



Insulation

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Insulation acts as a barrier to heat flow and is essential in keeping a home warm in winter and cool in summer.

A well insulated and well designed home will provide year-round comfort, reducing the need for active heating and cooling in the home, and helping to reduce heating and cooling bills.

Passive design techniques should be used in conjunction with insulation. For example, if insulation is installed but the house is not properly shaded, built up heat can be kept in by the insulation creating an 'oven' effect.

Climatic conditions will influence the appropriate level and type of insulation.

Insulation can assist with weatherproofing and eliminate moisture problems such as condensation. Some types of insulation also have soundproofing qualities.

First establish whether the insulation will be mainly needed to keep heat out or in (or both).

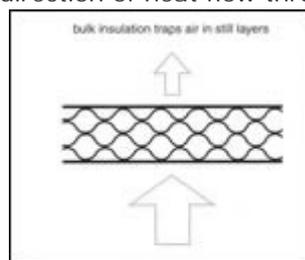
Insulation products come in 2 main categories – bulk and reflective. These are sometimes combined into a composite material. There are many different products available, see "insulation types and their applications" at <http://www.greenhouse.gov.au/yourhome/> for further information.

To compare the insulating ability of the products available look at their R-value, which measures resistance to heat flow. The higher the R-value the higher the level of insulation. Products with the same R-value will provide the same insulating performance if installed as specified.

Note – The Building Code of Australia includes detailed specifications for the installation of insulation in new homes.

INSULATION TYPES & THEIR APPLICATIONS

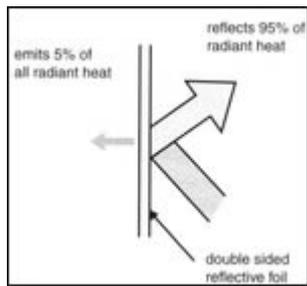
Bulk insulation mainly resists the transfer of conducted and convected heat, relying on pockets of trapped air within its structure. Its thermal resistance is essentially the same regardless of the direction of heat flow through it.



Bulk insulation includes materials such as glass fibre, wool, cellulose fibre, polyester and polystyrene. All products come with one material R-value for a given thickness.

Reflective insulation mainly resists radiant heat flow due to its high reflectivity and low emissivity (ability to re-radiate heat). It relies on the presence of an air layer of at least 25mm next to the shiny surface. The thermal resistance of reflective insulation varies with the direction of heat flow through it.

Reflective insulation is usually shiny aluminium foil laminated onto paper or plastic and is available as sheets (sarking), concertina-type batts and multi-cell batts. Together these products are known as reflective foil laminates or 'RFL'.



Dust settling on the reflective surface will greatly reduce performance. Face reflective surfaces downwards or keep them vertical. The 'anti-glare' surface of single sided foil sarking should always face up.

The system R values for reflective insulation are supplied as up and down values. System values depend on where and how the reflective insulation is installed. Ensure system values provided by the manufacturer relate to your particular installation situation.

For further information please refer to the factsheets at <http://www.greenhouse.gov.au/yourhome/>

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