



## CONCERTINA FOIL BATTS FROM WREN INDUSTRIES

Since 1991 Wren Industries has been successfully selling a radiant heat barrier insulation known as Concertina Foil Batts for use in roofs, ceilings, walls and floors. When it comes to the subject of insulation there are many factors that need to be taken into consideration, not the least of which concerns the effects of high temperature downward radiation on different insulation materials.

There are two basic types of insulation that exist: bulk insulation, a lightweight material containing many tiny pockets of still air; and reflective foil insulation, material covered on one or both sides with a layer of shiny aluminium foil, which then reflects most of the high temperature radiation in summer which falls on it, and emits very little on the foil underside.

When used as a radiant barrier under roofs or across ceiling joists, foil insulation stops radiant heat transfer downward through the roof space during the day, and, because foil has much lower resistance heat flow up compared to down. Foil in roof spaces prevents infrared radiant heat gains to occupants and promotes rapid cooling of houses after sundown. Foil is therefore desirable for houses in warm, winterless climates, but may be used with bulk insulations where there are cold winters (eg. Concertina Foil Batts laid on top). However, bulk acts like a sponge,

absorbing and retaining summer radiant heat, causing houses to take longer to cool down. The unique variable resistance feature of aluminium foil in roof spaces was revealed in a 1981 federally funded study of Queensland houses comparing bulk and foil in ceilings, with profound implications for reducing energy demand for cooling of buildings, both naturally ventilated and refrigerated.

According to Wren, the single most important historic testing of foil in Australia was in 1968–69 in Sydney where anti-glare double-sided foil under a tile roof revealed major cooling benefits for naturally ventilated houses, as well as protecting air-conditioning ductwork and reducing running costs.

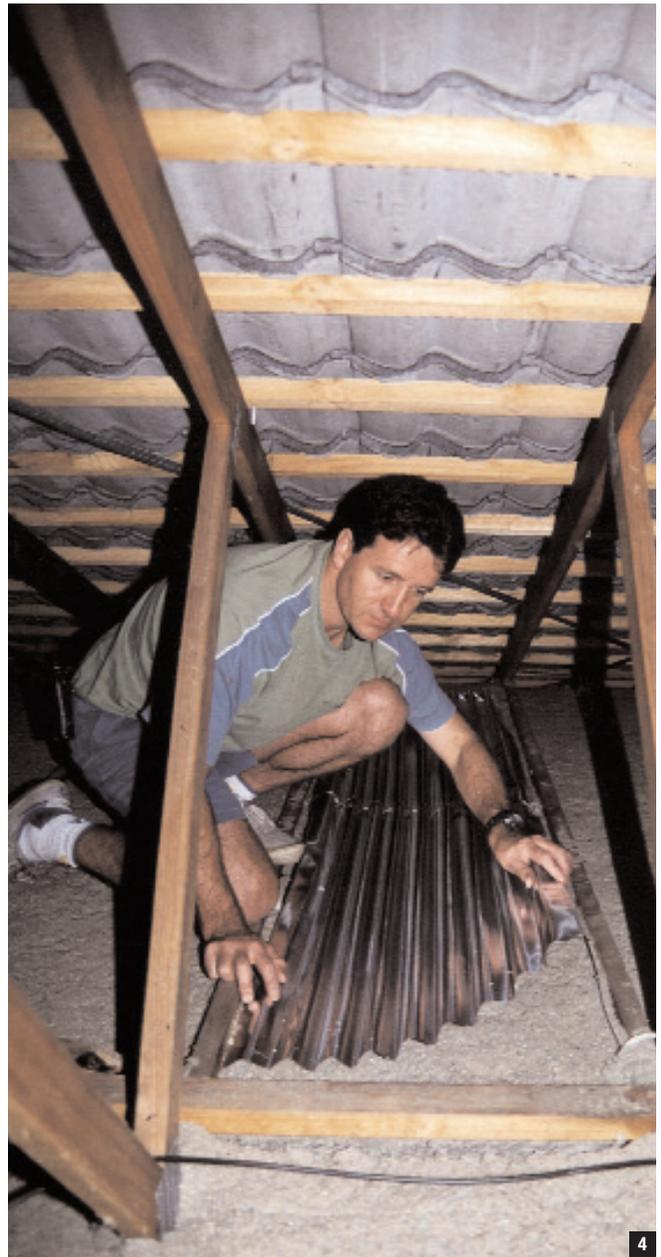
In the 2010 Senate Inquiry "Home Insulation Program" submissions were made by Wren Industries' Tim Renouf, Secretary of the Aluminium Foil Insulation Association (1998–2010). These submissions revealed inadequate summer thermal testing for bulk insulations in Australian Standards, and consequential negative impacts from excessive regulatory R-values under BCA 6-Star House Energy Ratings. Additional foil testimonies were provided to the Inquiry which included risks from condensation damage in bulk insulations used in warm, hot and tropical regions of BCA Climate Zones 1 and 2.



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1. For dual winter and summer climates, Concertina Foil Batts are laid on top of bulk insulation.
2. Foil Batts wrapped around air-conditioning ductwork from 50–70 °C roof space radiation, reducing running costs.
3. Foil Batts stapled between roofing rafters reducing downward radiation on cooling ductwork.
4. Concertina Foil Batts simply laid and unstapled, forming triangular foil airspaces, timbers visible.

#### FOR MORE INFORMATION

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