

Build Back Smarter Info Sheet

Ceiling insulation

The opportunity to build back smarter

Disaster repairs: Re-roofing or replacement of ceiling linings

Opportunity to upgrade: Install ceiling insulation to flat (skillion) or low pitched roofs – take the opportunity to get good levels of insulation into these usually inaccessible roof spaces while roofing or linings are removed. While relining and re-plastering ceilings, also take the opportunity to cut hatches to access hard-to-insulate places such as in roof extensions and attic conversions

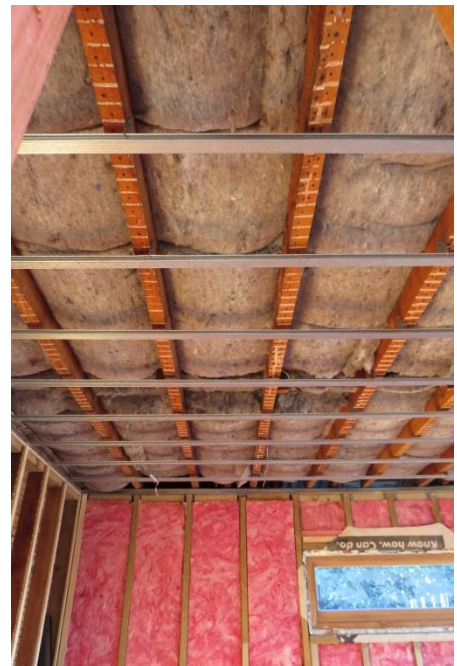
Why ceiling insulation is important

Insulation acts in two ways – in winter, it's like a blanket keeping your home warm, and in summer, it's like the walls of a chilly bin, keeping your home cool. Having a well-insulated home means that when you heat (or cool) it's your house that gets the benefit. Heating or cooling an un-insulated house is like trying to fill a bath with water, but not putting in the plug.

As insulated surfaces are warmer, condensation is less likely to form on them. As a result, an insulated house will have less mould and mildew, and be a less appealing environment for allergy-aggravating dust mites.

30-35% of heat escapes through the ceiling in an uninsulated house. Houses built before 1979 are unlikely to have any insulation, unless it has been subsequently added, and houses built before 2007 have much lower levels of insulation than necessary to keep most homes comfortable.

If your ceiling was insulated earlier, the products used were thinner than current minimum standards and a number of products used in early installations have now been shown to have a high failure rate due to slumping or general ineffectiveness (e.g. blown in products like macerated paper). With ceiling insulation, the Energy Efficiency and Conservation Authority (EECA) considers that all houses built pre-2000 are likely to be inadequately insulated, and support for retrofit of low income household's homes is provided through Warm Up New Zealand: Healthy Homes.



Build Back Smarter recommendations

Ask an assessor, such as a Home Performance Advisor or trained insulation installer, to check in your ceiling, looking for:

- Levels of existing insulation
- Quality of any existing insulation
- Fire hazards
- Evidence of other problems such as leaks or rodents

If you have no insulation, consider installing insulation of R4 or higher.

If you have some insulation but it is minimal, in poor condition, or is an older insulation which has since been shown to have poor performance, top up what's already there to meet current standards is recommended. This is often done by laying another blanket of insulation over the top of the existing insulation, and also over the rafters – making it snug and reducing heat loss from the rafters.

Generally, we recommend you should be aiming for a minimum of 180mm of insulation (R3.6 or better) in your ceiling.

Your assessor should look any problems with your existing insulation which need to be fixed. These can include:




- Areas where insulation has been moved around leaving gaps - insulation needs to be carefully re-laid to ensure even coverage of the ceiling.
- Insulation which is not well-fitted and has gaps between insulation and framing – needs to be re-laid for even coverage.
- Areas where access is limited or impossible - access holes to these roofspaces should be created during earthquake repairs. This will allow full assessment of insulation levels and allow additional insulation to be installed if needed
- Areas where insulation has become wet in many places due to the roof leaking. Moisture greatly reduces the R-Value of insulation and also causes it to become compressed which permanently reduces the R-Value even once the insulation has dried out. Ideally this should be replaced during earthquake repairs.

They will also check for fire hazards associated with your ceiling insulation. Typically these relate to insulation in contact with your downlights. This is a potential fire risk and we strongly recommend that you move the insulation so that there is a 10cm space around the downlights. The best solution would be to remove the downlights altogether and replace with IC-F rated downlights or non-recessed light fittings. Another potential fire hazard is older wiring. It is a good idea to repair and/or replace older wiring while work is going on in your ceiling. This is best done before insulation is added. Contact your electrician to advise you about this.

There may be other problems to be fixed while work is going on in your ceiling. If there is evidence of rodents, for example, these should be removed before new insulation is added. Any holes in the ceiling or roof should be repaired to stop heat loss and prevent leaks. Existing ducting for heat transfer or other systems may need repair.



Types of ceiling insulation

<p>Polyester (e.g. Autex Greenstuf, Mammoth, Eco Insulation, Cocoon)</p> 	<ul style="list-style-type: none"> ▪ A range of R-value products suitable for ceilings, walls and under-floor. Slightly lower R-values than fibreglass for same thickness of material. ▪ Some products are Environmental Choice certified and have high recycled content. ▪ Available as segments and as blankets. ▪ Stable, long life product although prone to compression damage if stored inappropriately before installation.
<p>Glass wool/Fibreglass (e.g. Pink Batts, Bradford Gold, Earthwool)</p> 	<ul style="list-style-type: none"> ▪ A range of R-value products suitable for ceilings, walls and under-floor, including high R-values (“Ultra” type products). ▪ Some products are Environmental Choice certified and have high rates of recycled glass content. ▪ Available as segments and as blankets. ▪ Early installations (e.g. those done in the 70s and 80s) may well have slumped and are of a very thin product – these need topping up or replacing. ▪ Long lasting product - current products have an expected 50 year life.
<p>Wool (e.g. EcoInsulation, Terra Lana, Latitude, Rockwool, Woolcote)</p> 	<ul style="list-style-type: none"> ▪ A range of R-value products suitable for ceilings, walls and under-floor. Slightly lower R-values than fibreglass for same thickness of material. Often available mixed with polyester. ▪ Some products have a high proportion of recycled fibre. ▪ Chemical treatment protects from fire and pests. ▪ Available as segments and blankets, or as loose fill. ▪ Long term durability/life expectancy not known.



What is an R-value?

Insulation generally works by trapping air which is the most effective method and/or reflecting heat. Materials that provide good heat insulation are lightweight because they contain large amounts of tiny pockets of still air.

The 'R-value' measures how good the insulation material is at containing heat. The higher the R-value on an insulation product, the more it slows down the transfer of heat and the more effective it will be. Generally, the R-value of insulation gets higher as the product gets thicker. For example an R3.0 product has greater thickness than a R1.0 product of the same type. However, using R-values helps you to compare the effectiveness of different types of insulation.

You should also note that insulation needs to be properly installed to reach its R-value and work effectively.

Installation

While it might at first seem simple, ceiling insulation installation is best done by someone who is well trained and experienced.

Having a good quality install is key to getting high performance out of your ceiling insulation. The insulation needs to be gap free – even small gaps can have a big negative impact. The insulation needs to cover the entire ceiling area – including the manhole cover. For fire safety reasons there needs to be a 150mm gap between downlights and metal flues and insulation.

Choose an installer who is:

- Trained through the Insulation Association of New Zealand (IOANZ) training programme
- From organisations accredited by EECA as Warm Up New Zealand installers

