U-value calculation
by BRE U-value Calculator version 2.04a
Printed on 06 Mar 2018 at 11:36

Element type: Floor - Suspended beam-and-block floor
Calculation Method: BS EN ISO 6946, BS EN ISO 13370

Plot 1

U-value of floor construction:

Layer	d (mm)	λ layer	λ bridge	Fraction	Density	Sp. heat	R layer	R bridge	Description
							0.170		Rsi
1	65	1.150			1800	1000	0.057		Screed
2	150	0.022			20	1400	6.818		insulation board
3	100	0.180	1.350	0.137	600	1000	0.556	0.074	AAC (600 kg/m³)/concrete beam
							0.170		Rs (underfloor)
	315 mm						7.770		

Total resistance: Upper limit: 7.701 Lower limit: 7.509 Ratio: 1.026 Average: 7.605 m²K/W
U-value of floor construction: 0.131 W/m²K

Ground parameters:

Perimeter P:	27.10 m	Wall thickness:	300 mm
Area A:	60.66 m²	Ground type:	Clay/silt (λ = 1.5 W/m·K)
P/A:	0.447	Rse:	0.04 m²K/W
Resistance on solum Rg:			0.000 m²K/W
Depth of underfloor space below ground:			0.200 m
Floor height above ground:			0.000 m
Mean wind speed:			5.00 m/s
Wind shielding factor:			0.050
Ventilation openings per metre length:			0.0015 m²/m

U-value for ground (Ug)	0.648
U-value of floor deck (Uf)	0.131
Ventilation equivalent U-value (Ux)	0.121

U-value overall 0.112
U-value (rounded) 0.11 W/m²K

Heat capacity per m² (κ) 117.0 kJ/m²K

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Plot 3

U-value of floor construction:

Layer	d (mm)	λ layer	λ bridge	Fraction	Density	Sp. heat	R layer	R bridge	Description
							0.170		Rsi
1	65	1.150			1800	1000	0.057		Screed
2	150	0.022			20	1400	6.818		insulation board
3	100	0.180	1.350	0.137	600	1000	0.556	0.074	AAC (600 kg/m³)/concrete beam
							0.170		Rs (underfloor)
	315 mm						7.770		

Total resistance: Upper limit: 7.701 Lower limit: 7.509 Ratio: 1.026 Average: 7.605 m²K/W
U-value of floor construction: 0.131 W/m²K

Ground parameters:

Perimeter P:	27.70 m	Wall thickness:	300 mm
Area A:	61.00 m²	Ground type:	Clay/silt (λ = 1.5 W/m·K)
P/A:	0.454	Rse:	0.04 m²K/W
Resistance on solum Rg:			0.000 m²K/W
Depth of underfloor space below ground:			0.200 m
Floor height above ground:			0.000 m
Mean wind speed:			5.00 m/s
Wind shielding factor:			0.050
Ventilation openings per metre length:			0.0015 m²/m

U-value for ground (Ug)	0.655
U-value of floor deck (Uf)	0.131
Ventilation equivalent U-value (Ux)	0.123

U-value overall	0.113
U-value (rounded)	**0.11 W/m²K**

Heat capacity per m² (κ) 117.0 kJ/m²K

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Plot 5

U-value of floor construction:

Layer	d (mm)	λ layer	λ bridge	Fraction	Density	Sp. heat	R layer	R bridge	Description
							0.170		Rsi
1	65	1.150			1800	1000	0.057		Screed
2	150	0.022			20	1400	6.818		insulation board
3	100	0.180	1.350	0.137	600	1000	0.556	0.074	AAC (600 kg/m³)/concrete beam
							0.170		Rs (underfloor)
	315 mm						7.770		

Total resistance: Upper limit: 7.701 Lower limit: 7.509 Ratio: 1.026 Average: 7.605 m²K/W
U-value of floor construction: 0.131 W/m²K

Ground parameters:

Perimeter P:	36.80 m	Wall thickness:	300 mm
Area A:	59.08 m²	Ground type:	Clay/silt (λ = 1.5 W/m·K)
P/A:	0.623	Rse:	0.04 m²K/W
Resistance on solum Rg:			0.000 m²K/W
Depth of underfloor space below ground:			0.200 m
Floor height above ground:			0.000 m
Mean wind speed:			5.00 m/s
Wind shielding factor:			0.050
Ventilation openings per metre length:			0.0015 m²/m

U-value for ground (Ug)	0.801
U-value of floor deck (Uf)	0.131
Ventilation equivalent U-value (Ux)	0.169

U-value overall	0.116
U-value (rounded)	**0.12 W/m²K**

Heat capacity per m² (κ) 117.0 kJ/m²K

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U-value calculation
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Element type: Floor - Exposed (upper) floor
Calculation Method: BS EN ISO 6946

Layer	d (mm)	λ layer	λ bridge	Fraction	Density	Sp. heat	R layer	R bridge	Description
							0.170		Rsi
1	19	0.130			500	1600	0.146		chipboard flooring
2	200	0.040	0.130	0.110	20	1030	5.000	1.538	insulation between joists
3	12.5	0.210			700	1000	0.060		plasterboard
4		R-value[1]			1	1000	0.900		Unheated space - corridor
							0.040		Rse
	232 mm						6.316		

Stairwell, facing wall not exposed

Total resistance: Upper limit: 5.572 Lower limit: 5.324 Ratio: 1.047 Average: 5.448 m^2K/W

U-value (uncorrected) 0.184

U-value corrections
No fixings in layer 2

Total ΔU 0.000

U-value (corrected) 0.184
U-value (rounded) 0.18 W/m^2K

Heat capacity per m^2 (κ) 15.2 kJ/m^2K

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U-value calculation
by BRE U-value Calculator version 2.04a
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Element type: Wall - Masonry - full cavity fill: slabs
Calculation Method: BS EN ISO 6946

Layer	d (mm)	λ layer	λ bridge	Fraction	Density	Sp. heat	R layer	R bridge	Description
							0.130		Rsi
1	12.5	0.210			700	1000	0.060		Plasterboard (standard wallboard)
2	15	R-value	0.430	0.200	1	1000	0.170	0.035	Drylining - plaster dabs
3	100	0.110			2000	1000	0.909		Concrete block (dense)
4	100	0.032			30	1030	3.125		Cavity fill, slabs
5	100	0.510	0.880	0.0670			0.196	0.114	Medium density
6	20	1.000			1600	1000	0.020		Render (cement, sand)
							0.040		Rse
	348 mm (total wall thickness)						4.650		

Total resistance: Upper limit: 4.616 Lower limit: 4.566 Ratio: 1.011 Average: 4.591 m²K/W

U-value (uncorrected) 0.218

U-value corrections

Air gaps in layer 4 ΔU = 0.005 (Level 1)
Wall ties in layer 4 ΔU = 0.012 (2.50 per m², 80.0 mm² cross-section, λ = 17.0)

Total ΔU 0.017

U-value (corrected) 0.235 (0.2346)
U-value (rounded) 0.23 W/m²K

Heat capacity per m² (κ) 82.2 kJ/m²K

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U-value calculation
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Element type: Wall - Masonry - full cavity fill: slabs
Calculation Method: BS EN ISO 6946

Layer	d (mm)	λ layer	λ bridge	Fraction	Density	Sp. heat	R layer	R bridge	Description
							0.130		Rsi
1	12.5	0.210			700	1000	0.060		Plasterboard (standard wallboard)
2	15	R-value	0.430	0.200	1	1000	0.170	0.035	Drylining - plaster dabs
3	100	0.510	0.880	0.0670	2000	1000	0.196	0.114	Medium density
4	100	0.033			30	1030	3.030		Cavity fill, slabs
5	100	0.510	0.880	0.0670	2000	1000	0.196	0.114	Medium density
6	15	R-value	0.430	0.200	1	1000	0.170	0.035	Drylining - plaster dabs
7	12.5	0.210			700	1000	0.060		Plasterboard (standard wallboard)
8		R-value[1]			1	1000	0.900		Unheated space - corridor
							0.040		Rse
	355 mm (total wall thickness)						4.952		

[1]Stairwell, facing wall not exposed

Total resistance: Upper limit: 4.885 Lower limit: 4.785 Ratio: 1.021 Average: 4.835 m^2K/W

U-value (uncorrected) 0.207

U-value corrections

Air gaps in layer 4	ΔU = 0.004	(Level 1)
Wall ties in layer 4	ΔU = 0.010	(2.50 per m^2, 80.0 mm^2 cross-section, λ = 17.0)

Total ΔU 0.014

U-value (corrected) 0.221
U-value (rounded) 0.22 W/m^2K

Heat capacity per m^2 (κ) 82.2 kJ/m^2K

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U-value calculation
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Element type: Roof - Pitched roof - insulated ceiling
Calculation Method: BS EN ISO 6946

Layer	d (mm)	λ layer	λ bridge	Fraction	Density	Sp. heat	R layer	R bridge	Description
							0.100		Rsi
1	12.5	0.210			700	1000	0.060		Plasterboard
2	200	0.040	0.130	0.0900	12	1030	5.000	1.538	Mineral wool quilt
3	200	0.040			12	1030	5.000		Mineral wool
4		R-value[1]			1	1000	0.200		Roof space
							0.040		Rse
	413 mm						10.400		

[1]Roof space - tiled roof, with felt or sarking boards

Total resistance: Upper limit: 9.953 Lower limit: 9.558 Ratio: 1.041 Average: 9.755 m^2K/W

U-value (uncorrected) 0.1025

U-value corrections
Air gaps in layer 2 $\Delta U = 0.0000$ (Level 0)
Loft hatch $\Delta U = 0.0038$ (Insulation thickness = 50 mm)

Total ΔU 0.0038

U-value (corrected) 0.106
U-value (rounded) 0.11 W/m^2K

Heat capacity per m^2 (κ) 8.8 kJ/m^2K

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