

**Sample Style: Casement**

**Fixed Light / Side Hung**

Blue line illustrates opening light length (air leakage)

**Input Values:**

Yellow input, green intermediary, blue finals

X' DP is no. of decimal places to enter

Parameter	Symbol	Units
Total window height <b>ODP</b>	$l_w$	1480 mm
Total window width <b>ODP</b>	$b_w$	1230 mm

Frame dimensions:	(b <sub>f</sub> )	Without gasket	Gasket protrusion	With gasket	Total
		(mm)	(mm)	(mm)	
All frame values to nearest 0.5mm, gaskets to 1DP					
	F1 fixed sill	45	0.0	45	89.5
	F2 fixed head	45	0.0	45	
	F3 fixed jamb	45	0.0	45	
F4 + F5 sash sill	F4 fixed sash sill	45	n/a	45	89.5
	F5 moving sash sill	44.5	0.0	44.5	
F6 + F7 sash head	F6 fixed sash head	45	n/a	45	89.5
	F7 moving sash head	44.5	0.0	44.5	
F8 + F9 sash jamb	F8 Fixed sash jamb	45	n/a	45	89.5
	F9 moving sash jamb	44.5	0.0	44.5	
F10 + F11 mullion	F10 fixed mullion	56	0.0	56	100.5
	F11 moving mullion	44.5	0.0	44.5	
Total gasket area			0	m <sup>2</sup>	

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

**Glazing dimensions and properties:**

Thickness of pane 1	4	mm
Pane 1/2 distance	16	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. - <b>3DP</b>	$U_g$	1.197	W/(m <sup>2</sup> ·K)
g-value - <b>2DP</b>	$g_{\perp}$	0.71	

Thermal transmittance of window from hot box test

$U_w - 2DP$		W/(m <sup>2</sup> ·K)
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Section	Window Dimensions:		Area	
	Length (m)	Width (m)	No gasket (m <sup>2</sup> )	With gasket (m <sup>2</sup> )
Fixed Light	1.3900	0.5420	0.7534	0.7534
Opening light	1.3010	0.4530	0.5894	0.5894
Total glazing, $A_g$			1.3427	1.3427
Frame	(m)	(m)	(m <sup>2</sup> )	(m <sup>2</sup> )
F1	0.6150	0.0450	0.0260	0.0260
F2	0.6150	0.0450	0.0260	0.0260
F3	1.4800	0.0450	0.0646	0.0646
F4	0.6150	0.0450	0.0260	0.0260
F5	0.5420	0.0445	0.0221	0.0221
F6	0.6150	0.0450	0.0260	0.0260
F7	0.5420	0.0445	0.0221	0.0221
F8	1.4800	0.0450	0.0646	0.0646
F9	1.3900	0.0445	0.0599	0.0599
F10	1.4800	0.0560	0.0804	0.0804
F11	1.3900	0.0445	0.0599	0.0599
Total Frame			0.4777	0.4777
Total Window, $A_w$			1.8204	1.8204
Percentage fixed light glass area			41.39%	41.39%
Percentage opening light glass area			32.37%	32.37%
Percentage glass area (total)			73.76%	73.76%

Where a  $U_g$  value from hot box testing is available, no  $L_f^{2DP}$  or  $L_{\psi}^{2DP}$  values need to be entered

Frame conductance:	All L values to 4DP. All b values to 0DP			
	$W/(m \cdot K)$	$b_p$ (mm)	$W/(m \cdot K)$	$b_g$ (mm)
F1 fixed sill	0.3024	190	0.3440	190
F2 fixed head	0.3024	190	0.3440	190
F3 fixed jamb	0.3024	190	0.3440	190
F4 + F5 sash sill	0.3942	190	0.4372	190
F6 + F7 sash head	0.3942	190	0.4372	190
F8 + F9 sash jamb	0.3942	190	0.4372	190
F10 + F11 mullion	0.6355	380	0.7212	380

Frame:	$b_f$ (no gaskets)	$U_f$	Frame areas (no gaskets)	Heat flow	$\psi$	$l_g$	Heat flow
Section	(m)	(W/(m <sup>2</sup> ·K))	(m <sup>2</sup> )	(W/K)	(W/(m·K))	(m)	(W/K)
F1 fixed sill	0.0450	1.7859	0.0260	0.0465	0.0362	0.5420	0.0196
F2 fixed head	0.0450	1.7859	0.0260	0.0465	0.0362	0.5420	0.0196
F3 fixed jamb	0.0450	1.7859	0.0646	0.1153	0.0362	1.3900	0.0503
F4 + F5 sash sill	0.0895	1.9236	0.0482	0.0927	0.0376	0.4530	0.0170
F6 + F7 sash head	0.0895	1.9236	0.0482	0.0927	0.0376	0.4530	0.0170
F8 + F9 sash jamb	0.0895	1.9236	0.1244	0.2394	0.0376	1.3010	0.0489
F10 + F11 mullion	0.1005	1.9047	0.1402	0.2671	0.0749	1.3455	0.1008
Totals			0.4777	0.9001		Total	0.2734

Solar Factor, g-value:

$F_w$	0.9
$g_w$	0.47

**Air Leakage loss:**

Air leakage at 50 Pa per hour & per unit length of opening light (BS 6375-1) - 2DP

Opening light length	3.8640	m	Total air leakage	0.541	m <sup>3</sup> /h
$L_{50}$	0.30	m <sup>3</sup> /(m <sup>2</sup> ·h)	Heat loss = 0.0165 $L_{50}$	0.00	W/(m <sup>2</sup> ·K)

Other parameters needed for calculation, taken from simulations:

$\lambda_p = 0.035$	W/(m·K)	$R_{se} = 0.04$	m <sup>2</sup> ·K/W	$R_{se} = 0.13$	m <sup>2</sup> ·K/W
Panel thickness, $d_p = d_g = 0.024$	m	$R_p = 0.6857$	m <sup>2</sup> ·K/W	$R_{tot} = 0.8557$	m <sup>2</sup> ·K/W
				$U_p = 1.1686$	W/(m <sup>2</sup> ·K)

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

**BFRC Rating =**

218.6  $g_{window} - 68.5 \times (U_{window} + \text{Effective } L_{50}) = -2.06$

Climate zone is: UK

Thermal transmittance, W/(m <sup>2</sup> ·K)	$U_{window}$	1.5
Solar factor	$g_{window}$	0.47
Window air leakage heat loss, W/(m <sup>2</sup> ·K)	$L_{factor}$	0.00





BS EN 14351-1:2006+A1:2010

WINDOWS AND EXTERNAL PEDESTRIAN DOORSETS WITHOUT  
RESISTANCE TO FIRE AND/OR SMOKE LEAKAGE CHARACTERISTICS

## DECLARATION OF PERFORMANCE

THIS IS TO CERTIFY THAT

**ATRIUM CONSERVATORIES LIMITED.**

The old Foundry, Victoria Road,  
Knigton, Herefordshire  
HR5 3DA.

HAVE CONFORMED WITH EN 14351-1:A1:2010 ANNEX ZA

FOR

VERTICAL SIDING & CASEMENT WINDOWS AND DOORS INTENDED TO BE USED  
IN DOMESTIC AND COMMERCIAL LOCATIONS

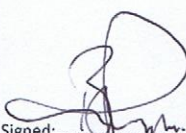
INSTIGATING AND IMPLEMENTING A SYSTEM OF FACTORY PRODUCTION  
CONTROL COMPLYING WITH EN 14351-1:A1:2010 ANNEX ZA

PRODUCING A TECHNICAL FILE CONTAINING THE TEST REPORT AND  
PERFORMANCE INDICATION PAPERS FOR ALL COMPONENTS  
INCLUDING THE FOLLOWING MANDATORY REQUIREMENTS

LOAD BEARING CAPACITY OF SAFETY DEVICES - Clause 4.8

THERMAL CHARACTERISTICS - Clause 4.12

DANGEROUS SUBSTANCES - Clause 4.6

Signed:  .....

Position: *Managing Director* .....

Date: 27-3-2013 .....