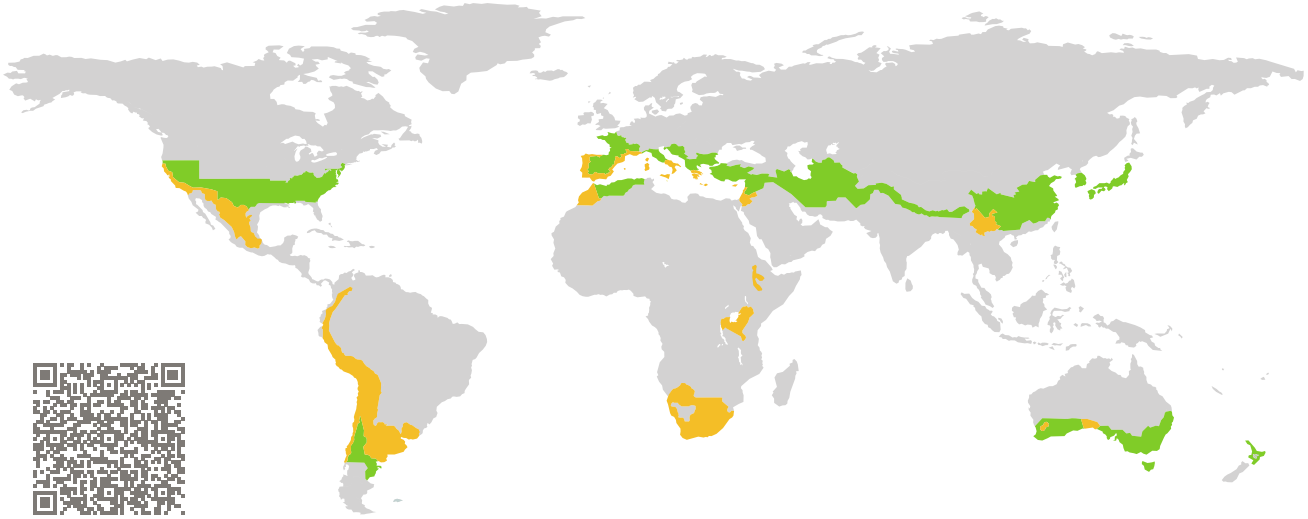
CERTIFICATE

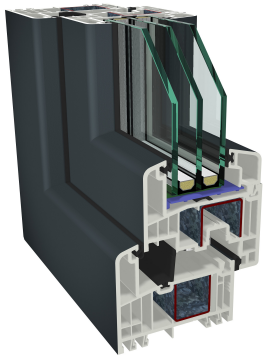
Certified Passive House Component

Component-ID 1239ws04 valid until 31st December 2025

Passive House Institute
Dr. Wolfgang Feist
64283 Darmstadt
Germany



Category:	**Window system**
Manufacturer:	**GEALAN Fenster Systeme GmbH, Santa Pola-Alicante, Spain**
Product name:	**Certification S9000**



This certificate was awarded based on the following criteria for the warm, temperate climate zone

Comfort	U_W = 0.99	≤	1.00 W/(m² K)
	$U_{W,\text{installed}}$	≤	1.05 W/(m² K)
	with U_g	=	0.90 W/(m² K)
Hygiene	$f_{Rsi=0.25}$	≥	0.65
Airtightness	Q_{100} = 0.16	≤	0.25 m³/(h m)

warm, temperate climate

phC

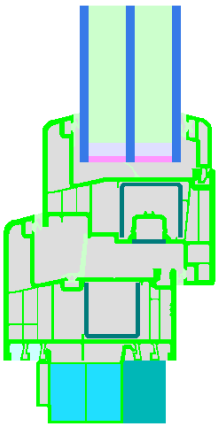
CERTIFIED COMPONENT

Passive House Institute

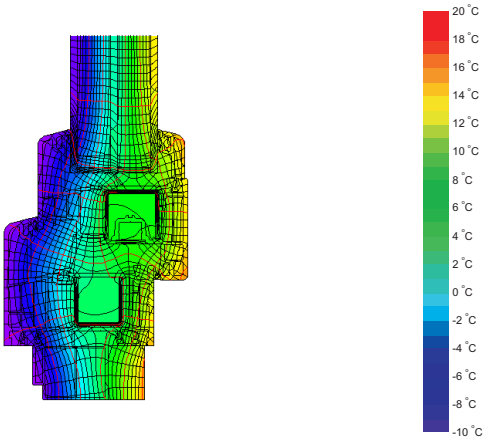
Passive House efficiency class	phE	phD	phC	phB	phA

www.passivehouse.com

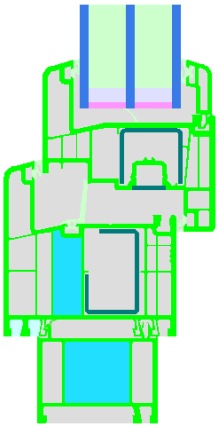
GEALAN Fenster Systeme GmbH
Calle Jose Alejo Bonmati 29 3-C, 03130 Santa Pola-Alicante, Spain
✉ info@gealan.de | http://www.gealan.de/homepage



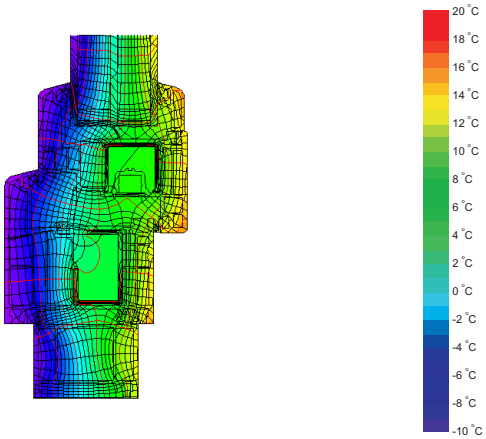
Calculation model



Isothermal



Calculation model



Isothermal

Description

PVC frame with PU foam (IKD®, 0.026 W/(mK)) insulated chamber. The required temperature factor is not achieved at the threshold. The airtightness was approved for a window with flying mullion (1650 mm * 1472 mm). Frame 6002 with reinforcement 6715 and bottom frame extension 7202 IKD, frame 6016 IKD with reinforcement 6716 and frame extension 7299 IKD, sash 6003 with reinforcement 6706, threshold 2596/2576 with 6431 and 6105, mullion 6012 with reinforcement 6711, mullion 6050 with reinforcement 6712. Pane thickness: 48 mm (4/18/4/18/4), rebate depth: 23 mm. Spacer: SWISSPACER Ultimate with polyurethane as secondary seal.

Explanation

The window U-values were calculated for the test window size of 2.46 m × 1.48 m with U_g = 0.90 W/(m² K). If a higher quality glazing is used, the window U-values will improve as follows:

Glazing	U_g =	0.90	1.04	0.60	0.52	W/(m² K)
		↓	↓	↓	↓	
Window	U_W =	0.99	1.09	0.79	0.73	W/(m² K)

Transparent building components are classified into efficiency classes depending on the heat losses through the opaque part. The frame U-Values, frame widths, thermal bridges at the glazing edge, and the glazing edge lengths are included in these heat losses. A more detailed report of the calculations performed in the context of certification is available from the manufacturer.
The Passive House Institute has defined international component criteria for seven climate zones. In principle, components which have been certified for climate zones with higher requirements may also be used in climates with less stringent requirements. In a particular climate zone it may make sense to use a component of a higher thermal quality which has been certified for a climate zone with more stringent requirements.

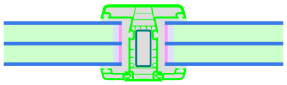
Further information relating to certification
can be found on www.passivehouse.com and passipedia.org.

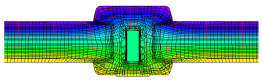
Frame values			Frame width b_f mm	U-value frame U_f W/(m² K)	Ψ-glazing edge Ψ_g W/(m K)	Temp. Factor $f_{Rsi=0.25}$ [-]
Mullion fixed	(0M1)		92	1.05	0.023	0.71
Transom fixed	(0T1)		140	1.05	0.023	0.71
Mullion 1 casement	(1M1)		140	1.07	0.023	0.69
Transom 1 casement	(1T1)		92	1.07	0.023	0.69
Mullion 2 casements	(2M1)		188	1.07	0.024	0.68
Transom 2 casements	(2T1)		188	1.07	0.024	0.68
Bottom fixed	(FB1)		100	0.91	0.022	0.71
Bottom fixed	(FB2)		125	1.01	0.022	0.72
Top fixed	(FH1)		70	0.96	0.023	0.72
Top fixed	(FH2)		84	0.89	0.022	0.72
Lateral fixed	(FJ1)		70	0.96	0.023	0.72
Lateral fixed	(FJ2)		84	0.89	0.022	0.72
Flying Mullion	(FM1)		170	1.08	0.022	0.65
Bottom	(OB1)		148	0.97	0.023	0.73
Bottom	(OB2)		174	1.04	0.024	0.73
Top	(OH1)		118	1.02	0.023	0.73
Top	(OH2)		132	0.98	0.024	0.73
Lateral	(OJ1)		118	1.02	0.023	0.73
Lateral	(OJ2)		132	0.98	0.024	0.73
Spacer: SWISSPACER Ultimate				Secondary seal: Polysulfide		

Frame values	Frame width b_f mm	U-value frame U_f W/(m² K)	Ψ-glazing edge Ψ_g W/(m K)	Temp. Factor $f_{Rsi=0.25}$ [-]
Threshold (OT2) 	92	1.71	0.023	0.63
Spacer: SWISSPACER Ultimate		Secondary seal: Polysulfide		

Mullion
fixed

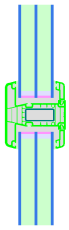
b_f = 92 mm
U_f = 1.05 W/(m² K)
Ψ_g = 0.023 W/(m K)
f_{Rsi} = 0.71

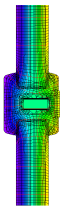




Transom
fixed

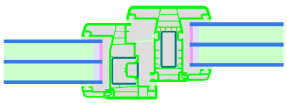
b_f = 140 mm
U_f = 1.05 W/(m² K)
Ψ_g = 0.023 W/(m K)
f_{Rsi} = 0.71

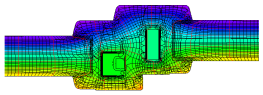




Mullion
1 casement

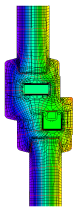
b_f = 140 mm
U_f = 1.07 W/(m² K)
Ψ_g = 0.023 W/(m K)
f_{Rsi} = 0.69





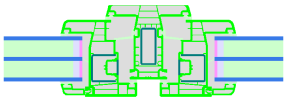
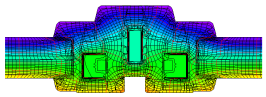
Transom
1 casement

b_f = 92 mm
U_f = 1.07 W/(m² K)
Ψ_g = 0.023 W/(m K)
f_{Rsi} = 0.69



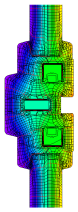
Mullion
2 casements

b_f = 188 mm
U_f = 1.07 W/(m² K)
Ψ_g = 0.024 W/(m K)
f_{Rsi} = 0.68

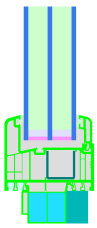
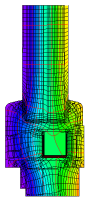
Transom
2 casements

b_f = 188 mm
U_f = 1.07 W/(m² K)
Ψ_g = 0.024 W/(m K)
f_{Rsi} = 0.68

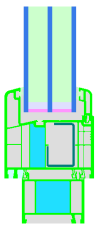
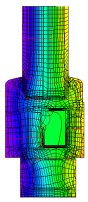
Bottom
fixed

b_f = 100 mm
U_f = 0.91 W/(m² K)
Ψ_g = 0.022 W/(m K)
f_{Rsi} = 0.71

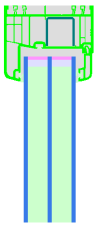
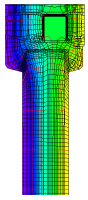
Bottom
fixed

b_f = 125 mm
U_f = 1.01 W/(m² K)
Ψ_g = 0.022 W/(m K)
f_{Rsi} = 0.72

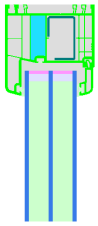
Top
fixed

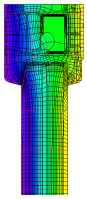
b_f = 70 mm
U_f = 0.96 W/(m² K)
Ψ_g = 0.023 W/(m K)
f_{Rsi} = 0.72

Top
fixed

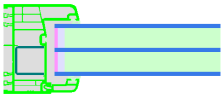
b_f = 84 mm
U_f = 0.89 W/(m^2 K)
Ψ_g = 0.022 W/(m K)
f_{Rsi} = 0.72

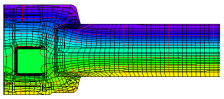




Lateral
fixed

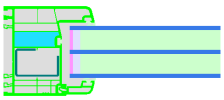
b_f = 70 mm
U_f = 0.96 W/(m^2 K)
Ψ_g = 0.023 W/(m K)
f_{Rsi} = 0.72

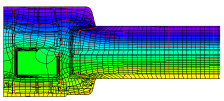




Lateral
fixed

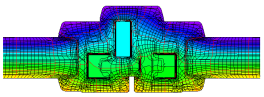
b_f = 84 mm
U_f = 0.89 W/(m^2 K)
Ψ_g = 0.022 W/(m K)
f_{Rsi} = 0.72





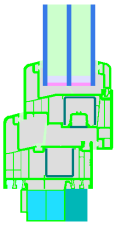
Flying Mullion

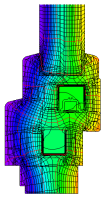
b_f = 170 mm
U_f = 1.08 W/(m^2 K)
Ψ_g = 0.022 W/(m K)
f_{Rsi} = 0.65



Bottom

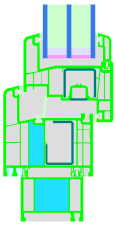
b_f = 148 mm
U_f = 0.97 W/(m^2 K)
Ψ_g = 0.023 W/(m K)
f_{Rsi} = 0.73

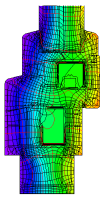




Bottom

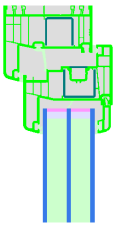
b_f = 174 mm
U_f = 1.04 W/(m² K)
Ψ_g = 0.024 W/(m K)
f_{Rsi} = 0.73

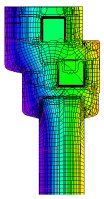




Top

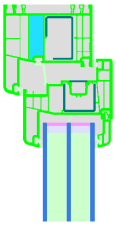
b_f = 118 mm
U_f = 1.02 W/(m² K)
Ψ_g = 0.023 W/(m K)
f_{Rsi} = 0.73

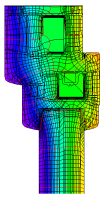




Top

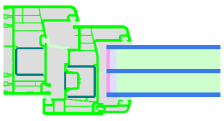
b_f = 132 mm
U_f = 0.98 W/(m² K)
Ψ_g = 0.024 W/(m K)
f_{Rsi} = 0.73

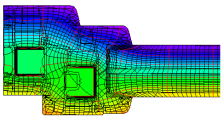




Lateral

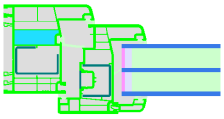
b_f = 118 mm
U_f = 1.02 W/(m² K)
Ψ_g = 0.023 W/(m K)
f_{Rsi} = 0.73

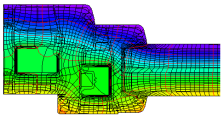




Lateral

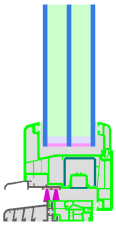
b_f = 132 mm
U_f = 0.98 W/(m² K)
Ψ_g = 0.024 W/(m K)
f_{Rsi} = 0.73

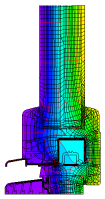




Threshold

b_f = 92 mm
U_f = 1.71 W/(m^2 K)
Ψ_g = 0.023 W/(m K)
f_{Rsi} = 0.63

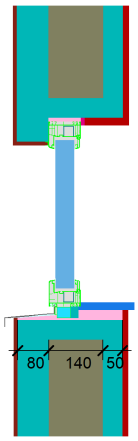




Validated installations

Formwork blocks (fixed)

U_{Wall} = 0.25 W/(m² K)

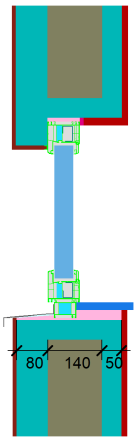


$\Psi_{install}$	W/(m K)
Top	–0.007
Left	–0.007
Right	–0.007
Bottom	0.012

$U_{W,installed}$ = 0.99 W/(m² K)

Formwork blocks (fixed) 2

U_{Wall} = 0.25 W/(m² K)

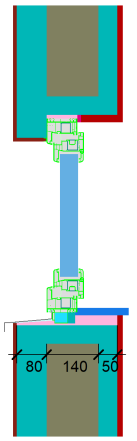


$\Psi_{install}$	W/(m K)
Top	–0.011
Left	–0.011
Right	–0.011
Bottom	0.008

$U_{W,installed}$ = 0.98 W/(m² K)

Formwork blocks (operable)

U_{Wall} = 0.25 W/(m² K)

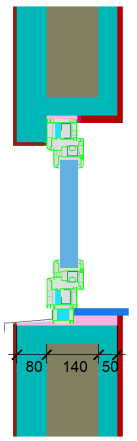


$\Psi_{install}$	W/(m K)
Top	–0.004
Left	–0.004
Right	–0.004
Bottom	0.015

$U_{W,installed}$ = 1.00 W/(m² K)

Formwork blocks (operable) 2

U_{Wall} = 0.25 W/(m² K)

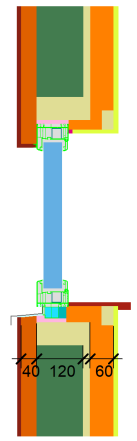


$\Psi_{install}$	W/(m K)
Top	–0.004
Left	–0.004
Right	–0.004
Bottom	0.008

$U_{W,installed}$ = 0.99 W/(m² K)

Lightweight timber (fixed glazed)

U_{Wall} = 0.19 W/(m² K)

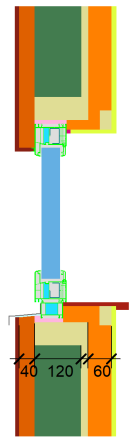


$\Psi_{install}$	W/(m K)
Top	0.004
Left	0.004
Right	0.004
Bottom	0.012

$U_{W,installed}$ = 1.01 W/(m² K)

Lighthweight timber (fixed glazed) 2

U_{Wall} = 0.19 W/(m² K)

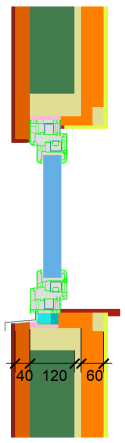


$\Psi_{install}$	W/(m K)
Top	0.002
Left	0.002
Right	0.002
Bottom	0.002

$U_{W,installed}$ = 1.00 W/(m² K)

Lightweight timber (operable)

U_{Wall} = 0.19 W/(m² K)

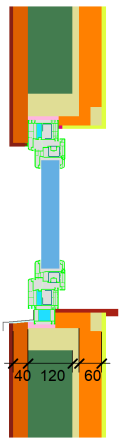


$\Psi_{install}$	W/(m K)
Top	0.005
Left	0.005
Right	0.005
Bottom	0.011

$U_{W,installed}$ = 1.01 W/(m² K)

Lightweight timber (operable) 2

U_{Wall} = 0.19 W/(m² K)

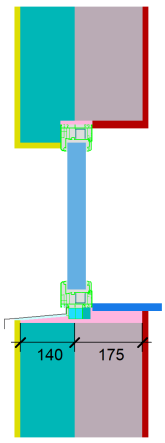


$\Psi_{install}$	W/(m K)
Top	0.007
Left	0.007
Right	0.007
Bottom	0.001

$U_{W,installed}$ = 1.00 W/(m² K)

Exterior insulation and finishing system (EIFS) (fixed glazed)

U_{Wall} = 0.23 W/(m² K)

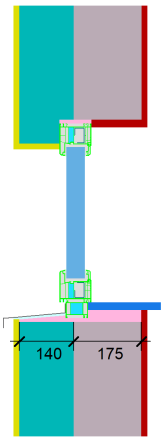


$\Psi_{install}$	W/(m K)
Top	0.001
Left	0.001
Right	0.001
Bottom	0.033

$U_{W,installed}$ = 1.02 W/(m² K)

Exterior insulation and finishing system (EIFS) (fixed glazed) 2

U_{Wall} = 0.23 W/(m² K)

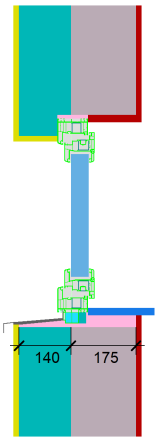


$\Psi_{install}$	W/(m K)
Top	–0.002
Left	–0.002
Right	–0.002
Bottom	0.035

$U_{W,installed}$ = 1.01 W/(m² K)

Exterior insulation and finishing system (EIFS) (operable)

U_{Wall} = 0.23 W/(m² K)

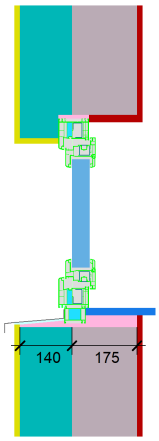


$\Psi_{install}$	W/(m K)
Top	0.007
Left	0.007
Right	0.007
Bottom	0.036

$U_{W,installed}$ = 1.03 W/(m² K)

Exterior insulation and finishing system (EIFS) (operable) 2

U_{Wall} = 0.23 W/(m² K)

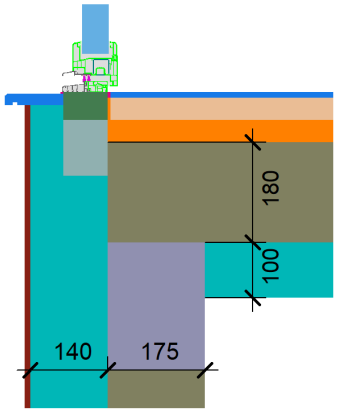


$\Psi_{install}$	W/(m K)
Top	0.008
Left	0.008
Right	0.008
Bottom	0.036

$U_{W,installed}$ = 1.03 W/(m² K)

Exterior insulation and finishing s (EIFS)
threshold (operable)

U_1 = 0.23 U_2 = 0.22 [W/(m^2 K)]



$\Psi_{install}$ = –0.01 W/(m K)