

Frame: 105

Glass: 3-glass

Applicable for product codes:
BG, TA, TD, TG, TQ, TZ

ND NTech Villa Topswing reversible

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.
Head Office: NorDan AS, Stasjonsveien 46. 4460 Moi, Norway. Web: www.nordan.uk

Report of standard model

Date: 14.10.2021

Version: TY/TG/BG 105

Type: Outward opening sash

Model: ND NTech Villa 105

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

Main results and dimensions

U-value: 0,81W/m²K

Width: 1230mm

Height: 1480mm

Area: 1,82m²

Percent glass: 71,4%

g-value: 0,53

LT-value: 0,74

Ug-value: 0,53W/m²K



U-Value Calculations - NTech Villa outward opening window



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Frame: 105

Glass: 3-glass

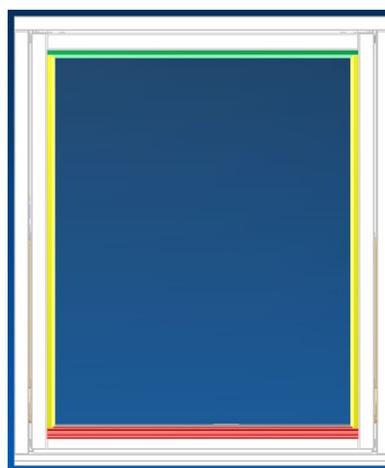
Applicable for product codes:
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Colour	Uf (W/m²K)	Width (m)	Name
Yellow	1,14	0,103	Jamb profile
Green	1,14	0,104	Head profile
Orange	1,27	0,106	Sill profile

Color	Uf (W/m²K)	Element area (m²)	*Percent element (%)
Yellow	1,14	0,117	6,4
Green	1,14	0,142	7,8
Orange	1,27	0,119	6,6
Yellow	1,14	0,142	7,8
Sum		0,520	28,6

*: Figure in relation to the whole window



Colour	PSI	Length (m)	Name
Yellow	0,038	2,540	TGI Jamb
Green	0,038	1,024	TGI Head
Orange	0,038	1,024	TGI Sill

Color	Spacer length (m)	L Psi spacer (W/K)	*L Psi spacer (%)
Yellow	1,270	0,048	27,7
Green	1,024	0,039	22,3
Orange	1,024	0,039	22,3
Yellow	1,270	0,048	27,7
Sum	4,588	0,174	100

*: Figure in relation to the spacer

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

ND NTech Villa Topswing Reversible Head

This example shows glas thicknes 39 - 51mm:

$$U_t = 0,8553 \frac{W}{m^2K}$$

$$B_f = 104 \text{ mm}$$

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

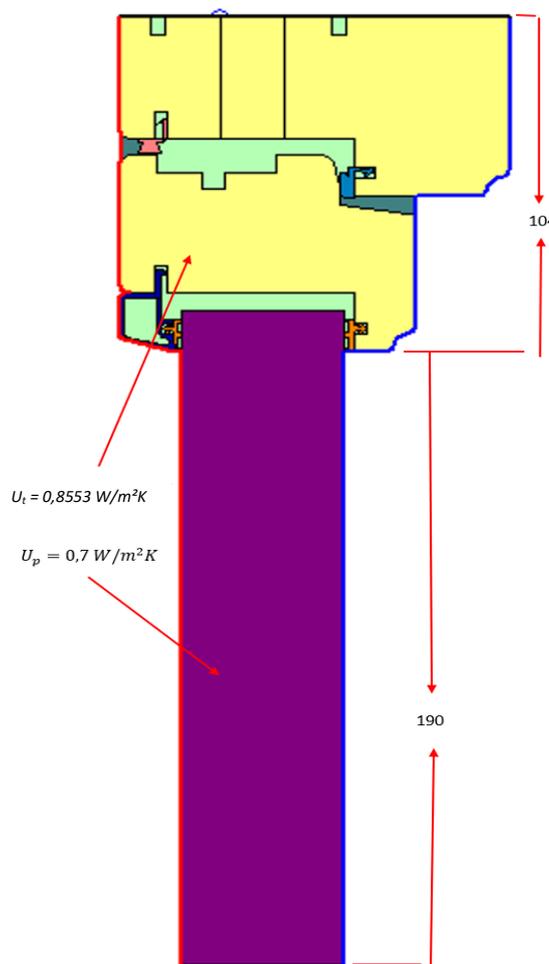
$$L_f^{2D} = U_t * L$$

$$L_f^{2D} = 0,8553 * (0,104 + 0,19) = 0,2515 \text{ W/mK}$$

$$U_f = \frac{0,2515 - (0,7 * 0,19)}{0,104} = 1,14 \text{ W/m}^2\text{K}$$

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

Material:	λ(W/mK)	e
Pine	0,12	0,9
Aluminium	160	0,9
Panel	0,035	0,9
Gasket EPDM	0,25	0,9
Gasket QL	0,06	0,9
Gasket DX 1466	0,15	0,9
Frame cavity- Cen slightly ventilatet		
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			
0,8553	0,7	0,2515	1,14

ND NTech Villa Topswing Reversible Jamb

This example shows glass thickness 39 - 51mm:

$$U_t = 0,8559 \text{ W/m}^2\text{K}$$

$$B_f = 103 \text{ mm}$$

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

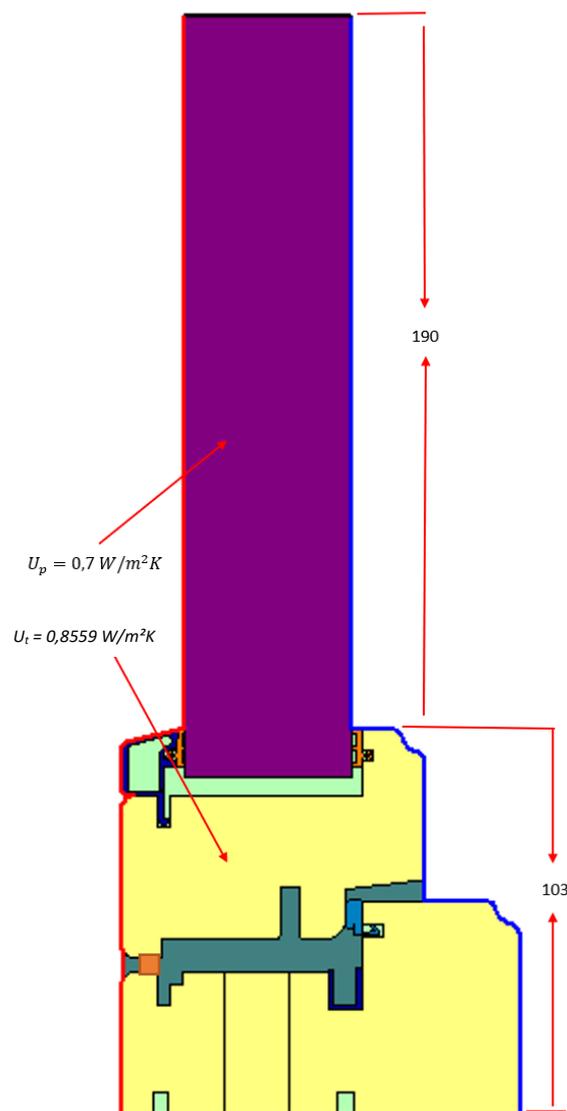
$$L_f^{2D} = U_t * L$$

$$L_f^{2D} = 0,8559 * (0,103 + 0,19) = 0,2508 \text{ W/mK}$$

$$U_f = \frac{0,2508 - (0,7 * 0,19)}{0,103} = 1,14 \text{ W/m}^2\text{K}$$

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

Material:	λ(W/mK)	e
Pine	0,12	0,9
Aluminium	160	0,9
Panel	0,035	0,9
Gasket EPDM	0,25	0,9
Gasket QL	0,06	0,9
Gasket DX 1466	0,15	0,9
Frame cavity- Cen slightly ventilatet		
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			
0,8559	0,7	0,2508	1,14

ND NTech Villa Topswing Reversible Sill

This example shows glass thickness 39 - 51mm:

$$U_t = 0,9061 \text{ W/m}^2\text{K}$$

$$B_f = 106 \text{ mm}$$

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

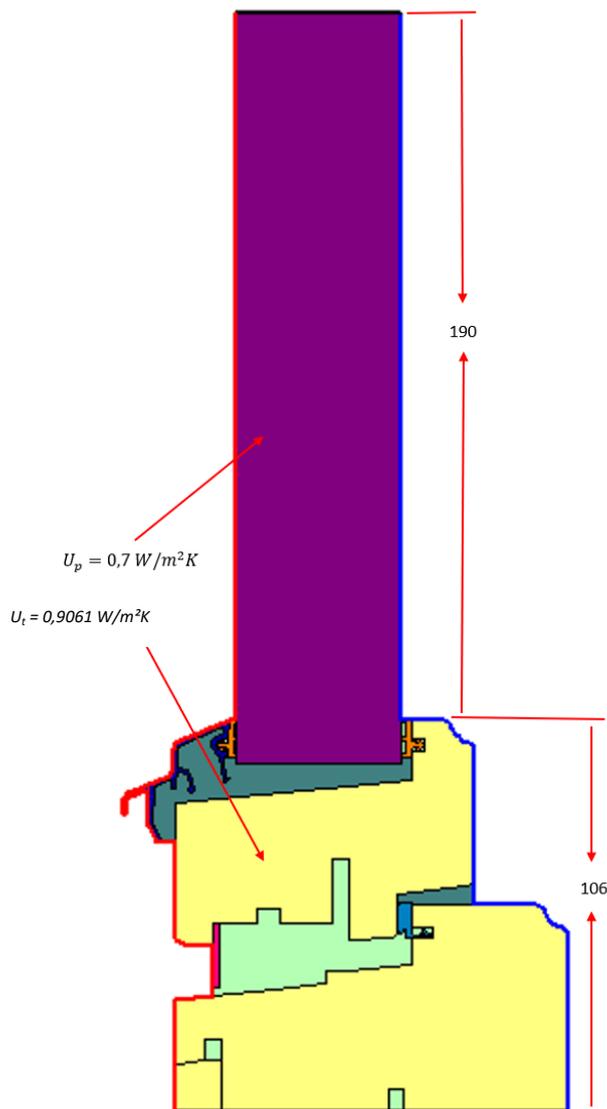
$$L_f^{2D} = U_t * L$$

$$L_f^{2D} = 0,9061 * (0,106 + 0,19) = 0,2682 \text{ W/mK}$$

$$U_f = \frac{0,2682 - (0,7 * 0,19)}{0,106} = 1,27 \text{ W/m}^2\text{K}$$

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

Material:	λ(W/mK)	e
Pine	0,12	0,9
Aluminium	160	0,9
Panel	0,035	0,9
Gasket EPDM	0,25	0,9
Gasket QL	0,06	0,9
Gasket DX 1466	0,15	0,9
Frame cavity- Cen slightly ventilatet		
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			
0,9061	0,7	0,2682	1,27