

Matrix 70 U-value Certificate				08/02/2012
	Window Profiles & Reinforcements	Frame Mullion 102176 & 102177	LB-X LB-X	
		Sash 103150	LB-X	
		Bead 107528	112279 & Q-Lon	
Glazing Specification	Outer Middle Inner	Saint-Gobain - Planilux Saint-Gobain - Ultra N II Saint-Gobain - Ultra N II		T.J. Williams (VEKA plc)
Spacer Bar	Edgetech	SuperSpacer		
Secondary Seal	5mm	Butyl Hot Melt		

Matrix 70 Fixed Light Next To Side Hung Window

Casement window dimensions:			
Total window	l_w	1480	mm
Total window	b_w	1230	mm

Glazing dimensions and properties:			
Thickness of pane 1	4.0	mm	
Pane 1/2 distance	16	mm	
Gas fill (1/2)	Argon 90%		
Thickness of pane 2	4.0	mm	
Complete next 3 cells for TG IGU			
Pane 2/3 distance	16	mm	
Gas fill (2/3)	Argon 90%		
Thickness of pane 3	4.0	mm	
Glazing Transmittance	U_g	0.577	W/(m ² ·K)

Frame dimensions:	(b_f)	Profile Width (mm)	Sight Line (mm)	Total
F1 frame	F1 fixed sill	70.0	70.0	115.5
F2 frame	F2 fixed head	70.0	70.0	
F3 frame	F3 fixed jamb	70.0	70.0	
F4 + F5 sash sill	F4 fixed sash sill	70.0	70.0	115.5
	F5 moving sash sill	45.5	45.5	
F6 + F7 sash head	F6 fixed sash head	70.0	70.0	115.5
	F7 moving sash head	45.5	45.5	
F8 + F9 sash jamb	F8 Fixed sash jamb	70.0	70.0	115.5
	F9 moving sash jamb	45.5	45.5	
F10 + F11 mullion	F10 fixed mullion	65.0	65.0	110.5
	F11 moving mullion	45.5	45.5	

Window Dimensions:			
Section	Length (m)	Width (m)	Area (m ²)
Fixed Light	1.3400	0.5125	0.6868
Opening light	1.2490	0.4215	0.5265
Total glazing, A_g 1.2132			
Frame	(m)	(m)	(m ²)
F1	0.6150	0.0700	0.0395
F2	0.6150	0.0700	0.0395
F3	1.4800	0.0700	0.0987
F4	0.6150	0.0700	0.0395
F5	0.5125	0.0455	0.0212
F6	0.6150	0.0700	0.0395
F7	0.5125	0.0455	0.0212
F8	1.4800	0.0700	0.0987
F9	1.3400	0.0455	0.0589
F10	1.4800	0.0650	0.0917
F11	1.3400	0.0455	0.0589
Total Frame 0.6072			
Total Window, A_w 1.8204			
Percentage glass area 66.64%			

Frame conductivity:	$W/(m^2 \cdot K)$	b_g (mm)	$W/(m \cdot K)$	b_g (mm)
F1 fixed sill	0.193	190	0.194	190
F2 fixed head	0.193	190	0.194	190
F3 fixed jamb	0.193	190	0.194	190
F4 + F5 sash sill	0.254	190	0.255	190
F6 + F7 sash head	0.254	190	0.255	190
F8 + F9 sash jamb	0.254	190	0.255	190
F10 + F11 mullion	0.381	380	0.383	380

Frame:	b_f (m)	U_f (W/(m ² ·K))	Frame areas (m ²)	Heat flow (W/K)	ψ (W/(m·K))	l_g (m)	Heat flow (W/K)
F1 fixed sill	0.0700	0.8552	0.0395	0.0337	0.0245	0.5125	0.0126
F2 fixed head	0.0700	0.8552	0.0395	0.0337	0.0245	0.5125	0.0126
F3 fixed jamb	0.0700	0.8552	0.0987	0.0844	0.0245	1.3400	0.0328
F4 + F5 sash sill	0.1155	1.0465	0.0607	0.0635	0.0245	0.4215	0.0103
F6 + F7 sash head	0.1155	1.0465	0.0607	0.0635	0.0245	0.4215	0.0103
F8 + F9 sash jamb	0.1155	1.0465	0.1576	0.1649	0.0245	1.2490	0.0306
F10 + F11 mullion	0.1105	1.0383	0.1505	0.1563	0.0490	1.2945	0.0634
Totals				0.6072	0.6002	Total	0.1726

Other parameters needed for calculation:		$\lambda_p =$	0.035	W/(m·K)	$R_{se} =$	0.04	m ² ·K / W	$R_{se} =$	0.13	m ² ·K / W	
Panel thickness, $d_p = d_g =$	0.044	m	$R_p =$	1.2571	m ² ·K / W	$R_{tot} =$	1.4271	m ² ·K / W	$U_p =$	0.7007	W/(m ² ·K)
Solar gain = g	0.53	Air leakage heat loss = 0.0165 L ₅₀		0.01	Energy Index	13.8	kWh/(m ² ·yr)				

Simulated in accordance with BS EN 10077 Parts 1 & 2 and BS EN 14351 by BFR certified simulator 009 - T.J. Williams using WinISO 7.2 software

Whole Window U-value 0.8 W/(m²·K)

Indicative Energy Index 14
Indicative energy rating A