



**TECHNOFORM**

# Creating complete solutions

Thermal edge bond solutions  
for insulating glass

**We are your partner  
for durable thermally  
optimized edge bond  
solutions – worldwide.**

# Content

- Hello, it's us, Technoform! ..... 4
- Cooperation and Partnership ..... 7
- Warm Edge ..... 8
- Edge Bond ..... 10
- TGI-Spacer M ..... 13
- TGI-Spacer Precision ..... 14
- TGI-Spacer Pellini ..... 15
- TGI-Muntin ..... 15
- Thermal Values ..... 16
- Colors and Sizes ..... 17
- Tests and Services ..... 18
- Building Certificates ..... 20
- Success Story ..... 24
- Your Challenges – Our Solutions ..... 26
- Sustainability – Thinking Ahead ..... 28
- Cooperation Partners ..... 30
- Contacts ..... 31



Hello, it's us, Technoform!



Warm Edge



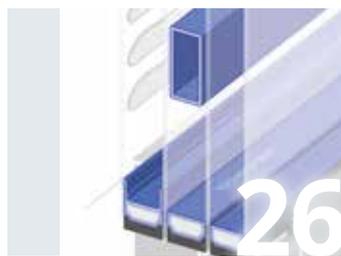
Our Products



Building Certificates



Success Story



Our Solutions

# Hello, it's us, Technoform!

As a family company, we know that people empower every business. We firmly believe that the best ideas are always born together. We are Technoform – 1,400 and growing, dedicated innovators that work for our customers worldwide.

Understanding what drives customers and markets since 1969, we develop leading solutions collaboratively. Providing 100% reliability and quality on all levels, we offer the same level of high-quality services and solutions all around the world. 45 sites in over 40 countries ensure continuous supply wherever you are.

Performing 360° precision and 1,000+ skills, our highly trained team turns individual needs into tailored technological solutions. Delivering quantities from 1 to 1,000,000 our customers can rely on receiving the best available package of quality, quantity, time, and price.



**We invite you to browse through this brochure and find out how we can support your personal vision.**



## **Our everyday business? Finding solutions for you**

In a fast-paced industry landscape new ideas and solutions are the currency that matters. Markets emerge, businesses transform, processes change. At Technoform, we unleash the full potential of people and their ideas across a global network to meet today's challenges collaboratively. We are people with a passion for plastics solutions. And in plastics extrusion we excel.

Our unique high-precision extrusion process allows us to form the most complex plastics – including those typically only suitable for injection molding. As a result, we are proud to offer outstanding technical characteristics that go far beyond the ordinary: extremely smooth surfaces, uniquely sharp contours, the lowest tolerances, the highest precision, and various custom material properties you would not usually expect from a plastic solution. In a nutshell: we always look for the perfect solution for you.

## **Take a look around - we are closer than you may think**

Providing holistic knowledge and technical expertise, we are the can-do partner and problem solver for various industries. This spans from thermal edge bond solutions for architects, building planners, and manufacturers of insulating glass units to a vast range of insulation solutions for aluminum windows, doors, and facades. This also includes high-precision plastic profile solutions and system components for the automotive, aviation, and electrical engineering industries – just to name a few.



**It's our true belief in a  
strong partnership with  
our customers that makes  
the difference.**



# Your cooperation with us – A true partnership



## Know-how

We offer you nearly 50 years of experience and knowledge in the high-precision extrusion of plastics and in the development of innovative warm edge solutions.



## Service

We don't consider you a customer, but a partner. With a global network of customer support and our three production sites, we are always near you and happy to advise you on all requests relating to the edge bond.



## Quality

Zero-defect performance and standardized processes ensure our consistent quality. We are certified to DIN EN ISO 9001. Our processes also comply with the requirements of applicable standards such as DIN EN 1279, DTA and ASTM and help to obtain the RAL quality mark for windows, facades, and doors.



## Customer-specific solutions

We continuously analyse the requirements of our customers and markets to find solutions to current topics and to identify future trends. We can meet your individual requirements and propose solutions within the shortest possible time thanks to our unique production process.



## Support and Tests

At Technoform, we can carry out and evaluate tests based on both applicable standards such as DIN EN 1279, DTA and ASTM and also on your individual requirements.



## Fields of application

Due to the perfect combination of material and form, our products significantly reduce the heat flow via the edge bond and are ideally suited for use in windows, doors, and facades. They are also suited for fire-resistant glass (E, EI and EW). Our wide range of widths guarantees that our products make a decisive contribution towards the reduction of noise.

# Warm edge – Insulating glass performance at its best

When it comes to building sustainably, high energy efficiency, durability, and indoor climate are key factors. To achieve this, thermally optimized edge bond solutions for insulating glass are what it takes. With our warm edge TGI-Spacers between the glass panes we improve the thermal performance of the edge bond and thus guarantee gas tightness at a peak level. The effects are not only minimized energy losses. There is also a visible reduction in condensation which forms at the edge of the window and thereby prevents the formation of mold. A warm edge significantly reduces the circulation of air near the window which gives you better life quality inside your home.

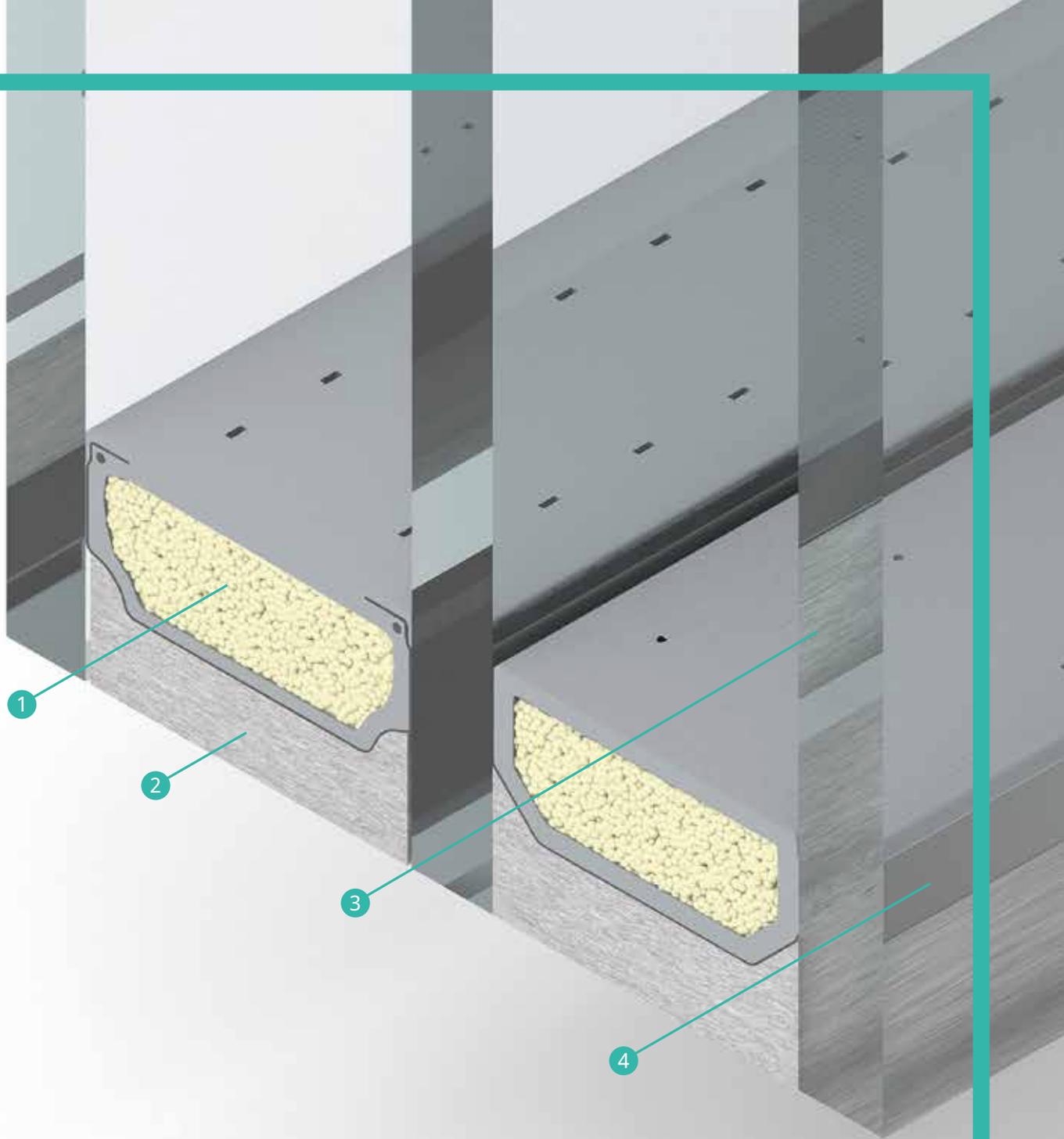
To offer a perfect fitting of our TGI-Spacers and TGI-Muntin bars into every frame we also set new standards in surface quality and match the highest requirements of architects and building designers.

Contact us if you want to increase the quality and durability of your window, door, and facade systems through an optimized glass edge bond. As a sideline our products help to save approximately 1.5 billion kWh of energy each year, which means a significant reduction of the global level of CO<sub>2</sub> emissions.



## **Warm Edge – Why?**

To understand the importance of the warm edge, take a standard window with triple-glazing, aluminum frame and an average aluminum spacer: Using a TGI-Spacer Precision, an improvement of the U<sub>w</sub>-value of more than 13% is possible. Multiply this effect by 200,000 (the size of an average town) and you achieve an annual saving equivalent to nearly 1.5 billion litres of heating oil. This makes the warm edge a smart and sustainable solution.



- 1 Desiccant
- 2 Secondary sealing material
- 3 Glass panel
- 4 Butyl

# Edge bond – Focusing on the next level of excellence

Using TGI-Spacers is combining the best of two worlds: a high degree of aesthetic and optimized thermal values as well as a perfect stability of the insulating unit. They represent the core factors for the heart of every window: the edge bond of the insulating glass.

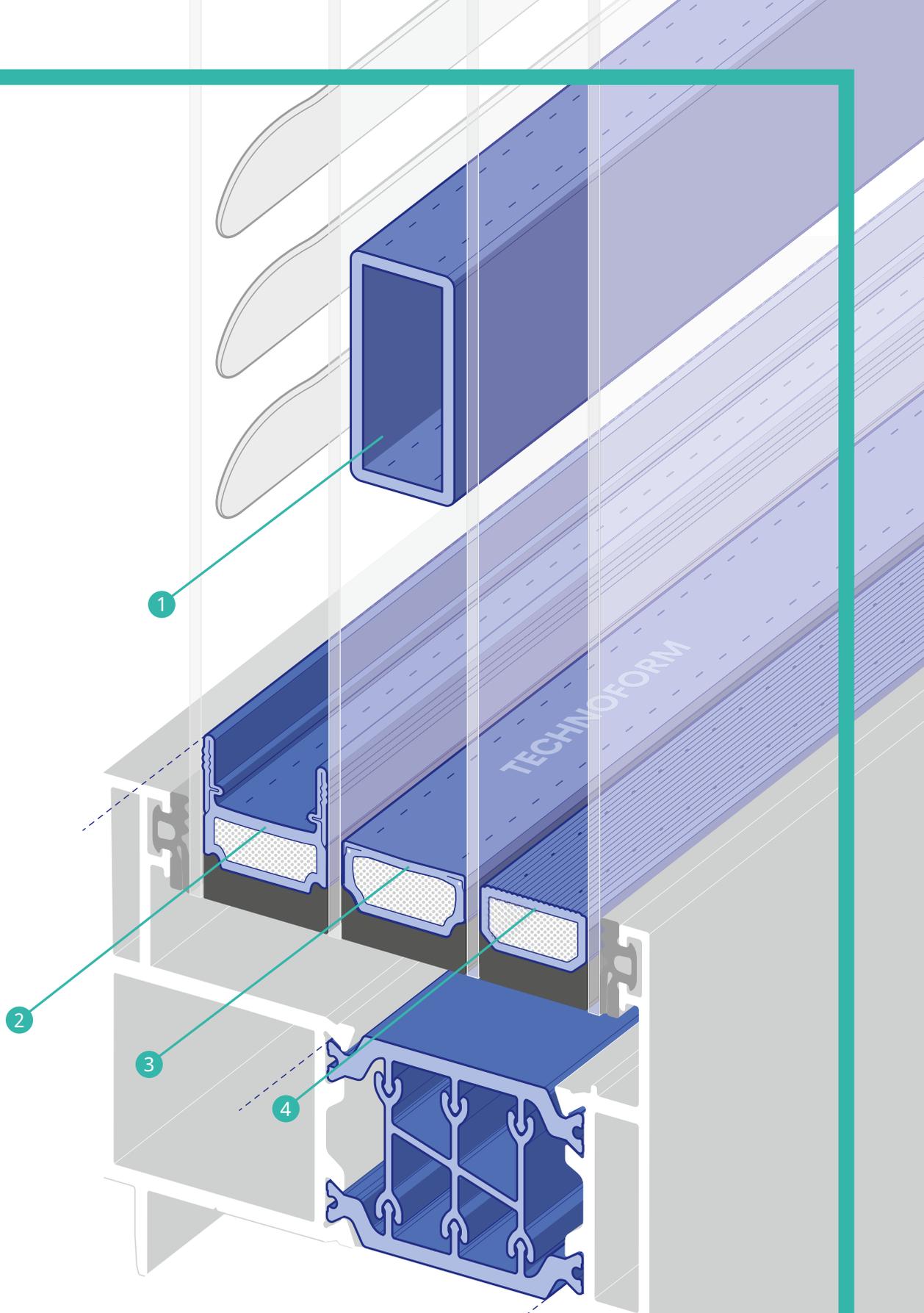
An optimally designed and well-composed edge bond determines the quality and durability of a window. In other words: only when the individual components such as spacers, sealants, desiccants, connectors and glass interplay perfectly, we can achieve maximum efficiency.

One aspect of this is the stability and mechanical properties of a window. Here, the edge bond must fulfil different demands: it must stay flexible even in extreme cold and heat to avoid glass breakage. At the same time a permanent gas tightness is required to guarantee the best insulation for long-term use. Furthermore, it must prevent incoming moisture which can lead to unpleasant milky or blind glasses as well as condensation.

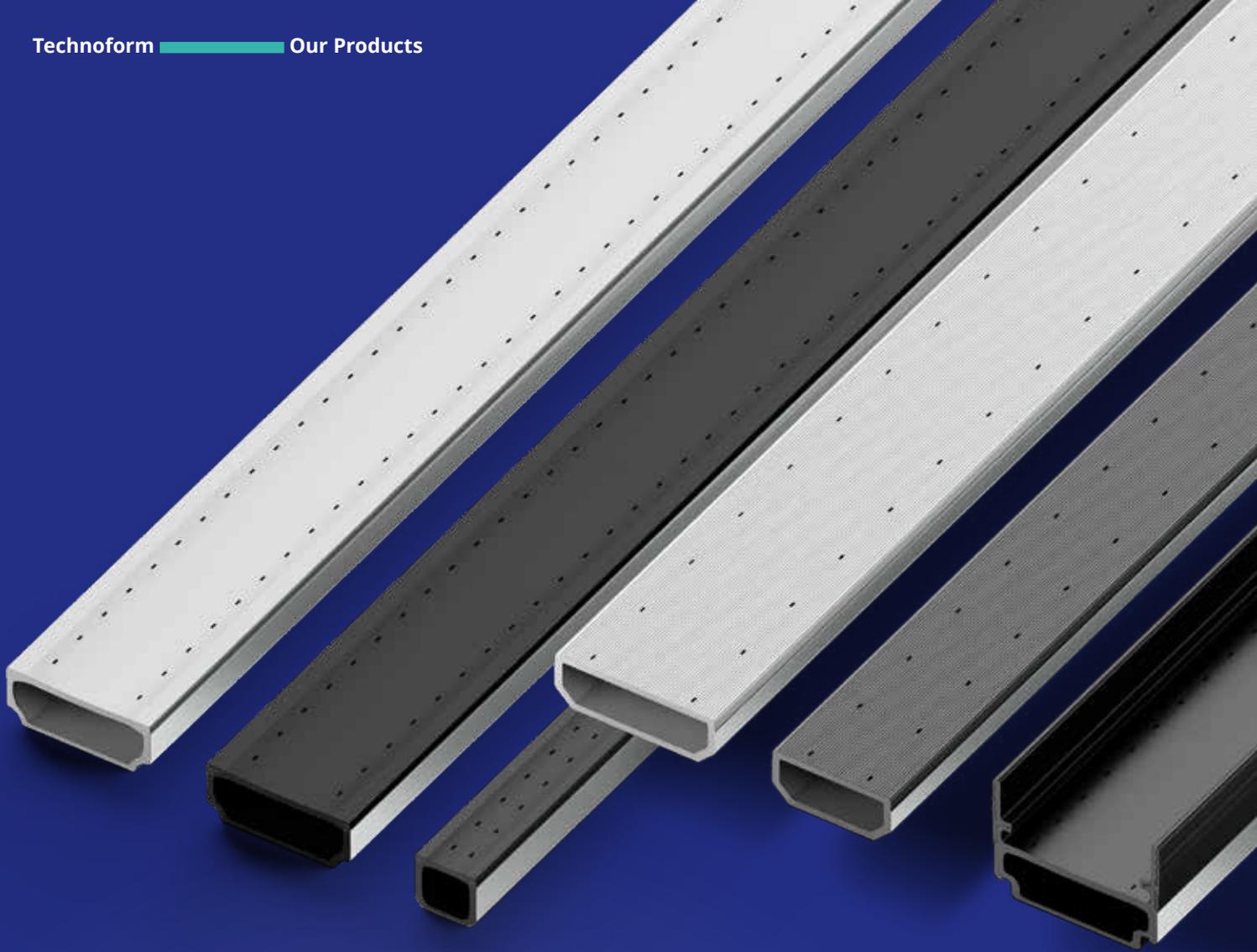
Now we are working on components which are adapted to our spacers and for whose quality we guarantee. The result: higher durability of the insulating glass for long-term use – an advantage for window manufacturers and final customers alike, who can rely on sustainable products of excellent quality.

Since the improvement of the single components has reached its limits, our focus has been on the edge bond in total. The merging of the components with each other and with the sash creates new opportunities for further sustainable developments. Only then the potential of the edge bond can be fully exploited.

Feel free to contact us to find out more about our solutions for your windows, doors, and facades systems.



- 1 TGI-Muntin
- 2 TGI-Spacer Pellini
- 3 TGI-Spacer M
- 4 TGI-Spacer Precision

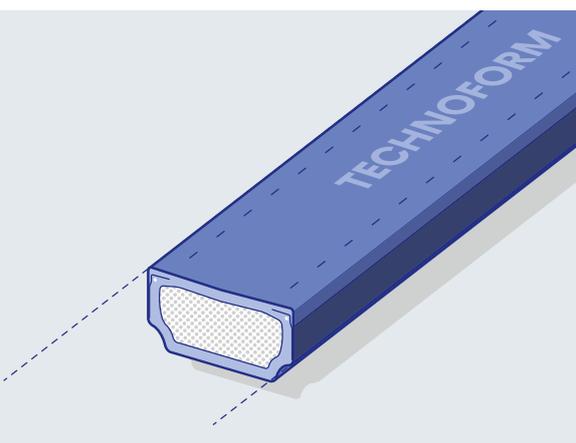


Thermal edge bond solutions for insulating glass

**Our products combine peak performance with appealing design – wherever you want to use them.**

# TGI-Spacer M – Equipped for every challenge

The TGI-Spacer M was designed to meet the numerous requirements which apply to the modern glass edge seal. It is available in a range of variants specially matched to their individual intended use. While some of the details of the designs may differ from each other, they all provide low Psi values, high productivity, high process reliability and high-quality appearance. The TGI-Spacer M complies to the requirements of EN 1279-2, 3 & 6, DTA and ASTM. It is a certified Passive House Component Class phB for Cold Climate.



**You can benefit from the following advantages:**

#### **TGI-Spacer M with wire (ww)**

- High profile stability due to patented steel wires
- Ideal for medium to large frames
- No readjustment of the frame
- Rigid corners

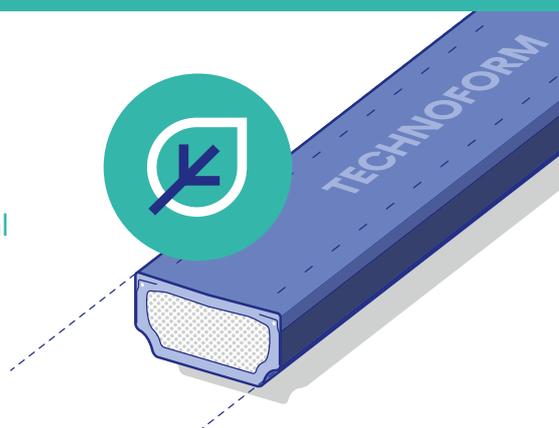
#### **TGI-Spacer M without wire (nw)**

- High level of design flexibility in any form
- Enables the bending of the smallest radii
- Allows negative bending (e.g. for continuous ventilation pipes)



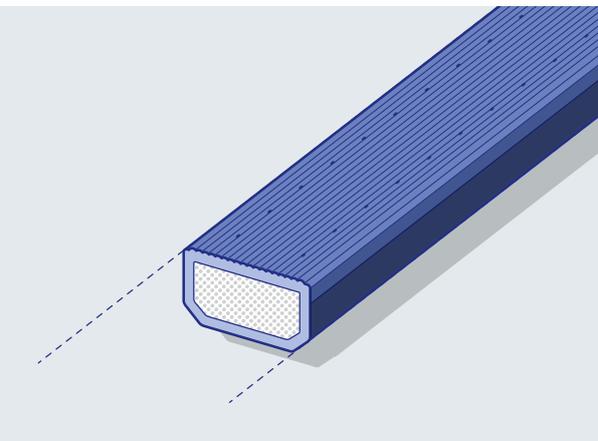
#### **TGI-Spacer M Bio – powered by nature**

With our biobased polymer derived from plants we offer additional benefits by providing environmental certification, e.g. LEED or BREEAM, and a significant reduction of carbon dioxide and fossil energy consumption during the production process.



# TGI-Spacer Precision – Rely on perfection

Due to our innovative production process, Technoform can consistently guarantee the high quality of the edge bond. Our developments in thermal performance fit in perfectly with the trend towards nearly zero-energy houses. The optimum combination of materials in the TGI-Spacer Precision enables the lowest possible U values to be achieved in the system as a whole. As a result, fluctuations in thermal values are minimized, ensuring that designers and customers have a reliable basis for their calculations. Reliable process stability and insertion are ensured while a high-quality look completes the package. The TGI-Spacer Precision complies to the requirements of EN 1279-2, 3 & 6.



## You can benefit from the following advantages:

- High quality of the glass edge seal and consistent Lambda-equivalent values due to lowest possible product tolerances
- Outstanding thermal performance
- Optimum process capability due to high fracture strength
- Suitable for large frames and triple-glazed units due to high profile stability
- Smooth and bright surface
- Perfectly fitting connecting elements
- Certified Passive House Component Class phA (Arctic Climate)



Vierol Headquarters, Oldenburg,  
Germany, 2015

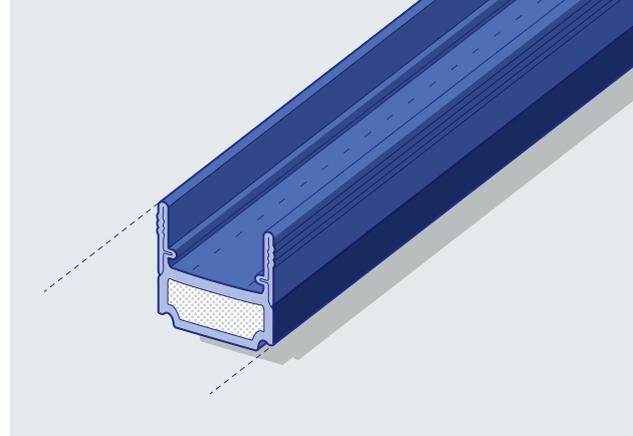


## TGI-Spacer Pellini – Our internal blinds specialist

The TGI-Spacer Pellini is a spacer with integrated locating and guiding elements, specially designed for use with internal blinds while keeping Psi values low within the whole system.

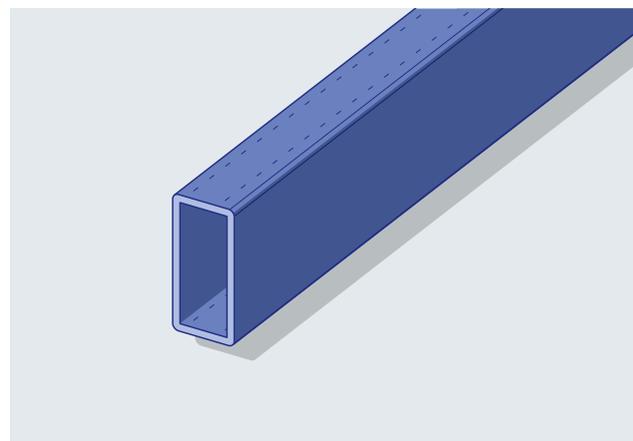
## TGI-Muntin – Less contact, more performance

Our “muntin” glazing bar system can be positioned within an insulating glass unit without any direct contact with the glass. It is aesthetically identical to the TGI-Spacer M, giving insulating glazing manufacturers a complete thermally optimized system that meets current thermal insulation requirements and will also meet the tighter requirements of tomorrow. Cross-shaped muntin bar connectors are used to connect profiles and are matched to the exact profile width in each case.



**You can benefit from the following advantages:**

- No noise or damage to the surface of the glass
- Low Psi values
- High-quality appearance



**You can benefit from the following advantages:**

- Low heat conductivity of just 0.25 W/mK
- Very high profile stability and low coefficient of linear expansion due to integrated glass fibres
- Perfect processability together with TGI-Spacer M

# Thermal values

A comparison of thermal values (according to Bundesverband Flachglas e.V.):

	Aluminum Spacer		TGI-Spacer M		TGI-Spacer Precision		
	Glazing	2 IG	3 IG	2 IG	3 IG	2 IG	3 IG
Wood Frame	$\psi$ value	0.074 W/mK	0.078 W/mK	0.040 W/mK	0.039 W/mK	0.031 W/mK	0.029 W/mK
	$U_w$ window	1.37 W/m <sup>2</sup> K	1.08 W/m <sup>2</sup> K	1.29 W/m <sup>2</sup> K	0.98 W/m <sup>2</sup> K	1.27 W/m <sup>2</sup> K	0.95 W/m <sup>2</sup> K
	Temperature factor $f_{Rsi}$	0.50	0.57	0.62	0.70	0.66	0.74
	Surface temp. $T_{oi}$ at -10 °C, +20 °C	7.6	9.3	10.6	12.5	11.4	13.4
	Aluminum Spacer		TGI-Spacer M		TGI-Spacer Precision		
	Glazing	2 IG	3 IG	2 IG	3 IG	2 IG	3 IG
Plastic Frame	$\psi$ value	0.068 W/mK	0.069 W/mK	0.040 W/mK	0.038 W/mK	0.032 W/mK	0.030 W/mK
	$U_w$ window	1.30 W/m <sup>2</sup> K	1.00 W/m <sup>2</sup> K	1.23 W/m <sup>2</sup> K	0.92 W/m <sup>2</sup> K	1.21 W/m <sup>2</sup> K	0.90 W/m <sup>2</sup> K
	Temperature factor $f_{Rsi}$	0.54	0.59	0.65	0.70	0.68	0.73
	Surface temp. $T_{oi}$ at -10 °C, +20 °C	8.6	9.8	11.3	12.9	12.0	13.3
	Aluminum Spacer		TGI-Spacer M		TGI-Spacer Precision		
	Glazing	2 IG	3 IG	2 IG	3 IG	2 IG	3 IG
Aluminum Frame	$\psi$ value	0.100 W/mK	0.100 W/mK	0.049 W/mK	0.044 W/mK	0.036 W/mK	0.031 W/mK
	$U_w$ window	1.52 W/m <sup>2</sup> K	1.26 W/m <sup>2</sup> K	1.39 W/m <sup>2</sup> K	1.12 W/m <sup>2</sup> K	1.36 W/m <sup>2</sup> K	1.09 W/m <sup>2</sup> K
	Temperature factor $f_{Rsi}$	0.53	0.60	0.66	0.73	0.69	0.76
	Surface temp. $T_{oi}$ at -10 °C, +20 °C	8.3	10.1	11.5	13.3	12.4	14.1
	Aluminum Spacer		TGI-Spacer M		TGI-Spacer Precision		
	Glazing	2 IG	3 IG	2 IG	3 IG	2 IG	3 IG
Wood/Alu. Frame	$\psi$ value	0.084 W/mK	0.090 W/mK	0.044 W/mK	0.042 W/mK	0.032 W/mK	0.030 W/mK
	$U_w$ window	1.40 W/m <sup>2</sup> K	1.15 W/m <sup>2</sup> K	1.31 W/m <sup>2</sup> K	1.03 W/m <sup>2</sup> K	1.28 W/m <sup>2</sup> K	1.00 W/m <sup>2</sup> K
	Temperature factor $f_{Rsi}$	0.45	0.53	0.59	0.59	0.63	0.71
	Surface temp. $T_{oi}$ at -10 °C, +20 °C	6.2	8.2	9.7	11.9	10.7	12.8

# Colors and Sizes

Widths	TGI-Spacer M		TGI-Spacer Precision	TGI-Spacer Pellini	TGI-Muntin	
	nw	ww			Widths	Heights
6.2 mm	•				21.5 mm	9.5 mm
8 mm	•				25.5 mm	9.5 mm
10 mm	•	•			31.5 mm	9.5 mm
12 mm	•	•	•		21.5 mm	11.5 mm
13 mm	•				25.5 mm	11.5 mm
14 mm	•	•	•		31.5 mm	11.5 mm
15 mm	•	•			21.5 mm	13.5 mm
16 mm	•	•	•	•	31.5 mm	13.5 mm
18 mm	•	•	•			
20 mm	•	•	•	•		
22 mm	•	•		•		
24 mm	•	•				
26 mm	•					
30 mm		•				

Other colors, sizes, and widths are available or can be produced according to customers' specification.

	Similar to RAL 7035 Light grey		Similar to RAL 9005 Black		Similar to RAL 8003 Light brown*
	Similar to RAL 7040 Dark grey		Similar to RAL 9016 White*		Similar to RAL 8016 Dark brown*

\* Currently not for the TGI-Spacer Pellini. Please contact us.

$U_w = \frac{U_f \cdot A_f + U_g \cdot A_g + \psi \cdot I_f}{A_w}$ $T_{oi} = T_{la} + f_{Rsi} \cdot (T_{li} - T_{la})$	<p>U<sub>w</sub> = Thermal transmission coefficient, window            U<sub>f</sub> = Thermal transmission coefficient, frame            U<sub>g</sub> = Thermal transmission coefficient, glass            A<sub>w</sub> = Window area            A<sub>f</sub> = Frame area            A<sub>g</sub> = Glass area</p>	<p>I<sub>f</sub> = Length of edge, frame-glass            ψ = Linear thermal coefficient, composite edge            T<sub>oi</sub> = Inner surface temperature            T<sub>li</sub> = Indoor air temperature +20 °C            T<sub>la</sub> = Outdoor air temperature -10 °C            f<sub>Rsi</sub> = Temperature factor at R<sub>Rsi</sub> = 0,20m<sup>2</sup> K/W</p>
--	--	--

# Tests and Services

We have always been dedicated to testing our products to the core. And as a true partner, we like to give our customers and partners the opportunity to gain an in-depth insight into the extensive competences of Technoform.

## Service, Support and Testing

- Determination of the humidity adsorption capacity of desiccant (DIN EN 1279-2 | ASTM E 2188)
- Climate test for determining gas leakage rate (DIN EN 1279-3 | ASTM E 2649-09)
- Analysis of the fogging characteristics of the whole insulated glazing system and individual components (DIN EN 1279-6 | ASTM E 1899)
- Testing of colour fastness after exposure to UV radiation (DIN EN 4892-2)
- Creation of microsections with microscopic analysis
- Material selection by means of differential scanning calorimetry and infrared spectroscopy
- Quantification of shore hardness D, glass-fibre content and density of thermoplastics
- Determination of bending properties of spacers
- Determination of thermal conductivity
- Adhesion tests on elastomers



### Organisation of external tests

- Determination of material properties
- Quantification of mechanical properties
- Performance of computer-aided simulation for the purpose of analysing mechanical and thermal properties
- Determination of weathering behavior under different climatic conditions

# Building Certificates

A spacer can make a difference

Our products have helped to gain valuable points in the various evaluation system categories and move closer to the goal of receiving a high building certification.



University of Central Missouri, Warrensburg, USA, 2011, LEED Gold

Driven by global developments such as climate change, dwindling resources and demographic change, sustainability is becoming increasingly important in the construction industry. In recent years, various building evaluation sys-

tems have been developed throughout the world, for example BREEAM, LEED, HQE, Green Star or Passive House. Construction products such as our TGI-Spacers can influence a building's rating effectively.



## BREEAM

BREEAM (Building Research Establishment Environmental Assessment Method) has been active since 1990 in over 75 countries. It is the world's leading sustainability assessment method with more than 565,000 certified buildings. Its aim is to develop customized systems for every type of building and building use. Different sustainability categories for new construction sum up to the final building rate.

Being a building product our TGI-Spacer M can influence the BREEAM categories of Health and Wellbeing, Materials and Innovation.



## Passive House

The Passive House Institute (PHI) is an independent research institute in Germany. The Passive House standard is characterized by a very high level of energy savings compared with conventional new buildings. Certifications are awarded to buildings,

products, and detailed solutions, as well as to planners, specialist engineers, craftsmen, and consultants. A Passive House is a building that, as a rule, does not require a conventional heating system on account of its effective thermal insulation and functional principle for avoiding ventilation heat losses by using heat exchangers.

Our TGI-Spacer M is Passive House certified for Cold Climate (phB), our TGI-Spacer Precision is even certified for Artic Climate (phA).



## LEED

LEED (Leadership in Energy and Environmental Design) was developed by the US Green Building Council (USGBC) in 1998. It provides practical and measurable strategies on how to plan, erect and operate buildings.

With almost 94,000 certified projects in over 165 countries, LEED is a widespread certification scheme for sustainable buildings. The current LEEDv4 version is organized to promote action in six credit categories, of which the TGI-Spacer M can influence the ones of "Materials and Resources" and "Indoor Environmental Quality".



## The DGNB System

The DGNB Certification System (German Sustainable Building Council) provides an objective description and assessment of the sustainability of buildings and urban districts. It assesses quality comprehensively over the entire life cycle of the building and can be applied internationally.

Due to its flexibility it can be tailored precisely to various uses of a building. The DGNB System does not evaluate individual measures, but the overall performance of a building.

As a building product, our TGI-Spacer M can influence the DGNB criteria of "Environmental quality" and "Sociocultural and functional quality".

([www.dgnb-system.de](http://www.dgnb-system.de))

**From the desert of Dubai to the Rocky Mountains of Canada – at Technoform, we unleash the full potential of people and their ideas across a global network to create the solutions of tomorrow.**

CITIC Tower/ Zhongguo Zun, tallest building in Beijing, China, LEED Gold (in final stages of construction) – equipped with the TGI-Spacer M and thermally broken unitized curtain wall systems by Technoform.





**Sealed units  
that helped seal  
the deal**



“Once we’d shown the architect our sealed units with TGI-Spacers, he was convinced that they looked far more appealing than other systems he’d seen on the market – and this decision saved around £150 per unit.”

Ian Short, MD Morley Glass & Glazing Ltd.

#### **The challenge:**

Combining functionality with aesthetic looks is not an easy task when it comes to insulating windows and facades. For a new two-storey Acute Mental Health Inpatient Unit within the Belfast City Hospital estate, our British partner Morley Glass & Glazing was approached to find a special solution for sealed units with integrated blinds that would match both requirements.

#### **The solution:**

Morley supplied the hospital with its SL20 MB system equipped with warm edge TGI-Spacers. It uses motorized blinds that were specially developed with two operating mechanisms – one for the patients to control inside their room, and a key operated override system for nurses to operate from the corridor. The electric brushless motor quietly raises, lowers and tilts the integral blinds safely, smoothly and with precision.

#### **The result:**

The double-glazed sealed units with integral blinds provided by Morley Glass & Glazing were not only far more appealing, but saved the hospital thousands of pounds due to a cost-efficient construction that outmatched other systems. Thus, Technoform helped Morley win a contract with Belfast City Hospital.

# Your challenges – Our solutions

---



## Material

### Challenge:

A spacer is exposed to UV radiation 365 days a year and to extreme variations in temperature. Its surface quality must remain constant. In addition, there must be no interactions between the various materials in the edge bond.

### Our Solution:

With our high-quality raw materials, most of which have been tried and tested for more than 12 years, combined with the optimum profile geometry, our products improve the service life of your insulating glass.

### Challenge:

The growing importance of building certification, such as BREEAM or LEED, and the increasing shortage of raw materials have led to a rise in the demand for sustainably produced and recyclable materials.

### Our solution:

Our products reduce the thermal conductivity of the system to a minimum and are also available in a bio-based polymer on request.



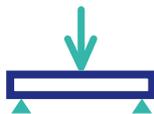
## Precision

### Challenge:

Insulating glass tolerances, gas tightness and secure installation are particularly critical issues as they have a significant influence on the quality and durability of window, door, and facade systems.

### Our Solution:

Our innovative production process enables the lowest possible product tolerances for accuracy in window, door and facade systems. We can guarantee the high quality of the edge bond.



## Reinforcing element

### Challenge:

High process reliability for different formats and for parallelism in triple glazing.

### Our solution:

Reinforcing elements like wires significantly increase profile stability and the force required to cause plastic deformation.



## Fire protection glazing units

### Challenge:

To provide high temperature resistance and guarantee the basic function of separating the panes, according to the relevant fire protection class, without limiting the thermal values.

### Our solution:

The ideal combination of materials means that our spacers are suitable for use in E, EI and EW fire-resistance class glazing units.



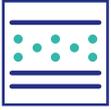
## Decorative elements

### Challenge:

To visually divide larger pane formats into smaller window units with a high-quality look.

### Our solution:

A muntin bar in a high-quality design to match the surface of the spacer while ensuring low thermal conductivity and high profile rigidity at the same time.



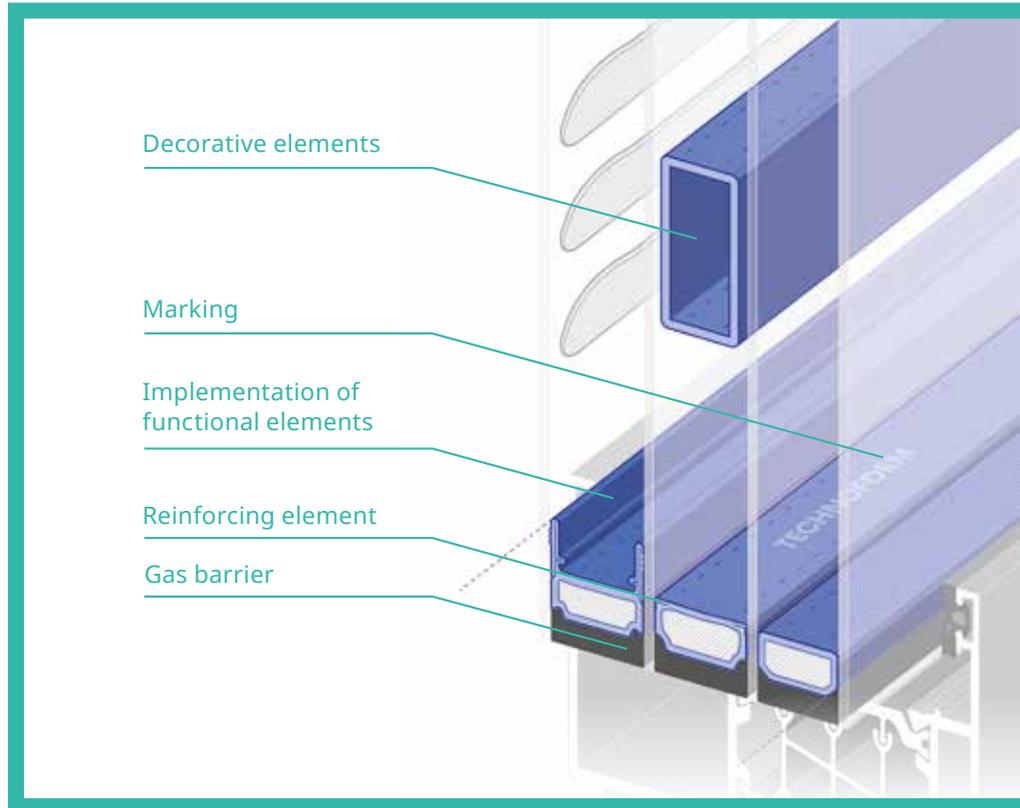
## Gas barrier

### **Challenge:**

To maintain the thermal performance of the window throughout its life cycle.

### **Our Solution:**

A gastight barrier with low heat conductivity and 100% adhesion to common sealants.



## Marking

### **Challenge:**

The increasing internationalisation of the markets and growing competition mean that the quality of products and your own brand need to stand out.

### **Our solution:**

Our laser marking system can individualise our spacers by marking the surface with their chosen text and logo. High-resolution markings don't affect the thermal properties of the spacer, are resistant to UV, do not cause abrasion or fogging and are environmentally-friendly.



## Implementation of functional elements

### **Challenge:**

To provide locating and guiding elements for internal blinds to avoid noise and damage to the surface of the glass while keeping thermal conductivity values low.

### **Our solution:**

Integrated locating and guiding elements in the thermally optimized TGI-Spacer Pellini.



## Sound insulation

### **Challenge:**

Components for different noise sources and varying noise intensity need.

### **Our Solution:**

A wide range of widths, e.g. the TGI-Spacer M in 30 mm, complements the individual sound-insulating asymmetric pane construction, enabling the whole glazing structure to be optimally coordinated.

# Sustainability – Thinking ahead for future generations

For us, sustainability is not just an empty phrase. It's our commitment and obligation to the generations to come. That's why we include economic, ecological, and social factors in our vision and management strategies. That means going the extra mile to create the best possible solutions that not only fit our customers' needs of today, but also guarantee the best durability and energy efficiency.

## Sustainable work practices

Sustainability is not limited to the output of our work but includes our everyday practice of how we work. Occupational health and safety, environmental protection and energy efficiency play a vital part in our daily work – certification included. Since 2013, we have been certified in accordance with DIN ISO 14001 and OHSAS 18001 in Germany and Great Britain and in accordance with DIN ISO 50001 in Germany.



Set your FOCUS on it!



Industrial safety



Environment



Occupational health



Energy efficiency

## Responsibility

We can all contribute to a careful use of our resources. To live up to this statement, we at Technoform take responsibility by recycling and separating waste – both in the office and at our production sites. To take it a step further, we always try to improve our production processes. This includes reduced energy consumption as well as the newest standards for our machines to make them quieter, more comfortable to operate and safer for our health.

## Climate neutrality

We have set up a cooperation with the “Plant-for-the-Planet Foundation”: By planting trees we compensate the CO<sub>2</sub> that is emitted due to the production of our packaging material and the truck deliveries in Germany.

## REACH compliance

A safe and chemically innocuous product is what our customers require and what we want to create. Therefore, we do not use any of the substances defined as harmful in REACH, the European Regulation on Chemicals, in our production process.

## Reliability of supply

Sometimes unforeseeable events occur that may cause difficulties for a scheduled delivery. To avoid this, we have installed a comprehensive occupational safety and fire protection concept. This allows us to carry on even in exceptional circumstances. Our three production sites in different parts of the world also guarantee a reliable supply – wherever you are.

## Sustainable products

Guaranteeing sustainability is at the core of what we do – every single day. Our products constantly insulate windows, doors, and facades to the highest degree, thus conserving valuable global resources in the process.

To put it in numbers: To date, we have produced around 1 billion metres of warm edge spacers worldwide. Our products have been used in around 350 million windows and help to save approximately 1.5 billion kWh of energy per year. And we are not finished yet.

In addition, we use materials which are made from renewable resources and can be recycled in an environmentally-friendly manner. Thus, we bring sustainability to a new level as we combine the advantages of the thermal break with enhanced environmental value. The effect: we meet even the highest requirements in the market.

You want to take it a step further? Then look at our resource-saving version of the TGI-Spacer M: the TGI-Spacer M Bio. The use of a biobased polymer derived from plants provides additional benefits for achieving environmental certification such as LEED and BREEAM.

You want to know more about our processes and products? Feel free to contact us, we are happy to hear from you!



# Cooperation Partners

## France

- CSTB – Centre Scientifique et Technique du Bâtiment
- CEBTP – Centre d’Expertise du Bâtiment et des Travaux Publics
- Bureau Veritas
- FFPV – Fédération Française des Professionnels du Verre
- Glassalia

## Germany

- IFT-Rosenheim – Institut für Fenstertechnik e.V.
- Member of the “Warm Edge” working committee of the Bundesverband Flachglas e.V.
- Verband Fenster + Fassade

## Great Britain

- Member of the British Fenestration Rating Council (BFRC)

## Italy

- SSV – Stazione Sperimentale del Vetro
- UNICMI – Unione Nazionale delle Industrie delle Costruzioni Metalliche e dell’Involucro dei serramenti
- UNI – Ente Italiano di Normazione

## Spain

- ASEFAVE – Asociación Española de fabricantes de fachadas ligeras y ventanas

## USA

- NFRC – National Fenestration Rating Council
- AIA – American Institute of Architects
- IGMA – Insulating Glass Manufacturers Alliance
- AAMA – American Architectural Manufacturers Association
- GANA – Glass Association of North America

## Certifications

We are certified in accordance with:

DIN ISO 9001:2015, DIN ISO 14001:2015 and OHSAS 18001:2007 (in Germany and Great Britain) and with DIN ISO 50001:2011 in Germany.

Our TGI-Spacers are certified Passive House Components:

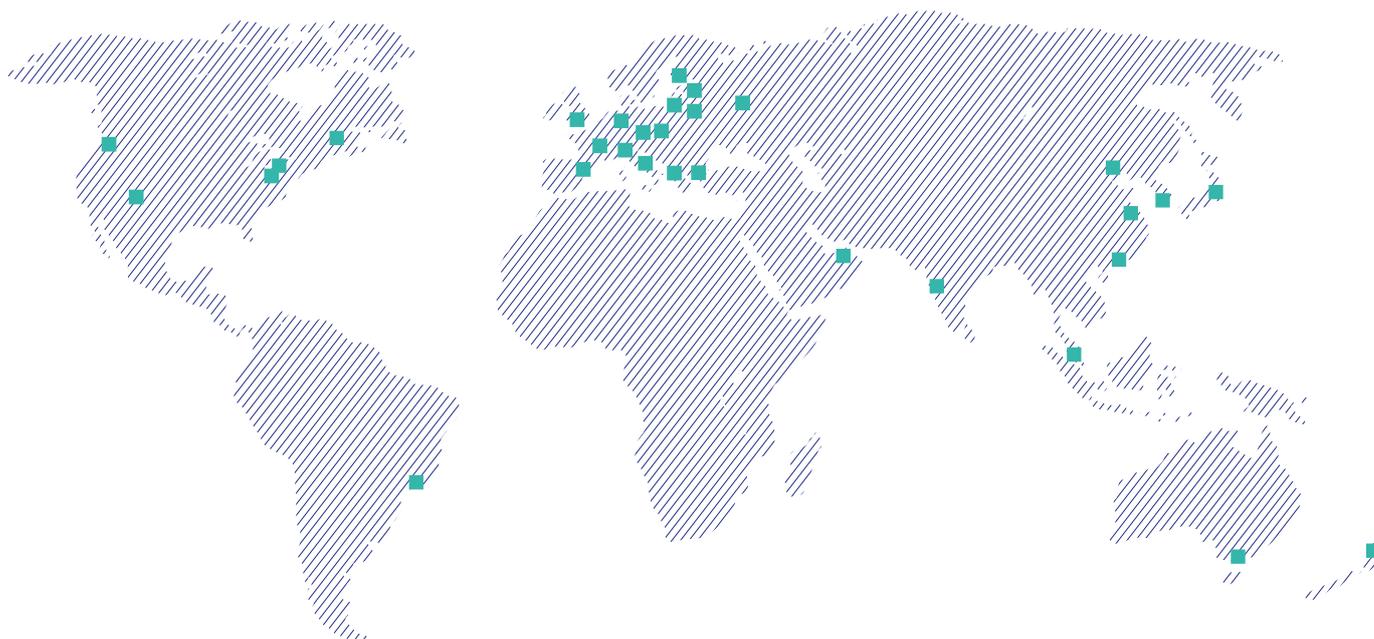


TGI-Spacer M



TGI-Spacer Precision

# Closer than you may think – You find us all over the world



**Germany** Kassel / Lohfelden  
Telephone: +49 561 9583 100

**France** Genas  
Telephone: +33 043 791 1000

**Great Britain** Birmingham  
Telephone: +44 156 433 3304

**Russia** Moscow  
Telephone: +7 495 933 71 5

**Italy** Milan  
Telephone: +39 02 901 6561

**Greece** Thessalonica  
Telephone: +30 231 072 0286

**Spain** Barcelona  
Telephone: +34 932 386 438

**Middle East** Dubai, UAE  
Telephone: +971 4 321 5615

**India** Mumbai  
Telephone: +91 96 1933 3880

**Japan** Tokio  
Telephone: +81 3 5579 9454

**Korea** Seoul  
Telephone: +82 2 501 7357

**Singapore** Singapore  
Telephone: +65 6273 9595

**New Zealand** Auckland  
Telephone: +64 9 415 9050

**Australia** Melbourne  
Telephone: +61 3 88445582

**USA** Twinsburg (OH)  
Telephone: +1 330 487 6600

**Taiwan** Taipei City  
Telephone: +886 955-900-727

**China** Suzhou  
Telephone: +86 0512 6283 3188

Shenzhen  
Telephone: +86 0755 2672 7912

Shanghai  
Telephone: +86 021 6261 1991

Beijing  
Telephone: +86 010 6590 7177

**South America** São Paulo  
Telephone: +55 11 9925 22708

# TECHNOFORM

Thermal edge bond solutions  
for insulating glass

[info.tgide@technoform.com](mailto:info.tgide@technoform.com)  
[www.technoform.com](http://www.technoform.com)