Ecofloor (manufactured by Eco Insulation 0800 400 326) and Green Stuff (manufactured by Autex 04 568 8211) are three brands of polyester batts. Polyester batts cost about \$18 - \$20/m² installed.

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Foil-backed fibreglass batts

Fibreglass batts with foil backing are also available. These batts are installed across the floor joists and stapled in place. The main advantage of this product is that the insulation effect remains even if the foil gets broken. However it is more expensive than other products.

Cosyfloor (a Tasman product) is one example of this product. It has an R value of **1.3** and costs about \$22 - \$25/ m² installed. Mitre 10 and some other hardware stores sell Cosyfloor.

4. Polythene moisture barrier

A polythene moisture barrier laid on the ground under the house will prevent water vapour rising up through the floor boards. In most cases, when installed along with underfloor insulation, this will provide an effective solution to condensation and damp problems. However it is important to establish if the damp is caused by a plumbing or drainage problem.



Thick polythene sheeting is available at most hardware stores. It is usually cut into strips (around 2 metres) and laid between the piles under the house. Slits are cut along one side of the strips to fit them around the piles and both the slits and the overlaps between strips are taped closed with polythene tape.

Weedmat pegs (available at hardware stores or garden shops) can be used to peg down the polythene at regular intervals (every 2 metres or so). However, if the underneath of your house is draughty, the pegs should be closer together.

For more information on underfloor insulation call Home Advice on 0508 SUSTAIN www.sustaintrust.org.nz or advice@sustaintrust.org.nz