IMPROVE YOUR COMFORT OUT OF SIGHT

... insulate walls and roofs!

Ventilate the roof space.

Bounce sunlight off a light coloured roof.

Did you know that standard batts and reflective foil perform very well in Central Australia ...

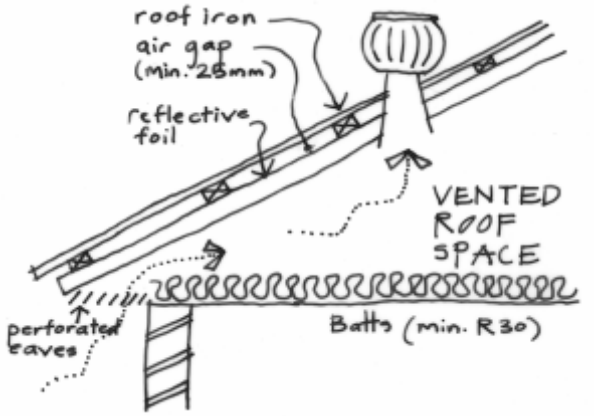
Insulation types

There are broadly three types of house insulation:

Bulk insulation includes batts (fibreglass, wool, polyester), foam panels and pump-in shredded paper. Insulation traps air to slow heat flow and typically work well in summer and winter.

Reflective foil insulation reflects radiant heat from its shiny surface. It requires at least a 25 mm air gap next to the shiny surface to work optimally.

Composite batts are a mix of the above, including batts with foil surfaces, bubble wrap sandwiched between foil and other combinations.



What insulation is best?

Good insulation is critical to the comfort of houses in Central Australia, particularly in summer.

For ceilings, the common Central Australian combination of minimum R3.3 batts against the ceiling and reflective foil under the roof works effectively for cavity roofs and cathedral ceilings.

For stud walls use minimum R2.5 batts and a reflective foil in the frame cavities.

For best effect, insulation should be combined with light coloured roofs and walls, roof ventilation, shading and thermally efficient wall materials. In winter, roof vents may be counterproductive and may need to be covered.

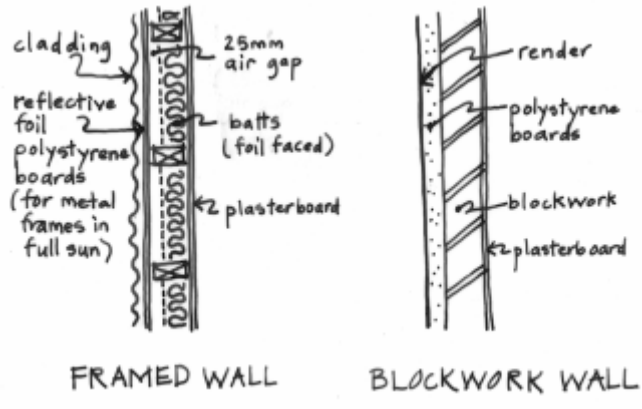
Thermal breaks are very important in steel clad buildings[1].

Roof colour and ventilation

Light coloured roofs reflect far more heat than dark roofs. One monitored roof in Alice Springs of white painted corrugated iron was 45 °C underneath on a 38 °C day when neighbouring dark green, maroon and unpainted grey sheets were 70 °C[2]. Rooms were up to 4 °C cooler even though roof batts and foil were used.

Light tones of most colours work almost as well as bright white and are easier on the eye. If painting a roof, standard paints perform well and are far cheaper than reflective paints.

Ventilate the roof space to release trapped summer heat. Use perforated eaves and 'whirly gig' ventilators to optimise air flow.



Monitoring of a fully vented local roof showed it was only 1 °C above ambient air temperature in summer[3]. In winter, 'whirly gigs' remove warm air which you want to trap and keep the house warm. Install a cover over them in winter.

Correct installation is vital

Poor installation can drastically reduce insulation performance.

Reflective foil requires a 25 mm sealed air gap next to the shiny surface. If placed directly against roof sheets heat will pass straight through.

For batts, any gaps left by poor installation allow substantial heat transfer in and out of rooms. Ensure tradespeople re-lay batts properly after completing maintenance jobs.

Case study

Six different ceiling insulation combinations were installed and monitored at the Alice Springs Cool Living House between 2002 and 2004.

The best overall performance in summer and winter was by standard R3.3 batts against the ceiling and reflective foil under the roof sheets.

Where ceiling batts were absent (foil-only) room temperatures were up to 4 °C warmer in summer.

Bubble wrap insulation performed almost as well as batts and foil, while two layers of foil did not work as well in winter. See www.alec.org.au for details.