

# Certificate

## Certified Passive House component

for cool, temperate climate, valid until 31.12.2013

Passive House Institute  
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Category: **Window Frame**  
Manufacturer: **M SORA d.d.**  
**4226 Žiri, SLOVENIA**  
Product name: **NATURA E112**

The following comfort criteria were used in awarding this certificate:

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

$$U_w = 0.77 \text{ W}/(\text{m}^2\text{K}) \leq 0.80 \text{ W}/(\text{m}^2\text{K})$$

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.

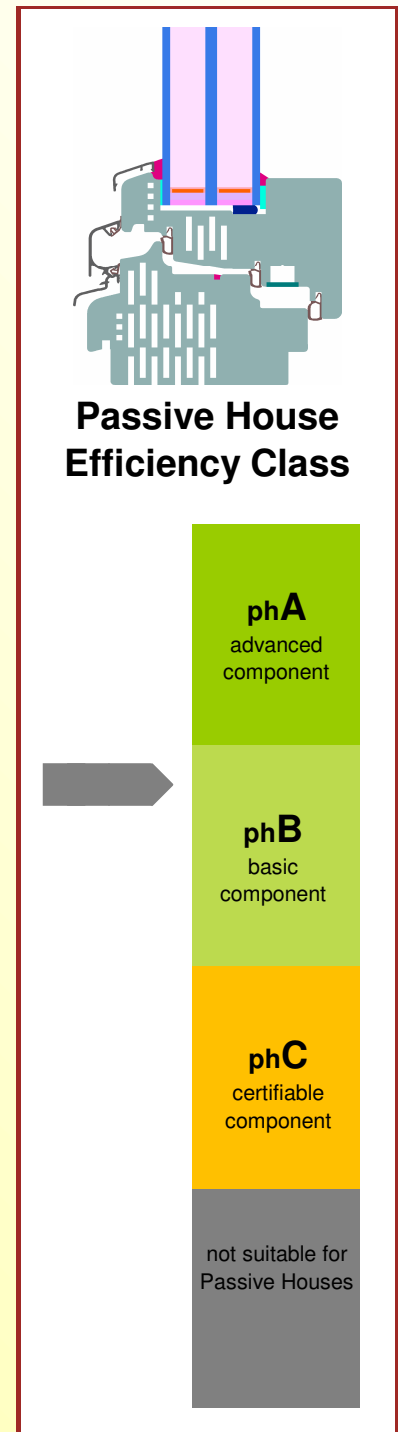
$$U_{w,\text{eingebaut}} \leq 0.85 \text{ W}/(\text{m}^2\text{K})$$

### Thermal data

	$U_f$ -value [W/(m <sup>2</sup> K)]	Width [mm]	$\Psi_g$ [W/(mK)]	$f_{Rsi=0.25}$ [-]
Spacer			SwisspacerV*	
Bottom	0.77	125	0.026	0.73
Side/top	0.71	115	0.025	

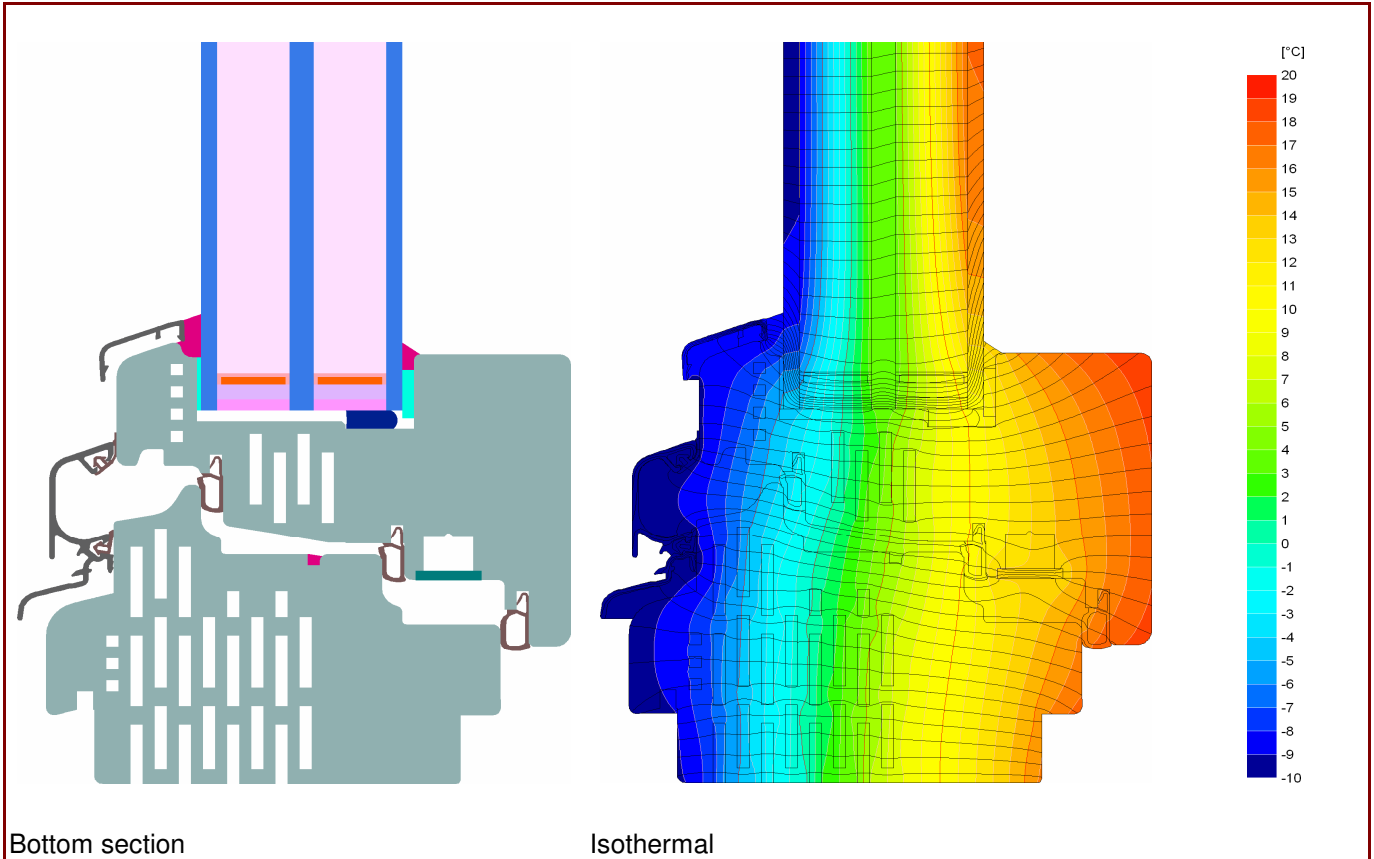
\*Spacers of lower thermal quality, especially those made of aluminium, lead to significantly higher thermal losses and lower temperature factors.

Further information see data sheet



# Data Sheet M SORA d.d., NATURA E112

**Manufacturer** M SORA d.d.  
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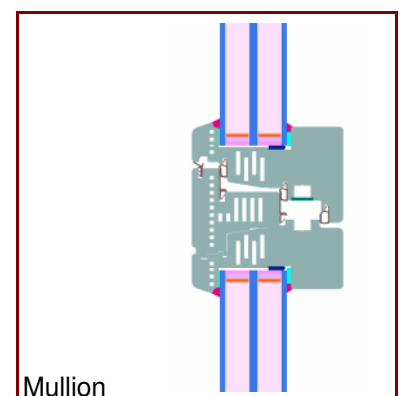


## Description

Window frame (spruce) with cavities and aluminium weather protection at the bottom section. Used Pane: 50 mm (4/18/6/18/4).

## Thermal data for the window frame

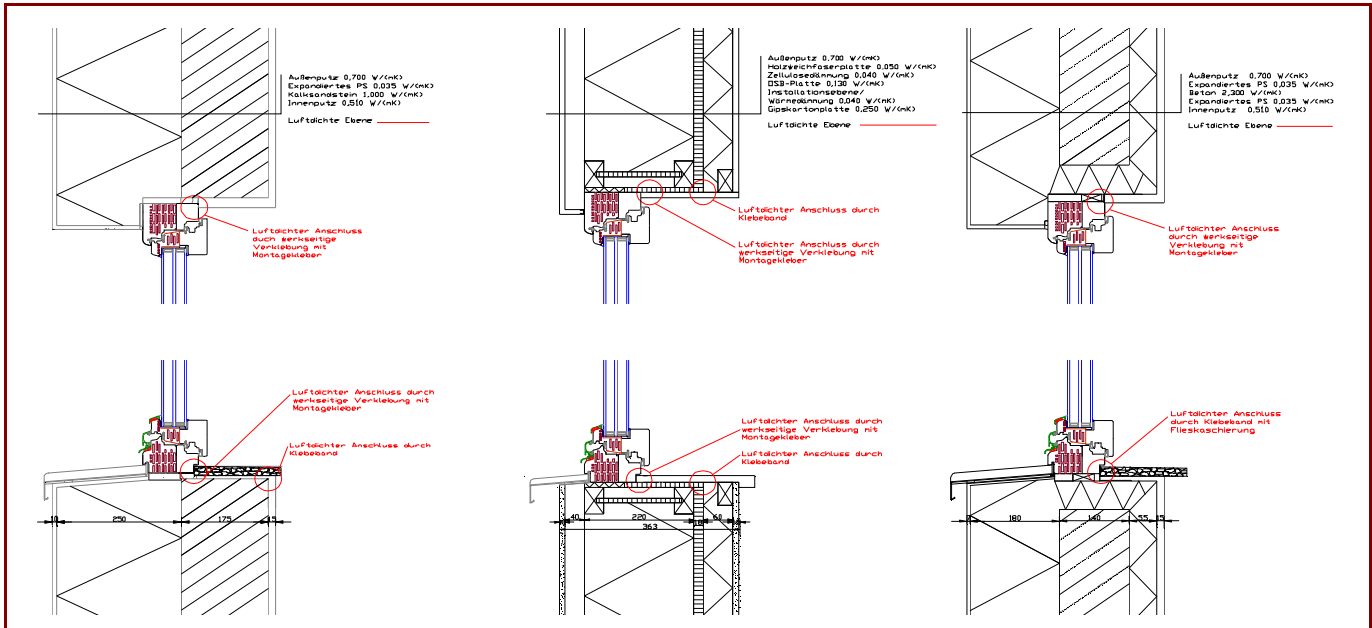
	$U_f$ -value [W/(m <sup>2</sup> K)]	Width [mm]	$\Psi_g$ [W/(mK)]	$f_{Rsi=0.25}$ [-]
Spacer	SwisspacerV*			
Bottom	0.77	125	0.026	0.73
Side/top	0.71	115	0.025	
Flying Mullion	0.78	140	0.024	0.72



\* Spacers of lower thermal quality leading to higher thermal losses and lower temperatures.

# Data Sheet M SORA d.d., NATURA E112

## Installation



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

		EIFS	Timber construction wall	Insulated formwork blocks
<b>Position</b>				
<b>Bottom</b>	[W/(mK)]	0.029	0.025	0.026
<b>Side/top</b>	[W/(mK)]	0.008	0.015	0.004
<b><math>U_{W, \text{instal.}}</math></b>	[W/(m <sup>2</sup> K)]	0.81	0.82	0.80

## Explanatory notes

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

<b>U Glazing</b>	<b><math>U_g</math> [W/(m<sup>2</sup>K)]</b>	0.66	0.60	0.54
<b>U Window</b>	<b><math>U_w</math> [W/(m<sup>2</sup>K)]</b>	0.74	0.70	0.66

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, multiplied by its width, the thermal bridge at the edge bond as well as the length of the edge bond.

Please ask the manufacturer for a detailed report containing all calculations and results. For further information, please visit [www.passivehouse.com](http://www.passivehouse.com) or [www.passipedia.org](http://www.passipedia.org).