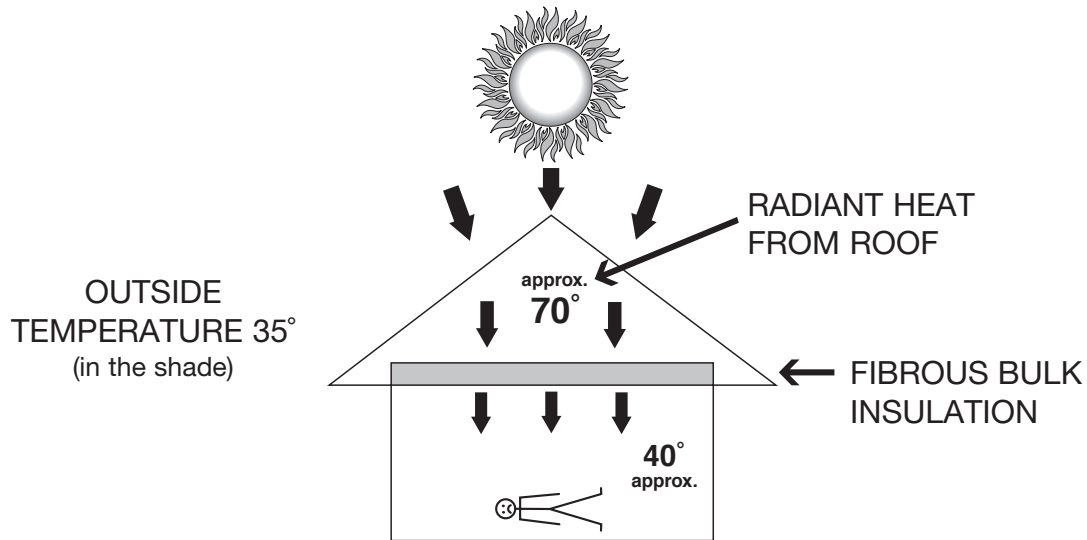
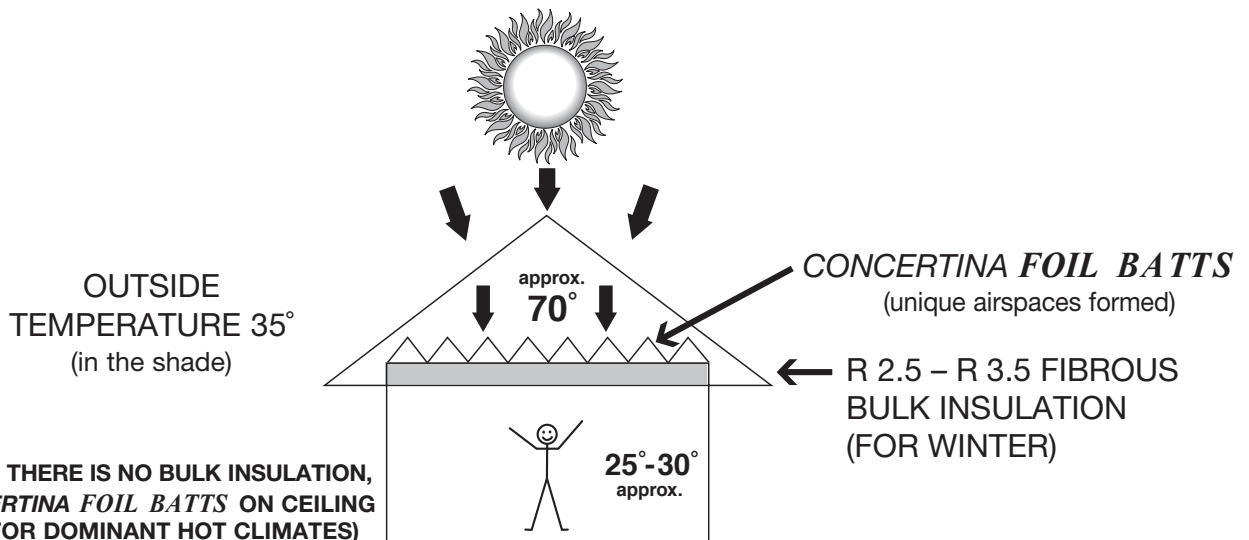


DO YOU LIVE IN A “HOT” HOUSE?



SIMPLE SOLUTION

SIMPLY LAY CONCERTINA *FOIL BATTS* ON TOP OF THE FIBROUS INSULATION WHICH PROTECTS IT FROM THE INTENSE RADIANT HEAT



NB: WHERE THERE IS NO BULK INSULATION, LAY CONCERTINA *FOIL BATTS* ON CEILING (MAINLY FOR DOMINANT HOT CLIMATES)

- **FOIL BATTS** STOP RADIANT HEAT, SIMILAR TO BEING UNDER THE SHADE OF A TREE
- **FOIL BATTS** WILL INCREASE SUMMER COMFORT BY LOWERING HEAT LOAD ON CEILING
- **FOIL BATTS** WILL EASE HEAT LOAD ON AIRCONDITIONING = LOWER FUEL BILLS
- **FOIL BATTS** ARE LOW IN COST AND EASY TO INSTALL

• SEE OVER - THERMAL TESTING EXAMPLES •

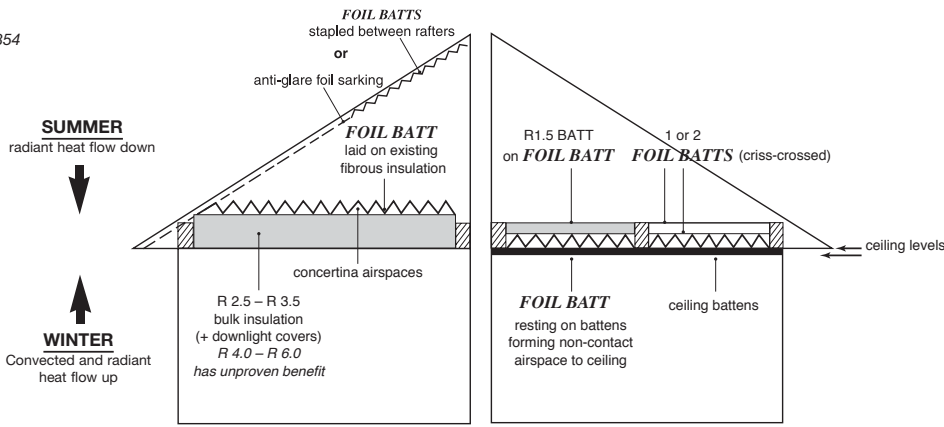
SUMMER HEAT IS **RADIANT HEAT**



THE **RADIANT HEAT BARRIER**
THERMAL INSULATION FOR
 CEILINGS • WALLS • FLOORS
 INVENTED 1992



USE **TENMAT** DOWNLIGHT
 COVERS TO REDUCE
 WINTER HEAT LOSS



CONCERTINA FOIL BATTs STOP RADIANT HEAT

SUMMER & WINTER DUAL CLIMATES
Bulk & Foil Insulation
DOMINANT SUMMER CLIMATE
Foil Insulation Alone

As everyone knows, the ground floor of a two storey house is much cooler than upstairs. And the reason is because the radiant heat has been eliminated. **FOIL BATTs** laid over the ceiling can do the same.
 (i) see Example G & H below.
 (ii) or when placed on top of existing bulk insulation. Radiation into the house is greatly reduced, thus lowering room temperature and fuel bills. For example, imagine the difference in running costs of an airconditioner upstairs compared to downstairs. Downstairs, overhead fans will often be sufficient without airconditioning.

It must be understood that the R values that are published for fibrous insulation have been calculated based on 4 hour laboratory tests done for winter conducted heat between a metal hot plate set at 33° and a cold plate of 13°, which measures the R value. But in summer, the heat radiating from the underside of the roof is around 80° - 100°.

There have been no tests done for radiant heat, and summer heat is radiant not conducted. Fibrous insulation does not stop radiant heat - it just slows it down but the ceiling still gets warm and this heat is radiated into the house. With the **FOIL BATT** system the foil airspace is much cooler and when the cool change comes there is no longer a warm blanket over your head radiating at you.

So, for new or existing houses, you can stop summer radiant heat on your ceiling by:

- (i) laying a concertina **FOIL BATT** on the ceiling and another laid across, see Example H below.
- (ii) **FOIL BATT** laid on top of fibre insulation - overlapped, no stapling. Examples B & D.

This will decrease intense heat loads and improve comfort within the house, see Example B below.

FOIL BATTs in the ceiling:

- Increase summer comfort
- Ease heat load on airconditioning = lower power bills
- Ceiling fans and natural ventilation can eliminate the need for expensive refrigerative airconditioning
- Provide summer and winter benefit - winter heat escape must be stopped at the ceiling, not the roof
- Easily installed D.I.Y. insulation-ideal for the handyman
- Ceiling joists not covered for easy identification

RAFTERS

Another way to improve comfort is to lower the heat load on airconditioning ductwork in the attic by simply stapling **FOIL BATTs** to the rafters. This greatly reduces the radiation of around 80° from the underside of the roof and will provide lower running costs for summer cooling.

For sloping ceilings and attic extensions with narrow depth rafters, two **FOIL BATTs** pulled tight will stop radiation better than using bulk insulation.

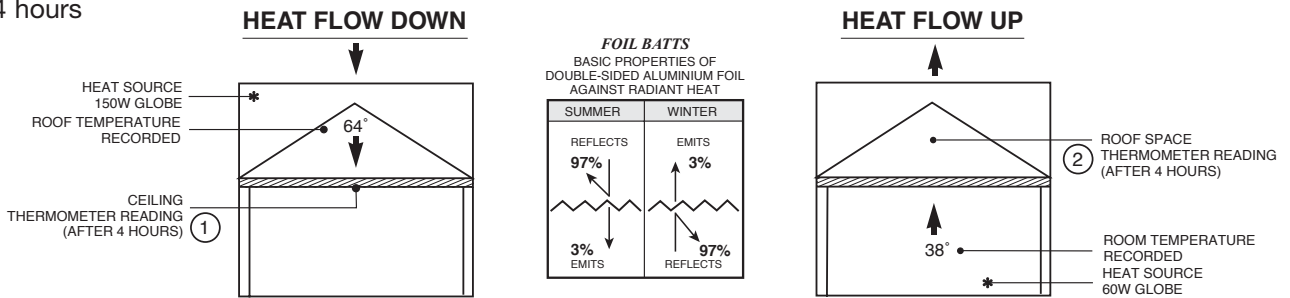
REMEMBER: THE PUBLISHED DAILY TEMPERATURE IS SHADE TEMPERATURE, NOT ACTUAL RADIANT HEAT IN ROOF SPACES OR OUT IN THE SUN.

CEILING APPLICATIONS

THERMAL INSULATION PERFORMANCE

WREN TESTING - MAY 1996 (enclosed model house with metal roof)

Temperature testing period = 4 hours



INSULATION TESTING EXAMPLES

(NO FOIL STAPLING. ALL JOISTS VISIBLE FOR NAVIGATION & WALKING.)

	A	B	C	D	E	F	G	H	
CEILING LINE	ceiling joists		FOIL BATT		FOIL BATT	1 FOIL BATT on ceiling	NO INSULATION	1 FOIL BATT on ceiling battens	2 FOIL BATTs on ceiling battens
THERMOMETER READING	R3.0 BATT	R3.0 BATT	R1.5 BATT	R1.5 BATT	R1.5 BATT	multiple airspaces	av. 50mm airspace	av. 50mm airspace	ceiling batten
1 SUMMER HEAT FLOW	DOWN 25°	DOWN 19°	DOWN 34°	DOWN 23°	DOWN 25°	DOWN 55°	DOWN 22°	DOWN 20°	
2 WINTER HEAT FLOW	UP 27°	UP 24°	UP 28°	UP 28°	UP 27°	UP 40°	UP 30°	UP 25°	

- Examples B and D are the most common ceiling insulation choice for locations experiencing dual cold winter / hot summer climates, requiring heating and cooling. Simple to install - no stapling.
- B and D demonstrate the summer benefit from laying FOIL BATTs on top of bulk insulation. The unique concertina shape creates two foil airspaces - foil laid flat has one upward facing airspace alone.
- To maintain the best winter performance for E, block off any heat escape from ceiling perimeters, e.g. place a torn, fibre batt wedge along wall top plate - ie make FOIL BATT stop short of ceiling edge.
- Good summer results occur where a 50-100mm downward foil airspace clearance to the ceiling is formed (i.e. non-conductive). G, H, or E on battens - FOIL BATT constantly emitting 3% of all summer radiant heat.
- Possible dust on top foil surface is of no importance. Example B tested with baby powder covering top surface 100% - ceiling temperature remained at 19° unchanged, downward ▲ airspace maintained.
- Small triangular reflective airspaces having multiple points of contact are too complex for accurate R value calculation, nevertheless significant thermal benefits occur.
- G & H well suited for dominant hot climates - no stapling, lengthway overlapping (approx. 50mm), top batt criss-crossed and snipped to fit between ceiling joists.