



Generic Pitched Roof

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Section: X P-B-Roof 0.20 15t1s50c150i25c15p

Prepared By:

GJW

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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 $R_{upper} [m^2 K/W] = 5.29$
 Lower limit of resistance $R_{lower} [m^2 K/W] = 4.89$
 Total resistance of element $R_T [m^2 K/W] = 5.09$
 Basic U-value of element $U_{basic} [W/m^2 K] = 0.20$
 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 $[mm] = 256$

RESULTS

Final U-value of element $U_{final} [W/m^2 K] = 0.20$ 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 $[mm] =$	150	Air:	Fixings:
	Manufacturer:	TYPE: Kingspan products			Ther. conductivity K =	0.021		
	Product:	Kooltherm K11 roof board (>=45mm)			Thermal resistance R =	7.143		
	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.