



PART L SOLUTIONS

U-VALUE TABLES

U-VALUE TABLES

WALLS SOLUTIONS

SUMMARY OF BLOCK TYPES USED IN THE TABLES			
BLOCK	THICKNESS		LAMBDA VALUE
A	100m Block	@	0.11 W/mK
B	100m Block	@	0.15 W/mK
C	100m Block	@	0.51 W/mK
D	100m Block	@	1.13 W/mK

The tables below provide a quick and easy reference guide to the thickness of insulation required to meet the stated U-values for walls.

All the solutions offered in this section are calculated using U-value calculation BS EN ISO 6946: 1997; are based on using butt edged insulation and are applicable for use with either stainless steel or galvanised wall ties.

Full Fill Cavity

(102.5mm Facing brick outer skin, Insulation, 100mm Internal block, 12.5mm Plasterboard on dabs, Plaster skim)

MANUFACTURER	PRODUCT	LAMBDA λ	U-Value 0.35				U-Value 0.30				U-Value 0.27				U-Value 0.25			
			BLOCK TYPE				BLOCK TYPE				BLOCK TYPE				BLOCK TYPE			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
			THICKNESS IN MM				THICKNESS IN MM				THICKNESS IN MM				THICKNESS IN MM			
ISOVER	HI-CAV	0.033	60	75	75	85	75	85	100	100	100	100	-	-	100	-	-	-
KNAUF INSULATION	CROWN DRITHERM PLUS CAVITY SLAB	0.036	-	-	-	85	75	85	-	100	-	100	-	-	100	-	-	-
	CROWN DRITHERM CAVITY SLAB	0.037	65	65	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	CROWN DRITHERM CAVITY SLAB 34	0.034	-	-	75	-	-	-	-	-	85	-	-	-	-	100	115	115
	CROWN DRITHERM CAVITY SLAB 32	0.032	-	-	-	-	-	-	85	-	-	-	100	100	-	-	-	-
ROCKWOOL	CAVITY WALL BATT	0.037	65	75	80	85	80	85	100	105	95	100	115	115	105	110	-	-
VENCEL RESIL	JABFILL	0.038	75	75	100	100	100	100	-	-	100	100	-	-	-	100	-	-

Using a plaster finish to the internal wall, instead of a plasterboard finish as given in the examples above, will cause a slight increase in the insulation thickness required.

U-VALUE TABLES

WALLS SOLUTIONS - CONTINUED

Partial Fill Cavity

(102.5mm Facing brick outer skin, 50mm Residual cavity, Insulation, 100mm Internal block, 12.5mm Plasterboard on dabs, Plaster skim)

MANUFACTURER	PRODUCT	LAMBDA λ	U-Value 0.35				U-Value 0.30				U-Value 0.27				U-Value 0.25			
			BLOCK TYPE				BLOCK TYPE				BLOCK TYPE				BLOCK TYPE			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
			THICKNESS IN MM				THICKNESS IN MM				THICKNESS IN MM				THICKNESS IN MM			
ISOVER	HI-CAV	0.031	35	40	65	65	50	70	-	-	75	-	-	-	-	-	-	-
CELOTEX	TUFF-R™ CW3000	0.023	30	30	40	45	40	45	50	55	45	50	60	60	55	60	65	70
DOW	WALLMATE CW-X	0.029	50	50	60	70	60	70	80	80	70	80	90	90	80	80	100	100
KINGSPAN	THERMAWALL TW50	0.023	25	25	35	40	35	40	50	50	45	45	60	60	50	60	65	70
KINGSPAN	KOOLTHERM K8 CAVITY BOARD	0.023 - 0.021	25	30	35	40	35	40	45	45	40	45	50	60	45	50	60	65
KNAUF INSULATION	CROWN DRITHERM CAVITY SLAB	0.037	-	65	75	-	-	-	-	-	-	-	-	-	-	-	-	115
	CROWN DRITHERM PLUS CAVITY SLAB	0.036	-	-	-	75	75	75	-	-	85	-	-	-	100	100	-	-
	CROWN DRITHERM CAVITY SLAB 34	0.034	50	-	-	-	-	-	85	-	-	85	100	100	-	-	-	-
	CROWN DRITHERM CAVITY SLAB 32	0.032	-	-	-	-	-	-	-	85	-	-	-	-	-	100	-	-
ROCKWOOL	HP PARTIAL FILL	0.034	-	-	-	-	70	75	85	-	80	85	100	-	90	95	-	-
VENCEL RESIL	JABWALL 70	0.038	55	60	75	80	75	80	95	100	90	95	110	115	105	110	125	125

Using a plaster finish to the internal wall, instead of a plasterboard finish as given in the examples above, will cause a slight increase in the insulation thickness required.

U-VALUE TABLES

WALLS SOLUTIONS - CONTINUED

Timber Frame

90mm Timber Stud @ 600 centres

(Brick outer leaf, Cavity, Breather membrane, Sheathing board, Insulation, Vapour barrier, 12.5mm Plasterboard)

MANUFACTURER	PRODUCT	LAMBDA λ	CONSTRUCTION	U-Value			
				0.35	0.30	0.27	0.25
				THICKNESS IN MM			
ISOVER	FRAME ROLL 032/ BATT 032	0.032	BETWEEN STUD	*1 90	-	-	-
CELOTEX	TUFF-R™ GA3000	0.023 0.023	BETWEEN STUD IN FRONT OF STUD	65 -	70 + 12	90 + 12	90 + 20
KINGSPAN	THERMAWALL TW55	0.023	BETWEEN STUD IN FRONT OF STUD	60 -	40 + 20	60 + 20	60 + 25

Calculations allow for 15% timber bridging detail

*1 0.32 U-Value is achieved if the breather membrane used is Tyvek Reflex or equivalent.

Timber Frame

140mm Timber Stud @ 600 centres

(Brick outer leaf, Cavity, Breather membrane, Sheathing board, Insulation, Vapour barrier, 12.5mm Plasterboard)

MANUFACTURER	PRODUCT	LAMBDA λ	U-Value			
			0.35	0.30	0.27	0.25
			THICKNESS IN MM			
ISOVER	FRAME BATT HP 032	0.032	90	-	*1 140	*2 140
	FRAME BATT 040	0.040	-	140	-	-
	FRAME ROLL 034/BATT 034	0.034	-	-	140	*5 140
KNAUF INSULATION	CROWN TIMBER ROLL	0.032	90	-	140	-
	CROWN TIMBER SLAB	0.032	90	-	-	-
	CROWN FRAMETHERM ROLL 40	0.040	-	140	-	-
	CROWN FRAMETHERM ROLL 35	0.035	-	-	-	140
ROCKWOOL	FLEXI	0.038	120	140	*3 150	*4 150

Calculations allow for 15% timber bridging detail

*1 Isover Frame Batt HP 032 (90mm & 50mm)

*2 0.24 U-value is achieved if the breather membrane used is Tyvek Reflex or equivalent.

*3 0.27 U-Value is achieved if 2 layers of plasterboard are used with a 150mm stud.

*4 0.25 U-Value is achieved if the breather membrane used is Tyvek Reflex or equivalent with a 150mm stud.

*5 0.25 U-Value is achieved if the breather membrane used is Tyvek Reflex or equivalent.

U-VALUE TABLES

WALLS SOLUTIONS - CONTINUED

Timber Frame

90mm Timber Stud @ 600 centres

(Brick outer leaf, Cavity (unventilated), Breather membrane, Sheathing board, Insulation, Vapour barrier, Laminate board)

			U-Value			
			0.35	0.30	0.27	0.25
MANUFACTURER	PRODUCT	LAMBDA λ	THICKNESS IN MM			
KNAUF INSULATION	CROWN FRAMETHERM SLAB 38	0.038	-	90 + (25.5 - PL)	-	90 + (45.5 - PL)
	CROWN TIMBER ROLL	0.032	-	-	90 + (30.5 - PL)	-
	CROWN TIMBER SLAB	0.032	-	-	90 + (30.5 - PL)	-

Calculations allow for 15% timber bridging detail

PL = The insulation is used in conjunction with a Polyfoam Linerboard (thickness shown in brackets) to achieve the given U-values.

Clear Cavity - Dry Lining Solution

102mm Brick, 50mm Clear Cavity, 100mm Block, Thermal Laminate

			U-Value 0.35			
MANUFACTURER	PRODUCT	LAMBDA λ	BLOCK TYPE THICKNESS IN MM (Incl. 9.5mm plasterboard)			
			A	B	C	D
BRITISH GYPSUM	GYPROC THERMALINE SUPER	0.022-0.023	50	50	60	60
BRITISH GYPSUM	GYPROC THERMALINE PLUS	0.030	55	-	-	-
KNAUF DRYWALL	PHENOLIC LAMINATE	0.018-0.022	50	50	60	60
KNAUF DRYWALL	THERMAL LAMINATE PLUS	0.030	55	-	-	-
LAFARGE PLASTERBOARD	THERMALCHECK K	0.023-0.024	50	50	-	-
LAFARGE PLASTERBOARD	THERMALCHECK XP	0.030	55	-	-	-

			U-Value 0.30			
MANUFACTURER	PRODUCT	LAMBDA λ	BLOCK TYPE THICKNESS IN MM (Incl. 9.5mm plasterboard)			
			A	B	C	D
BRITISH GYPSUM	GYPROC THERMALINE SUPER	0.023	60	60	-	-
KNAUF DRYWALL	PHENOLIC LAMINATE	0.022	60	60	-	-

			U-Value 0.27			
MANUFACTURER	PRODUCT	LAMBDA λ	BLOCK TYPE THICKNESS IN MM (Incl. 9.5mm plasterboard)			
			A	B	C	D
BRITISH GYPSUM	GYPROC THERMALINE SUPER	0.024	65	-	-	-
KNAUF DRYWALL	PHENOLIC LAMINATE	0.022	65	-	-	-

U-VALUE TABLES

FLOORS SOLUTIONS - Solid Ground

U-Value 0.25

The tables below provide a quick and easy reference guide to the thickness of insulation required to meet the stated U-values for floors.

Construction

(100mm Concrete slab, Insulation, Membrane (any), 65mm Screed)

Using the charts: The U-value for floors can be calculated using a perimeter to area ratio (P:A). To determine the thickness of insulation required, read up for length and across for width of the floor (ie using the chart below 5 x 4 floor = 65mm).

CELOTEX TUFF-R™ GA3000 KINGSPAN THERMAFLOOR TF70/THERMAPITCH TP10

0.023 LAMBDA λ

THICKNESS IN MM

WIDTH (metres)	15	75	70	65	60	55	50	50	45	45	40	40	40	35	35	35
	14	75	70	65	60	55	50	50	45	45	40	40	40	35	35	35
	13	75	70	65	60	55	50	50	45	45	45	40	40	40	40	35
	12	75	70	65	60	55	55	50	50	45	45	45	40	40	40	40
	11	75	70	65	60	55	55	50	50	50	45	45	45	40	40	40
	10	75	70	65	60	55	55	50	50	50	45	45	45	45	40	40
	9	75	70	65	60	60	55	55	50	50	50	50	45	45	45	45
	8	75	70	65	60	60	55	55	50	50	50	50	50	45	45	45
	7	75	70	65	65	60	60	55	55	55	50	50	50	50	50	50
	6	75	70	65	65	60	60	60	55	55	55	55	55	50	50	50
	5	75	70	65	65	65	60	60	60	60	55	55	55	55	55	55
	4	75	70	70	65	65	65	65	60	60	60	60	60	60	60	60
	3	75	70	70	70	65	65	65	65	65	65	65	65	65	65	65
	2	75	75	70	70	70	70	70	70	70	70	70	70	70	70	70
	1	75	75	75	75	75	75	75	75	75	75	75	75	75	75	70
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

LENGTH (metres)

DOW FLOORMATE 200-X/500-X/STYROFOAM SP-X KNAUF INSULATION - POLYFOAM FLOORBOARD STANDARD

0.029 LAMBDA λ

THICKNESS IN MM

WIDTH (metres)	15	95	85	80	75	70	65	60	60	55	50	50	50	45	45	40
	14	95	85	80	75	70	65	60	60	55	55	50	50	45	45	45
	13	95	85	80	75	70	65	65	60	55	55	55	50	50	45	45
	12	95	85	80	75	70	65	65	60	60	55	55	50	50	50	50
	11	95	85	80	75	70	65	65	60	60	60	55	55	55	50	50
	10	95	85	80	75	70	70	65	65	60	60	60	55	55	55	50
	9	95	85	80	95	75	70	65	65	60	60	60	60	55	55	55
	8	95	85	80	80	75	70	70	65	65	65	60	60	60	60	60
	7	95	85	85	80	75	75	70	70	65	65	65	65	65	60	60
	6	95	85	85	80	75	75	75	70	70	70	65	65	65	65	65
	5	95	90	85	80	80	75	75	75	75	70	70	70	70	70	70
	4	95	90	85	85	80	80	80	80	75	75	75	75	75	75	75
	3	95	90	90	85	85	85	85	80	80	80	80	80	80	80	80
	2	95	90	90	90	90	85	85	85	85	85	85	85	85	85	85
	1	95	95	95	95	95	95	95	85	85	95	95	95	95	95	95
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

LENGTH (metres)

U-VALUE TABLES

FLOORS SOLUTIONS - Solid Ground - CONTINUED

U-Value 0.25

Construction

(100mm Concrete slab, Insulation, Membrane (any), 65mm Screed)

Using the charts: The U-value for floors can be calculated using a perimeter to area ratio (P:A).

To determine the thickness of insulation required, read up for length and across for width of the floor.

KNAUF INSULATION POLYFOAM FLOORBOARD EXTRA

(Formerly Polyfoam Plus Floorboard 350)

Thickness (mm)	Lambda λ
25-35-50	0.029
65-75	0.031
100	0.034

All highlighted figures = a double layer of insulation

75 = 50mm + 25mm or 100mm (single layer)

85 = 50mm + 35mm or 100mm (single layer)

100 = 75mm + 25mm or 2 layers of 50mm

Due to varying Lambda values between the differing thickness of insulation boards, a double layer of insulation may be used to achieve specific U-values

KNAUF INSULATION POLYFOAM FLOORBOARD SUPER

(Formerly Polyfoam Plus Floorboard 500)

Thickness (mm)	Lambda λ
50	0.029
75	0.031
100	0.034

THICKNESS IN MM

WIDTH (metres)	THICKNESS IN MM														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
15	100	100	85	75	75	65	65	65	65	50	50	50	50	50	50
14	100	100	85	75	75	75	65	65	65	65	50	50	50	50	50
13	100	100	85	75	75	75	65	65	65	65	50	50	50	50	50
12	100	100	85	75	75	75	65	65	65	65	65	50	50	50	50
11	100	100	85	75	75	75	65	65	65	65	65	65	50	50	50
10	100	100	85	75	75	75	75	65	65	65	65	65	65	65	50
9	100	100	85	75	75	75	75	75	65	65	65	65	65	65	65
8	100	100	85	75	75	75	75	75	75	65	65	65	65	65	65
7	100	100	85	85	75	75	75	75	75	75	65	65	65	65	65
6	100	100	85	85	75	75	75	75	75	75	75	75	75	75	65
5	100	100	100	85	75	75	75	75	75	75	75	75	75	75	75
4	100	100	100	85	85	85	85	85	75	75	75	75	75	75	75
3	100	100	100	100	100	85	85	85	85	85	85	85	85	85	85
2	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
1	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

LENGTH (metres)

U-VALUE TABLES

FLOORS SOLUTIONS - Solid Ground - CONTINUED

U-Value 0.25

Construction

(100mm Concrete Slab, Insulation, Membrane (any), 65mm Screed)

Using the charts: The U-value for floors can be calculated using a perimeter to area ratio (P:A).

To determine the thickness of insulation required, read up for length and across for width of the floor.

DOW FLOORMATE 700-A
VENCEL RESIL JABFLOOR 1000.036 LAMBDA λ

THICKNESS IN MM

15	115	105	100	90	85	80	70	65	65	60	60	55	55	50	50
14	115	105	100	90	85	80	70	70	65	60	60	55	55	50	50
13	115	105	100	90	85	80	75	70	65	65	60	60	60	55	55
12	115	105	100	90	85	80	75	70	70	65	65	60	60	55	55
11	115	105	100	95	85	80	75	70	70	65	65	65	60	60	60
10	115	105	100	95	90	80	75	75	70	70	65	65	65	60	60
9	115	105	100	95	90	80	80	75	75	70	70	70	65	65	65
8	115	105	100	95	90	80	80	75	75	75	70	70	70	70	65
7	115	110	100	95	95	85	80	80	80	75	75	75	75	70	70
6	115	110	100	100	95	90	85	80	80	80	80	80	80	80	80
5	115	110	100	100	100	95	95	90	90	90	85	85	85	85	85
4	115	110	105	100	100	100	95	95	95	95	95	90	90	90	90
3	115	110	110	105	100	100	100	100	100	100	100	100	100	100	100
2	115	115	110	110	110	110	110	105	105	105	105	105	105	105	105
1	120	115	115	115	115	115	115	115	115	115	115	115	115	115	115
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

LENGTH (metres)

VENCEL RESIL JABFLOOR 70
ROCKWOOL ROCKFLOOR0.038 LAMBDA λ

THICKNESS IN MM

15	120	110	105	95	90	85	80	75	70	70	65	60	60	55	55
14	120	110	105	95	90	85	80	75	75	70	65	65	60	60	55
13	120	110	105	95	90	85	80	75	75	70	70	65	65	60	60
12	120	110	105	95	90	85	80	80	75	75	70	70	65	65	60
11	120	110	105	95	90	85	85	80	80	75	75	70	70	65	65
10	120	110	105	100	95	90	85	80	80	75	75	75	70	70	70
9	120	110	105	100	95	90	85	85	80	80	80	75	75	75	70
8	120	115	105	100	95	90	90	85	85	80	80	80	75	75	75
7	120	115	110	105	100	95	90	90	85	85	85	80	80	80	80
6	120	115	110	105	100	95	95	90	90	90	85	85	85	85	85
5	120	115	110	105	105	100	100	95	95	95	90	90	90	90	90
4	125	115	110	110	105	105	105	100	100	100	95	95	95	95	95
3	125	120	115	110	110	110	110	105	105	105	105	105	105	105	105
2	125	120	120	115	115	115	115	115	110	110	110	110	110	110	110
1	125	125	125	125	120	120	120	120	120	120	120	120	120	120	120
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

LENGTH (metres)

U-VALUE TABLES

FLOORS SOLUTIONS - Solid Ground - CONTINUED

U-Value 0.22

Construction

(100mm Concrete slab, Insulation, Membrane, 65mm Screed)

Using the chart: The elemental U-value for floors can be calculated using a perimeter to area ration (P:A).

P = The exposed floor perimeter length in metres. A = the floor area in square metres.

In order to determine the P:A, the length of perimeter is divided by the the floor area.

Eg. a 5 x 4 floor (Perimeter = 18mm & Area = 20m²). The P/A = 0.9

The table below lists the thickness of different insulation materials required to provide a U-value of 0.22 W/m²K.

LAMBDA λ	0.023	0.024 - 0.021	0.038	0.036	0.030	0.029	0.038
P/A RATIO	KINGSPAN THERMAFLOOR TF70/ THERMAPITCH TP10 CELOTEX TUFF-R™ GA3000	KINGSPAN KOOLTHERM K3 FLOORBOARD	JABFLOOR 70	JABFLOOR 100	JABLO	FLOORMATE 200-X/500X STYROFOAM SP-X	ROCKFLOOR
	THICKNESS IN MM	THICKNESS IN MM	THICKNESS IN MM	THICKNESS IN MM	THICKNESS IN MM	THICKNESS IN MM	THICKNESS IN MM
0.1	20	20	-	-	-	-	-
0.15	Celotex 20	-	25	20	25	25	-
0.2	30	35	50	45	40	40	50
0.25	-	-	-	-	60	60	-
0.3	50	50	80	75	65	70	80
0.4	60	55	95	90	75	80	90
0.5	65	60	105	100	85	90	100
0.6	70	65	110	105	90	90	110
0.7	75	70	115	110	100	100	115
0.8	80 (75 Celotex)	70	120	115	100	100	120
0.9	80	75	125	120	100	100	120
1.0	80	75	125	125	100	100	125

U-VALUE TABLES

PITCHED ROOFS SOLUTIONS

The tables below provide a quick and easy reference guide to the thickness of insulation required to meet the stated U-values for roofs.

Warm Pitched Roof - Unventilated

Recommended for new build or re-roofing

(Tiles, Tile battens, Breather membrane, Counter battens, Insulation above rafters, Cavity, 12.5mm Plasterboard)

U-Value 0.20

		U-Value 0.20	
MANUFACTURER	PRODUCT	LAMBDA λ	THICKNESS IN MM
CELOTEX	TUFF-R™ GA3000	0.023	100
DOW	ROOFMATE RL-X	0.029	120
KINGSPAN	THERMAPITCH TP10	0.023	100
KINGSPAN	KOOLTHERM K7	0.022	100

Two Layer Insulation

Warm Pitched Roof - Unventilated

Recommended for new build or re-roofing

(Tiles - Tile battens, Breather membrane, Counter battens, Insulation above rafters, Insulation between rafters, Cavity 12.5mm plasterboard @ 600mm centres)

U-Value 0.20

		U-Value 0.20		
MANUFACTURER	PRODUCT	CONSTRUCTION	LAMBDA λ	THICKNESS IN MM
KINGSPAN	THERMAPITCH TP10	OVER RAFTERS BETWEEN RAFTERS	0.023	60 55 50 55
KINGSPAN	KOOLTHERM K7 PITCHED ROOFBOARD	OVER RAFTERS BETWEEN RAFTERS	0.021	60 55 50 55
CELOTEX	TUFF-R™ GA3000	OVER RAFTERS BETWEEN RAFTERS	0.023	60 55 50 55

NB: Condensation - How to avoid. The thickest layer of insulation must be the insulation layer over the rafters.

Warm Pitched Roof - Rebated Insulation

Recommended for new build or re-roofing

(Tiles, Tile battens, Breather membrane, Counter battens, Insulation above timber, Insulation between timber, 12.5mm Plasterboard @ 600mm centres)

U-Value 0.20 & 0.16

		U-Value 0.20		U-Value 0.16
MANUFACTURER	PRODUCT	LAMBDA λ	THICKNESS IN MM	THICKNESS IN MM
DOW	ROOFMATE PR-X (50mm Over Rafters)	0.029	160	220
VENCEL RESIL	JABROOF PANEL (50mm Over Rafters)	0.036	190	250

Integral Insulation

Recommended for new build

(Tiles, Tile battens, Counter battens, Roof element, 12.5mm Plasterboard)

U-Value 0.25, 0.20 & 0.16

		U-Value 0.25		U-Value 0.20	U-Value 0.16
MANUFACTURER	PRODUCT	LAMBDA λ	THICKNESS IN MM	THICKNESS IN MM	THICKNESS IN MM
VENCEL RESIL	JABROOF ELEMENT SUPPORT SYSTEM	0.031	131	157	200

U-VALUE TABLES

PITCHED ROOFS SOLUTIONS - CONTINUED

Cold Roof with Insulation on the Horizontal between Joists

(Tiles, Tile battens, Felt, Loft space, Insulation between & above timber joists 12.5mm Plasterboard - based on 100mm joists @ 400mm centres)

U-Value 0.16 & 0.13

MANUFACTURER	PRODUCT	LAMBDA λ	U-Value 0.16	U-Value 0.13
			THICKNESS IN MM	THICKNESS IN MM
ISOVER	GP1000/SPACESAVER	0.043	100 + 170	-
ISOVER	SPACESAVER PLUS	0.040	100 + 150	100 + 200
CELOTEX	TUFF-R™ GA3000	0.023	100 + 60	100 + 90
KINGSPAN	THERMAPITCH TP10	0.023	100 + 60	100 + 90
KNAUF INSULATION	CROWN LOFT ROLL	0.044	100 + 170	-
KNAUF INSULATION	CROWN LOFT ROLL 40	0.040	-	100 + 200
KNAUF INSULATION	POLYFOAM SUPADECK SYSTEM*	0.031	*100 + 123	■170 + 123
ROCKWOOL	ROCKWOOL ROLL	0.044	100 + 170	100 + 240
VENCEL RESIL	JABLITE BOARD	0.038	100 + 135	100 + 200

* 100mm Crown Wool between the joists, 130mm Supadeck overlaying the joists

■ 170mm Crown Loft Roll 40 between the joists, 123mm Supadeck overlaying the joists

Insulation in the Pitch of the Roof (Room in a Roof)

(Tiles, Tile battens, Sarking felt, 50mm Residual cavity (ventilated), Insulation between timber, Vapour control membrane, 12.5mm Plasterboard @ 600mm centres)

U-Value 0.20

MANUFACTURER	PRODUCT	LAMBDA λ	U-Value 0.20
			THICKNESS IN MM
CELOTEX	TUFF-R™ GA3000	0.023	150
KINGSPAN	THERMAPITCH TP10	0.023	150
KNAUF INSULATION	POLYFOAM RAFTERSQUEEZE	0.030	180
VENCEL RESIL	JABSQUEEZE	0.038	215

Two Layer Insulation (Room in a Roof)

(Tiles, Tile battens, Sarking felt, 50mm Residual cavity (ventilated), Insulation between and beneath timber rafters, 12.5mm Plasterboard @ 600mm centres)

U-Value 0.20

MANUFACTURER	PRODUCT	CONSTRUCTION	LAMBDA λ	U-Value 0.20
				THICKNESS IN MM
CELOTEX	TUFF-R™ GA3000	In between Underneath	0.023	90 40
KINGSPAN	THERMAPITCH TP10	In between Underneath	0.023	90 40
VENCEL RESIL	JABLITE BOARD	In between Underneath	0.038	150 50

U-VALUE TABLES

PITCHED ROOFS SOLUTIONS - CONTINUED

Two layer Insulation

Unventilated Cold Roof - New Build or Retiling

(Tiles, Tile battens, Breather membrane, Counter battens, 100mm Rafters with Insulation between and beneath, **25mm Battens with 400 centres only**, 12.5mm Plasterboard)

U-Value 0.16 & 0.18

MANUFACTURER	PRODUCT	CONSTRUCTION	LAMBDA λ	U-Value 0.16	U-Value 0.18
				THICKNESS IN MM	THICKNESS IN MM
RAFTERS @ 600MM CENTRES					
CELOTEX	TUFF-R™ GA3000	IN BETWEEN UNDERNEATH	0.023	100 50	100 35
KINGSPAN	THERMAPITCH TP10	IN BETWEEN	0.023	100	100
	KOOLTHERM K18 (Insulation+ 12.5mm plasterboard)	UNDERNEATH	-	62.5	52.5
	KOOLTHERM K7	IN BETWEEN	0.021	100	100
	KOOLTHERM K18 (Insulation+ 12.5mm plasterboard)	UNDERNEATH	-	62.5	52.5
RAFTERS @ 400MM CENTRES					
CELOTEX	TUFF-R™ GA3000	IN BETWEEN UNDERNEATH + 25MM BATTEN	0.023	100 50 ✓	100 45 NO BATTEN
KINGSPAN	THERMAPITCH TP10	IN BETWEEN	0.023	100	100
	KOOLTHERM K18 (Insulation+ 12.5mm plasterboard)	UNDERNEATH	-	72.5	62.5
	KOOLTHERM K7	IN BETWEEN	0.021	100	100
	KOOLTHERM K18 (Insulation+ 12.5mm plasterboard)	UNDERNEATH	-	62.5	52.5

Thermal Laminate Solution Ventilated - Existing Roof

(Tiles, Tile battens, Sarking belt, 50mm Residual cavity (ventilated), Insulation 100mm between rafters, Thermal laminate based on 150mm Rafters @ 400 centres)

U-Value 0.20

MANUFACTURER	PRODUCT	LAMBDA λ OF INSULATION	LAMINATE THICKNESS IN MM	100MM INSULATION BETWEEN RAFTERS LAMBDA VALUE
BRITISH GYPSUM	GYPROC THERMALINE SUPER	0.022 - 0.024	65 50	MINERAL WOOL - 0.040 RIGID INSULATION - 0.023
KNAUF DRYWALL	PHENOLIC LAMINATE	0.018 - 0.022	65 50	MINERAL WOOL - 0.040 RIGID INSULATION - 0.023
LAFARGE PLASTERBOARD	THERMALCHECK K	0.023 - 0.024	50	RIGID INSULATION - 0.023

U-VALUE TABLES

FLAT ROOFS SOLUTIONS

The tables below provide a quick and easy reference guide to the thickness of insulation required to meet the stated U-values for roofs.

Construction

Timber Deck - Roof finish, Insulation, Vapour check bituminous, Sheathing board, Joists, Plasterboard based on 150mm joists @ 400mm Centres.

Concrete Deck - Roof finish, Insulation, Vapour Control Layer, 100mm Dense precast concrete, with suspended ceiling.

Metal Deck - Roof finish, Insulation, Vapour barrier, Aluminium.

Partially Bonded Built Up Felt Roof

U-Value 0.25 & 0.20

MANUFACTURER	PRODUCT	LAMBDA λ OF INSULATION	TIMBER DECK		CONCRETE DECK		METAL DECK	
			THICKNESS IN MM		THICKNESS IN MM		THICKNESS IN MM	
			0.25	0.20	0.25	0.20	0.25	0.20
CELOTEX	TEMPCHECK™ DECK TD3000	0.024	85	115	-	-	-	-
ECOTHERM	MULTI-THERM	0.027	90	120	100	130	105	130
KINGSPAN	THERMAROOF TR21	0.026	90	115	90	115	95	120
KINGSPAN	KOOLTHERM K5 ROOFBOARD	0.022-0.021	75	90	80	100	85	100
ROCKWOOL	DUO ROCK	0.038	130 -	170 -	∅140 ●130	∅180 ●170	145 -	185 -
ROCKWOOL	HARD ROCK DD	0.039	135 -	170 -	∅145 ●135	∅180 ●170	150 -	190 -

∅ Concrete 150mm - 13mm Plaster Ceiling

● Concrete 150mm - Plasterboard & Timber Batten Ceiling

U-VALUE TABLES

FLAT ROOFS SOLUTIONS - CONTINUED

Fully Bonded Built Up Felt & Mastic Asphalt

U-Value 0.25 & 0.20

MANUFACTURER	PRODUCT	LAMBDA λ	TIMBER DECK		CONCRETE DECK		METAL DECK	
			THICKNESS IN MM		THICKNESS IN MM		THICKNESS IN MM	
			0.25	0.20	0.25	0.20	0.25	0.20
ECOTHERM	FIBRE-THERM	0.027	90	110	90	120	100	120
KINGSPAN	THERMAROOF TR22	0.026	80+20*	80+20*	80+20*	80+20*	85+20*	80+20*
	THERMAROOF TR21	0.027	-	25	-	30	-	30
ROCKWOOL	HARDROCK DD	0.039	135	170	∅145 ●135	∅180 ●170	150	190
VENCEL RESIL	JABCORK	0.036	110+20*	155+20*	110+20*	165+20*	120+20*	165+20*
VENCEL RESIL	JABTHERM 3B	0.036	120	155	135	170	135	170

*Cork thickness

∅ Concrete 150mm - 13mm Plaster Ceiling

● Concrete 150mm - Plasterboard & Timber Batten Ceiling

Single Ply Membrane (Mechanically Fixed)

U-Value 0.25 & 0.20

MANUFACTURER	PRODUCT	LAMBDA λ	TIMBER DECK		CONCRETE DECK		METAL DECK	
			THICKNESS IN MM		THICKNESS IN MM		THICKNESS IN MM	
			0.25	0.20	0.25	0.20	0.25	0.20
CELOTEX	ENERGY-LOK EL3 + 6mm plywood	0.026-0.025	90	110	90*	110*	90	110
DOW	ROOFMATE RL-X	0.029	120	160	120	160	120	160
ECOTHERM	FOIL-THERM	0.023	90	110	90	110	90	110
KINGSPAN	THERMAROOF TR26 LCP/FM	0.023	90	110	90	110	95	110
ROCKWOOL	DUO ROCK	0.038	130 -	170 -	∅140 ●130	∅180 ●170	145 -	185 -
ROCKWOOL	HARD ROCK DD	0.039	135 -	170 -	∅145 ●135	∅180 ●170	150 -	190 -
VENCEL RESIL	JABROOF BOARD Grade 150 (for increased density)	0.036 (0.035)	120	155	135	170	135	170

∅ Concrete 150mm - 13mm Plaster Ceiling

● Concrete 150mm - Plasterboard & Timber Batten Ceiling

* Concrete 250mm

Single Ply Membrane (Fully Adhered)

U-Value 0.25 & 0.20

MANUFACTURER	PRODUCT	LAMBDA λ OF INSULATION	TIMBER DECK		CONCRETE DECK		METAL DECK	
			0.25	0.20	0.25	0.20	0.25	0.20
CELOTEX	TEMPCHECK™ DECK TD3000	0.023	85	115	-	-	-	-
ECOTHERM	GLASS-THERM	0.027	100	120	100	130	105	130
KINGSPAN	THERMAROOF TR27 LPC/FM	0.027 - 0.026	*100	120	90	130	100	130
ROCKWOOL	DUO ROCK	0.038	130	170	∅ 140 ● 130	∅ 180 ● 170	145	185
ROCKWOOL	HARD ROCK DD	0.039	135	170	∅ 145 ● 135	∅ 180 ● 170	150	190

∅ Concrete 150mm - 13mm Plaster Ceiling

● Concrete 150mm - Plasterboard & Timber Batten Ceiling

*TR27 - with suspended ceiling 90mm = 0.25 U-Value K2 with suspended ceiling 75mm = 0.25 U-Value

The solutions offered in this Guide are provided in good faith. Sheffield Insulations accepts no responsibility for the calculation methods used. Please note that the thickness sizes quoted are not necessarily the ones available.