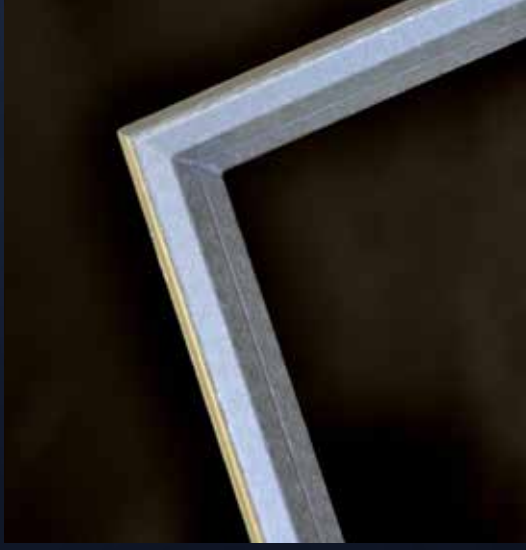
SWISSPACER

THE **"WARM EDGE"** SOLUTION FOR **ENERGY EFFICIENT WINDOWS** AND **FAÇADES**

Engineered in Switzerland

www.swisspacer.com

SAINT-GOBAIN



SWISSPACER
FOR YOUR PERFECT WINDOW

BETTER THERMAL EFFICIENCY FOR LOWER HEATING BILLS

The SWISSPACER warm edge spacer bar separates the panes of glass in a double or triple glazed unit. SWISSPACER is made of an insulating plastic composite material that is a barrier to heat lost through the edge of the glass. It stops heat escaping in winter and unwanted heat penetrating in summer.

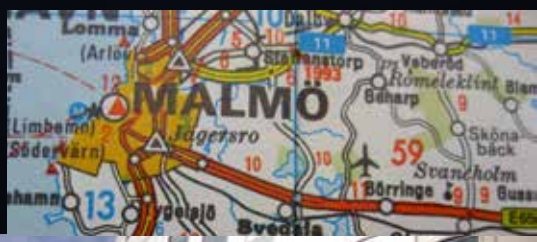
That results in more thermally efficient windows, lower energy bills and a more comfortable indoor temperature.

Most importantly, SWISSPACER's performance lasts. All SWISSPACER spacer bars have a High Tech Gas Barrier that fully prevents all gas leaking out and water vapour getting into the sealed unit through the spacer bar. If the spacer bar doesn't stop moisture vapour transmission and insulating gas leakage, the sealed unit will lose its energy efficiency and over time will fail completely.

SWISSPACER is a permanent solution. In a well-made sealed unit, windows with SWISSPACER inside will continue to function and contribute to the long term energy efficiency of the building.

WHY CHOOSE WINDOWS WITH SWISSPACER INSIDE?

- According to ift Rosenheim WA-17/1 & WA 08/2 guidelines, SWISSPACER has the best PSI and Lambda values of any warm edge spacer bar. SWISSPACER is the simplest and lowest cost solution for improving the energy efficiency of a window.
- SWISSPACER ensures a comfortable, condensation-free, healthy indoor environment. It keeps the edge of the glass warm to stop condensation forming on the inside of the window. Condensation looks unattractive and is unhealthy. It is a breeding ground for mould and bacteria, which can cause breathing difficulties and worsen underlying health conditions.
- SWISSPACER offers the largest choice of colours of any warm edge spacer bar. Aesthetics are becoming more important in window design and whether you want a spacer bar to match or contrast with your window, SWISSPACER has the colour for you.
- SWISSPACER is established around the world and most large sealed unit makers use SWISSPACER.



Turning Torso, Malmö (S)
Architect: Santiago Calatrava
Photo: Emporis GmbH

Photo: Kristen Pelou

PASSIVHAUS: LOW-COST, COMFORTABLE, SUSTAINABLE HOMES

Passivhaus is the world's leading fabric-first approach to energy efficient buildings. It is considered the 'diamond standard', setting the environmentally-friendly standard for energy efficiency, comfort and sustainability.

As energy costs continue to rise, more developers are choosing the Passivhaus standard to reduce energy consumption. Energy loss is reduced to a minimum using the most energy efficient flooring, walls, windows and roofs.

Passivhaus sets the most demanding standards for windows and facades. High performance warm edge spacer bars are particularly important, and most Passivhaus window manufacturers use SWISSPACER. A 2014 study by PHI Darmstadt (DE) found over 80% of all Passivhaus-approved windows have SWISSPACER inside.

CALUWIN – THE ENERGY SAVING PROGRAM

This free, unique calculation program enables architects, engineers and developers to calculate a window's energy savings, quickly and easily.

Caluwin lets you change components (including spacer bars) and calculate the Uw value and WER rating for virtually any window configuration. You can determine whether condensation will form at the window edge, and find out what is the risk of mould formation in different climate conditions. You can compare different window designs and combinations to calculate the savings in energy consumption, heating costs and CO_2 emissions.

The Caluwin App is free to download on iOS and Android devices. A version is available to use on your desktop at www.caluwin.com.

ZERTIFIZIERTE KOMPONENTE
Passivhaus Institut

Photo: Kristen Pelou

ARCHITECTS

SWISSPACER: AT THE HEART OF ENERGY-SAVING WINDOWS AND FACADES

Torre Cristal, Madrid (ES)
Architect: Pelli Clarke Pelli Architects / Ortiz Leon Arquitectos
Photo: Glassolutions La Veneciania

WHY USE SWISSPACER INSIDE WINDOWS AND FACADES?

SWISSPACER is the best performing warm edge spacer bar on the market. It contributes to energy efficiency, a more comfortable internal environment and better looking windows.

SWISSPACER Ultimate is the best warm edge spacer bar in the world in terms of heat conductivity. Ultimate came top for thermal efficiency in official tests by ift Rosenheim for the Warm Edge Working Group (German Flat Glass Association) of all leading warm edge brands.

All SWISSPACER spacer bars have High Tech Gas Barriers that stop insulating gas leakage and moisture vapour penetration for long-lasting performance. Well-made sealed units with SWISSPACER inside will continue to save energy over the lifespan of the window or facade.

According to a recent academic study, an uninsulated home loses around 18% of its heat through the windows. SWISSPACER is a simple and cost-effective way of improving the energy efficiency of windows and facades.

SWISSPACER is ideal for triple glazing because its strong, rigid structure can easily cope with the extra weight of the third pane of glass without any modification. SWISSPACER's rigid structure also provides clean, parallel sightlines for an attractive finish.

SWISSPACER's free Caluwin software allows you to calculate the energy, CO_2 and money saving potential of your windows and facades.

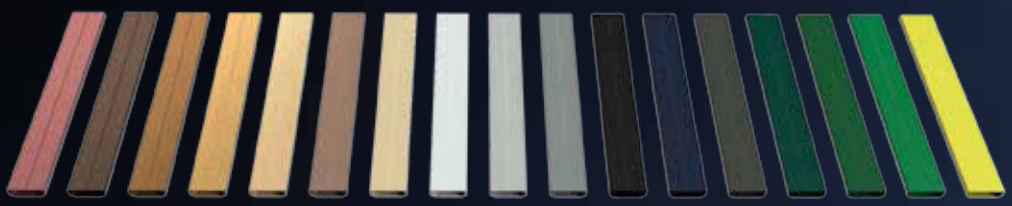
Swiss Re, London (UK)
Architect: Foster and Partners
Photo: Emporis GmbH

COLOUR AND APPEARANCE ARE IMPORTANT FACTORS WHEN DESIGNING BUILDINGS

Detail matters. Whether you want a spacer bar to match or contrast with your window frame material, SWISSPACER offers the largest choice of colours of any warm edge spacer bars – 17 colours in all. We can supply additional colours on request.

AESTHETICS

Looks matter. SWISSPACER spacer bars have a velvety, matt appearance that make an attractive finish. Unlike other spacer bars with high shine, metallic finishes, SWISSPACER does not reflect sunlight or create glare.



Architects: Dalla Corte Völkle Architects

WINDOW FABRICATORS

UP THE VALUE OF YOUR WINDOW AND CUT YOUR CUSTOMERS' HEATING BILLS WITH SWISSPACER

SWISSPACER is the leading warm edge spacer bar on the market. It is a key element of particularly energy efficient windows and improves the energy efficiency of the whole building.

OPTIMISE U_W VALUES AND WER RATINGS WITH SWISSPACER

SWISSPACER is a highly cost-effective way of improving U_w values and WER ratings: much lower cost compared to changing profile or glass. SWISSPACER lets you achieve tomorrow's energy standards today: it's the first warm edge spacer bar to achieve Passivhaus certification and the only warm edge brand with the highest Class A* certification.

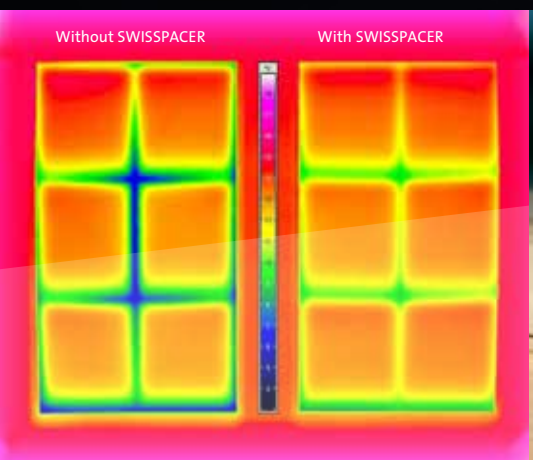
WHY USE SWISSPACER INSIDE?

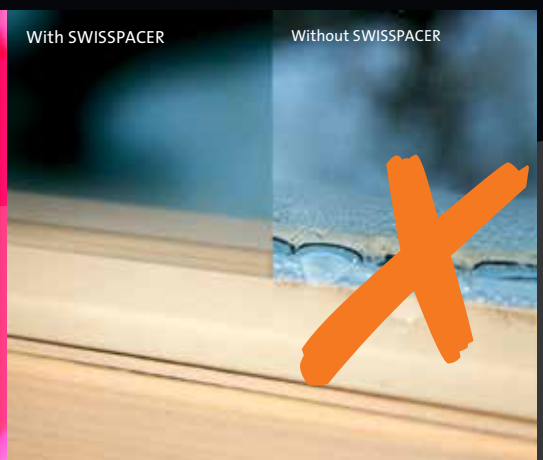
- SWISSPACER improves a window's energy efficiency and keeps buildings pleasantly warm in winter and cool in summer.
- Higher temperatures at the edge of the glass prevent condensation forming. Condensation looks bad, and leads to the build-up of mould and bacteria which can cause breathing difficulties and worsen underlying health conditions.

LONG-LASTING PERFORMANCE WITH SWISSPACER

- SWISSPACER is ideal for triple glazing. Its strong, rigid structure copes easily with the extra weight of the third pane of glass, without modification. SWISSPACER's strength and stability also guarantee clean sightlines in the triple glazed unit.
- Manufacturers and installers rely on SWISSPACER for high energy-efficient performance over the lifespan of the window. Every SWISSPACER spacer bar has a High Tech Gas Barrier that fully prevents all gas leaking out and moisture vapour getting into the sealed unit, so the sealed unit retains its energy saving properties. Windows with SWISSPACER inside continue to save energy for decades.

*Certified by the Passive House Institute Darmstadt (DE), as of 09/2014.





COMPARISON OF HEAT CONDUCTIVITY

SWISSPACER Ultimate is the best warm edge spacer bar in the world as tested to ift Rosenheim guidelines WA/17-1 & WA/08-2.

SWISSPACER Advance is our low-cost warm edge spacer bar with outstanding performance.

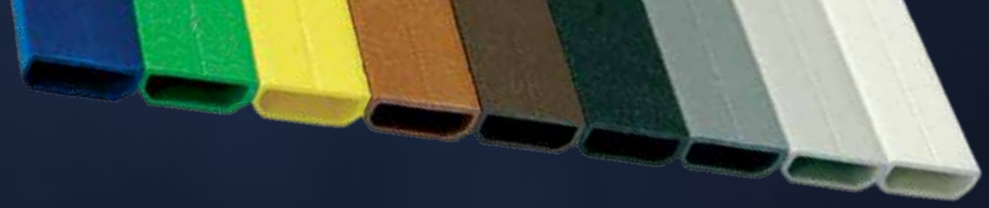
USE THE LABEL

SWISSPACER® inside
www.swisspacer.com

The 'SWISSPACER inside' window label confirms to property owners they have a high performance window, one that provides the best energy savings and long-lasting performance. Manufacturers and installers can ask for SWISSPACER inside window stickers by e-mailing info@swisspacer.com.

1 2 3 Bracken Hill in Bristol (UK)
Photo: Devonshire Homes

4 Grand Hotel Heiligendamm
Bad Doberan-Heiligendamm (DE)
Architect: HHP Architekten, Düsseldorf



SIMPLY, **THE BEST ENERGY EFFICIENCY** FOR ALL APPLICATIONS

SWISSPACER spacer bars provide low heat conductivity and excellent insulation. This prevents heat escaping through the glass edge in winter, and heat penetrating into the room in summer to give a comfortable indoor temperature all year round.

WHY USE SWISSPACER INSIDE YOUR INSULATED SEALED UNITS?

- SWISSPACER is a 'no investment needed' warm edge spacer bar. It can be processed by hand with cut and corner keys or used on existing machinery.
- For large-scale sealed unit makers, SWISSPACER offers high-performance automated welders with very short cycle times for increased productivity.
- SWISSPACER is a simple and low-cost solution for the best energy ratings and lowest U_w values.
- SWISSPACER provides long-lasting results. A High Tech Gas Barrier fully prevents all gas leaking out and moisture getting into the sealed unit through the spacer bar to ensure the sealed unit remains energy efficient. Well-made sealed units with SWISSPACER inside will perform and save energy over the lifespan of the window.
- SWISSPACER is established around the world and most large sealed unit makers use SWISSPACER.

SWISSPACER ULTIMATE

- Ultimate is the best warm edge spacer bar on the market with the lowest heat conductivity. In official tests by ift Rosenheim of all the leading warm edge spacer bars, Ultimate came top for thermal efficiency.
- These results were verified by the Warm Edge Working Group and documented in the German Flat Glass Association's official data sheets of spacer bar values.

SWISSPACER ADVANCE

- SWISSPACER Advance is SWISSPACER's new low-cost high-performance spacer bar.
- Advance provides excellent thermal performance at affordable prices.

GEORGIAN BAR

- SWISSPACER's Georgian Bar is made of the same insulating plastic as our spacer bars. An insulating bar, as opposed to a metal Georgian Bar, ensures there are no cold spots on the sealed unit, thus preserving the sealed unit's energy efficiency.
- Many sealed unit makers underestimate the impact of a metal Georgian Bar on insulating glass. The usual flat-rate increase in U_w value (up to 0.3 W/m²K) does not need to be calculated with SWISSPACER's Georgian Bar. SWISSPACER's Georgian Bar has a minimal impact on Uw values. Caluwin helps you calculate the minimal differences and show them to your customers.

SWISSPACER – EVEN FOR LARGE-SCALE HIGHLY AUTOMATED PROCESSING

1 LISEC Bieger, photo copyright: Lisec Maschinenbau GmbH

2 Bending process on the SWISSPACER bender, manufacturer: Fa. SEVA

3 Roweldo frame welding device by R & R, photo copyright: R & R Sondermaschinen GmbH

Sealed unit makers of all sizes can use SWISSPACER without the need to invest in new machinery. SWISSPACER can be used 'out of the box' with a saw and cut and corner keys. But for large-scale volume production, a range of automated benders and sawing and welding machines with very short cycle times are available.
If you are interested in upgrading to one of our automated solutions, we can provide advice and put you in touch with our machinery partners.

SWISSPACER – FOR THE BEST LOOKING WINDOWS

We have the biggest colour range of all warm edge spacer bars – 17 in all. Further colours are available on request.

Our wide colour range enables window makers to match or contrast the spacer bar with the colour of the window. SWISSPACER spacer bars have an attractive, velvety matt appearance for a high-end finish. They don't cause glare or reflect in sunlight.

Hand-finished or welded SWISSPACER frames have perfectly formed corners with 90° clean angles for an elegant, high quality finish.

SWISSPACER's strong, rigid structure makes it ideal for triple glazed sealed units because it is easy to handle and strong enough to cope with the additional pane of glass. The two SWISSPACER frames in a triple glazed unit provide perfect parallel lines that cannot be achieved with other spacer bars. Offset frames are a common problem with floppy spacer bars, which often lead to customer complaints.

Titanium grey RAL 9023	Black RAL 9005	White RAL 9016
Dark brown RAL 8014	Sulphur yellow RAL 1016	Yellow green RAL 6018
Beige brown RAL 1011	Pastel yellow RAL 1034	Grass green RAL 6010
Sapphire blue RAL 5003	Light brown RAL 8003	Light grey RAL 7035
Opal green RAL 6026	Brown green RAL 7013	Beige RAL 1001
Light ivory RAL 1015	Red brown RAL 8012	Other colours possible on request

4 5 6 7 8

4 Flexible corner angles

5 90°corner keys

6 Gas corner angles without hole

7 Gas corner angles with hole

8 Pre-butylated 90° corner keys

PRODUCT OVERVIEW
SPACER BAR

- Available in 17 colours. Special colours available on request.
- Colour grey or metal
- Colour black or titanium

SWISSPACER **Advance** with aluminium foil

WIDTH	08; 10; 11; 12; 14; 15; 16; 18; 20; 22; 24; 27 mm and 1/2”
HEIGHT	6.5 mm
LENGTH	5.1 and 6.0 m
Packaging	• Cardboard, container • with pre-inserted length-connectors in the container

SWISSPACER **Ultimate** with high-tech foil

WIDTH	08; 10; 11; 12; 14; 15; 16; 18; 20; 22; 24; 27 mm and 1/2”
HEIGHT	6.5 mm
LENGTH	5.1 and 6.0 m
Packaging	• Cardboard, container • with pre-inserted length-connectors in the container

ACCESSORIES

90°corner keys

WIDTH	08; 10; 11; 12; 14; 15; 16; 18; 20; 22; 24; 27 mm and 1/2”

Flexible corner angles

WIDTH	12; 14; 15; 16; 18; 20; 22 and 24 mm

Gas corner angles without hole

WIDTH	10; 12; 14; 16; 18; 20 mm and 1/2”

Gas corner angles with hole

WIDTH	10; 12; 14; 16; 18; 20 mm and 1/2”

Plugs for gas corner angles

WIDTH	of a standard size

Pre-butylated 90°corner keys

WIDTH	12; 14; 16; 18 and 20 mm

Georgian bar

WIDTH	7.5; 9.5 and 11.5 mm
HEIGHT	20; 24; 30 mm
LENGTH	3 m

Steel linear connectors

WIDTH	08; 10; 11; 12; 14; 15; 16; 18; 20; 22 and 24 mm

Crosses

WIDTH	20; 24; 30 mm
HEIGHT	7.5; 9,5 and 11.5 mm

Composite linear connectors

WIDTH	08; 10; 11; 12; 14; 15; 16; 18; 20 mm and 1/2

End caps

WIDTH	20; 24; 30 mm
HEIGHT	7.5; 9,5 and 11.5 mm

Plugs for gas-filled sleeves

WIDTH	of a standard size

Anti-rattle plugs

	A standard size for all windows

Gas fill sleeve

WIDTH	of a standard size

SWISSPACER - THERMAL OUTPUT
IN VARIOUS WINDOW DESIGNS

spacer bar system	2X DOUBLE GLAZING Aluminium	Stainless steel	ADVANCE	ULTIMATE	3X TRIPLE GLAZING Aluminium	Stainless steel	ADVANCE	ULTIMATE
WOODEN WINDOWS:								
Frame value: U_f =	1.4 W/m²K				1.3 W/m²K			
Glass value: U_g =	1.1 W/m²K				0.7 W/m²K			
Psi value [W/mK]	0.082	0.053	0.039	0.031	0.089	0.054	0.037	0.029
Window, U_w 1-pane [W/m²K]	1.40	1.32	1.29	1.27	1.10	1.02	0.97	0.95
Window, U_w 2-pane [W/m²K]	1.52	1.41	1.36	1.33	1.26	1.13	1.07	1.04
Minimum surface temperature* [°C]	4.1	7.3	8.9	9.7	6.0	9.6	11.2	12.1
PVC WINDOWS:								
Frame value: U_f =	1.2 W/m²K				1.2 W/m²K			
Glass value: U_g =	1.1 W/m²K				0.7 W/m²K			
Psi value [W/mK]	0.076	0.051	0.039	0.032	0.078	0.050	0.037	0.030
Window, U_w 1-pane [W/m²K]	1.32	1.26	1.23	1.21	1.05	0.98	0.95	0.93
Window, U_w 2-pane [W/m²K]	1.42	1.33	1.28	1.26	1.19	1.08	1.04	1.01
Minimum surface temperature* [°C]	5.3	8.3	9.7	10.4	6.7	9.9	11.3	12.0
WOOD ALUMINIUM WINDOWS:								
Frame value: U_f =	1.4 W/m²K				1.4 W/m²K			
Glass value: U_g =	1.1 W/m²K				0.7 W/m²K			
Psi value [W/mK]	0.094	0.059	0.042	0.032	0.100	0.060	0.040	0.030
Window, U_w 1-pane [W/m²K]	1.43	1.34	1.30	1.28	1.17	1.08	1.03	1.00
Window, U_w 2-pane [W/m²K]	1.57	1.44	1.38	1.34	1.35	1.21	1.13	1.10
Minimum surface temperature* [°C]	2.2	6.1	7.9	8.8	4.4	8.6	10.5	11.3
ALUMINIUM WINDOWS:								
Frame value: U_f =	1.6 W/m²K				1.6 W/m²K			
Glass value: U_g =	1.1 W/m²K				0.7 W/m²K			
Psi value [W/mK]	0.110	0.068	0.047	0.036	0.120	0.064	0.042	0.031
Window, U_w 1-pane [W/m²K]	1.54	1.44	1.39	1.36	1.30	1.17	1.12	1.09
Window, U_w 2-pane [W/m²K]	1.72	1.56	1.49	1.45	1.53	1.32	1.25	1.21
Minimum surface temperature* [°C]	4.7	8.4	10.0	10.8	6.8	10.6	12.2	12.9

The equivalent heat conductivity was calculated as per the ift WA-17/1 guidelines.
The representative Psi values were calculated under the conditions laid down in the ift WA-08/2 guidelines.

Psi value: linear heat throughput at glass edge [W/mK] as per EN ISO 10077-2:2012-06

* corresponds to conditions in DIN 4108-3

External temperature Ta: -10 °C
Internal temperature Ti: +20 °C

Geometry	Wood	PVC	Wood-aluminium	Aluminium
Total area: (1.23 x 1.48 m) A_w in m²	1.82	1.82	1.82	1.82
Frame width b_f in mm:	110	117	120	130
Frame area A_f: in m² (1-pane/2-pane.)	0.548/0.686	0.579/0.725	0.593/0.742	0.637/0.796
Length of glass edge l_g: in m (1-pane/2-pane.)	4.540/6.840	4.484/6.742	4.460/6.700	4.380/6.560

Gütegemeinschaft Mehrscheiben-Isolierglas e.V.

Bundesverband Flachglas Großhandel Isolierglasherstellung Veredlung e.V.

SWISSPACER
THE COMPANY

SWISSPACER operates worldwide and is the leading warm edge manufacturer in many markets. The company was founded in 1998 and is part of the Saint-Gobain Group. SWISSPACER's products stand out because of their superior thermal performance and excellent aesthetics.

Head office Kreuzlingen (CH)

SWISSPACER's head office is in Switzerland and includes production, research & development and administration. SWISSPACER has further production facilities in Germany and Poland, and a central distribution site in Germany ensure all customers get efficient distribution and a wide range of products.

Production Kreuzlingen (CH)

ABOUT SAINT-GOBAIN

Saint-Gobain is a leading global supplier for the home and business to business markets.
The company develops, produces and sells a wide range of construction materials.

Single-family dwelling in Tägerwilen (CH)
Architects: Dalla Corte und Völkle (CH)

The focus is on developing innovative products and solutions that contribute in particular to saving energy and environmental protection as well as increasing quality of life. To achieve this Saint-Gobain works closely with well-known universities and scientific institutions.

"Mid-sized mile" in Chemnitz (D)
Architekturbüro Andreas Richter
Photo: Christoph Seelbach Fotografie

Saint-Gobain was founded in France in 1665 and is one of the world's top 100 industrial companies. The Group employs 191,500 people and is represented in 64 countries.

Hamburghaus in Shanghai (CN)
Architecture Vision Studio
Photo: Sheen Zhogogai

SAINT-GOBAIN

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