

Back to Earth SW Ltd

7 Tuns Lane
Silverton, Exeter
Devon. EX5 4HY

Project Information

Reference

Date 14 September 2018

Construction Type

Element : Wall - 0 Spec generator copies

Internal surface emissivity : High External surface emissivity : High

	Thickness (mm)	Thermal Conductivity (W/mK)	Thermal Resistance (m ² K/W)	Pitch (°)	Bridge details Air gaps (Level, Delta U")
Outside surface resistance	-	-	0.130		
Brick inner leaf	225.0	0.560	0.402		
Clay or silt	5.0	1.499	0.003		
UdiTHERM	60.0	0.039	1.500		L:0 0.000W/m ² K
Multigrund	4.0	0.550	0.007		
Inside surface resistance	-	-	0.130		

Total thickness 294.0mm

U-value = 0.46W/m²K

U-value, Combined Method : 0.460W/m²K (upper/lower limit 2.172 / 2.172m²K/W, dUf 0.0000, dUg 0.0000, dUp0.0000, dUr0.0000, dUrc1 0.0000, dUrc2 0.0000)

Correction factors

Mechanical fasteners :-

Fixings

Alpha : 0.00 per m lambda f : 0.0010W/mK nf : 6.000 per m² Af : 0.000mm² Recess : 0.0mm

Delta Uf for UdiTHERM : 0.0000

nf = fasteners per m² Af = fasteners cross-sectional area

Air gaps, Delta Ug = 0.000W/m²K

	Thickness (mm)	Thermal Conductivity (W/mK)	Thermal Resistance (m ² K/W)	Vapour Resistivity (MNs/gm)	Vapour Resistance (MNs/g)
Outside surface resistance	-	-	0.130	-	-
Brick inner leaf	225.0	0.560	0.402	50.00	11.25
Clay or silt	5.0	1.499	0.003	250.00	1.25
UdiTHERM	60.0	0.039	1.500	25.00	1.50
Multigrund	4.0	0.550	0.007	600.00	2.40
Inside surface resistance	-	-	0.130	-	-
Total thickness	294.0mm				

Structure element : Wall
 Condensation calculations performed in accordance with BS5250:2011

Condensation is occurring at the following layers interfaces:-

Interface 1 : Clay or silt / UdiTHERM

Month	Int (C°)	Int (%RH)	Ext (C°)	Ext (%RH)	Interface 1 Gc (Kg/m ²)	Ma (Kg/m ²)
Jan	21.00	54.70	3.50	86.00	0.20265	0.41454
Feb	21.00	53.80	3.80	82.50	0.15898	0.57352
Mar	21.00	53.90	5.70	80.00	0.00987	0.58338
Apr	21.00	54.40	8.00	77.00	-0.08967	0.49371
May	21.00	57.90	11.30	77.00	-0.20169	0.29202
Jun	21.00	62.20	14.40	76.00	-0.30133	0.00000
Jul	21.00	66.80	16.50	76.50	0.00000	0.00000
Aug	21.00	67.40	16.10	78.50	0.00000	0.00000
Sep	21.00	64.60	13.80	81.50	0.00000	0.00000
Oct	21.00	60.80	10.70	84.00	0.00000	0.00000
Nov	21.00	56.50	6.40	85.50	0.03375	0.03375
Dec	21.00	55.50	4.50	86.50	0.17813	0.21189

Gc = Monthly moisture accumulation per area at an interface

Ma = Accumulated moisture content per area at an interface

Peak accumulated moisture content per area at interface (Ma) = 0.58338 Kg/m²

Annual moisture accumulation = 0.00000 Kg/m²

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Thermal Mass Details

	Thickness assessed (actual) (mm)	Density (kg/m ³)	Specific heat capacity (J/kgK)	Heat capacity (kJ/m ² K)
Brick inner leaf	0.0 (225.0)	1700.0	840.0	0.0
Clay or silt	0.0 (5.0)	1500.0	2085.0	0.0
UdiTHERM	0.0 (60.0)	140.0	2100.0	0.0
Multigrund	4.0 (4.0)	1300.0	1000.0	5200000.0
Total				5200000.0
kappa value				5.2000
Limiting condition:	insulation			

Admittance : 0.99 W/m²K Decrement : 0.13 factor Decrement delay : -11.67 hours

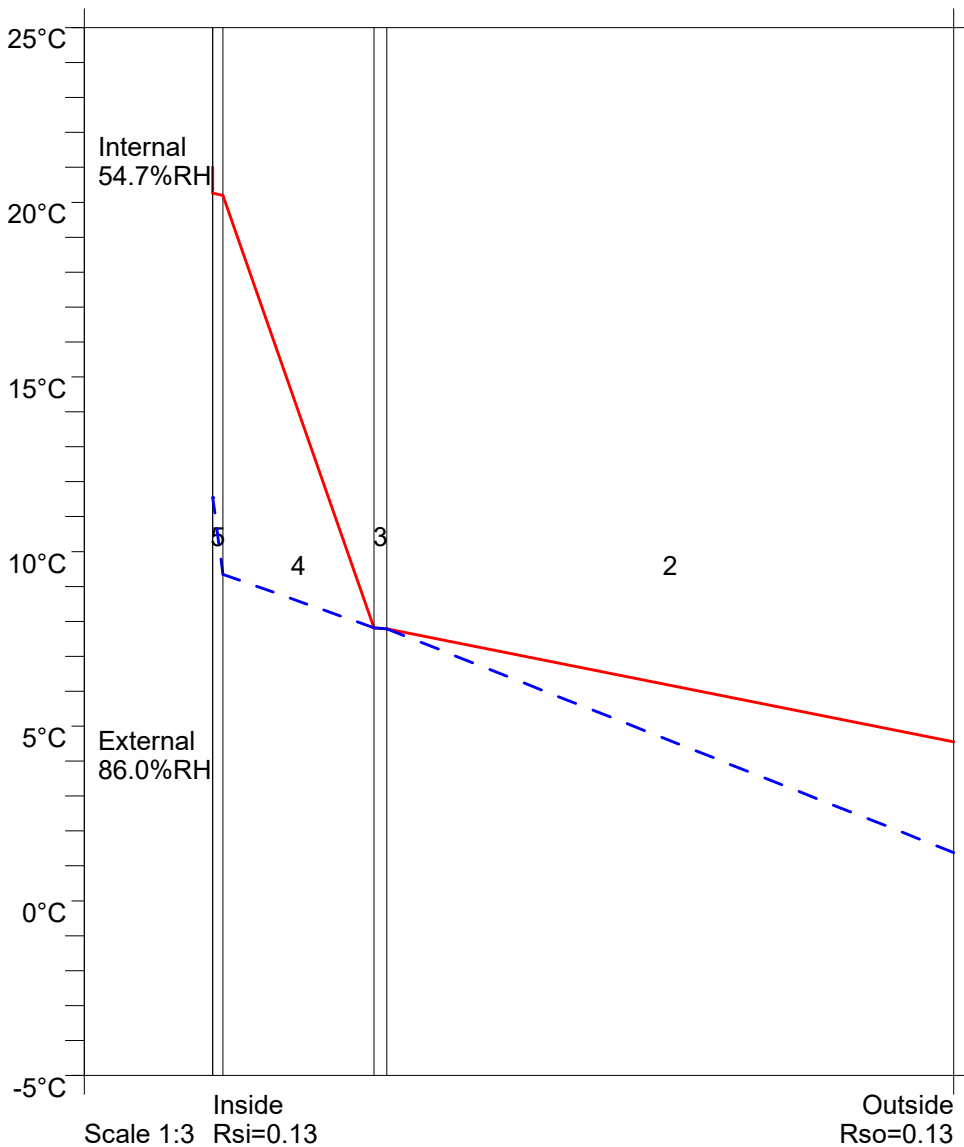
Condensation Risk Analysis (no account taken of thermal bridges)

3 - Dwellings with low occupancy

Jan (worst)	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
21.0C 54.7%	21.0C 53.8%	21.0C 53.9%	21.0C 54.4%	21.0C 57.9%	21.0C 62.2%	21.0C 66.8%	21.0C 67.4%	21.0C 64.6%	21.0C 60.8%	21.0C 56.5%	21.0C 55.5%
3.5C 86.0%	3.8C 82.5%	5.7C 80.0%	8.0C 77.0%	11.3C 77.0%	14.4C 76.0%	16.5C 76.5%	16.1C 78.5%	13.8C 81.5%	10.7C 84.0%	6.4C 85.5%	4.5C 86.5%

	Interface Temp. °C	Dewpoint Temp. °C	Vapour Pressure (kPa)	Saturated V.P. (kPa)	Worst Cond. (g/m ²)	Peak Buildup (g/m ²)	Condensation
1 Outside surface resistance							
2 Brick inner leaf	4.5	1.4	0.67	0.84			No
3 Clay or silt	7.8	7.8	1.06	1.06			No
4 UdiTHERM	7.8	7.8	1.06	1.06	203 in Jan	583 in Mar	Yes
5 Multigrund	20.2	9.3	1.17	2.37			No
6 Inside surface resistance	20.3	11.5	1.36	2.37			No

Worst case internal / external conditions for graph : 21.0°C @ 54.7%RH / 3.5°C @ 86.0%RH



Condensation Risk Analysis (no account taken of thermal bridges)

3 - Dwellings with low occupancy

Jan (worst)	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
21.0C 54.7%	21.0C 53.8%	21.0C 53.9%	21.0C 54.4%	21.0C 57.9%	21.0C 62.2%	21.0C 66.8%	21.0C 67.4%	21.0C 64.6%	21.0C 60.8%	21.0C 56.5%	21.0C 55.5%
3.5C 86.0%	3.8C 82.5%	5.7C 80.0%	8.0C 77.0%	11.3C 77.0%	14.4C 76.0%	16.5C 76.5%	16.1C 78.5%	13.8C 81.5%	10.7C 84.0%	6.4C 85.5%	4.5C 86.5%

	Interface Temp. °C	Dewpoint Temp. °C	Vapour Pressure (kPa)	Saturated V.P. (kPa)	Worst Cond. (g/m ²)	Peak Buildup (g/m ²)	Condensation
1 Outside surface resistance							
2 Brick inner leaf	16.8	12.4	1.44	1.91			No
3 Clay or silt	17.6	13.9	1.59	2.01			No
4 UdiTHERM	17.6	14.1	1.61	2.01	203 in Jan	583 in Mar	Yes
5 Multigrund	20.8	14.3	1.63	2.45			No
6 Inside surface resistance	20.8	14.6	1.66	2.46			No

Worst case internal / external conditions for graph : 21.0°C @ 66.8%RH / 16.5°C @ 76.5%RH

