



GLASS PERFORMANCE

Windell can specify SGG PLANITHERM™ & Pilkington Optitherm™ ranges of energy-saving products in their High Performance Thermally Enhanced Casement window systems

Table 1: Performance Data for SGG PLANITHERM range

SGG PLANITHERM TOTAL						
External pane		SGG PLANILUX				
Internal pane		SGG PLANITHERM TOTAL				
Composition *	mm	4 (12) 4	4 (16) 4	6 (12) 6	6 (16) 6	
Thickness	mm	20	24	24	28	
Weight	kg/m ²	20	20	30	30	
Low-E coating position	face	3	3	3	3	
Light factor						
LT	%	79	79	77	77	
LRe	%	12	12	11	11	
LRI	%	12	12	11	11	
UV	%	35	35	30	30	
Energy factor						
T	%	54	54	51	50	
Re	%	23	23	21	21	
A1	%	12	12	17	17	
A2	%	10	10	12	12	
Solar factor g		0,63	0,64	0,61	0,61	
Shading Coefficient		0,73	0,73	0,70	0,70	
U-value		W/(m ² .K)				
Air		1,7	1,4	1,7	1,4	
Argon 90 %		1,3	1,2	1,3	1,2	
Sound reduction indices *						
RW	dB	30	30	33	34	
C	dB	0	0	-1	-2	
Ctr	dB	-3	-3	-3	-5	
RA	dB	30	30	32	32	
RA,tr	dB	27	27	30	29	

Table 2: Performance Data for Pilkington Optitherm™ S1 Pro T [Toughened]

Product Description	Light		Solar Radiant Heat				Total shading coefficient	U _g -value (W/m ² K)
	Transmittance	Reflectance	Direct Transmittance	Reflectance	Absorptance	Total Transmittance (g value)		Argon-filled (90%)
Pilkington Insulight ™ Therm (with 4 mm outer pane, 16 mm argon gas-filled cavity and 4 mm Pilkington Optitherm ™ S1 Pro T (Toughened) inner pane)								
Pilkington Optifloat ™ Clear	0.76	0.17	0.49	0.34	0.17	0.56	0.64	1.0
Pilkington Optiwhite ™	0.77	0.18	0.51	0.39	0.10	0.58	0.67	1.0

Performance data determined in accordance with EN 410 and EN 673. Low-e coating on surface 3 (counting from the outside).

Tested by: **SGG & Pilkington**



PERFORMANCE OVERVIEW

High Performance Thermally Enhanced Casement window offers the specifier a wide and diverse range of profiles that will provide structural integrity, weather performance, thermal enhancement and security

Weather Performance:

Independently weather performance tested to BS 6375 -1

Air Infiltration	BS EN 1026	Class 4
Watertightness	BS EN 1027	Class E1050
Wind Resistance	BS EN 12211	Class E2400

Window Energy Rating:

A Rating

BREEAM Sustainability Rating:

A Rating

Acoustics:

BS EN ISO 140-3
BS EN ISO 717-1

Security:

This system has passed BS 7950 incorporating Amendments 1, 2 and 3 "Specification for Enhanced Security Performance" as generally accepted on Secure by Design products.

Size Limitation:

	Vent Width	Vent Height	Vent Weight
Top Hung Casement	2000mm	2000mm	100kg
Side Hung Casement	1000mm	1800mm	60kg

Tested by: **Metal Technology**



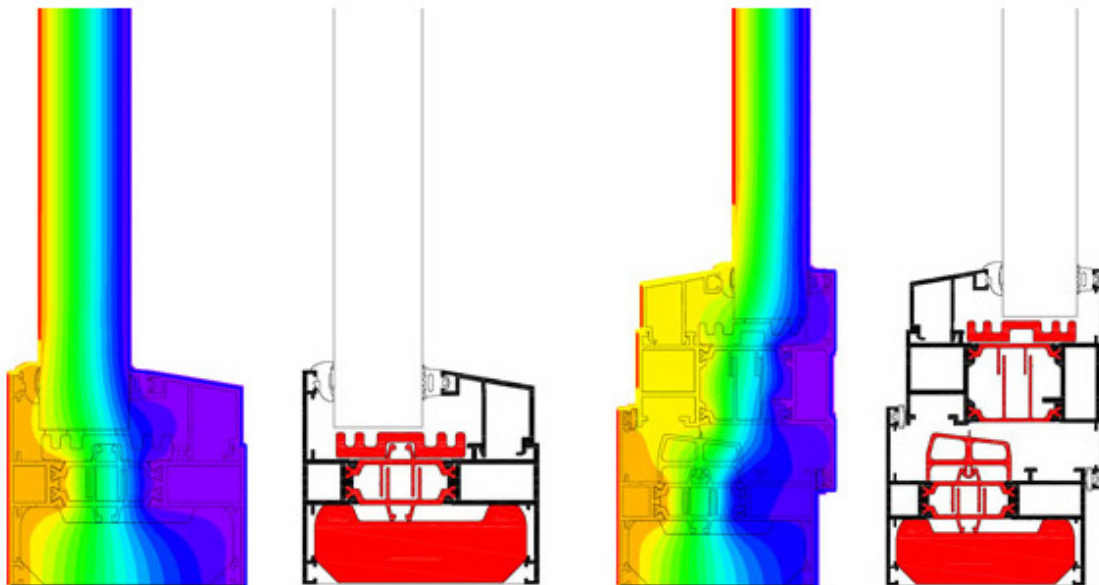
THERMAL PERFORMANCE

High Performance Thermally Enhanced Casement window in conjunction with the correct glass specification is designed to aid compliance with the latest thermal requirements of the current building regulations. Thermal performance is further improved through the introduction of specially designed thermal gaskets and foam profiles. These reduce radiation heat loss across the air cavities within the window to provide additional thermal enhancement

Hi+Thermally Enhanced Casement	U-Frame Values	
Fixed light outer frame	1.92w/m ² k	1.34w/m ² k
Outer frame and glazed-out vent	2.56 w/m ² k	1.69 w/m ² k
Outer frame and glazed-in vent	2.57 w/m ² k	1.69 w/m ² k

The following table, based on a standard commercial GGF window configuration and warm edge spacers, demonstrates how such improved U-frame values then contribute to improving the overall thermal performance of the complete window.

Achievable whole window U-value	Centre pane U-value	
	1.1 W/m ² K	0.6 W/m ² K
Hi Glazed-in casement	1.62 W/m ² K	1.30 W/m ² K
Hi Glazed-out casement	1.56 W/m ² K	1.25 W/m ² K
Hi+ Glazed-in casement	1.39 W/m ² K	1.04 W/m ² K
Hi+ Glazed-out casement	1.34 W/m ² K	0.98 W/m ² K



Tested by: **Metal Technology**