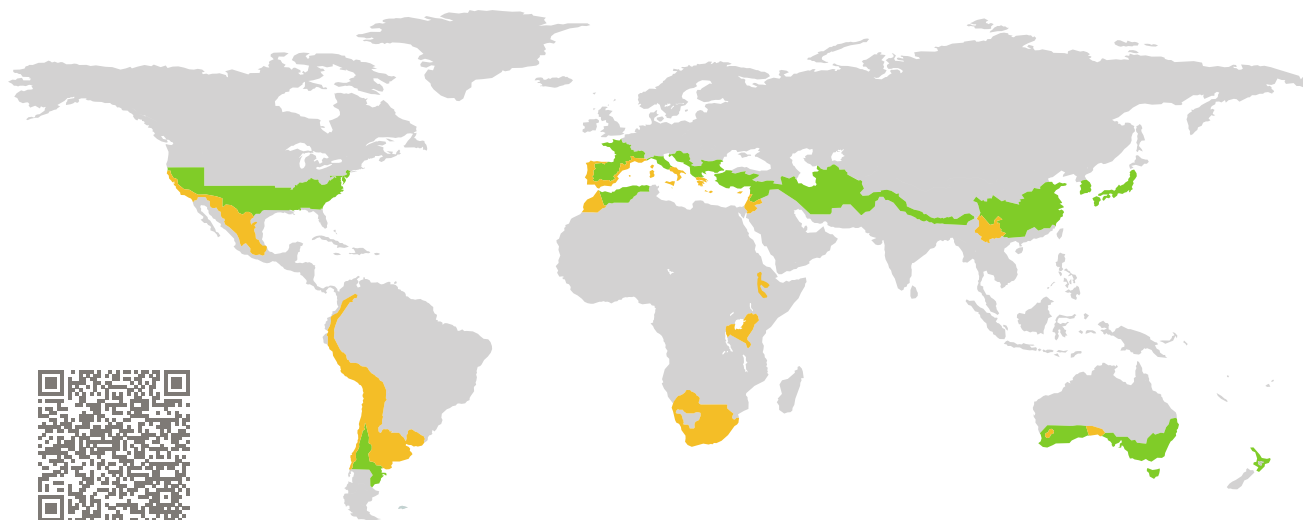


CERTIFICATE

Certified Passive House Component

Component-ID 1178wi04 valid until 31st December 2018

Passive House Institute
Dr. Wolfgang Feist
64283 Darmstadt
Germany

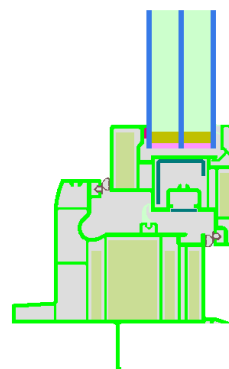


Category: **Window Frame**
Manufacturer: **YKK AP Inc.,
Tokyo,
Japan**
Product name: **APW 430 two action**

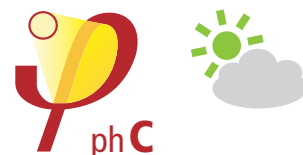
**This certificate was awarded based on the following
criteria for the warm, temperate climate zone**

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

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



warm, temperate climate



ph C

**CERTIFIED
COMPONENT**

Passive House Institute

Passive House
efficiency class

phE

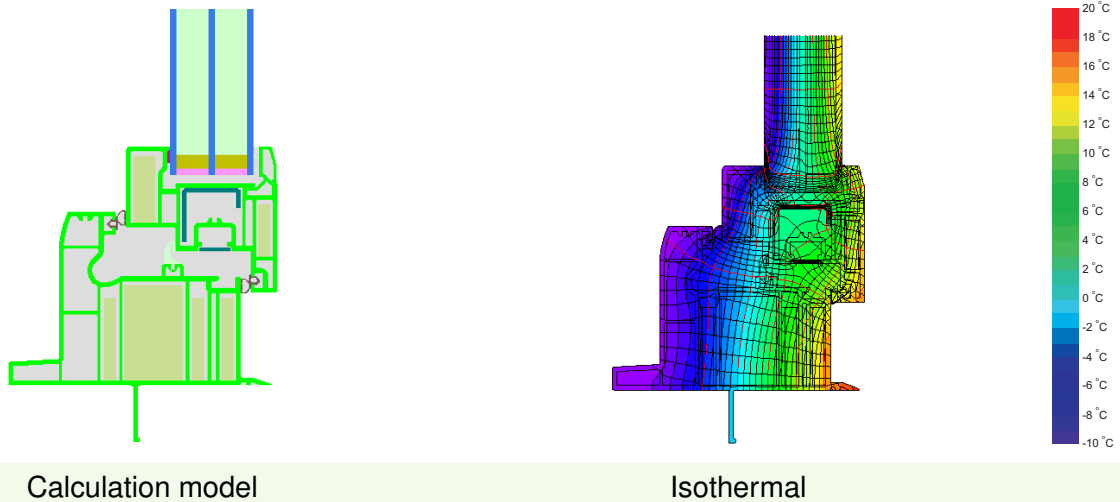
phD

phC

phB

phA

www.passivehouse.com



Calculation model Isothermal

Description

PVC frame (0,17 W/(mK), insulated by Closed cell polyethylen foam (0.037 W/(mK). Pane thickness: 41 mm (3/16/3/16/3), rebate depth: 16 mm, spacer: Chromatech Ultra F.

Explanation





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

Glazing	$U_g =$	0.90	0.70	0.58	0.66	W/(m ² K)
		↓	↓	↓	↓	
Window	$U_W =$	1.00	0.86	0.78	0.84	W/(m ² K)

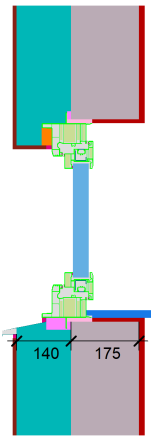
Transparent building components are classified into efficiency classes depending on the heat losses through the opaque part. The frame U-Values, frame widths, thermal bridges at the glazing edge, and the glazing edge lengths are included in these heat losses. A more detailed report of the calculations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

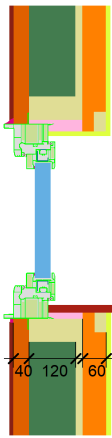
Further information relating to certification can be found on www.passivehouse.com and passipedia.org.

Frame values			Frame width b_f mm	U -value frame U_f W/(m ² K)	Ψ -panel edge Ψ_g W/(m K)	Temp. Factor $f_{RSi=0.25}$ [-]
Top	(to)		118	0.96	0.033	0.65
Side	(s)		118	0.96	0.033	0.65
Bottom	(bo)		118	0.96	0.033	0.65
Mullion 1 casement	(m1)		132	1.13	0.030	0.65
			Spacer: CHROMATECH ultra F		Secondary seal: Polysulfide	

Validated installations

Exterior insulation and finishing system (EIFS) (operable)	
$U_{Wall} = 0.23$ W/(m ² K)	
	
$\Psi_{install}$	W/(m K)
Top	0.010
Side	0.010
Bottom	0.041
$U_{W,installed} = 1.05$ W/(m ² K)	

Japanese timber construction	
$U_{Wall} = 0.25$ W/(m ² K)	
	
$\Psi_{install}$	W/(m K)
Top	0.017
Side	0.006
Bottom	0.021
$U_{W,installed} = 1.04$ W/(m ² K)	

Lightweight timber (operable)	
$U_{Wall} = 0.19$ W/(m ² K)	
	
$\Psi_{install}$	W/(m K)
Top	0.016
Side	0.016
Bottom	0.019
$U_{W,installed} = 1.05$ W/(m ² K)	

