



## Generic Pitched Roof

Rev:

Job No:

:SK1003

Page:

0.00

Section: X P-B-Roof 0.13 15t1s50c240i25c15p

Prepared By:

GJW

Date:

31/07/2020

### 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  $R_{upper} [m^2 K/W] = 7.98$   
 Lower limit of resistance  $R_{lower} [m^2 K/W] = 7.56$   
 Total resistance of element  $R_T [m^2 K/W] = 7.77$   
 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  $[mm] = 346$

### 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:	continuous material (loft)			Thickness $[mm] =$	15	Air:	Fixings:
	Material:	Gyprok SoundBlock (12.5mm)			Ther. conductivity K =	0.250		
	N/A				Thermal resistance R =	0.060		
Layer 2	Material type:	airspace			Thickness $[mm] =$	25	Air:	Fixings:
	Material:	unventilated air layer ( <=300mm)			Ther. conductivity K =			
	N/A				Thermal resistance R =	0.163		
Layer 3*	Material type:	timber rafters with insulation between			Thickness $[mm] =$	240	Air:	Fixings:
	Manufacturer:	TYPE: Kingspan products			Ther. conductivity K =	0.021		
	Product:	Kooltherm K11 roof board ( >=45mm)			Thermal resistance R =	11.429		
	Bridging:	K of timber =	0.13	Fractional area:	0.12	Rafter spacing $[mm] =$	400	& width $[mm] =$
Layer 4	Material type:	airspace			Thickness $[mm] =$	50	Air:	Fixings:
	Material:	slightly ventilated air layer ( <=300mm)			Ther. conductivity K =			
	N/A				Thermal resistance R =	0.082		
Layer 5	Material type:	continuous material (loft)			Thickness $[mm] =$	1	Air:	Fixings:
	Material:	breather paper			Ther. conductivity K =			
	N/A				Thermal resistance R =	0.001		
Layer 6	Material type:	continuous material (loft)			Thickness $[mm] =$	15	Air:	Fixings:
	Material:	plain tiles (concrete)			Ther. conductivity K =	1.500		
	N/A				Thermal resistance R =	0.010		
* - indicates bridged layer.								
External surface, $R_{se} [m^2 K/W] = 0.04$								

\* - indicates bridged layer.