THERMAL INSULATION EVALUATION BY CALCULATION

R for THERMADOOR™ insulation path. (98.9%)

section: Metal wall skin, 10mm unventilated reflective air gap, reflective foil on EPS (e=0.03), 35mm M Class Expanded Polystyrene, vinyl indoor skin

		R	winter				R	summer				cavity properties		
	Wall section components	m².K/W	°C out	°C in	°C avg	Δt	m².K/W	°C out	°C in	°C avg	Δt	e1	e2	mm
	Outdoor air film	0.040	**12.00**	12.16	12.08	0.16	0.040	**36.00**	35.67	35.83	0.33			
	Metal wall skin	0.000	12.16	12.16	12.16	0.00	0.000	35.67	35.67	35.67	0.00			0
	10mm unventilated reflective air gap	***0.376***	12.16	13.68	12.92	1.52	***0.371***	35.67	32.56	34.11	3.10	**0.03**	0.87	10
	reflective foil on EPS (e=0.03)	0.000	13.68	13.68	13.68	0.00	0.000	32.56	32.56	32.56	0.00			0
	35mm M Class Expanded Polystyrene	**0.946**	13.68	17.51	15.60	3.83	**0.902**	32.56	25.01	28.79	7.55			35
	vinyl indoor skin	0.001	17.51	17.51	17.51	0.00	0.001	25.01	25.00	25.01	0.01			0
	Indoor air film (unreflective surface)	0.120	17.51	**18.00**	17.76	0.49	0.120	25.00	**24.00**	24.50	1.00			
	Total Thermal Resistance, R_{Ti} =	**1.48**	winter			6.00	**1.43**	summer			12.00			45

R for THERMADOOR™ edge path. (1.1%)

section: Metal wall skin, 48mm unventilated unreflective air gap, vinyl indoor skin

		R	winter				R	summer				cavity properties		
	Wall section components	m².K/W	°C out	°C in	°C avg	Δt	m².K/W	°C out	°C in	°C avg	Δt	e1	e2	mm
	Outdoor air film	0.040	**12.00**	12.74	12.37	0.74	0.040	**36.00**	34.60	35.30	1.40			
	Metal wall skin	0.000	12.74	12.74	12.74	0.00	0.000	34.60	34.60	34.60	0.00			0
	48mm unventilated unreflective air gap	***0.164***	12.74	15.77	14.25	3.03	***0.183***	34.60	28.19	31.40	6.41	0.87	0.87	48
	vinyl indoor skin	0.001	15.77	15.78	15.78	0.02	0.000	28.19	28.19	28.19	0.00			0
	Indoor air film (unreflective surface)	0.120	15.78	**18.00**	16.89	2.22	0.120	28.19	**24.00**	26.10	4.19			
	Total Thermal Resistance, R_{Te} =	**0.33**	winter			6.00	**0.34**	summer			12.00			48

35MM M CLASS EPS THERMADOOR™ OVERALL

424w02 **Overall Total Thermal Resistance, R_T =** **1.43** winter **1.39** summer

JMF Calc of 13/05/2025 20:12

NOTES: **Determinations based upon AS/NZS 4859 Parts 1&2:2018, Thermal insulation materials for buildings. Referenced by NCC2022.**
The results are believed representative at the date of calculation, however the author reserves the right to revise calculations.
35mm M Class Expanded Polystyrene assumed to have conductivity 0.038 W/m·K & thermal resistance R0.92 m².K/W at 23°C
Insulation R adjusted for temperature per AS/NZS 4859.2:2018, Clause 5.2
Cavity air space insulation values (shown in italics) were calculated per the standard using infrared emittances e1 & e2 and stated gap.
The air gap calculations use the assumptions of the standard including emittance degradation from dust. (Vertical surface remains dust free.)
Total R values include indoor and outdoor air films. Total Conductance (U) calculated by U=1/R
Overall Total R result for the whole door surface calculated by the parallel path method using the percentage proportions assumed and stated.
This report may not be reproduced except in full. Results may not be quoted without reference to the assumptions.
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Signed: James Fricker

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