

**Generic Flat Roof**

Rev:

Job No:

:SK1002

Page:

0.00

Section: **X F-B0Wall 0.13 3f18t50c200i25c15p**

Prepared By:

GJW

Date:

18/04/2020

**GENERAL DATA**

Element type: **roof**  
 Direction of heat flow: **upwards**  
 Number of layers: **six**  
 Internal surface resistance  $R_{si} [m^2 K/W] = 0.10$   
 External surface resistance  $R_{se} [m^2 K/W] = 0.04$

**ROOF DATA**Roof type: **standard****CALCULATIONS**

N° of bridged layers / N° of thermal paths = 1 / 2  
 Upper limit of resistance  $R_{upper} [m^2 K/W] = 7.93$   
 Lower limit of resistance  $R_{lower} [m^2 K/W] = 7.30$   
 Total resistance of element  $R_T [m^2 K/W] = 7.62$   
 Basic U-value of element  $U_{basic} [W/m^2 K] = 0.13$   
 Correction for air voids  $\Delta U_g [W/m^2 K] = 0.000$   
 Correction for fasteners  $\Delta U_f [W/m^2 K] = 0.000$   
 Total corrections  $\Delta U_g + \Delta U_f [W/m^2 K] = < 3\%$   
 Total element thickness  $[mm] = 311$

**RESULTS**

Final U-value of element  $U_{final} [W/m^2 K] = 0.13$   
 Minimum mass of element  $[kg/m^2] = N/A$

| Internal surface, $R_{si} [m^2 K/W] = 0.10$ |                |  |                                      |
|---|----------------|--|--------------------------------------|
| Layer 1                                     | Material type: | <b>continuous material (loft)</b>  | Thickness $[mm] = 15$ Air: Fixings:  |
|   | Material:      | <b>plasterboard</b>  | Ther. conductivity $K = 0.250$       |
|   | N/A            |  | Thermal resistance $R = 0.060$       |
| Layer 2                                     | Material type: | <b>airspace</b>  | Thickness $[mm] = 25$ Air: Fixings:  |
|   | Material:      | <b>unventilated air layer ( &lt;=300mm)</b>  | Ther. conductivity $K =$             |
|   | N/A            |  | Thermal resistance $R = 0.163$       |
| Layer 3 *                                   | Material type: | <b>timber rafters with insulation between</b>  | Thickness $[mm] = 200$ Air: Fixings: |
|   | Manufacturer:  | <b>TYPE: Kingspan products</b>   | Ther. conductivity $K = 0.020$       |
|   | Product:       | <b>Kooltherm K12 framing board (foil faced) { &gt;=45mm}</b>                             | Thermal resistance $R = 10.000$      |
|   | Bridging:      | K of timber = 0.13 Fractional area: 0.10 Rafter spacing $[mm] = 400$ & width $[mm] = 38$ |                                      |
| Layer 4                                     | Material type: | <b>airspace</b>  | Thickness $[mm] = 50$ Air: Fixings:  |
|   | Material:      | <b>slightly ventilated air layer ( &lt;=300mm)</b>                                       | Ther. conductivity $K =$             |
|   | N/A            |  | Thermal resistance $R = 0.082$       |
| Layer 5                                     | Material type: | <b>continuous material (loft)</b>  | Thickness $[mm] = 18$ Air: Fixings:  |
|   | Material:      | <b>plywood</b>   | Ther. conductivity $K = 0.130$       |
|   | N/A            |  | Thermal resistance $R = 0.138$       |
| Layer 6                                     | Material type: | <b>continuous material (loft)</b>  | Thickness $[mm] = 3$ Air: Fixings:   |
|   | Material:      | <b>mineral felt</b>  | Ther. conductivity $K =$             |
|   | N/A            |  | Thermal resistance $R = 0.150$       |
| External surface, $R_{se} [m^2 K/W] = 0.04$ |                |  |                                      |

\* - indicates bridged layer.