

# 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: **M SORA d.d.**  
**4226 Žiri, Slovenia**  
Product name: **NATURA OPTIMO XLT**

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,

$$U_w = 0.79 \text{ W/(m}^2\text{K)} \leq 0.80 \text{ W/(m}^2\text{K)}$$

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.

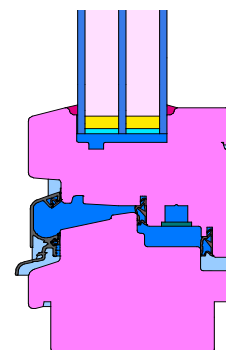
$$U_{w, \text{installed}} \leq 0.85 \text{ W/(m}^2\text{K)}$$

### Thermal data

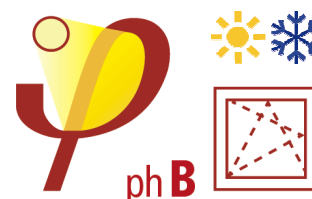
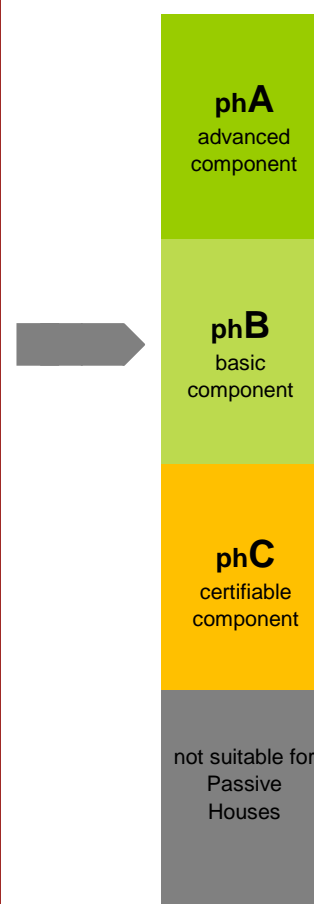
	$U_f$ -value [W/(m <sup>2</sup> K)]	Width [mm]	$\Psi_g$ [W/(mK)]	$f_{Rsi=0.25}$ [-]
Spacer			SuperSp. Tri-Seal PU*	
Bottom	0.87	143	0.023	0.71
Side/top	0.78	116	0.023	

\*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

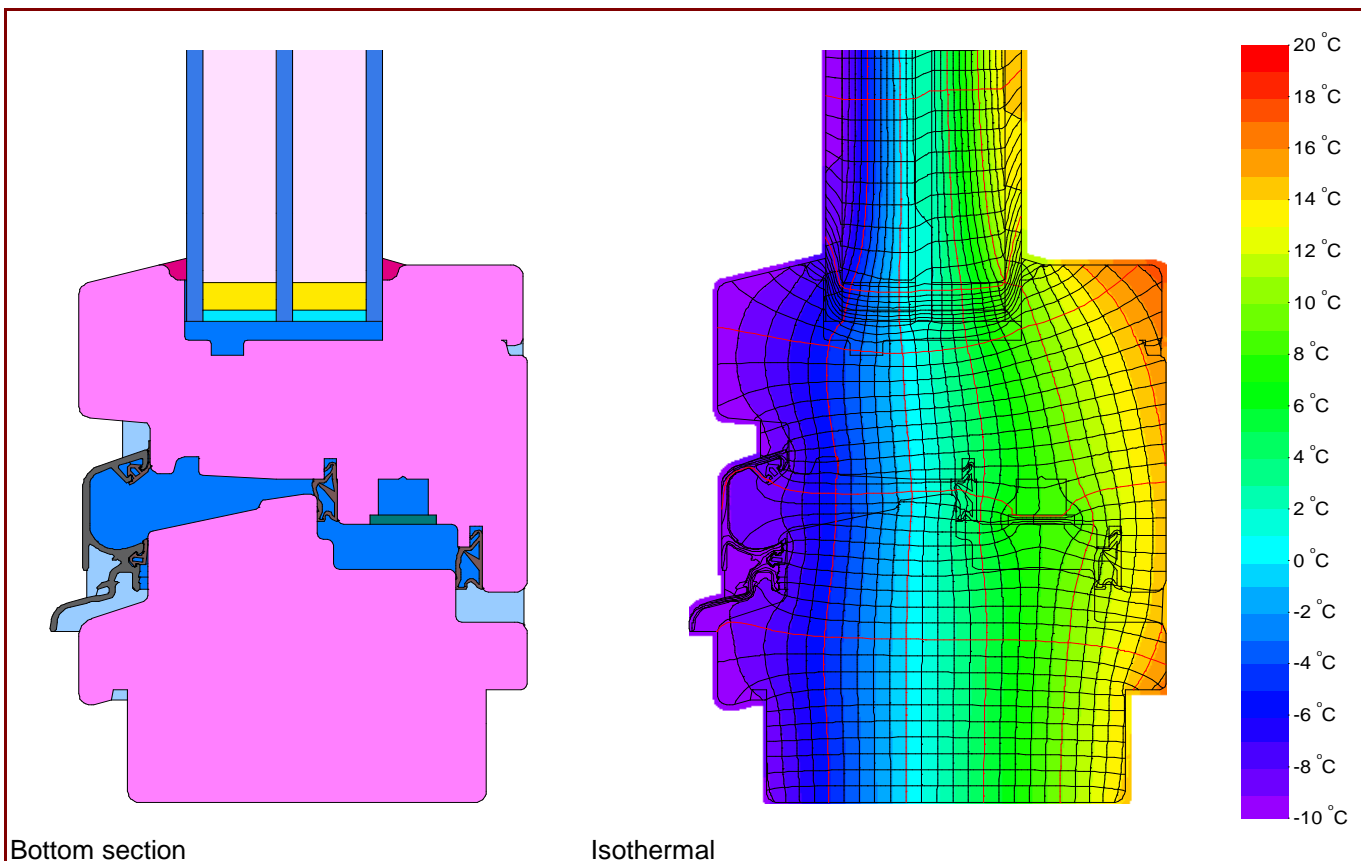
**COMPONENT AWARD 2014 1st PRIZE**

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

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## Data Sheet M SORA d.d., NATURA OPTIMO XLT

**Manufacturer** M SORA d.d.  
Trg svobode 2, 4226 Žiri, Slovenia  
Tel.: +386 4 50 50 241  
Email: ales.ugovsek@m-sora.si, www.m-sora.si

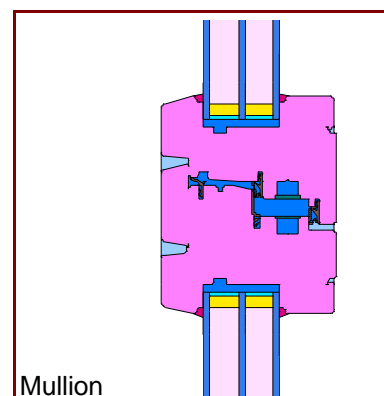


### Description

Frame from thermally modified spruce (0,09 W/(mK)). Glazing: 4/18/4/18/4. Spacer: SuperSpacer Tri-Seal with Polyurethane as secondary seal. Pane thickness: 48 mm (4/18/4/18/4), Rebate depth: 15 mm.

### Thermal data for the window frame

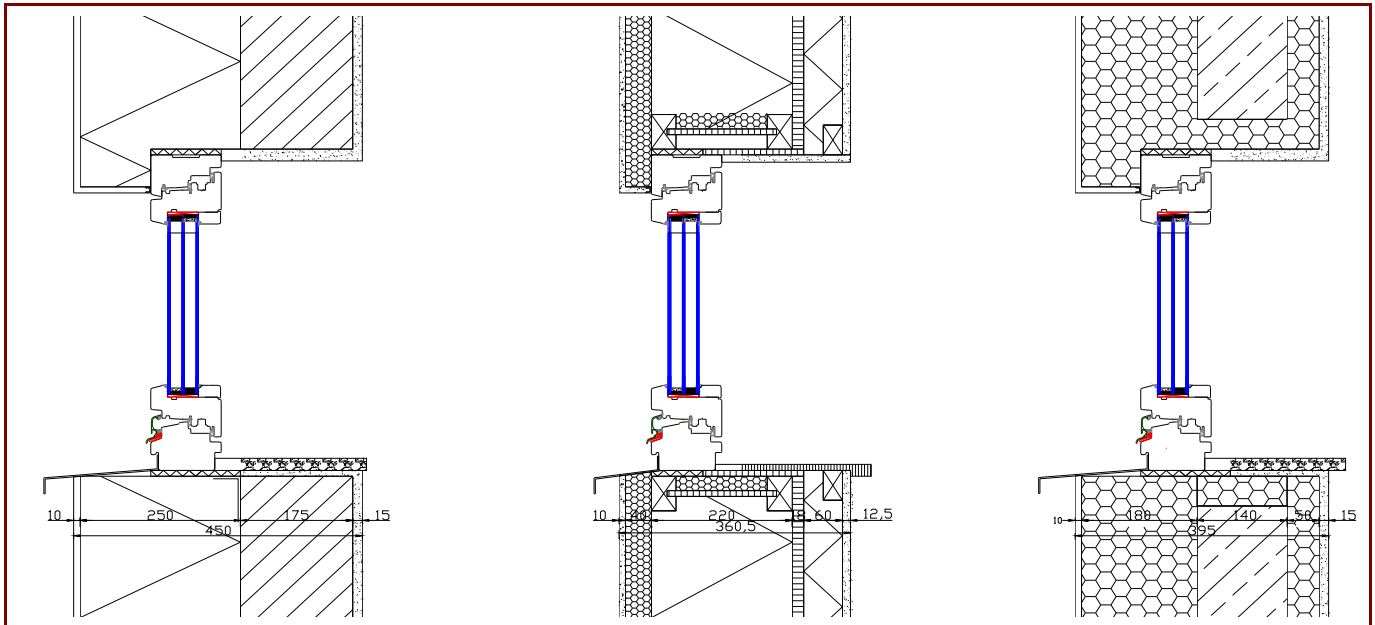
	$U_f$ -value [W/(m²K)]	Width [mm]	$\Psi_g$ [W/(mK)]	$f_{Rsi=0.25}$ [-]
Spacer				SuperSp. Tri-Seal PU*
Bottom	0.87	143	0.023	0.71
Side/Top	0.78	116	0.023	
Flying Mullion	0.80	148	0.023	0.71



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

# Data Sheet M SORA d.d., NATURA OPTIMO XLT

## 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)]	0.018	0.030	0.020
<b>Side/Top</b>	[W/(mK)]	-0.004	0.015	-0.002
<b><math>U_{W, \text{instal.}}</math></b>	[W/(m <sup>2</sup> K)]	0.79	0.85	0.80

## Explanatory notes

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

<b>U Glazing</b>	<b><math>U_g</math> [W/(m<sup>2</sup>K)]</b>	0.64	0.58	0.54
<b>U Window</b>	<b><math>U_w</math> [W/(m<sup>2</sup>K)]</b>	0.75	0.71	0.68

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](http://www.passivehouse.com) or [www.passipedia.org](http://www.passipedia.org).