

# Certificate

## Certified Passive House Component

for cold climates; valid until 31.12.2015

Category: **Spacer for low-E-glazing**

Manufacturer: **Ensinger GmbH**  
**88214 Ravensburg, GERMANY**

Product name: **Thermix TX.N plus**

### This certificate was awarded based on the following

#### The hygiene criterion

The spacer prevents mould growth in the climate stated below as a result of the high glass surface temperatures it facilitates. In the climate zone below, the spacer prevent conditions conducive to mould growth in no fewer than 3 of 7 reference window frames tested.

The spacer fullfills the criterion for the

#### **cold climate region**

and all other climate regions with lower requirements

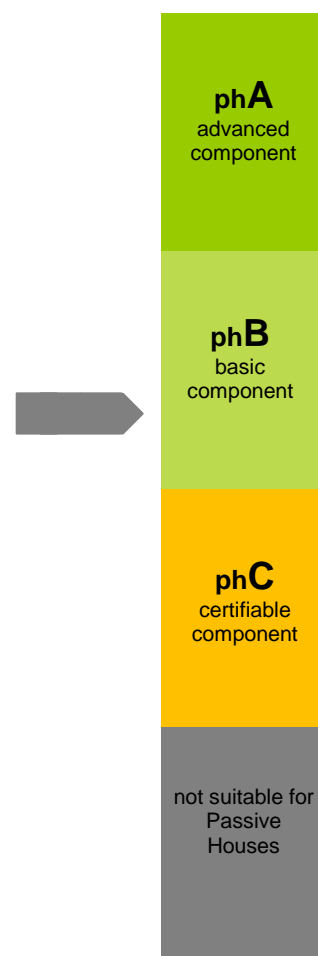
#### The efficiency criterion

The specific edge resistance of the spacer  $R_E$  is higher than the required, climate independent minimum

$$R_E = 3.4 \text{ mK/W} \geq 1,5 \text{ mK/W}$$

Please see the data sheet for further information

### Passive House Efficiency Class



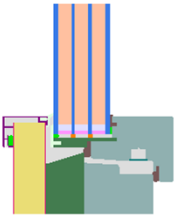
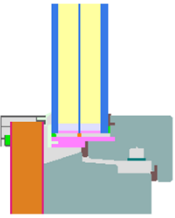
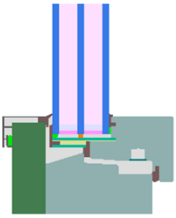
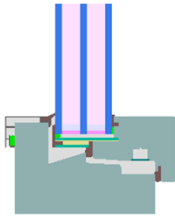
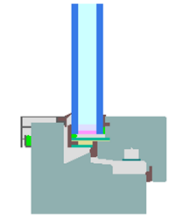
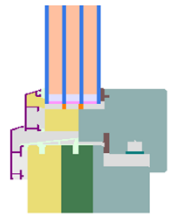
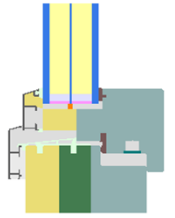
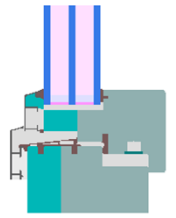
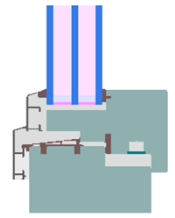
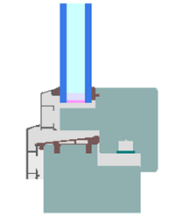
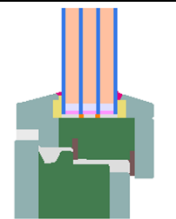
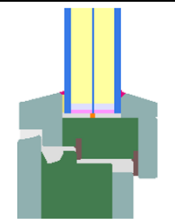
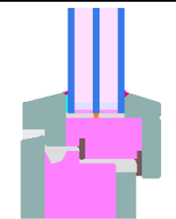
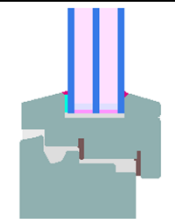
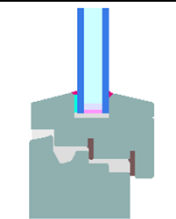
**CERTIFIED COMPONENT**

Passive House Institute

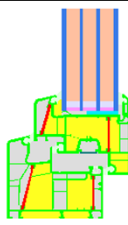
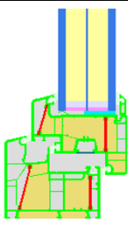
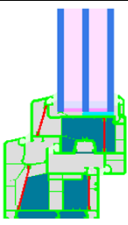
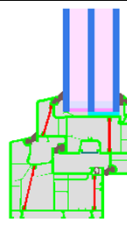
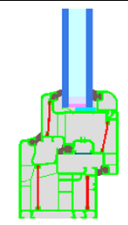
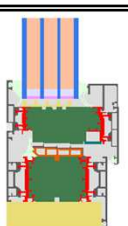
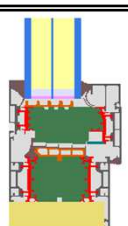
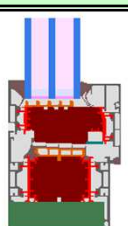
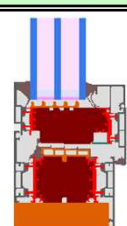
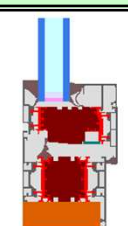
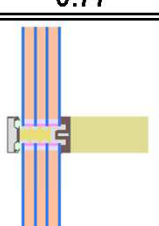
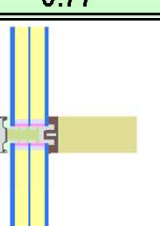
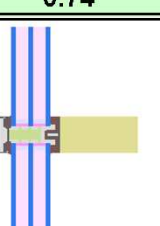
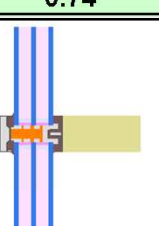
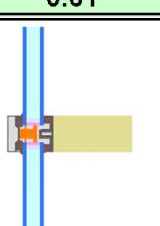
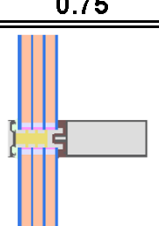
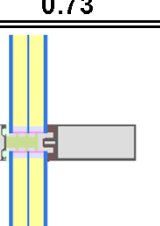
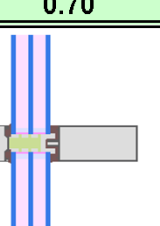
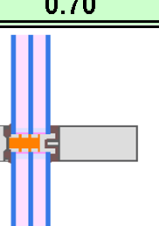
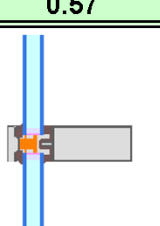
# Data Sheet Ensinger GmbH, Thermix TX.N plus

**Manufacturer** Ensinger GmbH  
 Mooswiesen 13, 88214 Ravensburg, GERMANY  
 Tel.: 0751-354520  
 Email: info@thermix.de, www.thermix.de

**Description** Spacer based on Polypropylen with 0,1 mm stainless steel vapor barrier and 2 special wires. Height of spacer: 7 mm, equivalent thermal conductivity according to WA 17/1, ift Rosenheim: 0,32 W/(mK).  
 Approved secondary sealing materials: Polysulfide, Polyurethane, Silikon, Hotmelt Butyl.  
 Deliverable spacer widths: 8, 10, 12, 14, 15, 16, 18, 20, 22 und 24 mm.

Type/Region	Arctic	Cool	Cool temperate	Warm temperate	Warm
Glas, Glas package, Glas-U-value	Quadrouple 4/12/3/12/3/12/4 0,35 W/(m²K)	Triple 6/18/2/18/6 0,52 W/(m²K)	Triple 6/16/6/16/6 0,70 W/(m²K)	Triple 6/16/6/16/6 0,70 W/(m²K)	Double 6/16/6 1,20 W/(m²K)
Timber-aluminum integral frame					
$U_f$ [W/(m²K)]	0.48	0.62	0.73	0.87	1.03
$\Psi_g$ [W/(mK)]	0.035	0.038	0.038	0.036	0.041
$f_{Rsi = 0,25 \text{ m}^2\text{K/W}}$ [-]	0.78	0.74	0.70	0.69	0.58
Timber-aluminum					
$U_f$ [W/(m²K)]	0.54	0.57	0.75	0.97	1.19
$\Psi_g$ [W/(mK)]	0.038	0.040	0.040	0.039	0.045
$f_{Rsi = 0,25 \text{ m}^2\text{K/W}}$ [-]	0.74	0.72	0.67	0.64	0.52
Timber					
$U_f$ [W/(m²K)]	0.51	0.53	0.78	0.86	0.99
$\Psi_g$ [W/(mK)]	0.033	0.037	0.037	0.037	0.041
$f_{Rsi = 0,25 \text{ m}^2\text{K/W}}$ [-]	0.76	0.75	0.72	0.71	0.61

# Data Sheet Ensinger GmbH, Thermix TX.N plus

Type/Region	Arctic	Cool	Cool temperate	Warm temperate	Warm
Glas, Glas package, Glas-U-value	Quadrouple 4/12/3/12/3/12/4 0,35 W/(m²K)	Triple 6/18/2/18/6 0,52 W/(m²K)	Triple 6/16/6/16/6 0,70 W/(m²K)	Triple 6/16/6/16/6 0,70 W/(m²K)	Double 6/16/6 1,20 W/(m²K)
Vinyl					
$U_f$ [W/(m²K)]	0.70	0.75	0.82	1.02	1.16
$\Psi_g$ [W/(mK)]	0.038	0.041	0.041	0.043	0.047
$f_{Rsi} = 0,25 \text{ m}^2\text{K/W}$ [-]	0.77	0.74	0.72	0.71	0.59
Aluminum					
$U_f$ [W/(m²K)]	0.60	0.61	0.71	0.73	1.17
$\Psi_g$ [W/(mK)]	0.040	0.045	0.046	0.046	0.052
$f_{Rsi} = 0,25 \text{ m}^2\text{K/W}$ [-]	0.77	0.77	0.74	0.74	0.61
Curtain wall timber					
$U_f$ [W/(m²K)]	0.60	0.65	0.66	0.71	1.11
$\Psi_g$ [W/(mK)]	0.046	0.045	0.047	0.047	0.058
$f_{Rsi} = 0,25 \text{ m}^2\text{K/W}$ [-]	0.75	0.73	0.70	0.70	0.57
Curtain wall aluminum					
$U_f$ [W/(m²K)]	0.67	0.73	0.75	0.79	1.33
$\Psi_g$ [W/(mK)]	0.053	0.053	0.056	0.056	0.079
$f_{Rsi} = 0,25 \text{ m}^2\text{K/W}$ [-]	0.83	0.81	0.79	0.79	0.67