

## E<sub>REF</sub> EXTENSION

The Eref-extension developed by Infissoft, the official distribution partner of Klaes Italy allows a more detailed calculation of the U-value and a calculation of the Eref value.


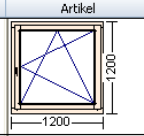

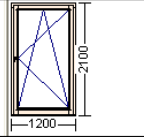

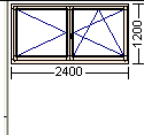
The extension provides the following functionality:

- Definition of the U<sub>F</sub>-value per Profile Group and wood type
- Definition of the PSI-value of the edge seal for double and triple glasses per profile group
- Definition of the U-value and the transmission values (ttg / gg) of the single glasses
- Assignment of fixed edge-seal to a certain type of glass
- Calculation of the U-value
- Definition of E<sub>ref</sub> value per profile group and wood type
- Calculation of E<sub>ref</sub> value per position based on configurable input constants (Gradstunden & Sonneneinfall)

Furthermore a flexible report generator is used to provide the opportunity to rapidly design your own print form.

**An example of the two types of a printout is given on the following screenshots:**

(1) The order in KLAES:

Position	Anzahl	Info	Artikel	Beschreibung
1	1			<b>Fenster einflügelig, zum Drehen und Ankippen</b> Maß: 1200 x 1200mm Holzart: IV78 - Fichte Farbe: grund. farblos Füllung: 4-20Ar-4 Alu Beschlag: Drehkipp Fenster rechts
2	1			<b>Balkontür einflügelig, zum Drehen und Ankippen mit Maico Transitschwelle</b> Maß: 1200 x 2100mm Holzart: IV78 - Fichte Farbe: grund. farblos Füllung: 4-20Ar-4 Alu Beschlag: Drehkipp Fenster rechts
3	1			<b>Fenster zweiflügelig, zum Drehen und Ankippen</b> Maß: 2400 x 1200mm Holzart: IV78 - Fichte Farbe: grund. farblos Füllung: 2 * 4-20Ar-4 Alu Beschlag: Stulp links, Drehkipp Tür Schwelle rechts

(2) Eref per profile group:

Calculation of the Coefficient of Thermal Conduction  
by EN ISO 10077-2 (Directive 2002/91/EC)

Order: **AU-30010** Customer: **Mol Dam**  
User: **SADMIN** Building Site: **Dam** Date: **27.07.2011**

<b>Profile Data:</b>	Profile group: <b>IV78</b>	<b>Fichte</b>	Uf profile: <b>1,7 W/m²K</b>	Profile area: <b>33,67 %</b>
<b>Glass Data:</b>	Glass: <b>1,1-4</b>		Ug glass: <b>1,1 W/m²K</b>	Glass area: <b>66,33 %</b>
<b>Edge Seal Data:</b>	Edge seal: <b>Thermix</b>		Psi-value: <b>0,040 W/(mK)</b>	Eref: <b>-20,5 kWh/m²</b>

Item	Pcs.	U-value-Data	Areas	%	TOTALS	
1	1	U-value Profile (Uf) <b>1,7 W/m²K</b>	Profile area (Af) <b>0,54 m²</b>	37,66 %	Total area (Af+Ag) <b>1,44 m²</b>	
		Glass perimeter (Lg) <b>3,79 lm</b>	Glass area (Ag) <b>0,90 m²</b>	62,34 %	Glass quote (Ag/Aw) <b>62,34 %</b>	
		<i>Glass description</i> ..... <i>Ug</i> .. <i>LT value</i> <i>g-value</i> <i>Psi</i> ..... <i>Edge Seal</i> 4-20Ar-4 Alu ..... <b>1,1 W/m²K</b> <b>70 %</b> <b>60 %</b> <b>0,04 W/(mK)</b> Thermix				U-value (W/m²K) <b>1,43</b>
2	1	U-value Profile (Uf) <b>1,7 W/m²K</b>	Profile area (Af) <b>0,78 m²</b>	30,77 %	Total area (Af+Ag) <b>2,52 m²</b>	
		Glass perimeter (Lg) <b>5,56 lm</b>	Glass area (Ag) <b>1,74 m²</b>	69,23 %	Glass quote (Ag/Aw) <b>69,23 %</b>	
		<i>Glass description</i> ..... <i>Ug</i> .. <i>LT value</i> <i>g-value</i> <i>Psi</i> ..... <i>Edge Seal</i> 4-20Ar-4 Alu ..... <b>1,1 W/m²K</b> <b>70 %</b> <b>60 %</b> <b>0,04 W/(mK)</b> Thermix				U-value (W/m²K) <b>1,37</b>
3	1	U-value Profile (Uf) <b>1,7 W/m²K</b>	Profile area (Af) <b>0,99 m²</b>	34,21 %	Total area (Af+Ag) <b>2,88 m²</b>	
		Glass perimeter (Lg) <b>7,79 lm</b>	Glass area (Ag) <b>1,89 m²</b>	65,79 %	Glass quote (Ag/Aw) <b>65,79 %</b>	
		<i>Glass description</i> ..... <i>Ug</i> .. <i>LT value</i> <i>g-value</i> <i>Psi</i> ..... <i>Edge Seal</i> 4-20Ar-4 Alu ..... <b>1,1 W/m²K</b> <b>70 %</b> <b>60 %</b> <b>0,04 W/(mK)</b> Thermix				U-value (W/m²K) <b>1,41</b>

Average coefficient of thermal conduction calculated on all items

$$U_w = \frac{A_f \cdot U_f + A_g \cdot U_g + L_g \cdot \Psi_i}{A_f + A_g} = 1,41 \text{ W/m}^2\text{K}$$

(3) Eref per position:

Calculation of the Coefficient of Thermal Conduction  
by EN ISO 10077-2 (Directive 2002/91/EC)

Order: **AU-30010** Customer: **Mol Dam**  
User: **SADMIN** Building Site: **Dam** Date: **27.07.2011**

<b>Profile Data:</b>	Profile group: <b>IV78</b>	<b>Fichte</b>	Uf profile: <b>1,7 W/m²K</b>	Profile area: <b>33,67 %</b>
<b>Glass Data:</b>	Glass: <b>1,1-4</b>		Ug glass: <b>1,1 W/m²K</b>	Glass area: <b>66,33 %</b>
<b>Edge Seal Data:</b>	Edge seal: <b>Thermix</b>		Psi-value: <b>0,040 W/(mK)</b>	

Item	Pcs.	U-value-Data	Areas	%	TOTALS	
1	1	U-value Profile (Uf) <b>1,7 W/m²K</b>	Profile area (Af) <b>0,54 m²</b>	37,66 %	Total area (Af+Ag) <b>1,44 m²</b>	
		Glass perimeter (Lg) <b>3,79 lm</b>	Glass area (Ag) <b>0,90 m²</b>	62,34 %	Glass quote (Ag/Aw) <b>62,34 %</b>	
		<i>Glass description</i> ..... <i>Ug</i> .. <i>LT value</i> <i>g-value</i> <i>Psi</i> ..... <i>Edge Seal</i> 4-20Ar-4 Alu ..... <b>1,1 W/m²K</b> <b>70 %</b> <b>60 %</b> <b>0,04 W/(mK)</b> Thermix				Eref <b>-55,78</b> U-value (W/m²K) <b>1,43</b>
2	1	U-value Profile (Uf) <b>1,7 W/m²K</b>	Profile area (Af) <b>0,78 m²</b>	30,77 %	Total area (Af+Ag) <b>2,52 m²</b>	
		Glass perimeter (Lg) <b>5,56 lm</b>	Glass area (Ag) <b>1,74 m²</b>	69,23 %	Glass quote (Ag/Aw) <b>69,23 %</b>	
		<i>Glass description</i> ..... <i>Ug</i> .. <i>LT value</i> <i>g-value</i> <i>Psi</i> ..... <i>Edge Seal</i> 4-20Ar-4 Alu ..... <b>1,1 W/m²K</b> <b>70 %</b> <b>60 %</b> <b>0,04 W/(mK)</b> Thermix				Eref <b>-42,38</b> U-value (W/m²K) <b>1,37</b>
3	1	U-value Profile (Uf) <b>1,7 W/m²K</b>	Profile area (Af) <b>0,99 m²</b>	34,21 %	Total area (Af+Ag) <b>2,88 m²</b>	
		Glass perimeter (Lg) <b>7,79 lm</b>	Glass area (Ag) <b>1,89 m²</b>	65,79 %	Glass quote (Ag/Aw) <b>65,79 %</b>	
		<i>Glass description</i> ..... <i>Ug</i> .. <i>LT value</i> <i>g-value</i> <i>Psi</i> ..... <i>Edge Seal</i> 4-20Ar-4 Alu ..... <b>1,1 W/m²K</b> <b>70 %</b> <b>60 %</b> <b>0,04 W/(mK)</b> Thermix				Eref <b>-50,11</b> U-value (W/m²K) <b>1,41</b>

Average coefficient of thermal conduction calculated on all items

$$U_w = \frac{A_f \cdot U_f + A_g \cdot U_g + L_g \cdot \Psi_i}{A_f + A_g} = 1,41 \text{ W/m}^2\text{K}$$

1.