

Project Information

Reference
Date

Construction Type

Element	: Pitched roof, ceiling at rafter line - 15.01.26 - Pitched Roof - Internal - SF40 SF40BB 75mm PIR - 0.11					
Internal surface emissivity	: High	External surface emissivity		: High		
		Thickness	Thermal Conductivity	Thermal Resistance	Pitch	Bridge details
		(mm)	(W/mK)	(m²K/W)	(°)	Air gaps (Level, Delta U")
Outside surface resistance		-	-	0.100		
Roof tiles		15.0	1.499	0.000		
Tile Batten Cavity		-	-	0.000		
Batten Cavity		50.0	-	0.000		
SuperFOIL SF40BB		11.2	-	2.850		1.500% SuperFOIL (11.2mm)
Rafter Cavity		50.0	-	0.282		11.750% softwood (~500kg/m³) (50.0mm)
(Bridged un-vented cavity - width=353.0mm, hro=5.100, E1=0.020, E2=0.050, upward heat flow)						
Rigid Insulation Board		75.0	0.022	3.409		11.750% Softwood (75.0mm)
Rafter Cavity		25.0	-	0.282		11.750% softwood (~500kg/m³) (25.0mm)
(Bridged un-vented cavity - width=353.0mm, hro=5.100, E1=0.050, E2=0.020, upward heat flow)						
SuperFOIL SF40		11.2	-	2.570		1.500% SuperFOIL (11.2mm)
Batten Cavity		50.0	-	0.487		7.833% softwood (~500kg/m³) (50.0mm)
(Bridged un-vented cavity - width=553.0mm, hro=5.100, E1=0.020, E2=0.900, upward heat flow)						
Plasterboard		12.5	0.179	0.070		
Skim		3.0	0.400	0.008		
Inside surface resistance		-	-	0.100		
Total thickness		302.9mm				

U-value = 0.11W/m²K

U-value, Combined Method : 0.111W/m²K (upper/lower limit 9.614 / 8.371m²K/W, dUf 0.0000, dUg 0.0000, dUp 0.0000, dUr 0.0000, dUrc1 0.0000, dUrc2 0.0000)

Correction factors

Air gaps, Delta Ug = 0.000W/m²K

(Based on the combined method for determining U-values of structures containing repeating thermal bridges)

This free U-value calculation is based on recipient-provided information. Every effort has been made to ensure accuracy, but Boulder Developments Ltd and associated parties are not liable. Project management and building control authorities must approve the specification. It demonstrates only the thermal transmittance of the specified construction. Other building regulation compliances, including fire safety, must be independently assessed.

	Thickness (mm)	Thermal Conductivity (W/mK)	Thermal Resistance (m²K/W)	Vapour Resistivity (MNs/gm)	Vapour Resistance (MNs/g)
Outside surface resistance	-	-	0.100	-	-
Roof tiles	15.0	1.499	0.000	0.00	0.00
Tile Batten Cavity	-	-	0.000	-	0.00
Batten Cavity	50.0	-	0.000	-	0.00
SuperFOIL SF40BB	11.2	-	2.850	-	0.12
Rafter Cavity	50.0	-	0.282	-	0.00
(Bridged un-vented cavity - width=353.0mm, hro=5.100, E1=0.020, E2=0.050, upward heat flow)					
Rigid Insulation Board	75.0	0.022	3.409	557.00	41.77
Rafter Cavity	25.0	-	0.282	-	0.00
(Bridged un-vented cavity - width=353.0mm, hro=5.100, E1=0.050, E2=0.020, upward heat flow)					
SuperFOIL SF40	11.2	-	2.570	-	1200.00
Batten Cavity	50.0	-	0.487	-	0.00
(Bridged un-vented cavity - width=553.0mm, hro=5.100, E1=0.020, E2=0.900, upward heat flow)					
Plasterboard	12.5	0.179	0.070	50.00	0.63
Skim	3.0	0.400	0.008	50.00	0.15
Inside surface resistance	-	-	0.100	-	-
Total thickness	302.9mm				

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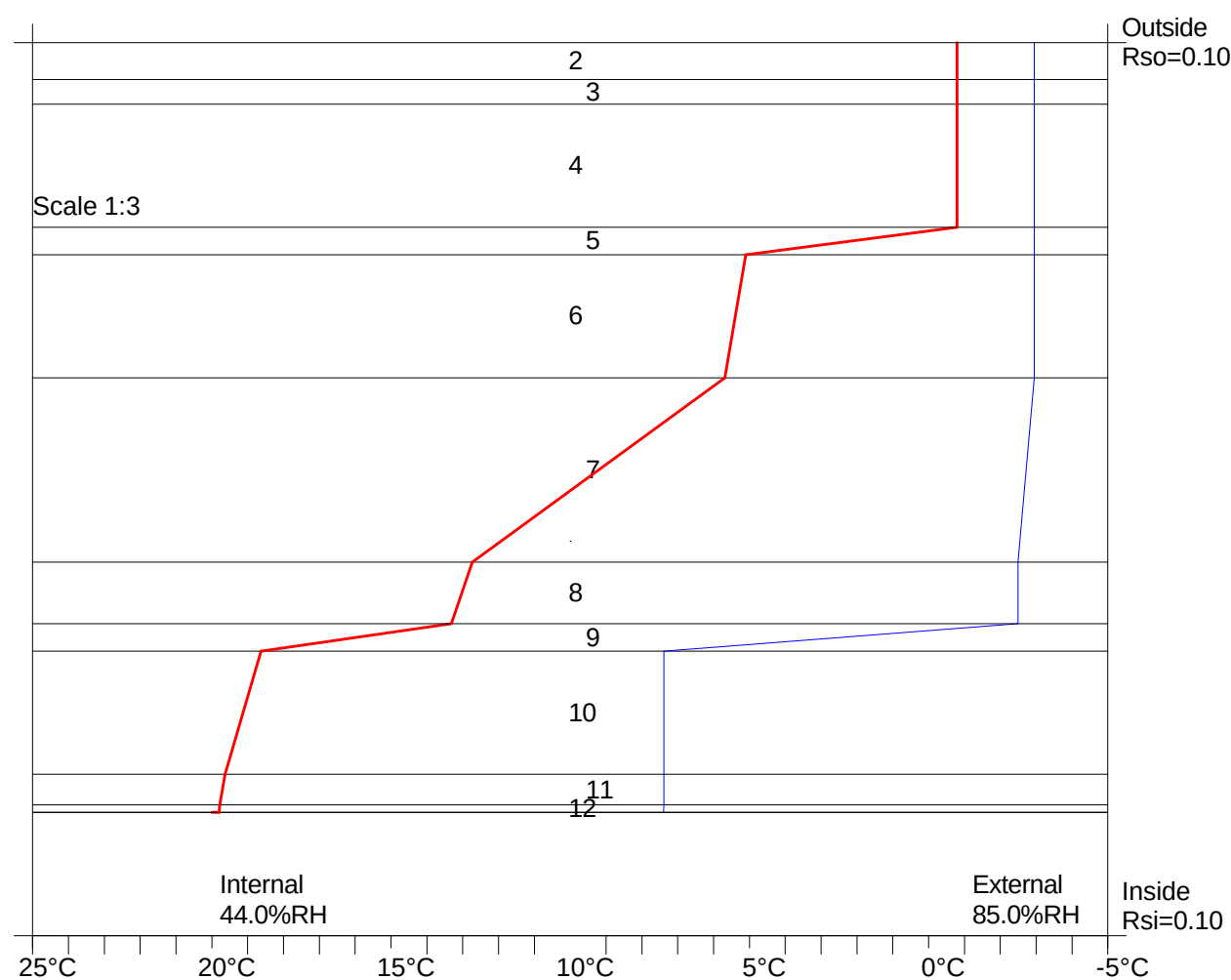
Condensation Risk Analysis (no account taken of thermal bridges)

3 - Dwellings with low occupancy

Jan (worst)	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec												
20.0C	44.0%	20.0C	45.0%	20.0C	49.0%	20.0C	54.0%	22.0C	59.0%	24.0C	63.0%	24.5C	64.0%	24.5C	64.0%	22.5C	60.0%	20.0C	55.0%	20.0C	50.0%	20.0C	46.0%
-1.0C	85.0%	0.0C	84.0%	4.0C	78.0%	9.0C	72.0%	14.0C	68.0%	18.0C	69.0%	19.0C	73.0%	19.0C	75.0%	15.0C	79.0%	10.0C	83.0%	5.0C	88.0%	1.0C	88.0%

	Interface Temp. °C	Dewpoint Temp. °C	Vapour Pressure (kPa)	Saturated V.P. (kPa)	Worst Cond. (g/m²)	Peak Buildup (g/m²)	Conden-sation
1 Outside surface resistance	-0.8	-2.9	0.48	0.57			No
2 Roof tiles	-0.8	-2.9	0.48	0.57			No
3 Tile Batten Cavity	-0.8	-2.9	0.48	0.57			No
4 Batten Cavity	-0.8	-2.9	0.48	0.57			No
5 SuperFOIL SF40BB	5.1	-2.9	0.48	0.88			No
6 Rafter Cavity	5.7	-2.9	0.48	0.91			No
7 Rigid Insulation Board	12.7	-2.5	0.50	1.47			No
8 Rafter Cavity	13.3	-2.5	0.50	1.53			No
9 SuperFOIL SF40	18.6	7.4	1.03	2.15			No
10 Batten Cavity	19.6	7.4	1.03	2.28			No
11 Plasterboard	19.8	7.4	1.03	2.30			No
12 Skim	19.8	7.4	1.03	2.31			No
13 Inside surface resistance							No

Worst case internal / external conditions for graph : 20.0°C @ 44.0%RH / -1.0°C @ 85.0%RH



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