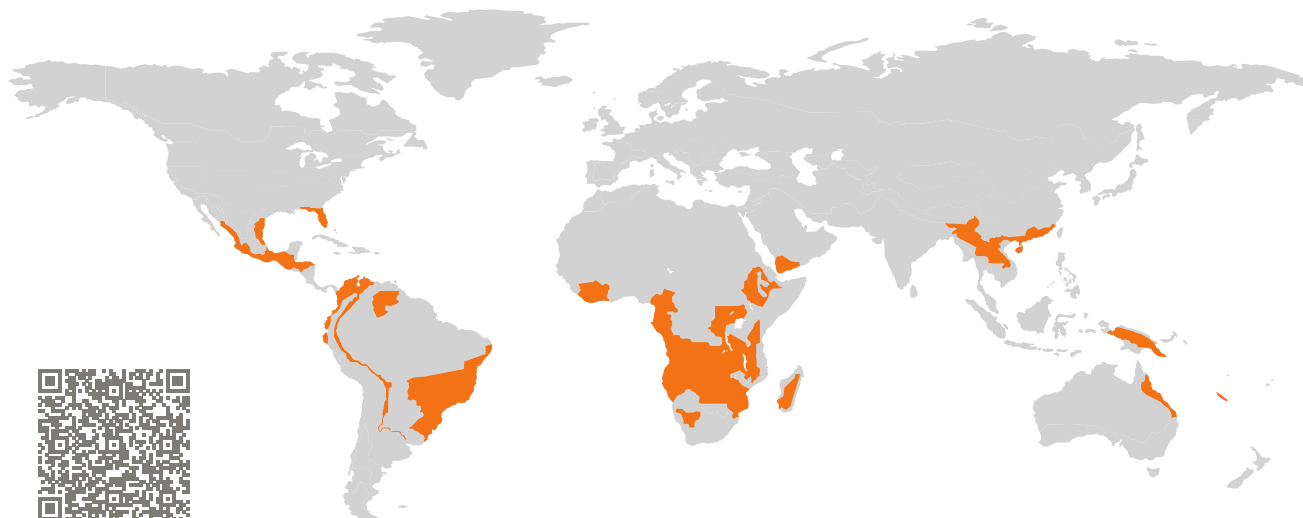


CERTIFICATE

Certified Passive House Component

Component-ID 2190wi06 valid until 31st December 2025

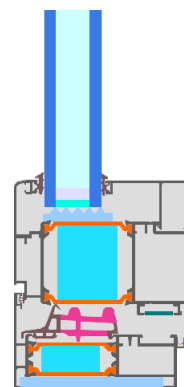
Passive House Institute
Dr. Wolfgang Feist
64283 Darmstadt
Germany



Category: **Window Frame**
Manufacturer: **Kalco Alu Systems Pvt. Ltd.,
Ghaziabad,
India**
Product name: **Thermal Break System**

**This certificate was awarded based on the following
criteria for the hot climate zone**

Comfort $U_W = 1.19 \leq 1.20 \text{ W}/(\text{m}^2 \text{ K})$
 $U_{W, \text{installed}} \leq 1.25 \text{ W}/(\text{m}^2 \text{ K})$
with $U_g = 1.10 \text{ W}/(\text{m}^2 \text{ K})$



Passive House
efficiency class

phE

phD

phC

phB

phA

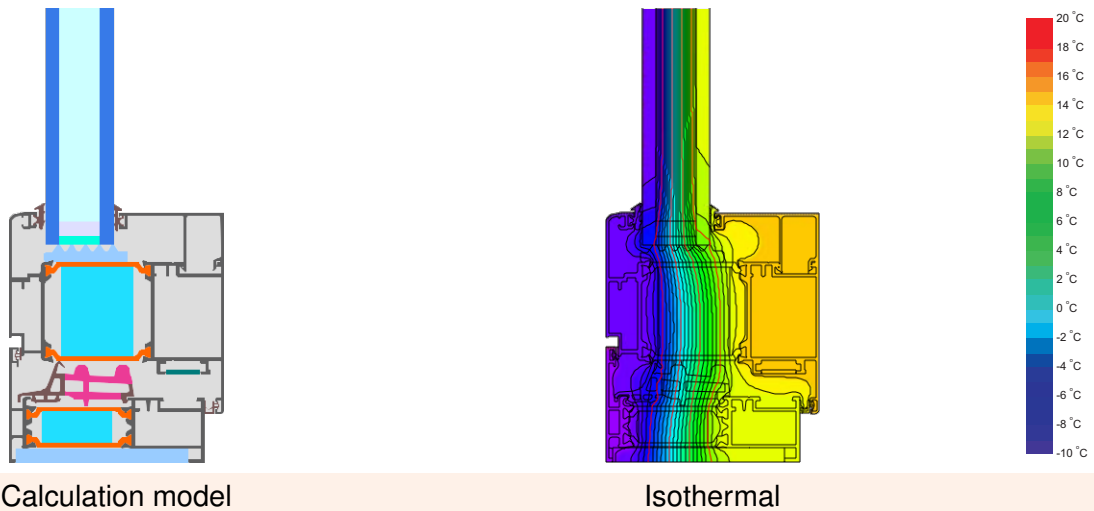
www.passivehouse.com

hot climate



**CERTIFIED
COMPONENT**

Passive House Institute



Description

Aluminium frame, thermally separated with Technoform Low Lambda (0,21 W/(mK)) and insulated with pre-cut polyurethane foam sections (0,027 W/(mK)). Pane thickness 30 mm (6/18/6 mm), rebate depth 15 mm. Spacer: TGI-Spacer SP16 with butyl secondary seal.

Explanation

The window U-values were calculated for the test window size of 1.23 m × 1.48 m with $U_g = 1.10 \text{ W}/(\text{m}^2 \text{ K})$. If a higher quality glazing is used, the window U-values will improve as follows:

Glazing	$U_g =$	1.10	1.05	0.95	0.90	W/(m ² K)
		↓	↓	↓	↓	
Window	$U_w =$	1.19	1.16	1.09	1.05	W/(m ² 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.

Validated installations

Ventilated facade (operable)		Exterior insulation and finishing system (EIFS) (operable)		Cavity wall (operable)	
$U_{Wall} = 0.46 \text{ W}/(\text{m}^2 \text{ K})$		$U_{Wall} = 0.47 \text{ W}/(\text{m}^2 \text{ K})$		$U_{Wall} = 0.44 \text{ W}/(\text{m}^2 \text{ K})$	
<p>Ventilated facade – substructure Mineral wool 0.035 W/(mK) Concrete 2.3 W/(mK) Interior plaster 0.57 W/(mK)</p>		<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>Clinker Brick 1.2 W/(mK) Air gap EPS 0.035 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>Suitable fastening, e.g. mounting frame or bracket, but only protruding as far as necessary for fixing the window</p>		<p>Suitable fastening, e.g. mounting frame or bracket, but only protruding as far as necessary for fixing the window</p>	
$\Psi_{install}$	W/(m K)	$\Psi_{install}$	W/(m K)	$\Psi_{install}$	W/(m K)
Top	0.014	Top	0.013	Top	0.015
Side	0.014	Side	0.013	Side	0.015
Bottom	0.016	Bottom	0.015	Bottom	0.017
$U_{W,installed} = 1.24 \text{ W}/(\text{m}^2 \text{ K})$		$U_{W,installed} = 1.23 \text{ W}/(\text{m}^2 \text{ K})$		$U_{W,installed} = 1.24 \text{ W}/(\text{m}^2 \text{ K})$	

Frame values		Frame width b_f mm	U -value frame U_f W/(m ² K)	Ψ -glazing edge Ψ_g W/(m K)	Temp. Factor $f_{Rsi=0.25}$ [-]
Mullion 1 casement	(1M1)	131	1.08	0.041	0.70
Bottom	(OB1)	110	1.07	0.041	0.72
Top	(OH1)	110	1.07	0.041	0.72
Lateral	(OJ1)	110	1.07	0.041	0.72
Spacer: Technoform-Spacer SP16			Secondary seal: Butyl		

