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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

**219mm Flat Roof with Green Roof Covering and 50mm Thermaline**

Layer	d (mm)	λ layer	λ bridge	Fraction	R layer	R bridge	Description
					0.100		Rsi
1	50	0.021			2.381		Gyproc Thermaline Super
2	22	R-value <sup>1</sup>	0.130	0.0800	0.530	0.169	Air layer unventilated
3							Protect VC Foil Ultra Insulating AVCL
4	11	0.130			0.085		SIP - OSB
5	197	0.030	0.130	0.0200	6.567	1.515	Lambdatherm
6	11	0.130			0.085		SIP - OSB
7							Protect VP400 Plus LR
8	50	R-value					Air layer ventilated
9	19	0.130					Plywood sheathing
10	25	0.110					Green Roof Covering
					<u>0.100 #</u>		Rse
	<u>385 mm (total roof thickness)</u>				<u>9.847</u>		

<sup>1</sup>Specified thermal resistance

# this resistance substitutes for Rse and the resistance of layers 8-10 because of the ventilated air layer (layer 8)

Total resistance: Upper limit: 9.613 Lower limit: 9.359 Ratio: 1.027 Average: 9.486 m<sup>2</sup>K/W

U-value 0.105  
**U-value (rounded) 0.11 W/m<sup>2</sup>K**

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 **Connor Smith** – Technical Officer

