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U-value calculation

by BRE U-value Calculator version 2.03
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Element type: Roof - Structural insulated panel
Calculation Method: BS EN ISO 6946

Roof Type 1 - 144mm SIP

Layer	d (mm)	λ layer	λ bridge	Fraction	R layer	R bridge	Description
					0.100		Rsi
1	12.5	0.160			0.078		Vapourcheck plasterboard
2							Protect VC Foil Ultra Insulating AVCL
Membrane							
3	25	R-value ¹	0.120	0.0800	0.530	0.208	Air layer unventilated
4	11	0.130			0.085		SIP - OSB
5	122	0.030			4.067		SIP - Lambdatherm EPS
6	11	0.130			0.085		SIP - OSB
7							Protect VP400 Plus LR
8	50	R-value					Air layer ventilated
9	12	1.000					Roof Tiles
					<u>0.100 #</u>		Rse
	<u>244 mm (total roof thickness)</u>				<u>5.044</u>		

¹Specified thermal resistance

this resistance substitutes for Rse and the resistance of layers 8-9 because of the ventilated air layer (layer 8)

Total resistance: Upper limit: 5.017 Lower limit: 4.986 Ratio: 1.006 Average: 5.001 m²K/W

U-value 0.200
U-value (rounded) 0.20 W/m²K

The U value result has been determined as follows:

Bridging:

A thermal bridge percentage for the timber studs of 12.5% has been used in accordance with BR 443: 2006 Conventions for U values (section 4.5.1 (ii)).

Correction level:

A correction level of 0 has been used in accordance with Table F1 of BS EN ISO 6946: 2017 Building components and Building elements - Thermal transmittance - Calculation methods.

Please check to confirm and advise if any amendments are required.

Calculated by Protect Technical Services

