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Calculation of interstitial condensation

by ICond Calculator version 2.03 - Printed on 10 Apr 2018 at 15:20

Element type: Roof - Structural insulated panel

Calculation Method: BS EN ISO 13788

194mm Flat Roof with Green Roof Covering and 50mm Thermaline

Construction Details

| Layer | d mm | λ W/m·K | rv MN·s/g·m | R layer m ² K/W | Rv layer MN·s/g | Description |
|-------|--------------------------------------|--------------------|----------------|-------------------------------|--------------------|---|
| | | | | 0.100 | | Rsi |
| 1 | 50 | 0.021 | 60.0 | 2.381 | 3.0 | Gyproc Thermaline Super |
| 2 | 22 | R-value | Rv-value | 0.530 | 0.050 | Air layer unventilated |
| 3 | | | Rv-value | | 689 | Protect VC Foil Ultra Insulating AVCL m |
| 4 | 11 | 0.130 | 50.0 | 0.085 | 0.55 | SIP - OSB |
| 5 | 172 | 0.030 | 7.00 | 5.733 | 1.2 | Lambdatherm |
| 6 | 11 | 0.130 | 50.0 | 0.085 | 0.55 | SIP - OSB |
| 7 | | | Rv-value | | 0.080 | Protect VP400 Plus LR |
| 8 | 50 | R-value | Rv-value | | ## | Air layer ventilated |
| 9 | 19 | 0.130 | 450 | | ## | Plywood sheathing |
| 10 | 25 | 0.110 | 250000 | | ## | Green Roof Covering |
| | | | | 0.100 # | | Rse |
| | <u>360 mm</u> (total roof thickness) | | | 9.014 | 694 | |

Boundary conditions Manchester (Manchester.hgt)

Return period 2 years (mean external temperature and RH)
Internal Humidity: BS 5250 Class 3

Results

No condensation

| Month | Internal T °C | Internal RH % | External T °C | External RH % | RH % at internal surface |
|-----------|------------------|------------------|------------------|------------------|-----------------------------|
| October | 20.0 | 62 | 10.6 | 83 | 62 |
| November | 20.0 | 59 | 6.4 | 85 | 60 |
| December | 20.0 | 58 | 4.6 | 86 | 59 |
| January | 20.0 | 57 | 3.9 | 85 | 58 |
| February | 20.0 | 56 | 3.9 | 82 | 57 |
| March | 20.0 | 56 | 5.7 | 79 | 57 |
| April | 20.0 | 55 | 8.0 | 75 | 55 |
| May | 20.0 | 57 | 11.3 | 73 | 57 |
| June | 20.0 | 62 | 14.2 | 75 | 62 |
| July | 20.0 | 65 | 15.8 | 75 | 65 |
| August | 20.0 | 66 | 15.7 | 77 | 66 |
| September | 20.0 | 64 | 13.5 | 80 | 64 |

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

