



How to achieve...

... impressive results in terms of thermal insulation, solar gains and daylight utilization

Natural light plays an important role for our well-being, health and performance.

In order to provide interiors with plenty of natural light, buildings are often designed with large glass surfaces. But it is precisely here that there is a risk of significant heat loss. Highly thermal insulating glazing helps, but it also filters out a high proportion of valuable natural light. In buildings with smaller window dimensions, this can have a significant effect. As a result, the building is well insulated, but more artificial light is required as less daylight can enter the building.



Impressive results in terms of thermal insulation, solar gains and daylight utilisation can be achieved through a combination of the products ECLAZ® from Saint-Gobain Building Glass and the warm edge spacer bar SWISSPACER ULTIMATE. A comparison using standard window dimensions (1.23m x 1.48m) for a PVC window (frame width 117 mm) with double glazing and Standard-Low-E coating and an aluminium spacer bar shows that if the ECLAZ® insulating glazing and SWISSPACER ULTIMATE are combined, the Psi value is reduced by more than 50 %, while the U_w value falls by up to 10 %. The total energy transmittance of the insulating glass is at 71 % and makes an increase of 11 % in DGU (up to 20 % in TGU) on free solar energy gains possible.

Window with double glazing:

COATING	STANDARD LOW-E	ECLAZ®
Spacer bars	Aluminium	SWISSPACER ULTIMATE
U _g value	1.1 W/(m ² K)	1.1 W/(m ² K)
g value	64 %	71 %
Psi value	0.076 W/(mK)	0.032 W/(mK)
U _w value	1.3 (1.319) W/(m ² K)	1.2 (1.210) W/(m ² K)
g _w value	44 %	48 %
E _{ref}	-33 kWh/(m ² a)	-14 kWh/(m ² a)
Energy efficiency class	D	B

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Dimensions 1.23m x 1.48m, PVC frame with U_f 1.2 W/(m²K) and frame width 117mm

Window with triple glazing:

COATING	STANDARD LOW-E	ECLAZ®
Spacer bars	Aluminium	SWISSPACER ULTIMATE
U _g value	0.6 W/(m ² K)	0.6 W/(m ² K)
g value	53 %	60 %
Psi value	0.078 W/(mK)	0.030 W/(mK)
U _w value	0.98 W/(m ² K)	0.86 W/(m ² K)
g _w value	36 %	41 %
E _{ref}	-18 kWh/(m ² a)	2 kWh/(m ² a)
Energy efficiency class	C	A








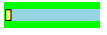


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Dimensions 1.23m x 1.48m, PVC frame with U_f 1.2 W/(m²K) and frame width 117mm



Better energy ratings for export markets

In countries that have clearly regulated window energy ratings, the use of the ECLAZ® and warm edge from SWISSPACER in thermally insulating glazing often facilitates a jump into an efficiency class that is two levels higher. Window manufacturers who optimise their products in this way have a strong competitive advantage – especially when export markets demand verifiable values.

$U_w = 1.3 (1.319) \text{ W/m}^2\text{K}$	$U_w = 1.2 (1.210) \text{ W/m}^2\text{K}$
 <p>Window Energy Rating $E_{w} = -33 \text{ kWh/m}^2\text{a}$ Class: D</p>	 <p>Window Energy Rating $E_{w} = -14 \text{ kWh/m}^2\text{a}$ Class: B</p>
 <p>Single sash $a=1.23\text{m} - b=1.48\text{m}$</p>	 <p>Single sash $a=1.23\text{m} - b=1.48\text{m}$</p>
 <p>PVC $U_f = 1.2 \text{ W/m}^2\text{K}$ Frame width 0.117 m</p>	 <p>PVC $U_f = 1.2 \text{ W/m}^2\text{K}$ Frame width 0.117 m</p>
 <p>Standard Double Glazing $U_g = 1.1 (1.10) \text{ W/m}^2\text{K}$ Structure: 4/16/4 $g = 64\%$</p>	 <p>CLIMAPLUS ECLAZ $U_g = 1.1 (1.10) \text{ W/m}^2\text{K}$ Structure: 4/4 $g = 71\%$</p>
 <p>Aluminium $\Psi_g = 0.076 \text{ W/mK}$</p>	 <p>SWISSPACER ULTIMATE $\Psi_g = 0.032 \text{ W/mK}$</p>

Two calculations for energy-efficiency with standard double-glazing and Eclaz® combined with SWISSPACER ULTIMATE © SWISSPACER

The software tool CALUWIN offers a reliable calculation basis for this. CALUWIN is available online at www.caluwin.com and as an App for iOS and Android end devices from the respective App Stores. The calculating engine in CALUWIN is certified by ift Rosenheim, and the calculations have been tested and confirmed by various international associations.