



Recticel Insulation Products
Enterprise Way, Whittle Road, Meir Park
Stoke-on-Trent
Staffordshire

technicalservices@recticel.com

Project Information

Reference
Date 24 March 2025
Project Fairhaven

Construction Type

Element	: Solid ground floor - Floor - insulation on slab under screed					
Internal surface emissivity	: High	External surface emissivity	: High	Thickness	Thermal Conductivity	Thermal Resistance
				(mm)	(W/mK)	(m²K/W)
				75.0	-	0.170
					1.150	0.065
Inside surface						
Screed - cast (BS5250)						
Polythene VCL, 500 gauge						
Eurothane GP				100.0	0.022	4.545
Concrete, high density (BS 10456)				65.0	2.000	0.033
Polythene DPM, 1200 gauge				-	-	-
Ground				-	-	0.040

Ground Floor Details

Floor type : Solid floor
Calculation method : EN ISO 13370:2007
P/A : 0.950 Characteristic dimension, B' : 2.105
Thermal conductivity of ground: : 2.000 W/mK Width of walls, w: : 0.300 m
Edge insulation position : None

U-value = 0.18W/m²K

U-value, Combined Method : 0.182W/m²K (upper/lower limit 4.853 / 4.853m²K/W, dUf 0.0000, dUg 0.0000, dUp0.0000, dUr0.0000, dUrc1 0.0000, dUrc2 0.0000)

Correction factors

Mechanical fasteners :-
Alpha : 0.00 per m lambda f : 0.0000W/mK nf : 0.000 per m² Af : 0.000mm² Recess : 0.0mm
Delta Uf for Eurothane GP : 0.0000
nf = fasteners per m² Af = fasteners cross-sectional area
Air gaps, Delta Ug = 0.000W/m²K

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Reference
Date 24 March 2025
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Construction Type

Element	: Pitched roof, ceiling at rafter line - Pitched roof - between and under (vented)					
Internal surface emissivity	: High	External surface emissivity	: High	Thickness	Thermal Conductivity	Thermal Resistance
				(mm)	(W/mK)	(m²K/W)
				-	-	0.100
				-	-	0.000
Outside surface resistance						
Airspace between tiles and roofing felt (inc. resistance-of tiles) (BS5250)				2.0	0.300	0.000
Type 1F felt (BS5250)				95.0	-	0.000
Clear cavity, vented (roof)				100.0	0.022	4.545
Eurothane GP, between rafters						
						12.750% Timber (100.0mm)
						L:0.000W/m²K
						L:0.000W/m²K
Eurothane GP, under rafters				70.0	0.022	3.182
Polythene VCL, 1000 gauge				-	-	-
Plasterboard - standard wallboard				12.5	0.190	0.066
Inside surface resistance				-	-	0.100

U-value = 0.15W/m²K

U-value, Combined Method : 0.155W/m²K (upper/lower limit 7.174 / 6.243m²K/W, dUf 0.0058, dUg 0.0000, dUp0.0000, dUr0.0000, dUrc1 0.0000, dUrc2 0.0000)

Correction factors

Mechanical fasteners :-
Alpha : 0.80 per m lambda f : 50.0000W/mK nf : 16.000 per m² Af : 4.000mm² Recess : 0.0mm
Insulated Drylining Screws
Delta Uf for Eurothane GP, under rafters : 0.0058
nf = fasteners per m² Af = fasteners cross-sectional area
Air gaps, Delta Ug = 0.000W/m²K

(Based on the combined method for determining U-values of structures containing repeating thermal bridges)

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Detailed U-value Calculation Results

Construction includes 1 bridged layer

Non-bridged layers

Outside surface resistance	0.100 m²K/W
Eurothane GP, under rafters	3.182 m²K/W
Plasterboard - standard wallboard	0.066 m²K/W
Inside surface resistance	0.100 m²K/W
Resistance of non-bridged layers, R _{ns} =	3.448 m²K/W

Bridged layer

Eurothane GP, between rafters (L1) bridged by Timber (B1)

Path 1 - Eurothane
Path 2 - Timber

Resistance and fraction of heat flow paths

R_{n1} = R_{ns} + R_{b1} = 3.448 + 4.545 = 7.993 m²K/W F_{p1} = 87.250%
R_{n2} = R_{ns} + R_{b2} = 3.448 + 0.769 = 4.217 m²K/W F_{p2} = 12.750%

Upper resistance limit

R_{upper} = 1 / ((F_{p1}/R_{n1}) + (F_{p2}/R_{n2}))
R_{upper} = 1 / ((0.873/7.993) + (0.127/4.217)) = 7.174m²K/W

Lower resistance limit

R_{lower} = R_{ns} + 1 / ((F_u/R_u) + (F_r/R_r))
R_{lower} = 3.448 + 1 / ((0.873/4.545) + (0.127/0.769)) = 6.243m²K/W

Total resistance of roof

R_t = (R_{upper} + R_{lower}) / 2 = (7.174 + 6.243) / 2 = 6.71 m²K/W

Mechanical fasteners :-

Calculations to BS EN ISO 6946:2007
Alpha : 0.80 per m lambda f : 50.0000W/mK nf : 16.000 per m² Af : 4.000mm² Recess : 0.0mm
Insulated Drylining Screws
Delta Uf for Eurothane GP, under rafters : 0.0058
Correction for air gaps, Delta Ug = 0.0000W/m²K

U = (1 / R_t) + (Delta Uf + Delta Ug + Delta Up + Delta Urc2 + Delta Urc2) = (1/6.7088) + 0.0058 + 0.0000 + 0.0000 + 0.0000 + 0.0000 = 0.15 W/m²K

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1 Recticel_floor slab
1 : 10

2 Recticel_Vaulted Roof
1 : 10



U-value Calculation Method: BS EN ISO 6946

Calculation Date: Mar 24, 2025

Masonry Cavity Walls (Full Fill), Project: Fairhaven

U-value Calculation

Project Name : Fairhaven
Construction Type : Extension
Country : Low-rise Dwelling
England

U-value Result:

0.18 W/m²K



Layer	d(mm)	λ layer	λ bridge	Fraction	Description
		0.130			RSI
1	9.50	0.190	-	-	Plasterboard facing to laminate
2	40.50	0.023	-	-	Knauf PIR Laminate 50mm
3	15.00	R: 0.17	0.43	20%	Drylining - plaster dabs
4	100.00	0.450	0.88	6.7%	Blockwork K= 0.450 (Medium Block)
5	100.00	0.032	-	-	DriTherm® Cavity Slab 32
6	102.50	0.770	-	-	Brick
7	0.00	R: 0.00	-	-	Insert Unheated Space (Optional)
		0.040			RSE
		367.50			

Total Thermal Resistance: Upper limit: 5.596 Lower limit: 5.544 Average: 5.57

U-value-corrections:
Fixings in layer 5 (2.5 per m², 12.5 mm² cross-section, λ=17)

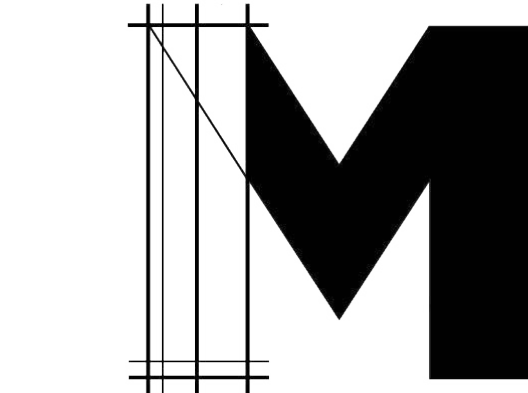
U-value (rounded):

0.18 W/m²K

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3 Knauf_walls
1 : 10



MOOSECONSULTING

ISSUE STATUS
CLIENT REVIEW

CLIENT

MR & MRS GREEN

PROJECT

FAIRHAVEN

REV	DESCRIPTION	DATE
A	CLIENT REVIEW	24.03.25

Notes

1. Structural calculations, guidance or notes of any is for guidance only, not for construction. You must engage a structural engineer.

2. All documentation provided does not limit your liability in respect to the engagement and full compliance of Planning and/or Building Control.

3. The nominated Building Control officer has the right to superceed any and all of the information contained within this document. You are required by Law to comply with the explicit directions given by your Building Control officer.

PROJECT ID	DATE of ISSUE
2503101	24.03.25
SCALE (@ A1)	REV
1 : 10	A

TITLE

U-VALUE CALCULATIONS

DWG No.

A512

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