Test Report

Report no.:
218859

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Client: DOLLE A/S
Vestergade 47
DK-7741 Frøstrup

Init: NTH / MMH
Order no. 218859

Object: Energy calculation of an Insulated loft ladder, SW64-4

Input data: The calculations have been based on input data from the description sent by the customer from 2022-10-12

Period: The tesing was carried out from 2023-10-12 to 2023-10-11.

Method:

EN 10077-2:2017	Thermal Performance of windows, doors and
EN 14351-1:2006 +A2:2016	Windows and doors - Product standard performance characteristics
Guideline WA-08engl/3 - Part 1	Thermally improved spacers. Determination of representative Ψ-values for profile sections of windows

Results: U-value: 0.77 W/m2K (A = 0.79 m2)

Terms: This test was conducted accredited in accordance with international requirements (ISO/IEC 17025:2017) and in accordance with the General Terms and Conditions of Danish Technological Institute. The test results solely apply to the tested item. This test report may be quoted in extract only if Danish Technological Institute has granted its written consent.

Location: 2023-11-10, Danish Technological Institute, Building and Construction, Aarhus

Performed by:
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Consultant, Engineer

Co-reader:
Mads B. Hansen
Consultant, Mechanical engineer

DIGITALLY SIGNED DOCUMENT
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Date: 2023.11.10 13:47:57 +01'00'

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Results

The determination of the Uf-value is conducted according to EN ISO 10077-2:2017.

$$U_f = \frac{U_{tot}^{panel} \, x \, \ell_{tot} - U_{panel} \, x \, \ell_p}{\ell_f}$$

Where:

U_{tot}^{panel}	=	thermal transmittance for total construction [W/(m² K)]
U_{panel}	=	thermal transmittance for panel plate [W/(m² K)]
ℓ_{tot}	=	total length of construction (m)
ℓ_f	=	length of frame/sash (m)
ℓ_p	=	length of panel plate in m (lg = 0.25 m is generally chosen)
U_f	=	thermal transmittance for frame/sash profile [W/(m² K)]

The determination of the U-value of the combined construction, which consists of the frame and insulation plate, is conducted according to EN ISO 10077-2:2017.

$$U_d = \frac{A_p \times U_p + A_f \times U_f}{A_d} W/(m^2K)$$

Where:

$\mathbf{A_p}$	=	Plate area (m²)
$\mathbf{U_p}$	=	U-value of the insulation plate [W/(m² K)]
$\mathbf{A_d}$	=	$A_p + A_f$ (m²)
$\mathbf{A_f}$	=	frame/sash area (m²)
$\mathbf{U_f}$	=	U-value of frame/sash [W/(m² K)])

For the construction SW64-4/5, with the following dimensions 1.175m x 0.676m (0.79 m^2), this result in a U-value of:

$$\boldsymbol{U_{SW64-4/5} = 0.77}$$

The above-mentioned U-value is valid for the construction shown in appendix 2 only.

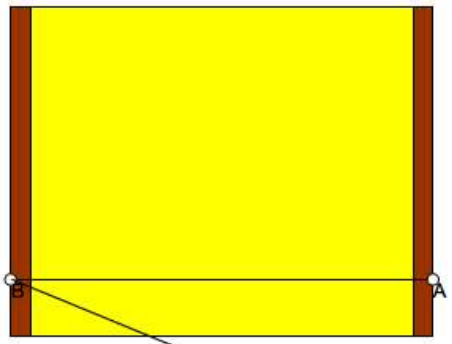
Appendix 1

Calculation of energy data for door profile	**System:** Dolle loftstrapper
	Profile: L29, L30, V28, V29
Manufacturer: Dolle	**Source:** Se side 2

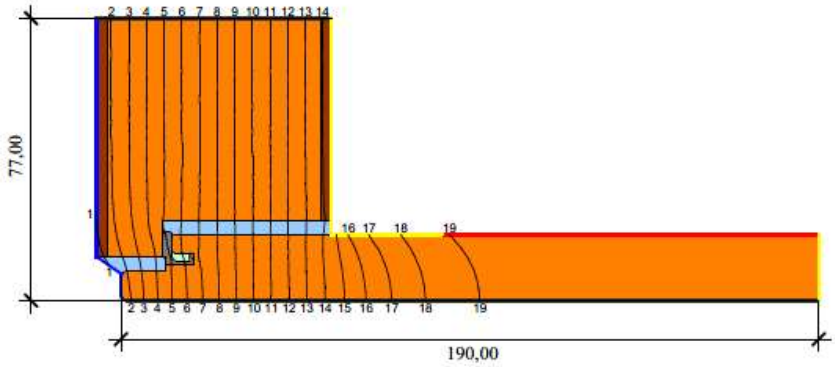
Boundary Condition	q[W/m²]	θ[°C]	R[(m²·K)/W]
Exterior, frame		0,000	0,040
Interior, frame, normal		20,000	0,130
Interior, frame, reduced		20,000	0,200
Symmetry/Model section	0,000		

Material	λ[W/(m·K)]
HDF	0,115
Q-lon liste	0,060
VT-00001: Ikke ventileret hulrum *	Eps=0,9/0,9
VT-00002: Let-ventileret hulrum *	Eps=0,9/0,9
VT-00012: Blødt træ	0,130

* EN ISO 10077-2:2017, 6.4.3



U_{A-B} = 0,46 W/(m²·K)



Results:

U-value sash/frame: U_f = 1,41 W/m² K

Width sash/frame: b_f = 77,0 mm

Comments:

U_{plate} = 0,46 W/m² K

Temperaturerne i tværsnittet er vist ved 0°C ude og 20°C inde.

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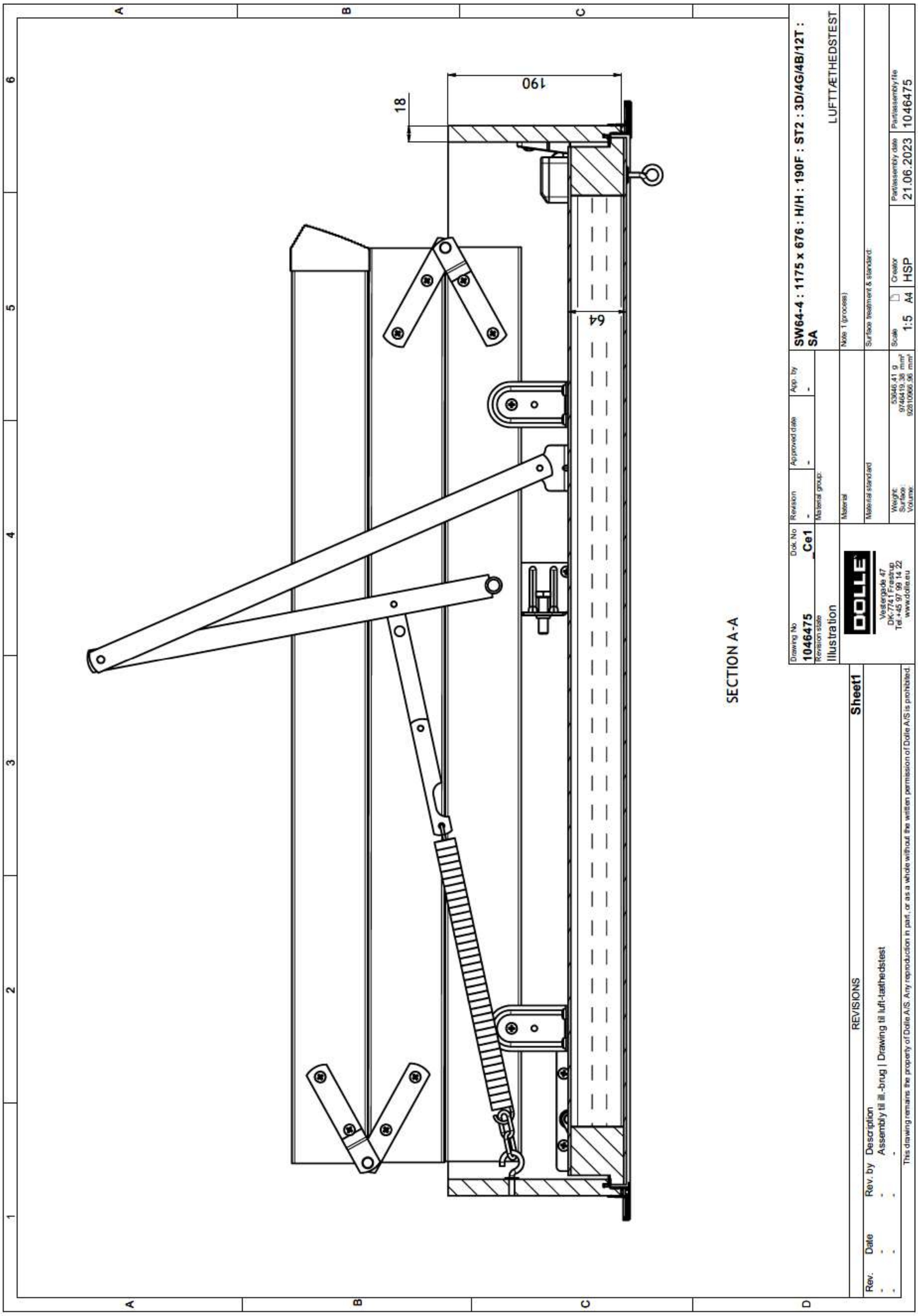
Date: 10-11-2023

Calculated byNisanthan Thanabalsingham

Appendix 2


190
18
64
SECTION A-A
SW64-4 : 1175 x 676 : H/H : 190F : ST2 : 3D/4G/4B/12T :
SA
LUFTTÆTHEDSTEST
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