FOIL BATT FACTS No. 11
DECEMBER 2008
CONCERTINA FOIL BATTS™ THE RADIANT HEAT BARRIER

FAILURE IN INSULATION STANDARD

AS/NZS 4859.1 (2002) "Materials for Thermal Insulation of Buildings" – EXTRACTS

*** from 1 May 2009, AS/NZS4859.1(2002) –Amendment 1(2006) will be adopted into BCA**

CLAUSE 2.3.1 THERMAL RESISTANCE – General page 9

EXTRACT

Thermal resistance of insulation materials may be highly dependent on boundary conditions and other environmental factors encountered in buildings and common insulation delivery systems. Thermal resistance (material, system or total) refers to the in-situ or in-service condition. It is the intent of the methods and procedures contained in this Standard that the measured and/or declared thermal resistance shall reflect as accurately as possible the performance encountered in buildings.

CLAUSE 2.3.3.2 TEST PROTOCOL page 11

EXTRACT

The test methods listed in Table 2.1 and computations shall be performed for appropriate environmental and installation conditions. All factors, that are known to affect the installed thermal resistance, shall be taken into account and stated, including –

(a) temperatures that affect heat flow, including the hot and cold surfaces of the insulation material or assembly and other relevant temperatures;
(b) air flows around the insulation material or assembly that influence heat flow, including ventilation effects and convection within airspaces or within insulation materials;
(c) radiant energy level, including effects due to adjacent hot or cold surfaces and radiation penetration through insulation materials (or assemblies) that have some transparency to infra-red frequencies;
(d) dimensions and orientation of structures and materials;
(e) infra-red reflectance of surfaces; and
(f) moisture content in service.

CLAUSE 2.3.3.3 *Mean temperatures*

EXTRACT

For comparison of bulk products, thermal resistance shall be determined at a standard mean temperature of 23 +- 1degC for products sold in Australia and 15 +- 1degC for products sold in New Zealand. For accurate thermal design purposes, thermal resistance should be determined at the appropriate operating temperatures.

Where testing laboratories are, for technical reasons, unable to measure at the appropriate mean temperature, thermal resistance shall be determined by extrapolation of measurements performed at a minimum of two other mean temperatures.

end of extracts

Commentary – Tim Renouf as at 17 Dec 2008

Secretary AFIA – Aluminium Foil Insulation Assoc. (Inc.Vic 1998) www.afia.com.au

Bulk fibrous insulations have a European/North American "standardised" **material Rvalue** (resistance to the flow of heat) measured in a *steady-state* **Heat Flow Meter** between hot and cold contact plates set at 33 & 13 degC, where the mean (average) temperature is 23 deg. **ie 33+13 = 46div2= 23 degC.
The duration of the test is four hours. If the material thickness is doubled, then the Rvalue is doubled.

It is an established scientific fact that when mean(average) temperature increases for any insulation , the resistance – Rvalue - falls. But in reality, all insulations have *variable* Rvalues – claimed *guaranteed Rvalues* for bulk insulations are only valid for the standardised test conditions (33/13degC). **Bulk insulations are not tested for in-situ effects of high temperature radiation, as what typically occurs across Australia in roof spaces of approx 50-70 deg.**

AS/NZS 4859.1 requires the assessment of radiant energy, but no testing facility exists in Australia for this to happen. The Standard is contradictory and needs major Revision.

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