

Frame: 105

Glas: 3-glas

Applicable for product codes:
BL, FA, TL

NorDan NTech Villa Fixed Light

Calculation of U-value in accordance to NS-EN ISO 10077-1, 10077-2 and the programme "Therm".

Centre U-value of glass is calculated in accordance to NS-EN 673.

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Report of standard model

Date: 19.01.2022

Version: TL/BL/FA 105

Type: Fixed Light

Model: NTech Villa/FA 105

Glass configuration: 4E+18G+4+18G+4E Planitherm Ultra N*, TGI*, Argon

Main results and dimensions

U-value: 0,71 W/m²K

Width: 1230 mm

Height: 1480 mm

Area: 1,82 m²

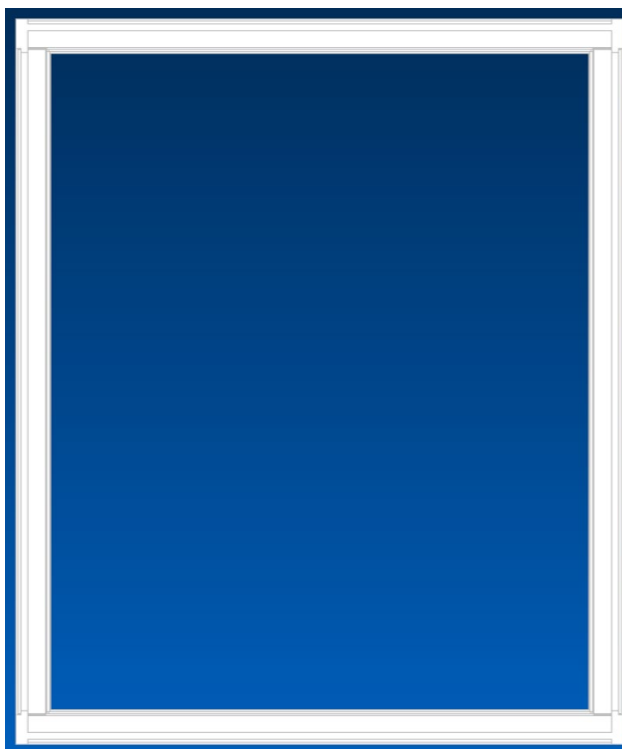
Percent glass: 84,02%

g-value: 0,53

LT-value: 0,74

Ug-value: 0,53 W/m²K

The elements share of the total heat loss: 64,1%



U-Value Calculations - ND NTech Villa Fixed frame



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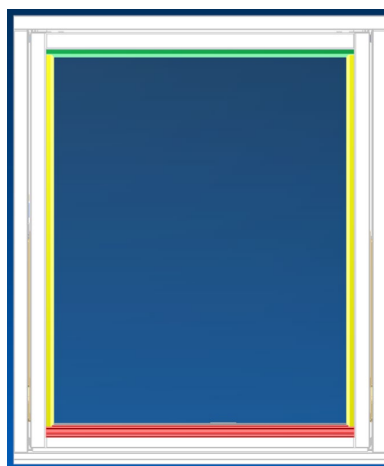
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| Colour | Uf (W/m ² K) | Width (m) | Name |
|--------|-------------------------|-----------|--------------|
| Yellow | 1,13 | 0,056 | Jamb profile |
| Green | 1,13 | 0,056 | Head profile |
| Orange | 1,42 | 0,056 | Sill profile |

| Color | Uf (W/m ² K) | Element area (m ²) | *Percent element (%) |
|--------|-------------------------|--------------------------------|----------------------|
| Yellow | 1,13 | 0,0797 | 4,38 |
| Green | 1,13 | 0,0657 | 3,61 |
| Orange | 1,42 | 0,0797 | 4,38 |
| Yellow | 1,13 | 0,0657 | 3,61 |
| Sum | | 0,292 | 15,98 |

*: Figure in relation to the whole window



| Colour | PSI | Length (m) | Name |
|--------|-------|------------|----------|
| Yellow | 0,038 | 2,736 | TGI Jamb |
| Green | 0,038 | 1,118 | TGI Head |
| Orange | 0,038 | 1,118 | TGI Sill |

| Color | Spacer length (m) | L Psi spacer (W/K) | *L Psi spacer (%) |
|--------|-------------------|--------------------|-------------------|
| Yellow | 1,368 | 0,052 | 27,7 |
| Green | 1,118 | 0,042 | 22,3 |
| Orange | 1,118 | 0,042 | 22,3 |
| Yellow | 1,368 | 0,052 | 27,7 |
| Sum | 4,972 | 0,188 | 100,0 |

*: Figure in relation to the spacer

U-Value window frame (U_f) Calculation according to EN ISO 10077-2

Villa Fixed frame Head/Jamb

This example shows glass thickness 39 - 51mm:

$$U_t = 0,7975 \frac{W}{m^2K}$$

$$B_f = 56 \text{ mm}$$

$$U_f = \frac{L_f^{2D} - U_p * b_p}{b_f}$$

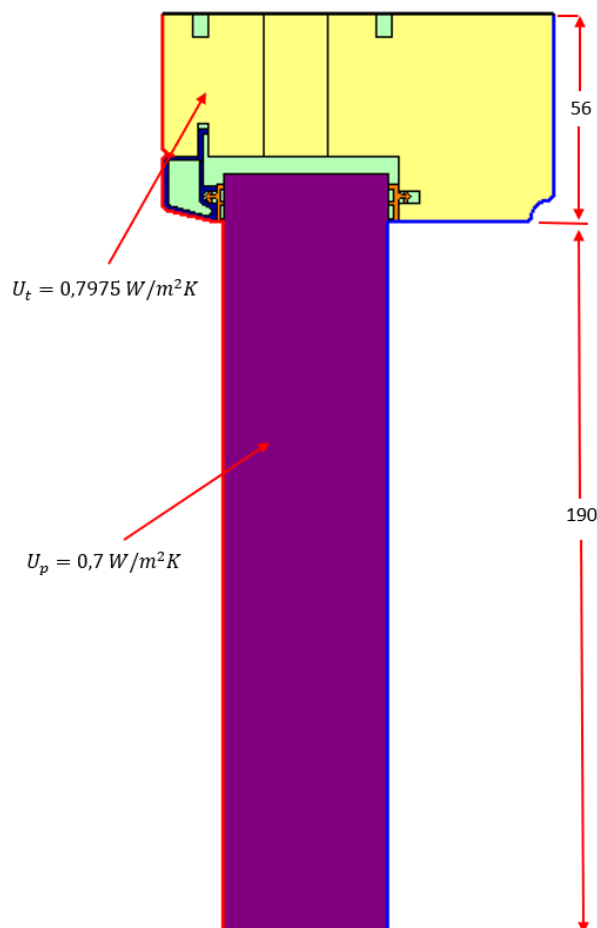
$$L_f^{2D} = U_t * L$$

$$L_f^{2D} = 0,7975 * (0,056 + 0,19) = 0,196 \text{ W/m}^2K$$

$$U_f = \frac{0,196 - (0,7 * 0,19)}{0,056} = 1,13 \text{ W/m}^2K$$

| Boundary Conditions | Temp: °C | Hc: W/m ² K |
|---------------------|----------|------------------------|
| Exterior | 0 | 25 |
| Interior | 20 | 7,69 |

| Material: | λ(W/mK) | ρ |
|---------------------------------------|---------|-----|
| Pine | 0,12 | 0,9 |
| Aluminium | 160 | 0,9 |
| Panel | 0,035 | 0,9 |
| Gasket EPDM | 0,25 | 0,9 |
| Gasket QL | 0,03 | 0,9 |
| Frame cavity- Cen slightly ventilatet | | |
| Frame cavity-Cen Simplified | | |



| U _t | U _p | L _f ^{2D} | U _f |
|--------------------------|----------------|------------------------------|----------------|
| Glass thickness 20-32 mm | | | |
| 1,2025 | 1,169 | 0,296 | 1,32 |
| Glass thickness 33-38 mm | | | |
| 0,9102 | 0,834 | 0,224 | 1,17 |
| Glass thickness 39-51 mm | | | |
| 0,7975 | 0,700 | 0,196 | 1,13 |

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Villa Fixed frame Sill

This example shows glass thickness 39 - 51mm:

$$U_t = 0,8641 \frac{W}{m^2K}$$

$$B_f = 56 \text{ mm}$$

$$U_f = \frac{L_f^{2D} - U_p * b_p}{b_f}$$

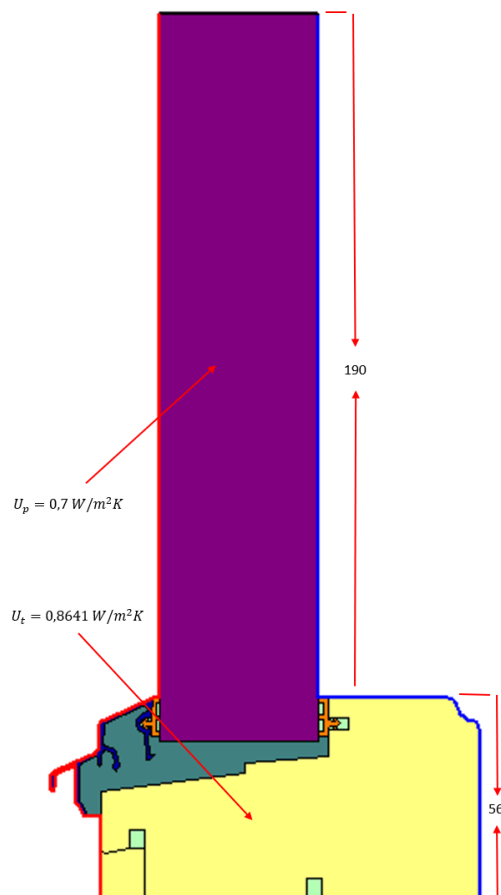
$$L_f^{2D} = U_t * L$$

$$L_f^{2D} = 0,8641 * (0,056 + 0,19) = 0,212 \text{ W/mK}$$

$$U_f = \frac{0,212 - (0,7 * 0,19)}{0,056} = 1,42 \text{ W/m}^2K$$

| Boundary Conditions | Temp: °C | Hc: W/m²K |
|---------------------|----------|-----------|
| Exterior | 0 | 25 |
| Interior | 20 | 7,69 |

| Material: | λ(W/mK) | ρ |
|---------------------------------------|---------|-----|
| Pine | 0,12 | 0,9 |
| Aluminium | 160 | 0,9 |
| Panel | 0,035 | 0,9 |
| Gasket EPDM | 0,25 | 0,9 |
| Gasket QL | 0,03 | 0,9 |
| Frame cavity- Cen slightly ventilated | | |
| Frame cavity- Cen Simplified | | |



| U_t | U_p | L_f^{2D} | U_f |
|--------------------------|-------|------------|-------|
| Glass thickness 20-32 mm | | | |
| 1,2840 | 1,169 | 0,316 | 1,67 |
| Glass thickness 33-38 mm | | | |
| 0,9836 | 0,834 | 0,242 | 1,49 |
| Glass thickness 39-51 mm | | | |
| 0,8641 | 0,700 | 0,212 | 1,42 |