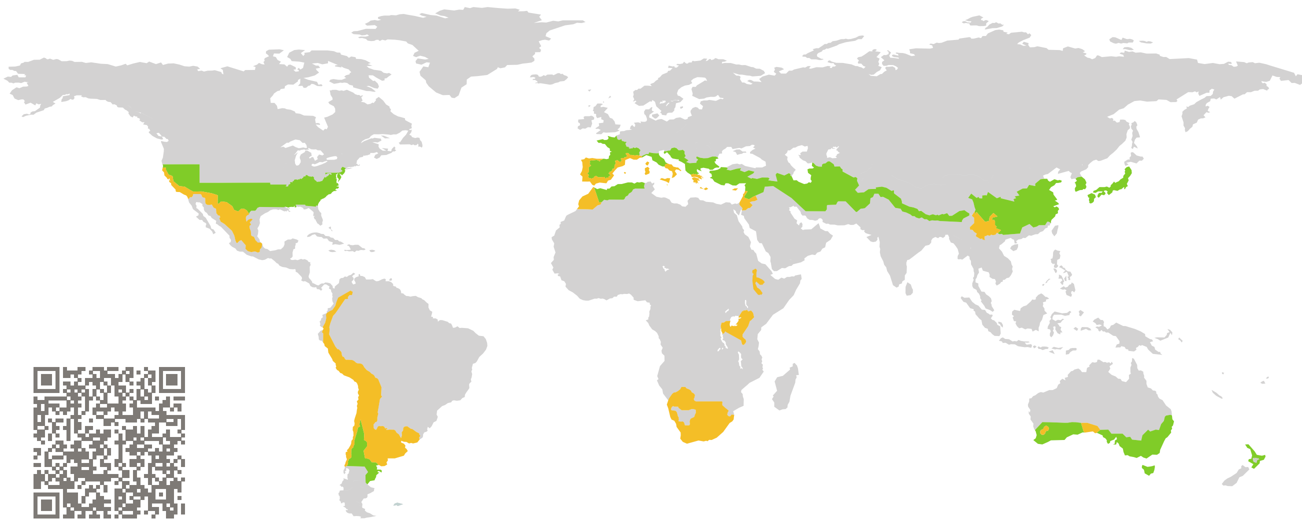
CERTIFICATE

Certified Passive House Component

Component-ID 1666sp04 valid until 31st December 2025

Passive House Institute
Dr. Wolfgang Feist
64283 Darmstadt
Germany



Category:	**Spacer for low-E-glazing**
Manufacturer:	**Alu-Pro S.r.l,** **Noale,** **Italy**
Product name:	**MULTITECH A**

Type
Plastic with aluminium foil
Height Box 2
6.50 mm
Thermal conductivity Box 2
0.510 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 $f_{Rsi} \geq 0.65$

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

Efficiency $R_E = 2.60\,\mathrm{m\,K/W} \geq 1.50\,\mathrm{m\,K/W}$

warm, temperate climate

phC

CERTIFIED COMPONENT

Passive House Institute

Passive House efficiency class	phE	phD	phC	phB	phA	phA+

Alu-Pro S.r.l
Via A. Einstein 8, Z.I., 30033 Noale, Italy
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Description

Spacer bar produced in SAN reinforced with Glass Fibres (35 %)and a aluminium foil as diffusion barrier. Height of spacer 6,5 mm, Equivalent thermal transmittance acc. to WA 17/1, IFT Rosenheim: 0,51 W/(mK). Allowed sealants: PS, PU, Hotmelt and Silicone Available spacer widths: 8,10,12,13,14,15,16,18,20,22,24 and 27mm.

Spacer height:	6.50 mm
Thermal conductivity:	0.510 W/(m K) (WA 17/1, ift Rosenheim (measured))
Available spacer widths:	8, 10, 12, 13, 14, 15, 16, 18, 20, 22, 24 and 27 mm

Appropriate secondary seal	Specific edge resistance R_E	Efficiency class
Hotmelt Butyl	3.00 m K/W	phC
Polyurethane	2.60 m K/W	phC
Silicone	2.70 m K/W	phC

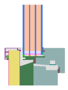
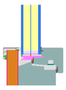
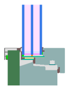
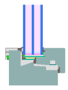
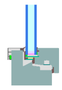
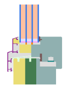
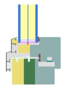
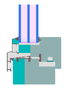
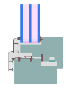
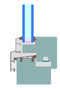
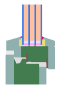
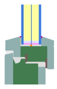
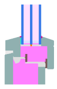
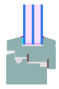
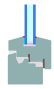
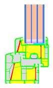
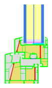
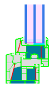
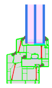
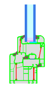
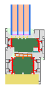
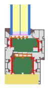
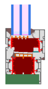
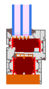
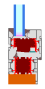
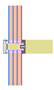
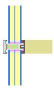
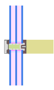
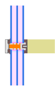
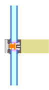
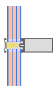
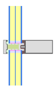
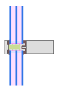
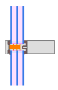
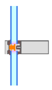
Explanation

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 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)]	0.044	0.047	0.046	0.045	0.049
f_{Rsi} [-]	0.75	0.71	0.68	0.66 ✓	0.56 ✓
Timber-aluminium					
U_f [W/(m² K)]	0.54	0.57	0.75	0.97	1.19
Ψ_g [W/(m K)]	0.048	0.051	0.050	0.049	0.054
f_{Rsi} [-]	0.71	0.68	0.64	0.61	0.50
Timber					
U_f [W/(m² K)]	0.51	0.53	0.78	0.86	0.99
Ψ_g [W/(m K)]	0.041	0.047	0.045	0.045	0.048
f_{Rsi} [-]	0.73	9.72 ✓	0.69	0.69 ✓	0.74 ✓
Vinyl					
U_f [W/(m² K)]	0.70	0.75	0.82	1.02	1.16
Ψ_g [W/(m K)]	0.048	0.051	0.051	0.052	0.056
f_{Rsi} [-]	0.74	0.71	0.69	0.69 ✓	0.57 ✓
Aluminium					
U_f [W/(m² K)]	0.60	0.61	0.71	0.73	1.17
Ψ_g [W/(m K)]	0.052	0.058	0.059	0.058	0.063
f_{Rsi} [-]	0.74	0.74	0.72 ✓	0.72 ✓	0.59 ✓
Curtain wall timber					
U_f [W/(m² K)]	0.60	0.65	0.66	0.71	1.11
Ψ_g [W/(m K)]	0.065	0.065	0.067	0.067	0.078
f_{Rsi} [-]	0.68	0.67	0.64	0.64	0.50
Curtain wall aluminium					
U_f [W/(m² K)]	0.67	0.73	0.73	0.79	1.33
Ψ_g [W/(m K)]	0.078	0.078	0.082	0.082	0.106
f_{Rsi} [-]	0.77	0.76 ✓	0.73 ✓	0.73 ✓	0.61 ✓