

Total R-value of Cupolex H260 & H350 system

All R-values are calculated by James M Fricker Pty Ltd based upon:

1. AS/NZS 4859.1: Thermal Insulation Materials for buildings. Part1: General criteria and technical provisions.
2. AS/NZS 4859.2: Thermal Insulation Materials for buildings. Part2: Design.
3. The Australian Institute of Refrigeration Air-conditioning & Heating(AIRAH) Handbook, and the ASHRAE Fundamentals Handbook.

Initial results report Total R for each thermal path. These results are combined by area weighting and isothermal planes method to deduce Overall Surface Total R.

Total R-values are based on product in-service conditions in accordance with AS/NZS 4859.2 including the alteration of insulation Material R for temperature, and Air Space R for temperature and infrared emittance.

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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Total R-value of Cupolex H350 & H260 system

(Ref: JMF Calc 428f0332 & 428f0331)

WINTER R				
Centre Post	Vertical element	t, mm	k	m ² .K/W
	60mm concrete	60	1.44	0.0417
	350mm concrete	350	1.44	0.2431
	2mm polypropylene	2	0.25	0.0080
	R0.14 PE Core vapour barrier	5	0.034	0.1400
	1000mm earth	1000	1.6	0.6250
2%	R sum between isothermal planes			1.0161

WINTER R				
4 Corners	Vertical element	t, mm	k	m ² .K/W
	60mm concrete	60	1.44	0.0417
	350mm concrete	350	1.44	0.2431
	2mm polypropylene	2	0.25	0.0080
	R0.14 PE Core vapour barrier	5	0.034	0.1400
	1000mm earth	1000	1.6	0.6250
8%	R sum between isothermal planes			1.0161

WINTER R				
Central Void	Vertical element	t, mm	k	m ² .K/W
	60mm concrete	60	1.44	0.0417
	0mm concrete	0	1.44	0.0000
	2mm polypropylene	2	0.25	0.0080
	350mm reflective air void	350	0.22	1.6103
	R0.14 PE Core vapour barrier	5	0.034	0.1400
	1000mm earth	1000	1.6	0.6250
30%	R sum between isothermal planes			2.3833

WINTER R				
Outer Void	Vertical element	t, mm	k	m ² .K/W
	60mm concrete	60	1.44	0.0417
	40mm concrete	40	1.44	0.0278
	2mm polypropylene	2	0.25	0.0080
	310mm reflective air void	310	0.20	1.5837
	R0.14 PE Core vapour barrier	5	0.034	0.1400
	1000mm earth	1000	1.6	0.6250
60%	R sum between isothermal planes			2.3844

Combined R between isothermal planes
 (= 1/(A%/Ra + B%/Rb + C%/Rc + D%/Rd))

Cupolex H350 Thermal Resistance*, base R = R2.14

*combined R with 1 metre earth plus top 60mm concrete

TOTAL R VALUES, Cupolex H350 + 1 metre earth		winter
bare floor		R2.30
with 6mm carpet and 15mm underlay		R2.71
with 25mm mountain ash floating timber overlay		R2.46

WINTER R				
Centre Post	Vertical element	t, mm	k	m ² .K/W
	60mm concrete	60	1.44	0.0417
	260mm concrete	260	1.44	0.1806
	2mm polypropylene	2	0.25	0.0080
	R0.14 PE Core vapour barrier	5	0.034	0.1400
	1000mm earth	1000	1.6	0.6250
2%	R sum between isothermal planes			0.9536

WINTER R				
4 Corners	Vertical element	t, mm	k	m ² .K/W
	60mm concrete	60	1.44	0.0417
	260mm concrete	260	1.44	0.1806
	2mm polypropylene	2	0.25	0.0080
	R0.14 PE Core vapour barrier	5	0.034	0.1400
	1000mm earth	1000	1.6	0.6250
8%	R sum between isothermal planes			0.9536

WINTER R				
Central Void	Vertical element	t, mm	k	m ² .K/W
	60mm concrete	60	1.44	0.0417
	0mm concrete	0	1.44	0.0000
	2mm polypropylene	2	0.25	0.0080
	260mm reflective air void	260	0.17	1.5314
	R0.14 PE Core vapour barrier	5	0.034	0.1400
	1000mm earth	1000	1.6	0.6250
30%	R sum between isothermal planes			2.3044

WINTER R				
Outer Void	Vertical element	t, mm	k	m ² .K/W
	60mm concrete	60	1.44	0.0417
	40mm concrete	40	1.44	0.0278
	2mm polypropylene	2	0.25	0.0080
	220mm reflective air void	220	0.15	1.5042
	R0.14 PE Core vapour barrier	5	0.034	0.1400
	1000mm earth	1000	1.6	0.6250
60%	R sum between isothermal planes			2.3049

Combined R between isothermal planes
 (= 1/(A%/Ra + B%/Rb + C%/Rc + D%/Rd))

Cupolex H260 Thermal Resistance*, base R = R2.06

*combined R with 1 metre earth plus top 60mm concrete

TOTAL R VALUES, Cupolex H260 + 1 metre earth		winter
bare floor		R2.22
with 6mm carpet and 15mm underlay		R2.63
with 25mm mountain ash floating timber overlay		R2.38