



Sample Style:
Casement
Fixed Light / Side Hung

Blue line illustrates opening light length (air leakage)

Report Number: **SIM00422 C** Issue No 22.1: 11/03/2013
 Report Date: **09 April 2014**
 Project Details: **Sculp, Diamant, Argon, Planitherm Total+, Swisspacer V, Hot Melt**

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Input Values:
 Yellow input, green intermediary, blue finals X' DP is no. of decimal places to enter

Frame offset: **No**

Nominal 4mm etc to **ODP**, others **1DP**

Glazing dimensions and properties:

Thickness of pane 1	4	mm
Pane 1/2 distance	20	mm
Gas fill (1/2)	Argon 90%	
Thickness of pane 2	4	mm
Complete next 3 cells for TG IGU		
Pane 2/3 distance		mm
Gas fill (2/3)		
Thickness of pane 3		mm
Glazing Trans. - 3DP	U_g 1.219	W/(m ² ·K)
g-value - 2DP	g_{\perp} 0.74	

Thermal transmittance of window from hot box test

U_w - 2DP		W/(m ² ·K)
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Window Dimensions:

Section	Length		Area	
	(m)	(m)	No gasket (m ²)	With gasket (m ²)
Fixed Light	1.3660	0.5245	0.7165	0.7165
Opening light	1.2720	0.4305	0.5476	0.5476
Total glazing, A_g			1.2641	1.2641
Frame				
F1	0.6150	0.0570	0.0325	0.0325
F2	0.6150	0.0570	0.0325	0.0325
F3	1.4800	0.0570	0.0811	0.0811
F4	0.6150	0.0570	0.0325	0.0325
F5	0.5245	0.0470	0.0224	0.0224
F6	0.6150	0.0570	0.0325	0.0325
F7	0.5245	0.0470	0.0224	0.0224
F8	1.4800	0.0570	0.0811	0.0811
F9	1.3660	0.0470	0.0620	0.0620
F10	1.4800	0.0670	0.0953	0.0953
F11	1.3660	0.0470	0.0620	0.0620
Total Frame			0.5563	0.5563
Total Window, A_w			1.8204	1.8204
Percentage fixed light glass area			39.36%	39.36%
Percentage opening light glass area			30.08%	30.08%
Percentage glass area (total)			69.44%	69.44%

Solar Factor, g-value:

F_w	0.9
g_w	0.46

U_{window}

No bars; or attached bars	1.37	W/(m ² ·K)
Single cross bar in IGU	1.5	
Multiple cross bar in IGU	1.6	
Glazing bar (Georgian bar)	1.8	

BFRC Rating

BFRC Rating kWh/(m ² ·yr)	Label index	EWER Rating Scale	Window Rating
≥10		A+	A
0 to <10	↔	A ↔	
-10 to <0		B	
-20 to <-10		C	
-30 to <-20		D	
-50 to <-30		E	
-70 to <-50		F	

Frame dimensions:

All frame values round to nearest 1mm, gaskets to 1DP	(b_i)	Frame width, b_f	Gasket protrusion, b_{gf}	Frame & gasket widths	Total
		(mm)	(mm)	(mm)	
F1 fixed sill	F1 fixed sill	57		57.0	104.0
	F2 fixed head	57		57.0	
	F3 fixed jamb	57		57.0	
F4 + F5 sash sill	F4 fixed sash sill	57	n/a	57.0	104.0
	F5 moving sash sill	47		47.0	
F6 + F7 sash head	F6 fixed sash head	57	n/a	57.0	104.0
	F7 moving sash head	47		47.0	
F8 + F9 sash jamb	F8 Fixed sash jamb	57	n/a	57.0	104.0
	F9 moving sash jamb	47		47.0	
F10 + F11 mullion	F10 fixed mullion	67		67.0	114.0
	F11 moving mullion	47		47.0	
Total gasket area				0	m ²

Where a U_w value from hot box testing is available, no L_f^{2D} or L_{ψ}^{2D} values need to be entered

Frame conductance:

Section	All L values to 4DP. All b values to 0DP			
	$W/(m \cdot K)$	b_g (mm)	$W/(m \cdot K)$	b_g (mm)
F1 fixed sill	0.2637	190	0.3304	190
F2 fixed head	0.2637	190	0.3304	190
F3 fixed jamb	0.2637	190	0.3304	190
F4 + F5 sash sill	0.3322	190	0.3983	190
F6 + F7 sash head	0.3322	190	0.3983	190
F8 + F9 sash jamb	0.3322	190	0.3983	190
F10 + F11 mullion	0.5591	380	0.6920	380

Frame:

Section	Frame width, b_f	Frame U-value, U_f	Frame areas, A_f	Frame heat flow, HU	near trans.	Linear length, l_g	Junction heat flow, H_{ψ}
	(m)	(W/(m ² ·K))	(m ²)	(W/K)	(W/(m·K))	(m)	(W/K)
F1 fixed sill	0.0570	1.1899	0.0325	0.0386	0.0310	0.5245	0.0162
F2 fixed head	0.0570	1.1899	0.0325	0.0386	0.0310	0.5245	0.0162
F3 fixed jamb	0.0570	1.1899	0.0811	0.0965	0.0310	1.3660	0.0423
F4 + F5 sash sill	0.1040	1.3108	0.0549	0.0720	0.0304	0.4305	0.0131
F6 + F7 sash head	0.1040	1.3108	0.0549	0.0720	0.0304	0.4305	0.0131
F8 + F9 sash jamb	0.1040	1.3108	0.1431	0.1876	0.0304	1.2720	0.0386
F10 + F11 mullion	0.1140	1.4680	0.1573	0.2310	0.0614	1.3190	0.0810
Totals				0.5563	0.7363	Total	0.2206

Air Leakage loss:

Air leakage at 50 Pa per hour & per unit length of opening light (BS 6375-1) - 2DP	0.00	m ³ /(m·h)
Opening light length	3.7810	m
Total air leakage	0.000	m ³ /h
L_{50}	0.00	m ³ /(m ² ·h)
Heat loss = 0.0165 L_{50}	0.00	W/(m ² ·K)

Other parameters needed for calculation, taken from simulations:

$d_p = d_g = 0.028$ m
 $\lambda_p = 0.035$ W/(m·K) $R_{se} = 0.04$ ²·K/W $R_{se} = 0.13$ m²·K/W
 $R_p = 0.8000$ m²·K/W $R_{tot} = 0.9700$ ²·K/W $U_p = 1.0309$ W/(m²·K)

BFRC Rating =

218.6g_{window} - 68.5 x (U_{window} + Effective L_{50}) = **6.71**

Climate zone is: **UK**

Thermal transmittance, W/(m ² ·K)	U_{window}	1.4
Solar factor	g_{window}	0.46
Window air leakage heat loss, W/(m ² ·K)	L_{factor}	0.00



Simulator Name: **Andy Gibson** Simulator **018**

BFRC Certified Simulator **018**