




Report in Accordance with BFRC Guidelines and Regulations

Energy Rating Performance of Windows & Doors

CONFIDENTIAL

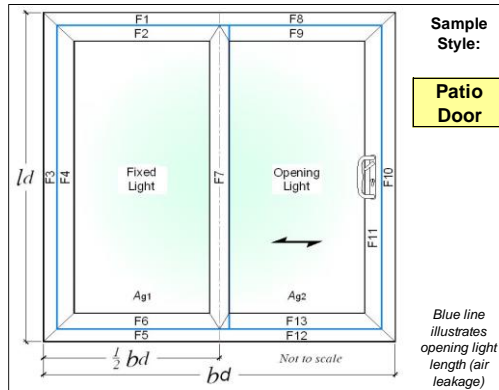
Report reference:	U25-001-4
Prepared for:	Aanco (UK) Ltd t/a Made For Trade Wellington House, Wynyard Avenue, Wynyard Billingham. TS22 5TB
Product Description:	Cortizo 4700 Patio Door
Date:	14 March 2025
Prepared by:	Sue Peatey BFRC Technical Officer  Approved Simulator S166

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5 BFRC Spreadsheet



Report Number: **U25-001-4** Issue 2.7: 04/01/2016
 Report Date: **22 January 2025**
 Project Details: **Cortizo 4700 Patio door.**

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

Parameter	Symbol	Units
Total door height ODP	l_d	2180 mm
Total door width ODP	b_d	2000 mm

Frame offset: **No**

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

Glazing dimensions and properties:

Thickness of pane 1	6	mm
Pane 1/2 distance	16	mm
Gas fill (1/2)	Argon 90%	
Thickness of pane 2	6.8	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 1.189	W/(m ² ·K)
g-value - 2DP	g_u 0.73	

Thermal transmittance of door from hot box test
 U_{d-2dp} **0.9546** W/(m²·K)

Frame dimensions: All frame values to nearest 1mm, gaskets to 1DP	Frame heights, (b _i)	Without gasket (mm)	Gasket protrusion (mm)	With gasket (mm)	Total (mm)
F1 + F2 left head rail	F1 left fixed head	47	n/a	47.0	113.0
	F2 left opening head	66	0.0	66.0	
F3 + F4 left jamb	F3 left fixed jamb	47	n/a	47.0	106.0
	F4 left opening jamb	59	0.0	59.0	
F5 + F6 left threshold	F5 left fixed threshold	47	n/a	47.0	111.0
	F6 left opening threshold	64	0.0	64.0	
F7 Meeting Stile	F7 Meeting Stile	47	0.0	47.0	
F8 + F9 right head rail	F8 right fixed head	47	n/a	47.0	113.0
	F9 right opening head	66	0.0	66.0	
F10 + F11 right jamb	F10 right fixed jamb	47	n/a	47.0	106.0
	F11 right opening jamb	59	0.0	59.0	
F12 + F13 right threshold	F12 right fixed threshold	47	n/a	47.0	111.0
	F13 right opening threshold	64	0.0	64.0	
Total gasket area				0	m ²

Door Dimensions:

Section	Length (m)	Width (m)	Area	
			No gasket (m ²)	With gasket (m ²)
Left Fixed Light	1.9560	0.8705	1.7027	1.7027
Right Opening light	1.9560	0.8705	1.7027	1.7027
Total glazing, A_g			3.4054	3.4054
Frame	(m)	(m)	(m ²)	(m ²)
F1	1.0000	0.0470	0.0459	0.0459
F2	0.9530	0.0660	0.0602	0.0602
F3	2.1800	0.0470	0.1003	0.1003
F4	2.0860	0.0590	0.1192	0.1192
F5	1.0000	0.0470	0.0459	0.0459
F6	0.9530	0.0640	0.0584	0.0584
F7	2.0860	0.0470	0.0950	0.0950
F8	1.0000	0.0470	0.0459	0.0459
F9	0.9530	0.0660	0.0602	0.0602
F10	2.1800	0.0470	0.1003	0.1003
F11	2.0860	0.0590	0.1192	0.1192
F12	1.0000	0.0470	0.0459	0.0459
F13	0.9530	0.0640	0.0584	0.0584
Total Frame			0.9546	0.9546
Total door, A_d			4.3600	4.3600
Percentage left light glass area			39.05%	39.05%
Percentage right light glass area			39.05%	39.05%
Percentage glass area (total)			78.11%	78.11%
Solar Factor, g-value:			F_d 0.9	
			g_d 0.51	

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

All L values to **4DP**. All b values to **ODP**

Frame conductance:	L_{f-2DP}	b_i (mm)	$W/(m^2 \cdot K)$	$L_{\psi-2DP}$	$W/(m^2 \cdot K)$	b_g (mm)
F3 + F4 left jamb	0.5418	190	0.6155	190		
F5 + F6 left threshold	0.5564	190	0.6305	190		
F7 Meeting Stile	0.7031	380	0.8629	380		
F8 + F9 right head rail	0.5809	190	0.6511	190		
F10 + F11 right jamb	0.5585	190	0.6286	190		
F12 + F13 right threshold	0.5740	190	0.6442	190		

Frame:	Frame width, b_i (m)	Frame U-value, U_i (W/(m ² ·K))	Frame area (no gaskets), A_i (m ²)	Frame heat flow, H_U (W/K)	Linear trans, ψ (W/(m·K))	Linear length, l_g (m)	Junction heat flow, H_{ψ} (W/K)
F1 + F2 left head rail	0.1130	3.3118	0.1061	0.3513	0.0397	0.8705	0.0345
F3 + F4 left jamb	0.1060	3.3060	0.2195	0.7256	0.0392	1.9560	0.0766
F5 + F6 left threshold	0.1110	3.2886	0.1042	0.3428	0.0396	0.8705	0.0344
F7 Meeting Stile	0.0470	6.8163	0.0950	0.6475	0.0907	1.9560	0.1774
F8 + F9 right head rail	0.1130	3.4472	0.1061	0.3656	0.0357	0.8705	0.0310
F10 + F11 right jamb	0.1060	3.4635	0.2195	0.7602	0.0356	1.9560	0.0695
F12 + F13 right threshold	0.1110	3.4471	0.1042	0.3594	0.0357	0.8705	0.0310
Totals			0.9546	3.5524	Total	0.4546	

Other parameters needed for calculation, taken from simulations:

$\lambda_p = 0.035$ W/(m·K) $R_{se} = 0.04$ m²·K/W $R_{tot} = 0.9929$ m²·K/W $d_p = d_g = 0.0288$ m $R_{\psi} = 0.13$ m²·K/W $U_p = 1.0072$ W/(m²·K)

U_{door}	No bars; or attached bars	1.85	W/(m ² ·K)
	Single cross bar in IGU	1.9	
	Multiple cross bar in IGU	2.0	
	Glazing bar (Georgian bar)	2.2	

Air Leakage loss:

Air leakage at 50 Pa per hour & per unit length of opening light (BS 6375-1) - 2DP	1.28	m ³ /(m·h)
Opening light length L_{50} 10.0700 m	Total air leakage	12.890 m ³ /h
L_{50} 2.96 m ³ /(m ² ·h)	Heat loss = $0.0165 L_{50}$	0.05 W/(m ² ·K)

Energy Door
Energy Index
-18
Door Rating
C

BFRC Rating
kWh/(m²·yr)

- ≥ 20 **A** ++
- >10 to 20 **A** +
- 0 to <80 **A**
- 10 to <0 **B**
- 20 to <-10 **C** ✓
- 30 to <-20 **D**
- 50 to <-30 **E**

BFRC Rating =
 $218.6g_d - 68.5 \times (U_d + \text{Effective } L_{50}) =$ **-17.73**
 Climate zone is: **UK**

Thermal transmittance, $W/(m^2 \cdot K)$	U_{door} 1.8
Solar factor	g_{door} 0.51
Door air leakage heat loss, $W/(m^2 \cdot K)$	L_{factor} 0.05

Simulator Name: **Sue Peatey**

BFRC
BFRC Certified Simulator No
S166

6 BS EN 673 Spreadsheet

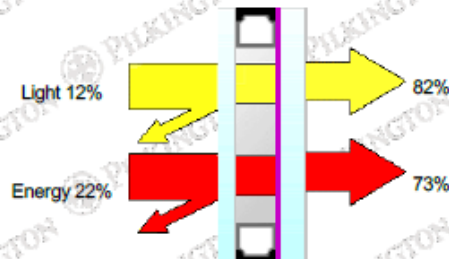
Version 12 18/06/2015. Calculations according to BS EN 673:2011

Number of spaces	Help			
1				
Spaces		1		
Glazing orientation				
Vertical				
Resistivity panes	1	m·K/W		
Outside		90%		
		P a n e 1	P a n e 2	
Calculate		Gas		
		Argon		
Thickness (mm)	6.0	16	6.8	
Normal emissivity		0.89	0.05	
$\sum d_j r_j =$	0.0128	Uncoated		

For uncoated surfaces input 0.89 for normal emissivity, which corresponds to a corrected emissivity of 0.837

External, R_{se}	0.04	$(m^2 \cdot K)/W$		
Internal, R_{si}	0.13	$(m^2 \cdot K)/W$		
Iteration number	U value	$\sum 1/h_s$	λ_{eff}	ΔT
	$W/(m^2 \cdot K)$	$(m^2 \cdot K)/W$	$W/(mK)$	
1	1.189	0.65864	0.0243	15
2	1.189	0.65864	0.0243	15

8 G-Value Data



DESCRIPTION

Position	Product	Process	Thickness (nominal) mm	Weight kg/m ²
Pilkington Insullight™ Protect				
Glass 1	Pilkington Optiwhite™	Annealed	6.0	
Cavity 1	Argon (90%)		16.0	
Glass 2	Pilkington Optilam K Glass™ S	Laminated	6.8	
Product Code	6w-16Ar-KS6.8L		28.8	30.76

PERFORMANCE

Light			Energy		
Transmittance	LT	82%	Direct Transmittance	ET	59%
	UV %	1%	Reflectance	ER	22%
Reflectance Out	LR out	12%	Absorptance	EA	19%
Reflectance In	LR in	12%	Total Transmittance	g	73%
Performance Code			Shading Coefficient Total		0.84
U _g -value/Light/Energy		1.2 / 82 / 73	Shading Coefficient Shortwave		0.68
Ra		98	Sound Reduction	R _w (C;C _T) dB	33 (-2; -5)
The values of some of characteristics are displayed as NPD. This stands for No Performance Determined.			Thermal Transmittance	W/m ² K	1.2

Carbon Footprint

GWP kgCO₂e/m² 57

Global Warming Potential (GWP) values derived from the Life Cycle Assessment (LCA) that underpins the third-party verified product Environmental Product Declarations (EPDs). They are declared for modules A1 to A3; the scope of the EPDs is cradle-to-grave and module D in accordance with the requirements of Product Category Rules EN 15804:2012+A2:2019/AC:2021 and EN17074:2019. As noted in the EPD, indicators for modules A1 to A3 should not be used without considering indicators for module C.

Pilkington Spectrum allows you to combine a wide range of products available from Pilkington and determine their key properties such as light transmittance, g-value and U value. The program includes restrictions that prevent some combinations being selected that may be considered unwise or impractical. Even with these restrictions, it is still possible to create product combinations that may not be available from your supplier. Please check with your supplier that your chosen product combination is possible, available in the sizes required and in a timescale appropriate to your project. Furthermore, it is essential that you check that your product combination is appropriate for satisfying local, regional, national and other project-specific requirements.

Calculations are made according to EN standards 410 and 673/12898

Pilkington Spectrum Version UK:7.4.1

04/03/2025

