

**Project Information**

Reference PhotonAir/PhotonFoil 140294-2 RCS\_0.15\_400\_38\_DG  
 Date 31/1/20  
 Client Thermic Technology PhotonAir/PhotonFoil  
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**Construction Type**

Element : Pitched roof, ceiling at rafter line - RCS\_0.15\_400\_38\_DG

Warm pitched roof

Internal surface emissivity : High

External surface emissivity : High

	Thickness (mm)	Thermal Conductivity (W/mK)	Thermal Resistance (m <sup>2</sup> K/W)	Pitch (°)	Bridge details Air gaps (Level, Delta U")
Outside surface resistance	-	-	0.040		
Tiling including batten space	-	-	0.120		
PhotonAir	33.0	0.034	0.971		
Rafter Cavity (ISO15099)	20.0	-	0.700		9.500% Timber (20.0mm)
0.032 Cavity Batt	100.0	0.032	3.125		9.500% Timber (100.0mm) L:0 0.000W/m <sup>2</sup> K
Rafter Cavity (ISO15099)	20.0	-	0.700		9.500% Timber (20.0mm)
PhotonFoil	33.0	0.034	0.971		
38mm Cross Batten Cavity (ISO15099)	21.0	-	0.670		6.333% Timber (21.0mm)
Plasterboard (BS5250)	12.5	0.170	0.074		
Plaster, lightweight skim	3.0	0.220	0.014		
Inside surface resistance	-	-	0.100		

**U-value = 0.15W/m<sup>2</sup>K**

U-value, Combined Method : 0.151W/m<sup>2</sup>K (upper/lower limit 6.886 / 6.316m<sup>2</sup>K/W, dUf 0.0000, dUg 0.0000, dUp0.0000, dUr0.0000, dUrc1 0.0000, dUrc2 0.0000)

**Correction factors**

Air gaps, Delta Ug = 0.000W/m<sup>2</sup>K

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

	Thickness (mm)	Thermal Conductivity (W/mK)	Thermal Resistance (m <sup>2</sup> K/W)	Vapour Resistivity (MNs/gm)	Vapour Resistance (MNs/g)
Outside surface resistance	-	-	0.040	-	-
Tiling including batten space	-	-	0.120	-	0.01
PhotonAir	33.0	0.034	0.971	6.67	0.22
Rafter Cavity (ISO15099)	20.0	-	0.700	-	0.00
0.032 Cavity Batt	100.0	0.032	3.125	5.00	0.50
Rafter Cavity (ISO15099)	20.0	-	0.700	-	0.00
PhotonFoil	33.0	0.034	0.971	0.00	192.00
38mm Cross Batten Cavity (ISO15099)	21.0	-	0.670	-	0.11
Plasterboard (BS5250)	12.5	0.170	0.074	60.00	0.75
Plaster, lightweight skim	3.0	0.220	0.014	30.00	0.09
Inside surface resistance	-	-	0.100	-	-

### 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
20.0C 58.3%	20.0C 57.7%	20.0C 57.9%	20.0C 58.4%	20.0C 61.9%	20.0C 66.8%	20.0C 70.9%	20.0C 72.0%	20.0C 69.4%	20.0C 65.1%	20.0C 60.0%	20.0C 59.2%
4.3C 85.0%	4.4C 83.0%	6.0C 81.0%	8.1C 78.0%	11.3C 77.5%	14.4C 77.0%	16.3C 77.0%	16.1C 79.0%	13.8C 82.5%	11.0C 84.0%	7.0C 84.0%	5.1C 86.0%

	Interface Temp. °C	Dewpoint Temp. °C	Vapour Pressure (kPa)	Saturated V.P. (kPa)	Worst Cond. (g/m <sup>2</sup> )	Peak Buildup (g/m <sup>2</sup> )	Condensation
1 Outside surface resistance							
2 Tiling including batten space	4.4	2.0	0.71	0.84			No
3 PhotonAir	4.6	2.0	0.71	0.85			No
4 Rafter Cavity (ISO15099)	6.7	2.0	0.71	0.98			No
5 0.032 Cavity Batt	8.1	2.0	0.71	1.08			No
6 Rafter Cavity (ISO15099)	14.7	2.1	0.71	1.67			No
7 PhotonFoil	16.2	2.1	0.71	1.84			No
8 38mm Cross Batten Cavity (ISO15099)	18.2	11.5	1.36	2.09			No
9 Plasterboard (BS5250)	19.6	11.5	1.36	2.28			No
10 Plaster, lightweight skim	19.8	11.6	1.36	2.30			No
11 Inside surface resistance	19.8	11.6	1.36	2.31			No

Worst case internal / external conditions for graph : 20.0°C @ 58.3%RH / 4.3°C @ 85.0%RH

Scale 1:3

