



## In association with Gradient Flat Roofing

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### Project Information

Reference UCS17155AP  
Date 10 April 2025  
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Project Great Cliff  
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### Construction Type

Element : Flat roof - Roof 01 & 02 proposed - 0.16

Internal surface emissivity : High External surface emissivity : High

	Thickness (mm)	Thermal Conductivity (W/mK)	Thermal Resistance (m <sup>2</sup> K/W)	Pitch (°)	Bridge details Air gaps (Level, Delta U")
Outside surface resistance	-	-	0.040		
Langley Elastoflex GS capsheet	5.0	-	0.040		L:0 0.000W/m <sup>2</sup> K
Langley Adepar JSVV	2.2	-	0.040		L:0 0.000W/m <sup>2</sup> K
Langley Parafoam Ultra	140.0	0.024	5.833		L:0 0.000W/m <sup>2</sup> K
Langley Paravapo SBS	2.3	-	0.020		L:0 0.000W/m <sup>2</sup> K
Timber (existing)	18.0	0.170	0.106		
Inside surface resistance	-	-	0.100		

U-Value calculation for existing roof structure is indicative only. Thermal performance, moisture content and condition of existing materials cannot be guaranteed or accurately determined.

### U-value = 0.16W/m<sup>2</sup>K

U-value, Combined Method : 0.162W/m<sup>2</sup>K (upper/lower limit 6.179 / 6.179m<sup>2</sup>K/W, dUf 0.0000, dUg 0.0000, dUp0.0000, dUr0.0000, dUrc1 0.0000, dUrc2 0.0000)

### Correction factors

Air gaps, Delta Ug = 0.000W/m<sup>2</sup>K

	Thickness (mm)	Thermal Conductivity (W/mK)	Thermal Resistance (m²K/W)	Vapour Resistivity (MNs/gm)	Vapour Resistance (MNs/g)
Outside surface resistance	-	-	0.040	-	-
Langley Elastoflex GS capsheet	5.0	-	0.040	-	1000.00
Langley Adepar JSVV	2.2	-	0.040	-	1000.00
Langley Parafoam Ultra	140.0	0.024	5.833	-	15.00
Langley Paravapo SBS	2.3	-	0.020	-	5000.00
Timber (existing)	18.0	0.170	0.106	450.00	8.10
Inside surface resistance	-	-	0.100	-	-

This U-Value calculation is based on materials relevant to British Standards unless material data has been provided to us.  
Recticel Insulation takes no responsibility for the actual material values included.

Structure element : Flat roof  
 Condensation calculations performed in accordance with BS5250:2021

Condensation is occurring at the following layers interfaces:-  
 Interface 1 : Langley Adepar JSVV / Langley Parafoam Ultra

Month	Int (C°)	Int (%RH)	Ext (C°)	Ext (%RH)	Interface 1 Gc (Kg/m²)	Ma (Kg/m²)
Jan	20.00	69.30	-5.00	90.00	0.00063	0.00151
Feb	20.00	68.20	-5.00	86.50	0.00055	0.00207
Mar	20.00	67.10	3.70	84.00	0.00021	0.00227
Apr	20.00	66.00	6.00	81.00	0.00005	0.00232
May	20.00	67.30	9.30	81.00	-0.00011	0.00221
Jun	20.00	69.50	12.40	80.00	-0.00030	0.00191
Jul	20.00	72.70	14.50	80.50	-0.00043	0.00148
Aug	20.00	73.40	14.10	82.50	-0.00034	0.00114
Sep	20.00	72.10	11.80	85.50	-0.00013	0.00101
Oct	20.00	70.30	8.70	88.00	0.00006	0.00006
Nov	20.00	69.00	4.40	89.50	0.00038	0.00044
Dec	20.00	69.30	2.50	90.50	0.00045	0.00089

Gc = Monthly moisture accumulation per area at an interface

Ma = Accumulated moisture content per area at an interface

Peak accumulated moisture content per area at interface (Ma) = 0.00232 Kg/m²

Annual moisture accumulation = 0.00101 Kg/m²

## Condensation Risk Analysis (no account taken of thermal bridges)

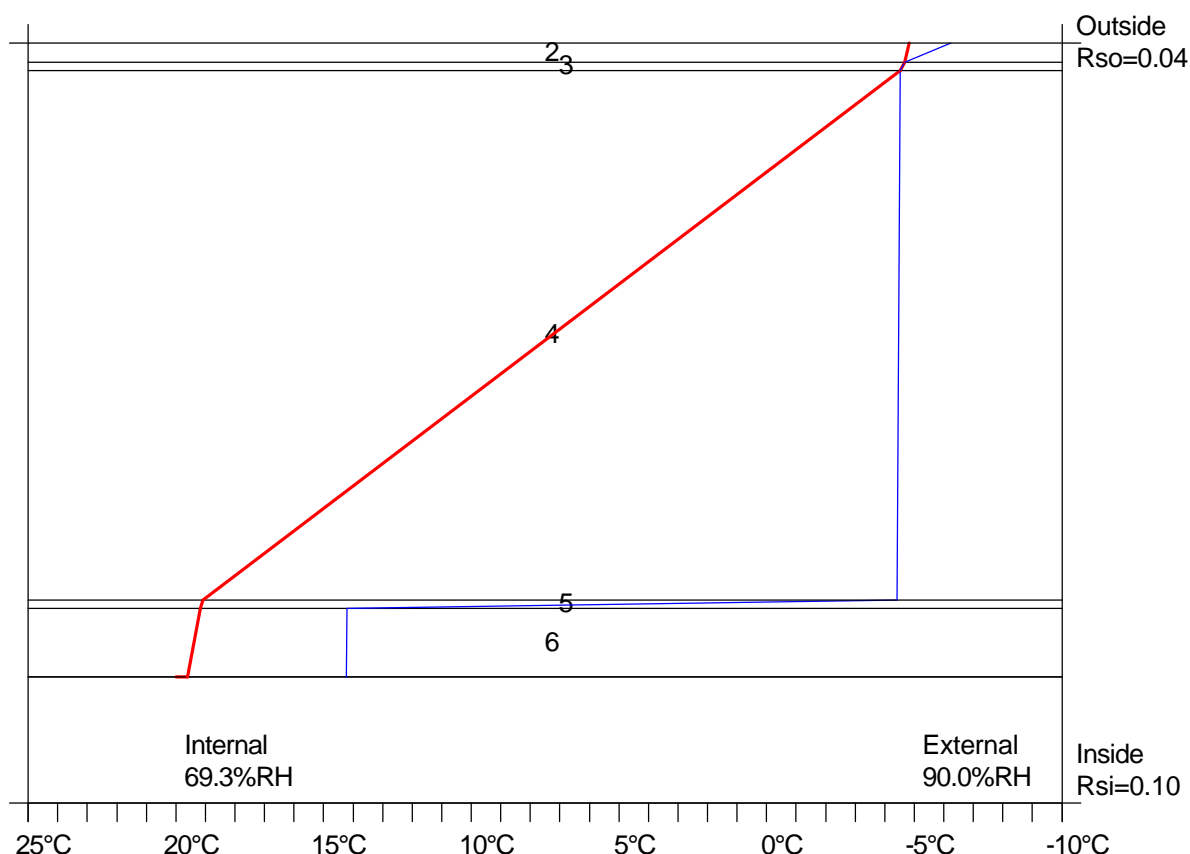
### 4 - Sports halls, kitchens, canteens, school classrooms, hospitals and buildings with unflued gas heaters

Jan (worst)	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
20.0C 69.3%	20.0C 68.2%	20.0C 67.1%	20.0C 66.0%	20.0C 67.3%	20.0C 69.5%	20.0C 72.7%	20.0C 73.4%	20.0C 72.1%	20.0C 70.3%	20.0C 69.0%	20.0C 69.3%
-5.0C 90.0%	-5.0C 86.5%	3.7C 84.0%	6.0C 81.0%	9.3C 81.0%	12.4C 80.0%	14.5C 80.5%	14.1C 82.5%	11.8C 85.5%	8.7C 88.0%	4.4C 89.5%	2.5C 90.5%

	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	-4.8	-6.2	0.36	0.41			No
2 Langley Elastoflex GS capsheet	-4.7	-4.7	0.41	0.41			No
3 Langley Adepar JSVV	-4.5	-4.5	0.42	0.42	0.6 in Jan	2 in Apr	Yes
4 Langley Parafoam Ultra	19.1	-4.4	0.42	2.21			No
5 Langley Paravapo SBS	19.2	14.2	1.62	2.22			No
6 Timber (existing)	19.6	14.2	1.62	2.28			No
7 Inside surface resistance							No

Worst case internal / external conditions for graph : 20.0°C @ 69.3%RH / -5.0°C @ 90.0%RH

Scale 1:2



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