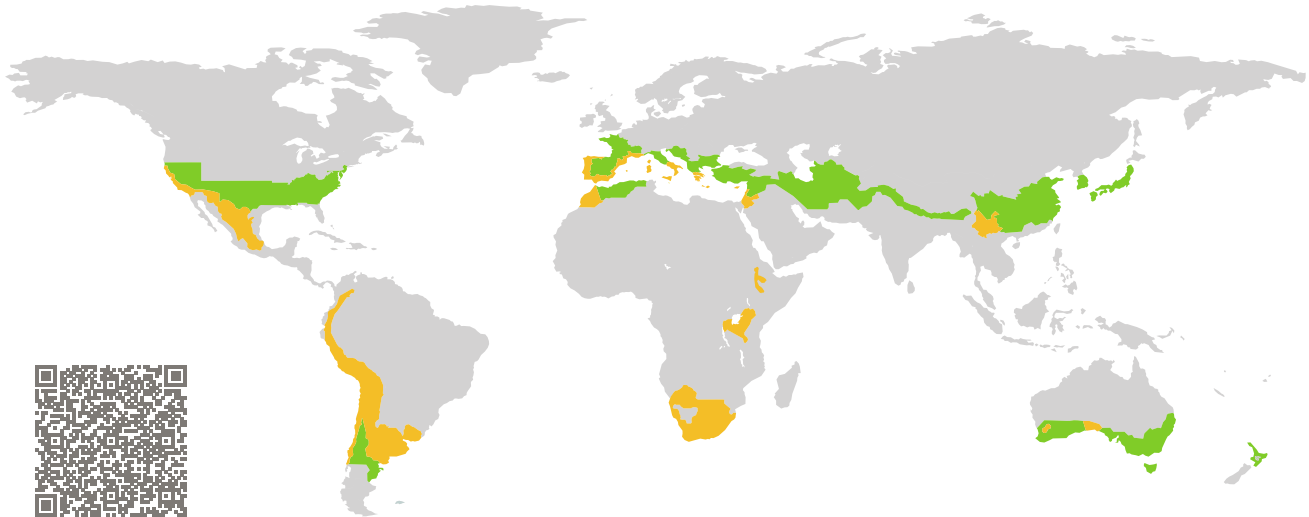


# CERTIFICATE

Certified Passive House Component

Component-ID 2118wi04 valid until 31st December 2025

Passive House Institute  
Dr. Wolfgang Feist  
64283 Darmstadt  
Germany

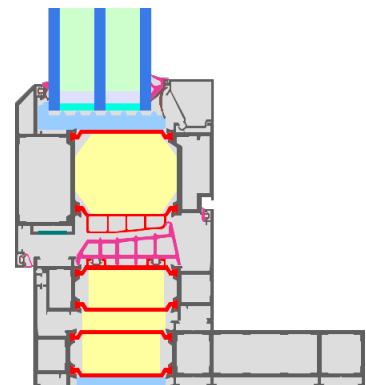


Category: **Window Frame**  
Manufacturer: **Shandong Qiaoju Doors and Windows Co.,Ltd, Weifang, China**  
Product name: **Pangoo Passive**

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

Comfort  $U_W = 0.97 \leq 1.00 \text{ W}/(\text{m}^2 \text{ K})$   
 $U_{W, \text{installed}} \leq 1.05 \text{ W}/(\text{m}^2 \text{ K})$   
with  $U_g = 0.90 \text{ W}/(\text{m}^2 \text{ K})$

Hygiene  $f_{Rsi=0.25} \geq 0.65$



Passive House  
efficiency class

phE

phD

phC

phB

phA

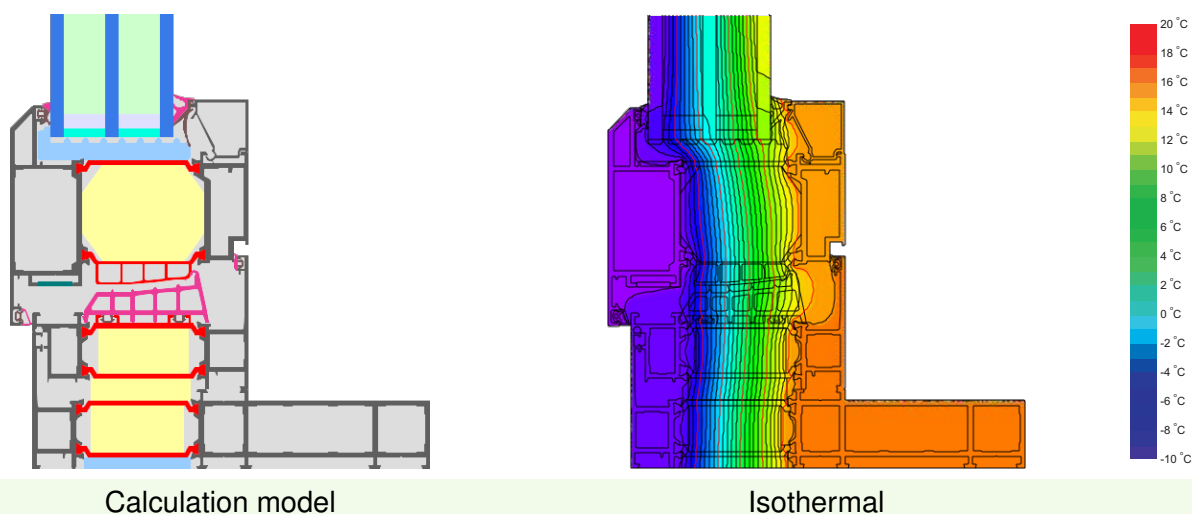
[www.passivehouse.com](http://www.passivehouse.com)

warm, temperate climate



**CERTIFIED  
COMPONENT**

Passive House Institute



## Description

Aluminium frame with thermal separation (0.30 W/(mK)) and insulation (Resol foam 0.022 W/(mK)); glazing: 6/18/6/18/6; spacer: Technoform-Spacer SP16 with butyl secondary seal. The frame extends to the inside to accommodate an insect screen.

## Explanation

The window U-values were calculated for the test window size of 1.23 m × 1.48 m with  $U_g = 0.90$  W/(m<sup>2</sup> K). If a higher quality glazing is used, the window U-values will improve as follows:

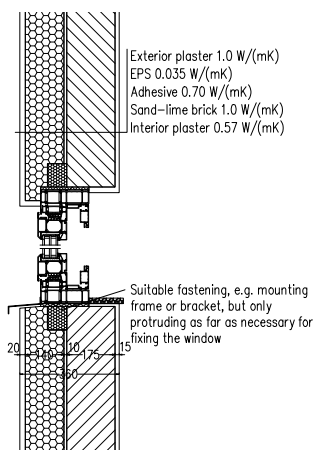
Glazing	$U_g =$	0.90	0.82	0.74	0.66	W/(m <sup>2</sup> K)
		↓	↓	↓	↓	
Window	$U_W =$	0.97	0.93	0.88	0.83	W/(m <sup>2</sup> K)

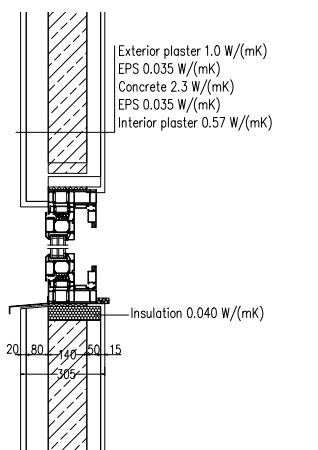
Transparent building components are classified into efficiency classes depending on the heat losses through the opaque part. The frame U-Values, frame widths, thermal bridges at the glazing edge, and the glazing edge lengths are included in these heat losses. A more detailed report of the calculations performed in the context of certification is available from the manufacturer.

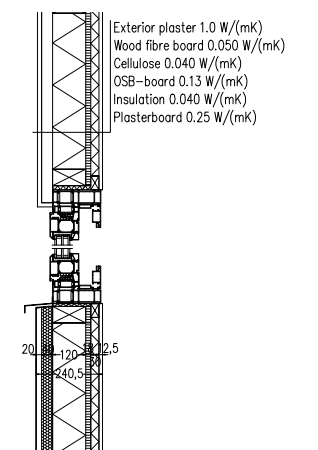
The Passive House Institute has defined international component criteria for seven climate zones. In principle, components which have been certified for climate zones with higher requirements may also be used in climates with less stringent requirements. In a particular climate zone it may make sense 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](http://www.passivehouse.com) and [passipedia.org](http://passipedia.org).

## Validated installations

Exterior insulation and finishing system (EIFS) (operable)	
$U_{\text{Wall}} = 0.23 \text{ W}/(\text{m}^2 \text{ K})$	
 <p>Exterior plaster 1.0 W/(mK) EPS 0.035 W/(mK) Adhesive 0.70 W/(mK) Sand-lime brick 1.0 W/(mK) Interior plaster 0.57 W/(mK)</p> <p>Suitable fastening, e.g. mounting frame or bracket, but only protruding as far as necessary for fixing the window</p> <p>20 80 140 175 15</p>	
$\Psi_{\text{install}}$	W/(m K)
Top	0.010
Side	0.010
Bottom	0.016
$U_{W,\text{installed}} = 1.01 \text{ W}/(\text{m}^2 \text{ K})$	

Formwork blocks (operable)	
$U_{\text{Wall}} = 0.25 \text{ W}/(\text{m}^2 \text{ K})$	
 <p>Exterior plaster 1.0 W/(mK) EPS 0.035 W/(mK) Concrete 2.3 W/(mK) EPS 0.035 W/(mK) Interior plaster 0.57 W/(mK)</p> <p>Insulation 0.040 W/(mK)</p> <p>20 80 140 150 15</p>	
$\Psi_{\text{install}}$	W/(m K)
Top	0.012
Side	0.012
Bottom	0.022
$U_{W,\text{installed}} = 1.01 \text{ W}/(\text{m}^2 \text{ K})$	

Lightweight timber (operable)	
$U_{\text{Wall}} = 0.25 \text{ W}/(\text{m}^2 \text{ K})$	
 <p>Exterior plaster 1.0 W/(mK) Wood fibre board 0.050 W/(mK) Cellulose 0.040 W/(mK) OSB-board 0.13 W/(mK) Insulation 0.040 W/(mK) Plasterboard 0.25 W/(mK)</p> <p>20 120 120 240.5 12.5</p>	
$\Psi_{\text{install}}$	W/(m K)
Top	0.019
Side	0.019
Bottom	0.026
$U_{W,\text{installed}} = 1.03 \text{ W}/(\text{m}^2 \text{ K})$	

Frame values			Frame width $b_f$ mm	$U$ -value frame $U_f$ W/(m² K)	$\Psi$ -glazing edge $\Psi_g$ W/(m K)	Temp. Factor $f_{Rsi=0.25}$ [-]
Mullion 2 casements	(2M1)		290	0.99	0.024	0.71
Bottom	(OB1)		162	0.94	0.024	0.72
Top	(OH1)		162	0.94	0.024	0.72
Lateral	(OJ1)		162	0.94	0.024	0.72
Spacer: Technoform-Spacer SP16			Secondary seal: Butyl			

