

## Calculation of interstitial condensation

by ICond Calculator version 2.00

Printed on 28 Mar 2019 at 15:33

Filename: 225mm Standard U Value SWIP IWI System.uva (File saved: 28 Mar 2019 15:24)

### Element type: Wall

Calculation Method: BS EN ISO 13788

### Example Wall System

#### Construction Details

| <u>Layer</u> | <u>d</u><br>mm                       | <u>λ</u><br>W/m·K | <u>rv</u><br>MN·s/g·m | <u>R layer</u><br>m <sup>2</sup> K/W | <u>Rv layer</u><br>MN·s/g | <u>Description</u>                       |
|--------------|--------------------------------------|-------------------|-----------------------|--------------------------------------|---------------------------|--|
|              |                                      |                   |                       | 0.130                                |                           | Rsi                                      |
| 1            | 12.5                                 | 0.210             | 60.0                  | 0.060                                | 0.75                      | Plasterboard (standard wallboard)        |
| 2            |                                      |                   | Rv-value              |                                      | 250                       | Vapour control layer                     |
| 3            | 15                                   | 0.032             | 5.00                  | 0.469                                | 0.075                     | SWIP(95mm)/15mm OSB(on SWIP)             |
| 4            | 80                                   | 0.032             | 5.00                  | 2.500                                | 0.40                      | SWIP(95mm)/SWIP                          |
| 5            | 13                                   | 0.570             | 40.0                  | 0.023                                | 0.52                      | Gypsum plaster (1300 kg/m <sup>3</sup> ) |
| 6            | 500                                  | 2.300             | 50.0                  | 0.217                                | 25                        | Stone                                    |
|              |                                      |                   |                       | <u>0.040</u>                         |                           | Rse                                      |
|              | <u>621 mm</u> (total wall thickness) |                   |                       | 3.438                                | <u>277</u>                |  |

#### Boundary conditions

London (Kew.hgt)

Return period 10 years (T -1°C, RH +4%)

Internal Humidity: BS 5250 Class 3

#### Results

No condensation

| <u>Month</u> | <u>Internal</u><br><u>T °C</u> | <u>Internal</u><br><u>RH %</u> | <u>External</u><br><u>T °C</u> | <u>External</u><br><u>RH %</u> | <u>RH % at</u><br><u>internal surface</u> |
|--------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|---|
| October      | 20.0                           | 60                             | 10.7                           | 82                             | 61  |
| November     | 20.0                           | 58                             | 6.5                            | 87                             | 60  |
| December     | 20.0                           | 58                             | 4.4                            | 89                             | 60  |
| January      | 20.0                           | 56                             | 3.6                            | 86                             | 58  |
| February     | 20.0                           | 55                             | 3.7                            | 83                             | 57  |
| March        | 20.0                           | 53                             | 5.8                            | 76                             | 55  |
| April        | 20.0                           | 50                             | 7.9                            | 68                             | 51  |
| May          | 20.0                           | 53                             | 11.3                           | 68                             | 54  |
| June         | 20.0                           | 57                             | 14.5                           | 69                             | 58  |
| July         | 20.0                           | 61                             | 16.6                           | 70                             | 61  |
| August       | 20.0                           | 63                             | 16.3                           | 73                             | 64  |
| September    | 20.0                           | 62                             | 13.9                           | 77                             | 63  |

#### Temperatures and dewpoints at interfaces

Interfaces (first line = temperature, second line = dewpoint)

| <u>Month</u> | <u>Int.Surf.</u> | <u>1-2</u> | <u>2-3</u> | <u>3-4</u> | <u>4-5</u> | <u>5-6</u> | <u>Ext.Surf.</u> |
|--------------|------------------|------------|------------|------------|------------|------------|------------------|
| October      | 19.65            | 19.49      | 19.49      | 18.22      | 11.46      | 11.40      | 10.81            |
|              | 12.00            | 11.99      | 8.20       | 8.20       | 8.20       | 8.19       | 7.76             |
| November     | 19.49            | 19.26      | 19.26      | 17.42      | 7.60       | 7.51       | 6.66             |
|              | 11.49            | 11.48      | 5.29       | 5.29       | 5.28       | 5.26       | 4.50             |
| December     | 19.41            | 19.14      | 19.14      | 17.01      | 5.67       | 5.57       | 4.58             |
|              | 11.49            | 11.47      | 3.80       | 3.80       | 3.78       | 3.76       | 2.75             |
| January      | 19.38            | 19.10      | 19.10      | 16.86      | 4.94       | 4.83       | 3.79             |
|              | 10.96            | 10.94      | 2.65       | 2.65       | 2.63       | 2.61       | 1.48             |

|           |       |       |       |       |       |       |       |
|-----------|-------|-------|-------|-------|-------|-------|-------|
| February  | 19.38 | 19.10 | 19.10 | 16.88 | 5.03  | 4.92  | 3.89  |
|           | 10.69 | 10.67 | 2.27  | 2.27  | 2.25  | 2.23  | 1.09  |
| March     | 19.46 | 19.22 | 19.22 | 17.28 | 6.96  | 6.86  | 5.97  |
|           | 10.14 | 10.12 | 2.88  | 2.88  | 2.86  | 2.85  | 1.91  |
| April     | 19.54 | 19.33 | 19.33 | 17.68 | 8.89  | 8.81  | 8.04  |
|           | 9.27  | 9.25  | 3.16  | 3.16  | 3.14  | 3.13  | 2.37  |
| May       | 19.67 | 19.52 | 19.52 | 18.33 | 12.01 | 11.95 | 11.40 |
|           | 10.14 | 10.13 | 6.10  | 6.10  | 6.09  | 6.08  | 5.62  |
| June      | 19.79 | 19.70 | 19.70 | 18.95 | 14.95 | 14.91 | 14.56 |
|           | 11.23 | 11.22 | 9.12  | 9.12  | 9.12  | 9.11  | 8.89  |
| July      | 19.87 | 19.81 | 19.81 | 19.35 | 16.88 | 16.85 | 16.64 |
|           | 12.25 | 12.25 | 11.22 | 11.22 | 11.22 | 11.22 | 11.11 |
| August    | 19.86 | 19.80 | 19.80 | 19.29 | 16.60 | 16.58 | 16.34 |
|           | 12.75 | 12.74 | 11.58 | 11.58 | 11.58 | 11.58 | 11.46 |
| September | 19.77 | 19.66 | 19.66 | 18.83 | 14.40 | 14.36 | 13.97 |
|           | 12.50 | 12.50 | 10.20 | 10.20 | 10.19 | 10.19 | 9.94  |

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