

Certificate

Certified Passive House Component

for cool, temperate climates; valid until 31.12.2015

Passive House Institute
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Category: **Window Frame**
Manufacturer: **Cruz & Oliveira - Carpintaria e Mobiliár**
3660-070 São Pedro do Sul, Portugal
Product name: **EPW CN92**

This certificate was awarded based on the following criteria:

Given a U_g value of $0.70 \text{ W/(m}^2\text{K)}$ and a window size of 1.23 m by 1.48 m,

$$U_w = 0.80 \text{ W/(m}^2\text{K)} \leq 0.80 \text{ W/(m}^2\text{K)}$$

Taking into account the installation based thermal bridges and provided that the installation is, with regard to the thermal bridges, equal or better than shown in the data sheet, the window meets the following criterion.

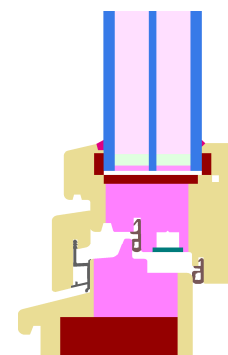
$$U_{w, \text{installed}} \leq 0.85 \text{ W/(m}^2\text{K)}$$

Thermal data

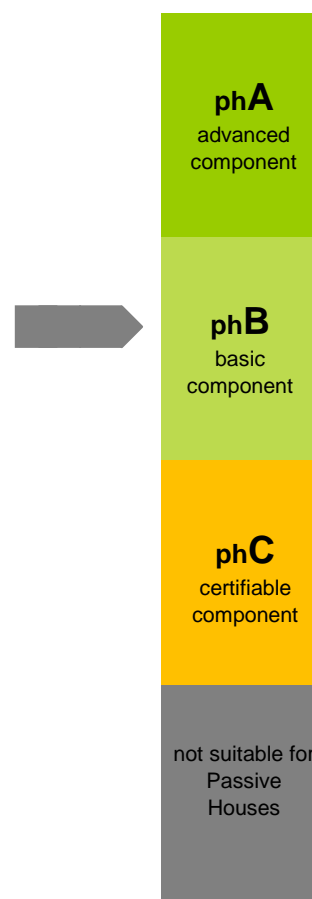
| | U_f -value [W/(m ² K)] | Width [mm] | Ψ_g [W/(mK)] | $f_{Rsi=0.25}$ [-] |
|----------|--|---------------|----------------------|-----------------------|
| Spacer | | | Swisspacer Ultimate* | |
| Bottom | 0.87 | 124 | 0.026 | 0.75 |
| Side/top | 0.81 | 110 | 0.026 | |

*Spacers of lower thermal quality, especially those made of aluminium, lead to significantly higher thermal losses and lower temperature factors.

For further information, please see the data sheet



Passive House Efficiency Class

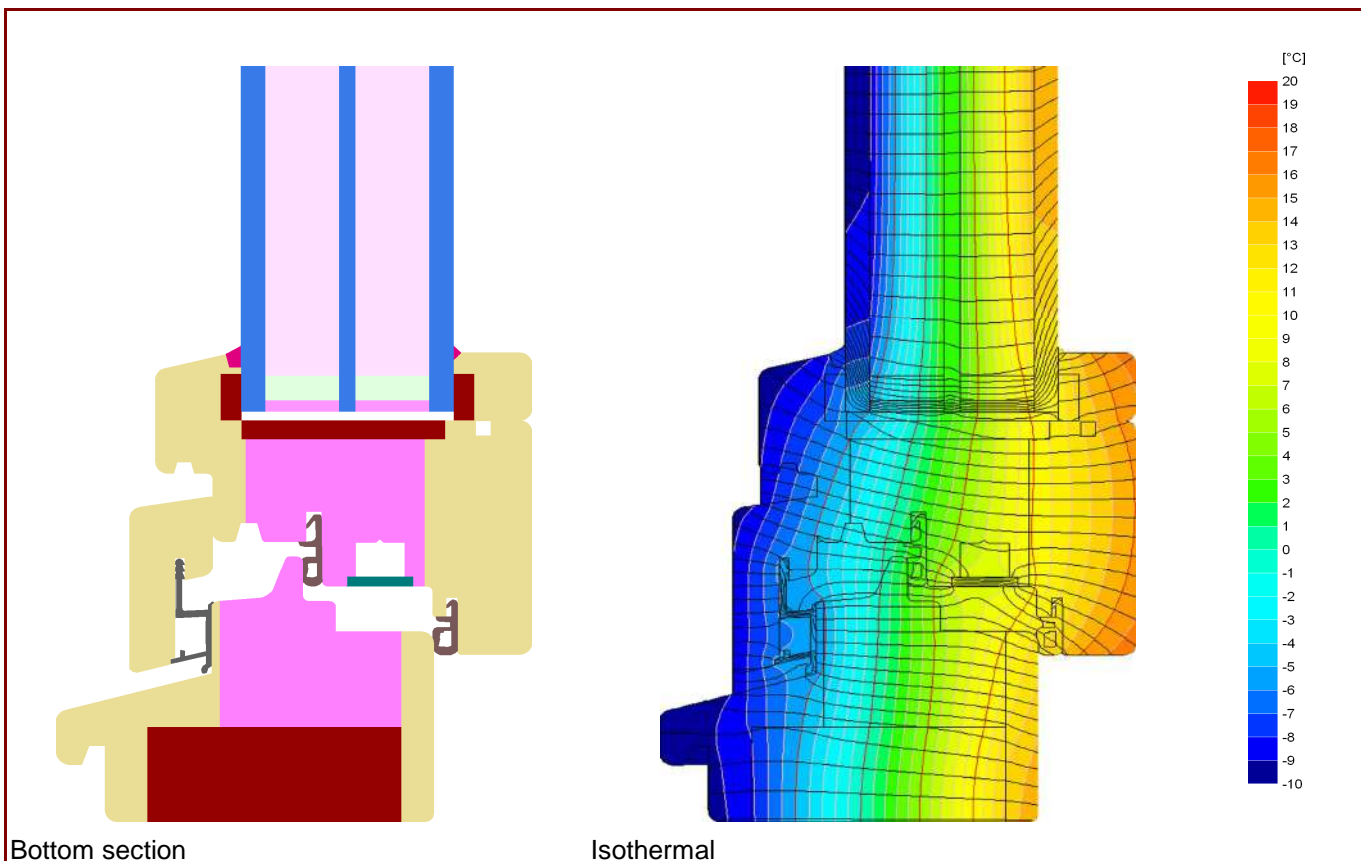


CERTIFIED COMPONENT

Passive House Institute

Data Sheet Cruz & Oliveira - Carpintaria e Mobiliário, Lda, EPW CN92

Manufacturer Cruz & Oliveira - Carpintaria e Mobiliário, Lda
 Casal de Abados, Carvalhais, 3660-070 São Pedro do Sul, Portugal
 Tel.: 00351 232799188
 Email: geral@carpintariacasanova.com, www.carpintariacasanova.com

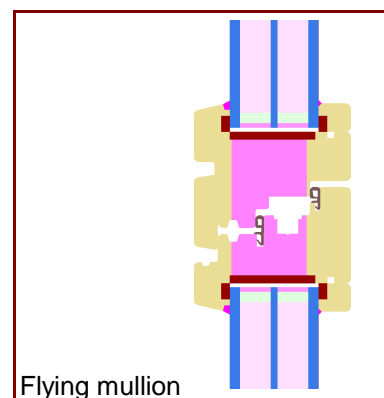


Description

Timber window frame (Spruce/Fir 0,11 W/(mK)), insulated by recycled Polyurethane foam (0,08 W/(mK)) and Cork (0,045 W/(mK)). Pane thickness: 52 mm (6/18/4/18/6), Rebate depth: mm.

Thermal data for the window frame

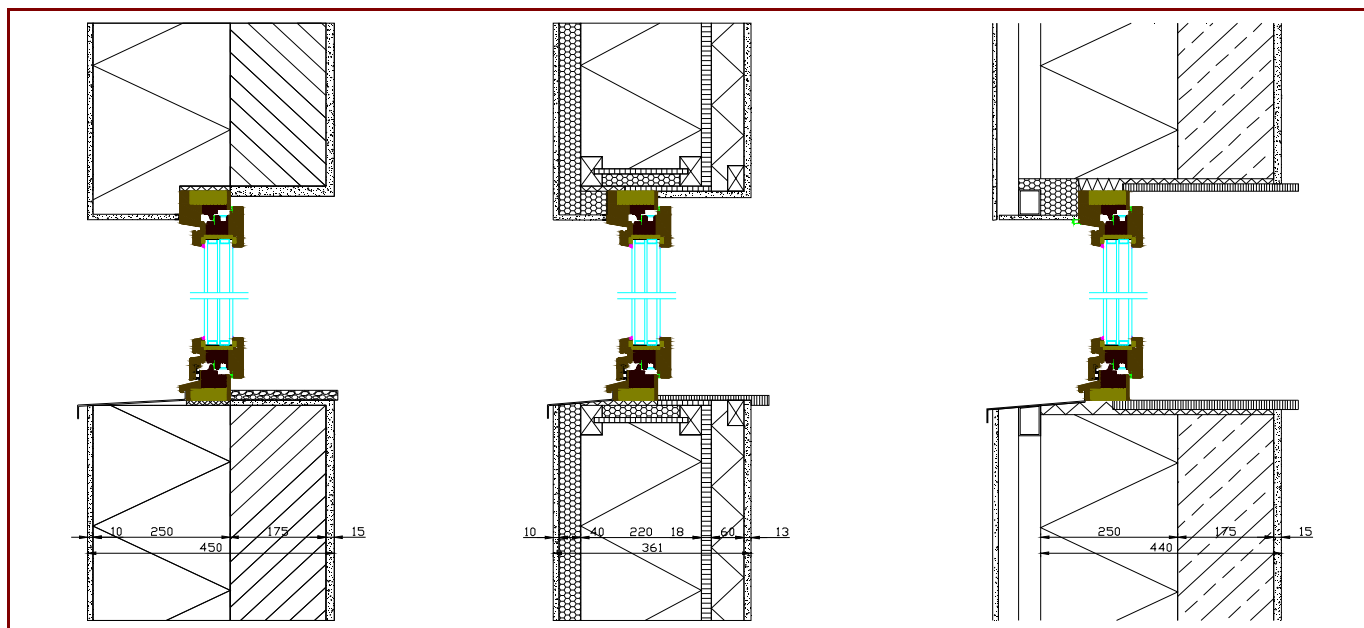
| | U_f -value [W/(m²K)] | Width [mm] | Ψ_g [W/(mK)] | $f_{Rsi=0.25}$ [-] |
|----------------|---------------------------|---------------|----------------------|-----------------------|
| Spacer | Swisspacer Ultimate* | | | 0.75 |
| Bottom | 0.87 | 124 | 0.026 | |
| Side/Top | 0.81 | 110 | 0.026 | |
| Flying Mullion | 0.86 | 134 | 0.023 | 0.74 |



* Spacers of lower thermal quality lead to higher thermal losses and lower glass edge temperatures.

Data Sheet Cruz & Oliveira - Carpintaria e Mobiliário, Lda, EPW CN92

Installation



Installation based thermal bridge $\Psi_{\text{instal.}}$ in Passive House suitable walls

| | | EIFS | Timber construction wall | Ventilated facade |
|--|-----------|-------|--------------------------|-------------------|
| Position | | | | |
| Bottom | [W/(mK)] | 0.022 | 0.025 | 0.027 |
| Side/Top | [W/(mK)] | 0.008 | 0.015 | 0.010 |
| $U_{W,\text{instal.}}$ | [W/(m²K)] | 0.84 | 0.85 | 0.85 |

Explanatory notes

The window U-values were calculated based on a 1.23 m by 1.48 m window $U_g = 0.70 \text{ W/(m}^2\text{K)}$. If better glazing is used, the window U-values decrease as follows:

| | | | | |
|------------------|-----------------------------------|------|------|------|
| U Glazing | U_g [W/(m²K)] | 0.64 | 0.58 | 0.54 |
| U Window | U_w [W/(m²K)] | 0.76 | 0.72 | 0.69 |

Depending on the thermal losses through opaque elements, transparent components are categorised according to efficiency classes. These thermal losses include the losses through the frame, the frame width, the thermal bridge at the glass edge as well as the length of the glass edge. Certificates for arctic regions are too valid vor cold, certificates for cold regions are too valid for cool, temperate zones.

Please ask the manufacturer for a detailed report containing all calculations and results.

For further information, please visit www.passivehouse.com or www.passipedia.org.