



**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 16:07

### Element type: Roof - Structural insulated panel

Calculation Method: BS EN ISO 6946

### Roof Type 3 - 194mm Flat Roof with EPDM Rubber

Layer	d (mm)	$\lambda$ layer	$\lambda$ bridge	Fraction	R layer	R bridge	Description
					0.100		Rsi
1	12.5	0.210			0.060		Plasterboard (standard wallboard)
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	172	0.030	0.130	0.0200	5.733	1.323	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>299 mm</u> (total roof thickness)				6.692		

<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: 6.410 Lower limit: 6.257 Ratio: 1.025 Average: 6.333 m<sup>2</sup>K/W

U-value 0.158  
**U-value (rounded) 0.16 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

