

Insulation, ventilation and draught proofing your home

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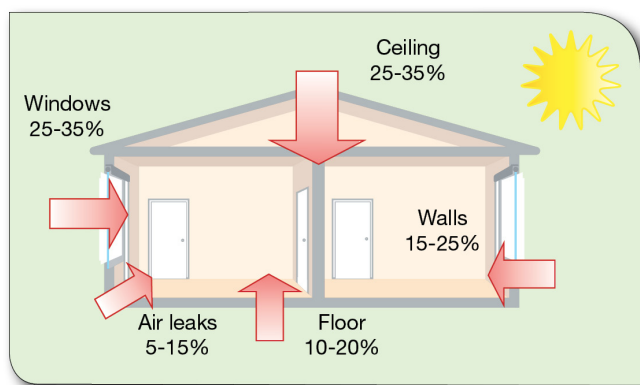
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Your home's heating and cooling needs can be reduced through installing insulation, controlling ventilation and preventing draughts in your home.

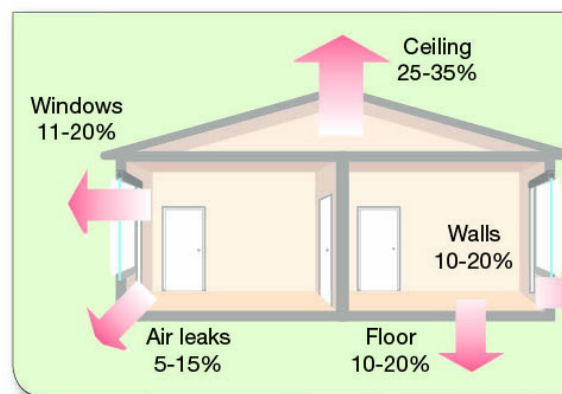
Why insulation is important

Insulation is any material that reduces the amount of heat transfer to or from your home through doors, windows, walls, ceilings, floors and gaps. Insulating your home will help to:

- keep the warmth inside your home in winter
- prevent heat from entering your home in summer
- reduce your need for heating and cooling appliances
- reduce your heating and cooling related costs and greenhouse gas emissions.



Typical heat gain in summer for an uninsulated home (Source: yourhome.gov.au)



Typical heat loss in winter from an uninsulated home (Source: yourhome.gov.au)

Types of insulation

There are two main types of insulation:

- bulk insulation
- reflective insulation.

Some insulation products use a combination of both bulk and reflective foil to achieve their insulating effect.

Bulk insulation

Bulk insulation is the most common type of insulation used to insulate walls and ceilings. It is usually made from:

- fibreglass mineral wool or rockwool
- synthetic fibre
- sheep's wool.

These products come in two forms:

- blankets - long rolls of insulation that must be cut to fit into place
- batts - pre-cut lengths of insulation.



Blankets usually come with a moisture barrier, foil or plain paper backing while batts can come with or without backing.

Batts are a common choice when there is easy access to the space needing insulation.

Loose fill insulation

Loose fill insulation is another form of bulk insulation. It has no backing and is pumped into a wall cavity or roof space.

Loose fill insulation is one of the fastest and easiest forms of insulation to install. It can easily fit into areas where blankets or batts may be difficult to install.

Loose fill material includes:

- mineral wool
- cellulose fibre.

Cellulose fibre is made from recycled paper that has been chemically treated to resist fire, rot and vermin.

Use a water resistant grade of loose fill to insulate external cavity walls.

Rigid insulation

Rigid insulation comes in pre-cut boards that are primarily used in new home construction. They are ideal for insulating:

- raked or cathedral ceilings
- solid brick external walls
- under wooden floors
- around concrete slabs.

To be effective, rigid insulation needs to be installed with a tight seal between boards.

Reflective foil insulation

Reflective foil insulation reflects radiant heat reducing the amount that enters the home.

Reflective foil only affects heat transfer in one direction. To prevent heat from escaping, the home reflective foil insulation is often bonded with batts or plasterboard to provide insulation benefits in both directions.

Reflective foil insulation can act as a water proofing membrane under a roof and as a moisture barrier for roofs and walls.

Reflective foil is available in:

- single layered form
- multi-layered form - an air pocket between layers provides extra insulating benefit.

If installing single layered reflective foil insulation under a tiled or metal roof, bulk insulation may still be needed at ceiling level to achieve a good level of insulation through all seasons.

Reflective insulation requires an air layer of at least 25 mm next to the shiny surface in order for it to insulate effectively.

Insulation R-values

What is an insulation R-value?

The insulation R-value is a measure of a material's resistance to heat transfer. The higher the R-value the higher the level of insulation.

Bulk insulation will show one material R-value which refers to the insulating value of the product alone.

Reflective insulation R-values can differ depending on the direction of heat flow through the product:

- up R-value - resistance to heat flow upwards (sometimes known as winter R-values)
- down R-value - resistance to heat flow downwards (sometimes known as summer R-values).

Both R-values should be quoted when installing reflective insulation.

What is the recommended R-value?

In Adelaide the recommended insulation R-value is 3.2 for the ceiling or roof and 1.9 for walls. In colder climates - eg Mt Gambier - a higher insulation R-value is recommended, 3.7 in ceiling or roof and 2.2 in walls.

New homes must comply with the Six star energy efficiency requirements. Requirements for insulation levels in walls, floor and roofs are defined in the Building Code of Australia.

Comparing insulation performance

Use the R-value to compare the performance of insulation material. If two different types of material have the same R-value they will perform equally.

Advice for having insulation installed in your home

Ensure your installer is licensed

When choosing an installer, make sure they have a South Australian builder's licence that permits them to install insulation. To check they are licensed, use the [Consumer and Business Services' licensing public register](#).

Check your installation is certified, treated and installed appropriately

Seek advice about the best R-value for your needs. Always get multiple quotes and ensure they show the correct R-value.

Make sure that the insulation is certified to Australian Standard AS3999 and has been properly treated for fire or is a non-combustible product. Insulation products have a fire rating under Australian Standards AS1530.3.

Insulation batts should be cut so they fit snugly between ceiling joists and allowance made for them to expand to their natural thickness.

Insulation should also be kept clear of electrical equipment - eg downlights, exhaust fans - and electrical wiring. Your installer should install appropriate barriers and/or covers.

You can do a basic assessment of your home to determine if your roof space has objects that may generate heat and pose a fire risk if they come into contact with insulation. Download and complete the Self-assessment and installer acknowledgement form 314.9 KB so you can discuss your concerns with your insulation installer or licensed electrician. The form can also be used by installers to identify hazards and acknowledge they have installed the insulation safely.

Insulating without shading

Be aware that if you insulate without shading, your home can get very hot and insulation will keep this heat inside. Shading will reduce this effect by preventing heat from entering your home.

Ventilation and draught proofing

Cross ventilation occurs when two sides of the home are opened to allow air to flow from one end to the other. Encouraging airflow on summer evenings is an effective means of cooling the house and occupants at night.

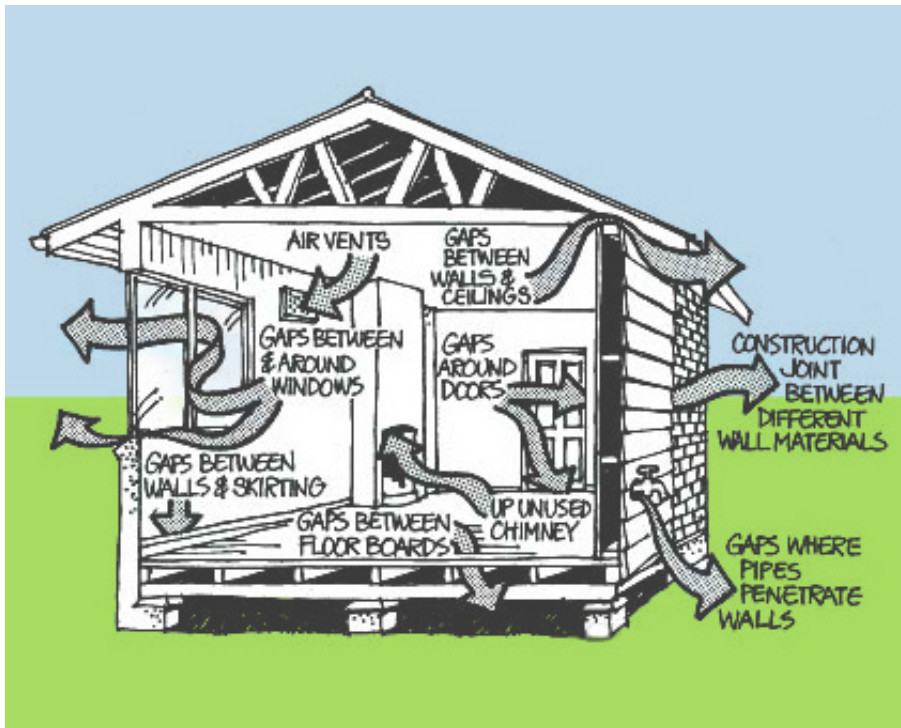
It is important to be able to control ventilation and prevent draughts. Draughts can create discomfort and lead to energy losses in both summer and winter.

In winter, draughts can account for 25% of heat loss. Reducing draughts is a cheap and cost effective way of reducing heating and cooling costs.

Draughts can be reduced by sealing:

- cracks and gaps between walls, ceilings, floors, windows and doors
- unnecessary vents
- exhaust fans and outlet grills
- unused fireplaces
- vented skylights
- ceiling evaporative ducts during colder months.

Gas heaters require adequate ventilation. Check with a **licensed gas fitter** before sealing any exhaust fans or outlet grills.



Related information

On this site

[Thermal performance of your home - orientation, location and layout](#)

[Glazing and shading](#)

[Six star energy efficiency requirement for new homes](#)

[Explore the interactive energy efficient home](#)

Other websites

[Insulation](#) - Your Home, Australian Government

[Insulation installation](#) - Your Home, Australian Government

Provided by: Department of State Development

URL: <https://www.sa.gov.au/topics/water-energy-and-environment/energy/saving-energy-at-home/energy-efficient-home-design/insulation-ventilation-and-draught-proofing>

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