Generic Roof - each column represents a possible roof layer

Recommended Minimal U-values W/m2degC | Loft thickness mm | Residential Construction ADoc L1A & L2B U-value Calculation Reference & File Name (Timber Roofs)

<<< Overall Thickness of the External Roof >>>

<< Line of water proof membrane

	external surface	finish	battens	sarking	rafters	loft (ventilated)	insulation or beam	ceiling joists	internal insulation	service void**	internal finish	internal surface			
Above		15	25			>300	150	100			13		0.09	263	C L-BA-Roof 0.16 100i150i.pdf
		15	25			>300	100	100			13		0.12	213	C L-BA-Roof 0.16 100i100i.pdf
		15	25			>300	200	20			13		0.16	233	C L-BA-Roof 0.16 20i200i.pdf (200i = 1/2 R)
		15	25			>300	150	20			15		0.12	185	C L-BA-Roof 0.12 20i150i.pdf
		15	25			>300	100	20			15		0.16	135	C L-BA-Roof 0.16 20i100i.pdf
Under		15	25			>300			200	25	15			240	Not a practical solution
		15	25			>300			150	25	15			190	Not a practical solution
		15	25			>300			100	25	15			140	Not a practical solution
Between & Under		15	25			>300								0	
		15	25			>300								0	
		15	25			>300								0	
		15	25			>300		100	50	25	15		0.16	190	C L-BU-Roof 0.16 100i50i.pdf
		15	25			>300		75	75	25	15		0.15	190	C L-BU-Roof 0.15 75i75i.pdf
		15	25			>300		100	75	25	15		0.13	215	C L-BU-Roof 0.13 100i75i.pdf

<< 2nd Vapour B. << Line of Vapour Barrier

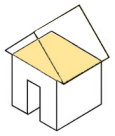
Not recommend to have all insulation between joists

Between		15	25			>300		200		25	15		0.17	240	C L-BU-Roof 0.17 200i.pdf
		15	25			>300		100		25	15		0.30	140	C L-BU-Roof 0.30 100i.pdf

<< 2nd Vapour Ba << Line of Vapour Barrier

----------Summary----------
- 250mm insulation gives 0.09 U-value ____
200mm insulation gives 0.12 U-value ____
175mm insulation gives 0.15 U-value ____
150mm insulation gives 0.16 U-value ____
100mm insulation gives 0.30 U-value

Loft Roof - Thermal Insulation 4 Homeowners



Notes

** 25mm service void recommended for electrics & plumbing

Calculation Sources

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

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

Table 4 Summary of concurrent notional dwelling specification

<< From Approved Document L1A

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/(m²·K)	<< 0.18 or lower - Walls
Party walls	0.0 W/(m²·K)	
Floor	0.13 W/(m²·K)	<< 0.13 or lower - Floors
Roof	0.13 W/(m²·K)	<< 0.13 or lower - Roofs
Windows, roof windows, glazed roof-lights and glazed doors	1.4 W/(m²·K) (whole window U-value)[2]	
	g-value = 0.63[3]	
Opaque doors	1.0 W/(m²·K)	
Semi-glazed doors	1.2 W/(m²·K)	
Airtightness	5.0 m³/(h·m²)	
Linear thermal transmittance	Standardised psi values – see SAP 2012 Appendix R, except use of y = 0.05 W/(m²·K) if the default value of y = 0.15 W/(m²·K) is used in the actual dwelling	
Ventilation type	Natural (with extract fans)[4]	
Air-conditioning	None	

Loft Roof - Thermal Insulation 4 Homeowners

OWLarchitecture.com
Drawing No. SK1004
Date : 22nd Feb 2021

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 Calculation
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/4the 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 incuding space betwen 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