

Frame: 105

Glass: 3-glass

Applicable for product codes:
NB, ND, NS, OB, OD, OS, ZB, ZD, ZS

ND NTech Tilt and turn

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: 02.07.2021

Version: ND/ZD/OD 105

Type: Inward opening sash

Model: ND NTech 105

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

Main results and dimensions

U-value: 0,80W/m²K

Width: 1230mm

Height: 1480mm

Area: 1,82m²

Percent glass: 72,9%

g-value: 0,53

LT-value: 0,74

Ug-value: 0,53W/m²K



U-Value Calculations - NTech Inward opening sash



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Date: 2 July 2021

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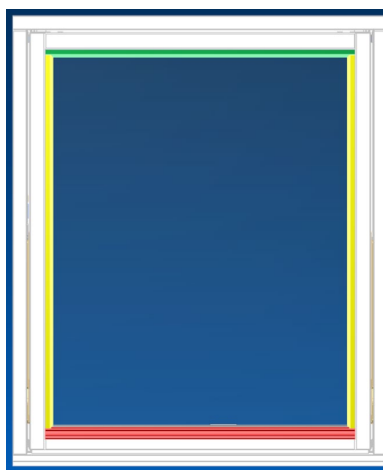
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Colour	Uf (W/m²K)	Width (m)	Name
Yellow	1,18	0,094	Jamb profile
Green	1,16	0,105	Head profile
Orange	1,31	0,101	Sill profile

Color	Uf (W/m²K)	Element area (m²)	*Percent element (%)
Yellow	1,18	0,139	7,63
Green	1,16	0,119	6,53
Orange	1,31	0,115	6,31
Yellow	1,18	0,139	7,63
Sum		0,512	28,1

*: Figure in relation to the whole window



Colour	PSI	Length (m)	Name
Yellow	0,038	2,548	TGI Jamb
Green	0,038	1,042	TGI Head
Orange	0,038	1,042	TGI Sill

Color	Spacer length (m)	L Psi spacer (W/K)	*L Psi spacer (%)
Yellow	1,274	0,048	27,3
Green	1,042	0,040	22,7
Orange	1,042	0,040	22,7
Yellow	1,274	0,048	27,3
Sum	4,632	0,176	100

*: Figure in relation to the spacer

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

ND NTech Tilt and turn Head

This example shows glas thicknes 39 - 51mm:

$$U_t = 0,8637 \text{ W/m}^2\text{K}$$

$$B_f = 105 \text{ mm}$$

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

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

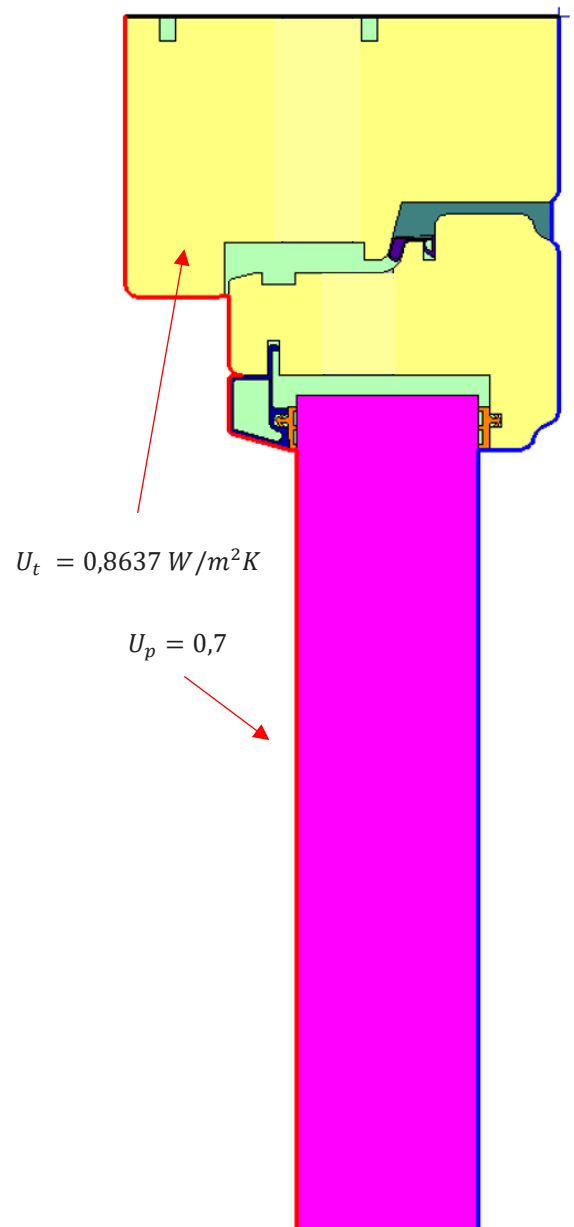
$$L_f^{2D} = 0,8637 * (0,105 + 0,19) = 0,255 \text{ W/mK}$$

$$U_f = \frac{0,255 - (0,7 * 0,19)}{0,105} = 1,16 \text{ W/m}^2\text{K}$$

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
Glas thicknes 20-32mm			
Glas thicknes 33-38mm			
Glas thicknes 39-51mm			
0,8637	0,7	0,255	1,16



ND NTech Tilt and turn Jamb

This example shows glas thicknes 39 - 51mm:

$$U_t = 0,8589 \text{ W/m}^2\text{K}$$

$$B_f = 94 \text{ mm}$$

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

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

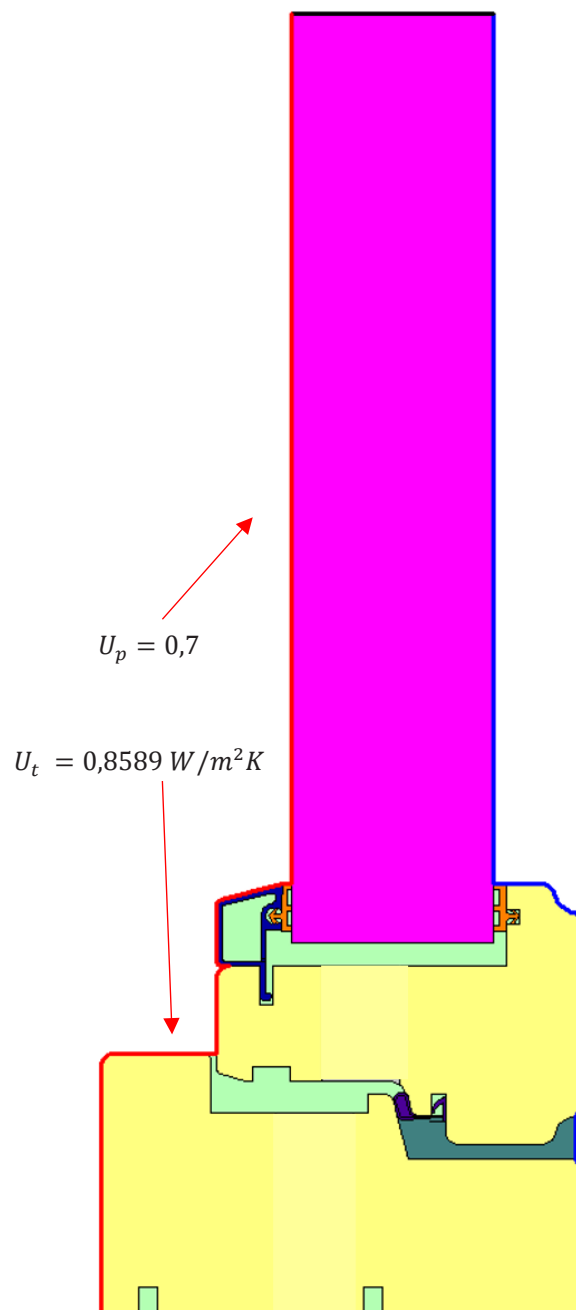
$$L_f^{2D} = 0,8589 * (0,094 + 0,19) = 0,244 \text{ W/mK}$$

$$U_f = \frac{0,244 - (0,7 * 0,19)}{0,094} = 1,18 \text{ W/m}^2\text{K}$$

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
Glas thicknes 20-32mm			
Glas thicknes 33-38mm			
Glas thicknes 39-51mm			
0,8589	0,7	0,244	1,18



ND NTech Tilt and turn Cill

This example shows glass thickness 39 - 51mm:

$$U_t = 0,9117 \text{ W/m}^2\text{K}$$

$$B_f = 101 \text{ mm}$$

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

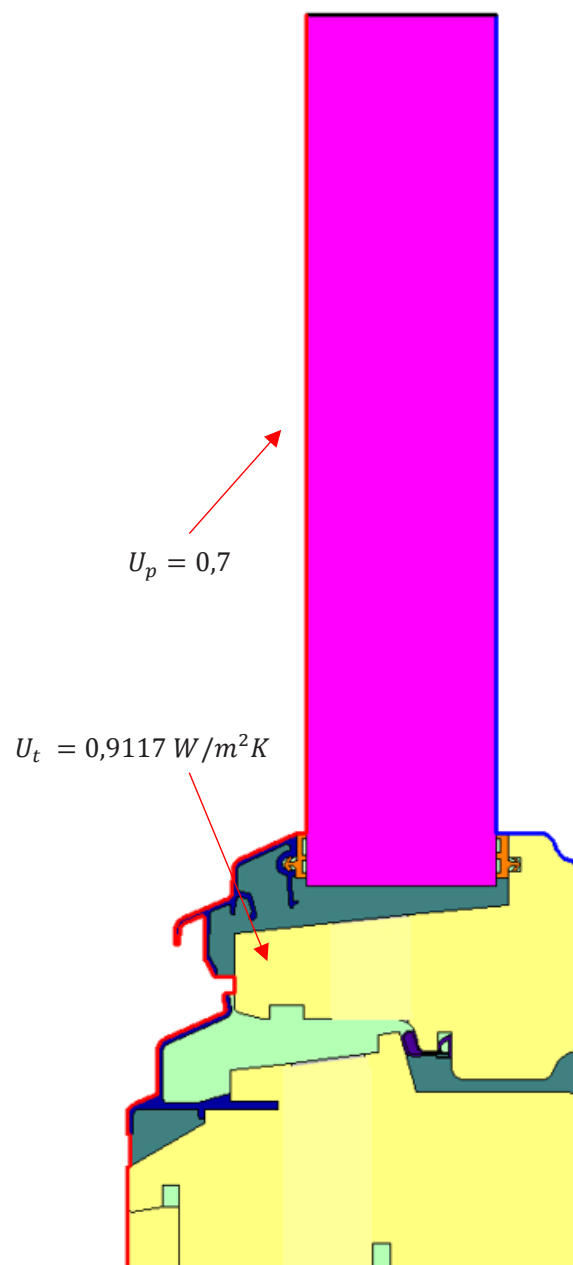
$$L_f^{2D} = U_t * L$$

$$L_f^{2D} = 0,9117 * (0,101 + 0,19) = 0,265 \text{ W/mK}$$

$$U_f = \frac{0,265 - (0,7 * 0,19)}{0,101} = 1,31 \text{ W/m}^2\text{K}$$

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

Material:	$\lambda(\text{W/mK})$	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
Glas thicknes 20-32mm			
Glas thicknes 33-38mm			
Glas thicknes 39-51mm			
0,9117	0,7	0,265	1,31