



Protect Membranes
2 Brooklands Road, Sale, Cheshire M33 3SS

Telephone **0161 905 5700**
Fax **0161 905 2085**
Email info@protectmembranes.com
Website www.protectmembranes.com

U-value calculation

by BRE U-value Calculator version 2.03
Printed on 05 Apr 2018 at 16:10

Element type: Roof - Structural Insulated Panel

Calculation Method: BS EN ISO 6946

Roof Type 3 - 219mm Flat Roof with EPDM Rubber 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 ¹	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	1	0.200					EPDM Rubber
					<u>0.100 #</u>		Rse
	<u>361 mm</u> (total roof thickness)				9.847		

¹Specified 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 m²K/W

U-value 0.105
U-value (rounded) 0.11 W/m²K

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

