

Generic Roof - each column represents a possible roof layer										U-values		Residential Construction ADoc L1A & L2B		
<<< Overall Thickness of the External Roof >>>										W/m2degC		Roof U-value		
<<< Line of water proof membrane												thickness Calculation		
Above	50	38	100						60	40	13	0.13	301 C P-AB-Roof 0.13 38c100i60i40c13p 450c-c.pdf	
	50	36	150								13	0.13	424 Q P-A-Roof 0.13 150i175c13p 400c-c.pdf	
	50	38	100								13	0.18	351 C P-A-Roof 0.18 38c100i150c13p	
	50	25	110	18	150						15	0.2	368	
Under	50				175				175	25	15	0.13	440	
	50				175				120	25	15	0.18	385	
	50				175				110	25	15	0.20	375	
Between & Under	50			25	80				80	25	13	0.13	273 C P-BU-Roof 0.13 25c80i80i25c13p 450c-c.pdf	
	50			38	100				70		13	0.13	271 K P-BU-Roof 0.13 38c100i70i13p 400c-c.pdf	
	50			50	75				50	25		0.18	0	
	50			25	50				50	25	13	0.2	250	
external surface	finish	counter battens	insulation	deck/board	cavity* (ventilated)	insulation or beam	existing finish or deck	internal insulation	service void**	internal finish	internal surface			213 C P-BU-Roof 0.20 25c50i50i25c13p 400c-c.pdf
	15			50	240				25	15		0.13	345 X P-B-Roof 0.13 15t1s50c240i25c15p.pdf	
Between	15			50	150				25	15		0.2	255 X P-B-Roof 0.20 15t1s50c150i25c15p.pdf	
												0.00		

Notes
 *If well ventilated then external layer disregarded - 50mm is normal
 ** 25mm service void recommended for electrics & plumbing
 *** Condensation risk (see *** below) :- thus ensure double vapour barriers are used

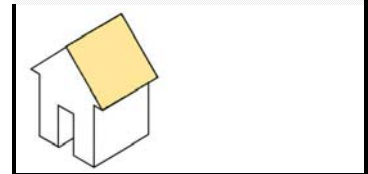
Calculation Sources

- Celotex <https://www.celotex.co.uk/member/dashboard>
- Kingspan <https://www.uvalue-calculator.co.uk/calculator/>
- Quinn <https://uvaluecalculator.quinn-buildingproducts.com/>
- YourSpreadsheets <https://www.yourspreadsheets.co.uk/u-value-calculator-to-bs-en-iso-6946.html>
- REF: <https://www.homebuilding.co.uk/insulating-roofs/>
- *** <https://www.energuide.be/en/questions-answers/can-a-flat-roof-be-insulated-from-inside-from-the-ceiling-of-the-area-below/101>

Summary
 - 170mm insulation gives 0.13 U-value ____
 - 150mm insulation gives 0.18 U-value ____
 - 100mm insulation gives 0.20 U-value ____
 - 50% more insulation for between rafters only

Not recommend to have all insulation between joists
 345 X P-B-Roof 0.13 15t1s50c240i25c15p.pdf
 255 X P-B-Roof 0.20 15t1s50c150i25c15p.pdf

Pitched Roof - Thermal Insul'n 4 Homeowners



See foot note for pdf File Names/Codes etc...

Table 4 Summary of concurrent notional dwelling specification

Element or system	Values
Opening areas (windows and doors)	Same as actual dwelling up to a maximum proportion of 25% of total floor area ¹
External walls (including opaque elements of curtain walls)	0.18 W/(m ² ·K)
Party walls	0.0 W/(m ² ·K)
Floor	0.13 W/(m ² ·K)
Roof	0.13 W/(m ² ·K)
Windows, roof windows, glazed roof-lights and glazed doors	1.4 W/(m ² ·K) (whole window U-value) ² g-value = 0.63 ³
Opaque doors	1.0 W/(m ² ·K)
Semi-glazed doors	1.2 W/(m ² ·K)
Airtightness	5.0 m ³ /(h·m ³)
Linear thermal transmittance	Standardised psi values – see SAP 2012 Appendix R, except use of y = 0.05 W/(m ² ·K) if the default value of y = 0.15 W/(m ² ·K) is used in the actual dwelling
Ventilation type	Natural (with extract fans) ⁴
Air-conditioning	None

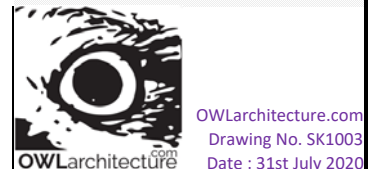
<< From Approved Document L1A

<< 0.18 or lower - Walls

<< 0.13 or lower - Floors

<< 0.13 or lower - Roofs

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Footnote for pdf filenames - PREFIX: C is Celotex Calculation, K is Kingspan Calc, Q is Quinn Calc, X is Generic Calc, Z is Belt & Braces Calculator

2nd Letter: C is Cavity Wall, D is Dormer Wall, S is Solid Wall, P is a SIPs Wall (Structural Insulated Panel normally 142 mm)

2nd Letter: F is Flat roof, P is Pitched roof insulation at rafters, L is Pitched roof insulation at ceiling joists/Loft

3rd/4th Letter: A is insulation above, B is insulation between eg. rafters, joist and concrete layers etc..., U is insulation under

Thickness of elements in numbers followed by:

(a) is cavity (may be including space between joists etc...), (b) is brick/block, (c) is concrete, (f) is finish, (i) is insulation, (m) is stone masonry, (p) is plaster, (s) is screed, (t) is timber or board, (c-c) is centre to centre

PA is Perimeter/Area ratio