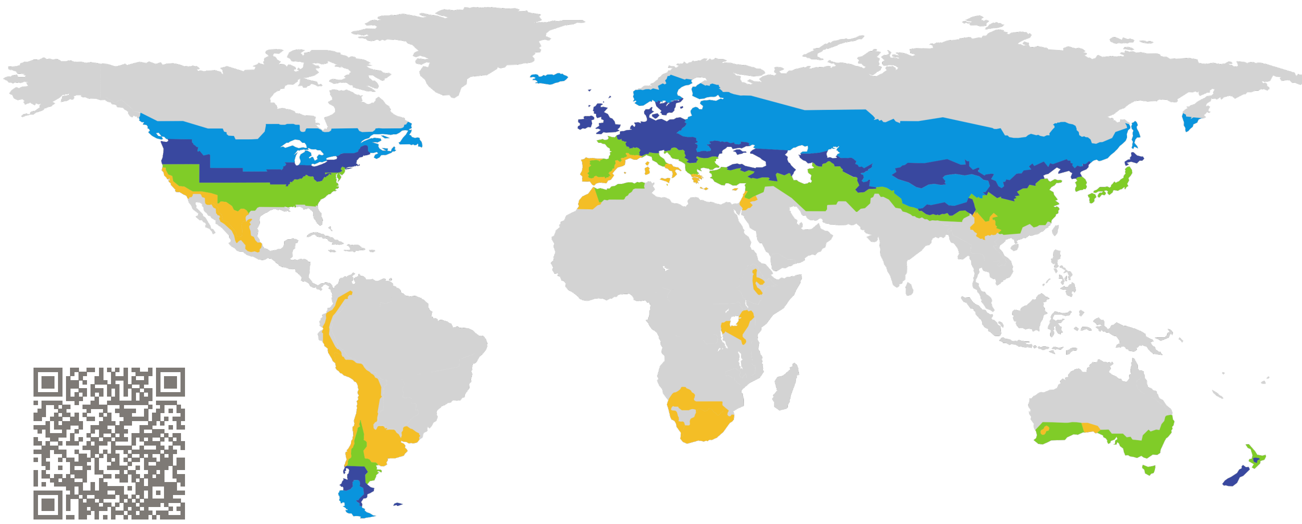
CERTIFICATE

Certified Passive House Component

Component-ID 0722sp02 valid until 31st December 2017

Passive House Institute
Dr. Wolfgang Feist
64283 Darmstadt
Germany



Category: **Spacer for low-E-glazing**

Manufacturer: **Technoform Glass Insulation GmbH, Lohfelden, Germany**

Product name: **TGI-Spacer M**

Type
Plastic with stainless steel foil
Height Box 2
6.90 mm
Thermal conductivity Box 2
0.31 W/(m K)

This certificate was awarded based on the following criteria:

Depending on the climatic region, the spacer prevents high surface temperatures, which can cause mould. At least 3 out of the 7 reference frames fulfilled the spacer hygiene criteria for the relevant climatic region.

Hygiene $f_{Rsi} \geq 0.75$

The specific resistance of the spacer's edges is greater than the climate-independent minimum requirement.

Efficiency R_E = 3.50 m K/W $\geq$ 1.50 m K/W

cold climate

phB

CERTIFIED COMPONENT

Passive House Institute

Passive House efficiency class	phE	phD	phC	phB	phA	phA+

Technoform Glass Insulation GmbH
Matthäus-Merian-Straße 6, 34253 Lohfelden, Germany
☎ | ✉ | http://www.glassinsulation.de |

Description

The TGI-Spacer M is a hybrid plastic spacer with metal for firm and gass-tight connection with top thermal resistance for insulating glass.

Spacer height: 6.90 mm
Thermal conductivity: 0.31 W/(m K) (WA 17/1, ift Rosenheim)
Available spacer widths: 8, 10, 12, 14, 15, 16, 18, 20, 22 and 24 mm

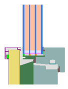
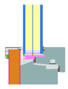
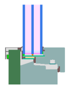
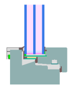
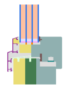
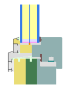
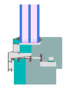
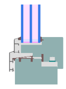
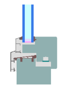
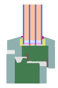
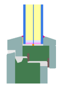
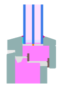
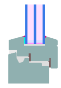
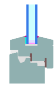
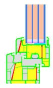
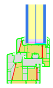
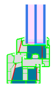
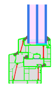
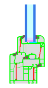
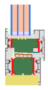
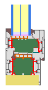
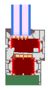
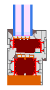
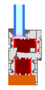
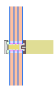
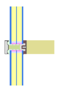
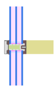
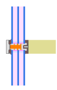
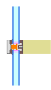
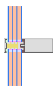
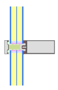
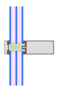
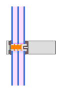
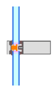
Appropriate secondary seal	Specific edge resistance R_E	Efficiency class
Polysulfide	3.54 m K/W	phB
Polyurethane	4.08 m K/W	phB
Silicone	3.70 m K/W	phB

Explanation

Spacers are categorized into different efficiency classes based on the resistance of their edges R_E. A secondary polysulfide sealant is typically used, unless the spacer is not approved for polysulfide. A detailed report with the calculations is available from either the manufacturer or the Passive House Institute.
The Passive House Institute has defined global component requirements for seven climate regions. In principle, components that have been certified for climates with higher requirements can also be used in climates with lower requirements. This may be economically advantageous.

Use in PHPP:
If individually calculated values are not available then the thermal bridge loss coefficient specified in in this document can be used. In this case, the appropriate reference frame must be selected and a 10 % safety margin should be applied.

Further information regarding certification is available
on www.passivehouse.com and www.passipedia.org .

Reference frames calculated with Polysulfide					
Climate	Arctic	Cool ✓	Cool temperate ✓	Warm temperate ✓	Warm ✓
Glass	Quadruple	Triple	Triple	Triple	Double
Glass package	4/12/3/12/3/12/4	6/18/2/18/6	6/16/6/16/6	6/16/6/16/6	6/16/6
Glass U-value	0.35 W/(m² K)	0.52 W/(m² K)	0.70 W/(m² K)	0.70 W/(m² K)	1.20 W/(m² K)
Timber-aluminium integral frame					
U_f [W/(m² K)]	0.48	0.62	0.73	0.87	1.03
Ψ_g [W/(m K)]	0.035	0.037	0.037	0.036	0.041
f_{Rsi} [-]	0.78	0.74	0.70 ✓	0.69 ✓	0.59 ✓
Timber-aluminium					
U_f [W/(m² K)]	0.54	0.57	0.75	0.97	1.19
Ψ_g [W/(m K)]	0.037	0.039	0.039	0.038	0.045
f_{Rsi} [-]	0.74	0.72	0.68	0.65 ✓	0.53
Timber					
U_f [W/(m² K)]	0.51	0.53	0.78	0.86	0.99
Ψ_g [W/(m K)]	0.032	0.036	0.036	0.036	0.041
f_{Rsi} [-]	0.77	0.75 ✓	0.72 ✓	0.72 ✓	0.61 ✓
Vinyl					
U_f [W/(m² K)]	0.70	0.75	0.82	1.02	1.16
Ψ_g [W/(m K)]	0.038	0.040	0.041	0.042	0.047
f_{Rsi} [-]	0.77	0.74	0.72 ✓	0.71 ✓	0.60 ✓
Aluminium					
U_f [W/(m² K)]	0.60	0.61	0.71	0.73	1.17
Ψ_g [W/(m K)]	0.039	0.044	0.042	0.045	0.051
f_{Rsi} [-]	0.78	0.77 ✓	0.75 ✓	0.75 ✓	0.62 ✓
Curtain wall timber					
U_f [W/(m² K)]	0.60	0.65	0.66	0.71	1.11
Ψ_g [W/(m K)]	0.044	0.044	0.046	0.046	0.057
f_{Rsi} [-]	0.75	0.74	0.71 ✓	0.71 ✓	0.57 ✓
Curtain wall aluminium					
U_f [W/(m² K)]	0.67	0.73	0.75	0.79	1.33
Ψ_g [W/(m K)]	0.052	0.052	0.055	0.055	0.077
f_{Rsi} [-]	0.83 ✓	0.82 ✓	0.79 ✓	0.79 ✓	0.68 ✓