

“TOTAL R”

THERMAL PERFORMANCE CALCULATIONS

TO AS/NZS 4859.1:2002/Amdt 1 (Dec 2006)

The following calculations by James M Fricker Pty Ltd are based upon:

- a) AS/NZS 4859.1:2002/Amdt 1 (Dec 2006) “Materials for the thermal insulation of buildings. Part 1: General criteria and technical provisions”,
- b) the Australian Institute of Refrigeration Air-conditioning & Heating (AIRAH) Handbook (2007 Edition), and (if necessary) the ASHRAE Fundamentals Handbook.

Results reported are for the **insulation path** only per the original AS/NZS 4859.1:2002 Clause 1.5.3.3 – “*Total thermal resistance - A total resistance associated with a material or a system or construction of materials, specified as a Total R, including surface film resistances*” to be in alignment with the BCA2011 Specification J1.3 examples.

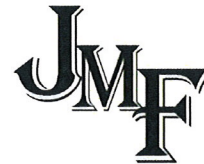
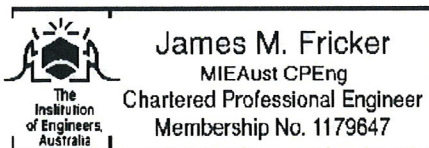
R-values for parallel-faced air cavities were calculated using the Reflect-3 computer software that is based on Robinson and Powell data and research by Oakridge National Laboratory, USA. These calculations are iterative and only the converged results are shown. (Note that Reflect-3 calculations are limited to a maximum 100mm air gap.)

Total R-values are based on product in-service conditions in accordance with AS/NZS 4859.1:2002/Amdt 1 (Dec 2006) including the alteration of insulation material R for temperature, and derations of reflective foil emittances due to dust as noted. Where a cavity is sealed, it is assumed there is no dust and hence emittance is not derated.

The calculations have not yet been independently verified per requirements of AS/NZS 4859.1:2002/Amdt 1.

Each calculation result is subject to any specific notes and assumptions listed on the calculation.

If a construction differs from the described system, the thermal resistance may be different.



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SUMMARY OF RESULTS

JMF Calc.	Calculations as at 6/12/2011	Total R		Total U	
		"s" Summer	"w" Winter	"s" Summer	"w" Winter
365w00	50mm Loxo Panel, 70mm to 140mm unreflective air gap, 10mm plasterboard	R0.78	R0.80	1.28	1.25
365w011a	50mm Loxo Panel, 20mm unreflective air gap, noglare single-sided foil sarking (e=0.87/0.03), 70mm reflective air gap, 10mm plasterboard	R1.39	R1.52	0.72	0.66
365w02a	50mm Loxo Panel, 20mm unreflective air gap, (no sarking), R2.0 bulk insulation (e.g. 70mm 22.1kg/m3 glasswool), 10mm plasterboard	R2.69	R2.90	0.37	0.34
372w031a	50mm Loxo Panel, 20mm unreflective air gap, noglare single-sided foil sarking (e=0.87/0.03), R2.0 bulk insulation (e.g. 70mm 22.1kg/m3 glasswool), 10mm plasterboard	R2.69	R2.90	0.37	0.34
365w011b	50mm Loxo Panel, 20mm unreflective air gap, noglare single-sided foil sarking (e=0.87/0.03), 90mm reflective air gap, 10mm plasterboard	R1.40	R1.56	0.72	0.64
365w02b	50mm Loxo Panel, 20mm unreflective air gap, (no sarking), R2.0 bulk insulation (e.g. 90mm 10.2kg/m3 glasswool), 10mm plasterboard	R2.69	R2.90	0.37	0.34
372w032b	50mm Loxo Panel, 20mm unreflective air gap, noglare single-sided foil sarking (e=0.87/0.03), R2.0 bulk insulation (e.g. 90mm 10.2kg/m3 glasswool), 10mm plasterboard	R2.69	R2.90	0.37	0.34
372w033b	50mm Loxo Panel, 40mm unreflective air gap, noglare single-sided foil sarking (e=0.87/0.03), R2.0 bulk insulation (e.g. 90mm 10.2kg/m3 glasswool), 10mm plasterboard	R2.70	R2.91	0.37	0.34

NOTES: The above shows Total R determinations based upon AS/NZS 4859.1:2002/Amdt 1 2006, Materials for the thermal insulation of buildings. The insulation thermal resistance is calculated for the Australian air temperature differences (winter: 18°-12°C = 6K, summer: 36°-24°C = 12K) per AS/NZS 4859.1:2002/Amdt 1 2006.