

## FOUNDATION OF FOIL R-VALUES AND REGULATIONS UNDER BCA & HER – HOUSE ENERGY RATING

Thermal resistance for aluminium foil insulations are always expressed as 'Total R-values' which are calculated, between indoor and outdoor temperatures, for the building element: walls, floors, ceiling/roof structures.

Total R-values fluctuate depending on installation, orientation and prevailing climatic conditions.

The calculation method is based on historical testing of aluminium foil in the USA (1954).

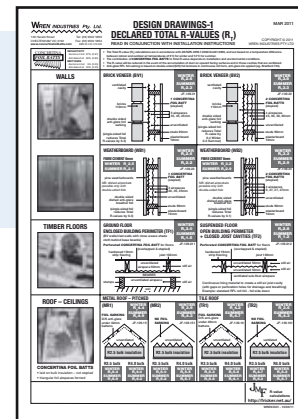
**CONCERTINA FOIL BATTSTM** conform to the Insulation Standard AS/NZS4859.1(2002) Amendment 1(2000) "Materials for Thermal Insulation" in the Building Code of Australia - "Energy Efficiency Measures".

The Standard requires that where thermal performance is calculated, the calculations shall be performed by an appropriately qualified person and shall be accompanied by endorsement from a recognized laboratory.

R-values of **CONCERTINA FOIL BATTSTM** have been calculated and certified by Melbourne engineer James Fricker P/L (MIEAust, MAIRAH, CPEng) and endorsed by a recognized laboratory R&D Services (USA). R-values are based on in-service conditions and AFIA Standard Guidelines and Assumptions.

### Refer to Wren Design Drawings:

<http://www.concertinafoilbatts.com/Installation.pdf>



### AFIA – Aluminium Foil Insulation Association – "Standard Guidelines"

AFIA website - essential technical reading key links:

[http://afia.com.au/docs/afia\\_assumptions\\_guideline\\_march\\_2005.pdf](http://afia.com.au/docs/afia_assumptions_guideline_march_2005.pdf)

<http://afia.com.au/news.htm> \*\*read all INDUSTRY NEWS sub-links for detailed understanding.

The AFIA Guidelines have legal force and have been audited.

Special Notes: CSIRO and BRANZ(of NZ) are not *recognized laboratories* for endorsing R-value calculations of foil insulation products.

### SPECIAL WARNING:

HOUSE ENERGY RATING scheme are flawed "FAILURE" - <http://www.concertinafoilbatts.com/failures.htm>

#### BUILDING CODE OF AUSTRALIA (BCA) 2010 – extracts

##### Acceptable construction practice

##### Clause 3.12.1.1 Building fabric thermal insulation

- (b) Where required, reflective insulation must be installed with
- (i) the necessary airspace, to achieve the required R-Value between a reflective side of the reflective insulation and a building lining or cladding;

##### Explanatory information: Airspace adjoining reflective insulation

For reflective insulation and the adjoining airspace to achieve its tested R-Value, the airspace needs to be a certain width. This width varies depending on the particular type of reflective insulation and the R-Value to be achieved.

##### Clause 3.12.1.2 Roofs Figure 3.12.1.1

**Explanatory information:** 6. Choice of insulation (last sentence)  
Where bulk insulation fills the airspace, the Total R-Value should be reduced to take account of the loss of airspace.

#### HOUSE ENERGY RATING (HER) – FIRST RATE & ACCURATE

##### P6.1 Reflective foil insulation products

Reflective foil only provides an insulating effect when it faces an air space, because it works by reducing radiant heat flow across this air space. If reflective foil does not face an air space it does not have an R value.

Reflective foil product tests often show the R value of the whole building element, whereas bulk insulation tests usually show the R value of the insulation alone. Whole building element R values should be entered into the 'Total R value' field in FirstRate, while insulation product R values should be entered into the 'Insulation R value' field.

- \* ADDITIONAL ADVICE: "Winter" Total R-values are to be used alone in accordance with BCA Heat Flow Directions, when based on reducing energy for winter heating.