Report in Accordance with BFRC Guidelines and Regulations

Product description: Made For Trade Korniche Bi-Fold Doorset

CONFIDENTIAL

Client:	Aanco (UK) Ltd T/A Made For Trade Wellington House, Wynyard Avenue Wynyard Billingham TS22 5TB
Project:	Aluminium Korniche Bi-Fold Doorset
Project reference:	CU21577-11/2
Prepared By:	Richard Bate Technical Director
Issue date:	16 May 2022

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Approved Simulator 001

1 Introduction

The U-value calculations of the Made For Trade, Korniche bi-fold doorset detailed below were commissioned by Ashley Gaunt of Made For Trade.

2 Validation of Program

The BISCO 12.0 analysis software has been validated against proofs in Annex I (I1 to I10) of BS EN ISO 10077-2:2017.

3 Analysis Method

The frame profile results detailed below are provided by computer simulation using BISCO 12.0 software program and BFRC guidelines and regulations.

4 Summary of Results

A summary of results are detailed in the following sections. The details supplied for the analysis as well as all information required to verify the analysis can be found in the attached CD.

4.1 Frame thermal transmittance (following the principles of BS EN ISO 10077-2)

Frame Profile	Frame Thermal Transmittance (U_f)
Head	3.2 W/(m²·K)
Left Jamb	3.0 W/(m²·K)
Right Jamb	3.2 W/(m²·K)
Threshold	3.2 W/(m²·K)
Meeting Stile	2.8 W/(m²·K)

4.2 Linear thermal transmittance (following the principles of BS EN ISO 10077-2)

Frame Profile	Linear Thermal Transmittance (ψ)
Head	0.024 W/(m·K)
Left Jamb	0.027 W/(m·K)
Right Jamb	0.024 W/(m·K)
Threshold	0.025 W/(m·K)
Meeting Stile	0.052 W/(m·K)

4.3 Centre pane U-Value of glazing calculated in accordance with BS EN 673.

Glazing Unit	Centre Pane U-value (U_g)
4-20-4 Low-E 0.05 uncorrected emissivity (Pilkington KS Glass), 90% Argon 10% Air filled, float outer pane (Pilkington Optifloat) glazing unit with Superspacer Premium spacer bar with 5mm hot melt butyl secondary seal.	1.2 W/(m²·K)

4.4 The thermal performance of the doorsets (U_D) in accordance with BFRC guidelines and regulations:

Korniche Frame Profile	Doorset U-Value
Aluminium frame system with 4-20-4 Low-E 0.05 uncorrected emissivity (Pilkington KS Glass), 90% Argon 10% Air filled, float outer pane (Pilkington Optifloat) glazing unit with Superspacer Premium spacer bar with 5mm hot melt butyl secondary seal.	1.8 W/(m²·K)

4.6 The Effective L_{50} in accordance with BFRC guidelines and regulations:

Frame Profile	Effective L_{50}
Air permeability at 50 pa	0.00 W/(m²·K)

4.7 Total solar energy transmittance (g) in accordance with EN 410

Korniche Frame Profile	$g_{doorset}$
Aluminium frame system with 4-20-4 Low-E 0.05 uncorrected emissivity (Pilkington KS Glass), 90% Argon 10% Air filled, float outer pane (Pilkington Optifloat) glazing unit with Superspacer Premium spacer bar with 5mm hot melt butyl secondary seal.	0.47

5.0 BFRC Rating

5.1 Made For Trade Korniche Bi-Fold doorset system

Korniche Frame Profile	Rating
Aluminium frame system with 4-20-4 Low-E 0.05 uncorrected emissivity (Pilkington KS Glass), 90% Argon 10% Air filled, float outer pane (Pilkington Optifloat) glazing unit with Superspacer Premium spacer bar with 5mm hot melt butyl secondary seal.	- 20 (Rating Scale C)

6.0 Authorisation

	Prepared by:
Signature:	
Name:	Richard Bate
Title:	Technical Director

Technical Specification

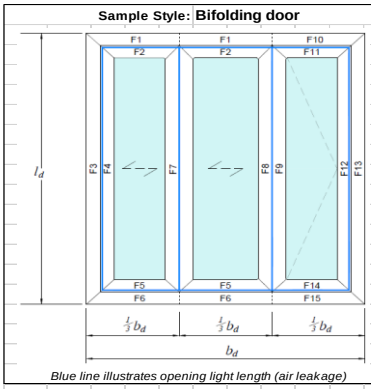
Profiles	Ref. No.	Material Type/Manufacturer's Name & Density (Timber only)	Dimensions (Height & Width)
Head	A-04105	Made For Trade, thermally broken aluminium	Outer frame - 56mm x 84mm Sash – 60mm x 75mm
Left Jamb	A-04104	Made For Trade, thermally broken aluminium	Outer frame - 56mm x 84mm Sash – 82mm x 83mm
Right Jamb	A-04103	Made For Trade, thermally broken aluminium	Outer frame - 56mm x 84mm Sash – 60mm x 75mm
Threshold	A-04114	Made For Trade, thermally broken aluminium	Outer frame - 56mm x 84mm Sash – 60mm x 75mm
Meeting Stile	A-04117	Made For Trade, thermally broken aluminium	60mm x 75mm

Glazing Component	Specification
Overall sealed unit: 1. Thickness (mm)	1. 28mm
Outer pane 1. Thickness (mm) 2. Manufacturer 3. Description	1. 4mm 2. Pilkington 3. Optifloat
Inner pane: 1. Thickness 2. Manufacturer 3. Description	1. 4mm 2. Pilkington 3. KS Glass
Spacer bar: 1. Manufacturer 2. Description	1. Edgetech 2. Superspacer Premium
Cavity 1. Distance (mm) 2. Gas %	1. 20mm 2. Argon 90% Air 10%
Edge seal 1. Manufacturer 2. Description	1. N/A 2. 5mm hot melt butyl secondary seal

Additional Notes
Air leakage data is taken from Build Check report ref. W22208 dated May 2022 (data at 50Pa pressure = 0.05). Solar heat gain figures are calculated from g-values supplied by the product manufacturer from EN 410 calculations for the glass units used in this simulation. The value used is 0.71.

BFRC Spreadsheet

Sample Style: Bifolding door



Blue line illustrates opening light length (air leakage)

Frame offset:	No	

Nominal 4mm etc to ***0DP***, others ***1DP***		
Glazing dimensions and properties:		
Thickness of pane 1	4	mm
Pane 1/2 distance	20	mm
Gas fill (1/2)	Argon 90%	
Thickness of pane 2	4	mm
Complete next 3 cells for TG IGU		
Pane 2/3 distance		mm
Gas fill (2/3)		
Thickness of pane 3		mm
Glazing Trans. - ***3DP*** U_g	1.219	W/(m²·K)
g -value - ***2DP*** $g_\perp$	0.71	

Thermal transmittance of door from hot box test		
U_d - *2DP*		W/(m²·K)

Door Dimensions:			Area	
Section	Length (m)	Width (m)	No gasket (for U-value) (m^2)	With gasket (for g-value) (m^2)
Left Sliding light	1.9680	0.6573	1.2936	1.2936
Middle Sliding light	1.9680	0.7073	1.3920	1.3920
Right Opening light	1.9680	0.6553	1.2897	1.2897
Total glazing, A_g			3.9754	3.9754
Frame	(m)	(m)	(m^2)	(m^2)
F1	1.6667	0.0560	0.0918	0.0918
F2	1.6107	0.0500	0.0744	0.0744
F3	2.1800	0.0560	0.1189	0.1189
F4	2.0680	0.0540	0.1090	0.1090
F5	1.6107	0.0500	0.0744	0.0744
F6	1.6667	0.0560	0.0918	0.0918
F7	2.0680	0.1320	0.2664	0.2664
F8	2.0680	0.0600	0.1211	0.1211
F9	2.0680	0.0720	0.1453	0.1453
F10	0.8333	0.0560	0.0451	0.0451
F11	0.7773	0.0500	0.0358	0.0358
F12	2.0680	0.0500	0.1009	0.1009
F13	2.1800	0.0560	0.1189	0.1189
F14	0.7773	0.0500	0.0358	0.0358
F15	0.8333	0.0560	0.0451	0.0451
Total Frame			1.4746	1.4746
Total door, Ad			5.4500	5.4500
Percentage left light glass area			23.74%	23.74%
Percentage middle light glass area			25.54%	25.54%
Percentage right light glass area			23.66%	23.66%
Percentage glass area (total)			72.94%	72.94%

Solar Factor, *g*-value:	F_d	0.9
	g_d	0.47

U_{door}	No bars; or attached bars	1.78
	Single cross bar in IGU	1.9
	Multiple cross bar in IGU	2.0
	Glazing bar (Georgian bar)	2.2

W/(m²·K)

Energy Window
Energy Index
-20
Window Rating
C

BFRC Rating kWh/(m²·yr)

≥20	A	++
>10 to 20	A	+
0 to <10	A	
-10 to <0	B	
-20 to <-10	C	✓
-30 to <-20	D	
-50 to <-30	E	

Report Number:	U21577-11
Report Date:	10 March 2022
Project Details:	Aluminium Bi-fold Doorset

Issue 2.3: *04/01/2016*

THIS SPREADSHEET IS THE PROPERTY OF THE BFRC AND CAN ONLY BE USED IN CONJUNCTION WITH A BFRC LICENCE APPLICATION

Input Values:
Yellow input, green intermediary, blue finals — X DP is no.of decimal places to enter

Parameter	*Symbol*		*Units*
Total door height ***0DP***	l_d	2180	mm
Total door width ***0DP***	b_d	2500	mm

Frame dimensions: All frame values to nearest mm, gaskets to nearest 0.1mm		Frame height, b_f (mm)	Gasket protrusion, b_{gt} (mm)	Frame with gasket (mm)	Total frame (mm)
F1 + F2 L&M head rail	F1 left fixed head	56	n/a	56.0	106
	F2 left opening head	50	0.0	50.0	
F3 + F4 left jamb	F3 left fixed jamb	56	n/a	56.0	110
	F4 left opening jamb	54	0.0	54.0	
F5 + F6 L&M threshold	F5 left opening threshold	50	0.0	50.0	106
	F6 left fixed threshold	56	n/a	56.0	
F7 Meeting Stile	F7 Meeting Stile	132	0.0	132.0	
			0.0		
F8 + F9 Meeting stile	F8 bi-fold opener	60	0.0	60.0	132
	F9 opener	72	0.0	72.0	
F10 + F11 right head rail	F10 right fixed head	56	n/a	56.0	106
	F11 right opening head	50	0.0	50.0	
F12 + F13 right jamb	F12 right opening jamb	50	0.0	50.0	106
	F13 right fixed jamb	56	n/a	56.0	
F14 + F15 R threshold	F14 right opening threshold	50	0.0	50.0	106
	F15 right fixed threshold	56	n/a	56.0	
Recession depth	F6 & F15:		n/a		
Total gasket area			0	m^2	

Where a U_d value from hot box testing is available, no L_f^{2D} or L_ψ^{2D} values need to be entered

Frame conductance:	All *L* values to ***4DP***. All b values to ***0DP***				
	L_f^{2D} W/(m·K)	b_p (mm)	L_ψ^{2D} W/(m·K)	b_g (mm)	
F1 + F2 L&M head rail	**0.5330**	**190**	**0.5930**	**190**	
F3 + F4 left jamb	**0.5240**	190	**0.5870**	190	
F5 + F6 L&M threshold	**0.5320**	190	**0.5930**	190	
F7 Meeting Stile	**0.7600**	380	**0.8830**	380	
F8 + F9 Meeting stile	**0.7600**	380	**0.8830**	380	
F10 + F11 right head rail	**0.5330**	190	**0.5930**	190	
F12 + F13 right jamb	**0.5300**	190	**0.5900**	190	
F14 + F15 R threshold	**0.5320**	190	**0.5930**	190	

Frame:	Frame widths (no gaskets), B_f (m)	Frame U-value, U_f (W/(m²·K))	Frame areas (no gaskets), A_f (m^2)	Frame heat flow, HU (W/K)	Linear trans, ψ (W/(m·K))	Linear length, l_g (m)	Junction Heat flow, Hψ (W/K)
Section							
F1 + F2 L&M head rail	0.1060	3.1804	0.1661	0.5284	0.0243	1.3647	0.0331
F3 + F4 left jamb	0.1100	2.9829	0.2279	0.6799	0.0273	1.9680	0.0537
F5 + F6 L&M threshold	0.1060	3.1710	0.1661	0.5269	0.0253	1.3647	0.0345
F7 Meeting Stile	0.1320	2.7898	0.2664	0.7431	0.0515	1.9680	0.1014
F8 + F9 Meeting stile	0.1320	2.7898	0.2664	0.7431	0.0515	1.9680	0.1014
F10 + F11 right head rail	0.1060	3.1804	0.0809	0.2573	0.0243	0.6553	0.0159
F12 + F13 right jamb	0.1060	3.1521	0.2198	0.6930	0.0243	1.9680	0.0478
F14 + F15 R threshold	0.1060	3.1710	0.0809	0.2566	0.0253	0.6553	0.0166
Totals			1.4746	4.4283		Total	0.4043

Other parameters:								Panel thickness, d_p=d_g=	0.028	m
λ_p =	0.035	W/(m·K)	R_{se} =	0.04	m²·K/W	R_{se} =	0.13	m²·K/W		
R_p =	0.8000	m²·K/W	R_{tot} =	0.9700	m²·K/W	U_p =	1.0309	W/(m²·K)		

Air Leakage loss:

Air leakage at 50 Pa per hour & per unit length of opening light (BS 6375-1) - ***2DP***				0.05	m³/(m·h)
Opening light length	13.0480	m	Total air leakage	0.652	m³/h
L_{50}	0.12	m³/(m²·h)	Heat loss = 0.0165 L_{50}	0.00	W/(m²·K)

BFRC Rating =

218.6*g* $_{door}$ **- 68.5 x (** U_{door} **+ Effective** L_{50}**) =**		**-19.89**
Climate zone is:		**UK**
Thermal transmittance, W/(m²·K)	U_{door}	**1.8**
Solar factor	g_{door}	**0.47**
Door air leakage heat loss, W/(m²·K)	L_{factor}	**0.00**

BFRC

BFRC Certified Simulator No **001**

Simulator Name: **Richard Bate**

BS EN 673 Spreadsheet

Version 12 18/06/2015. Calculations according to BS EN 673:2011

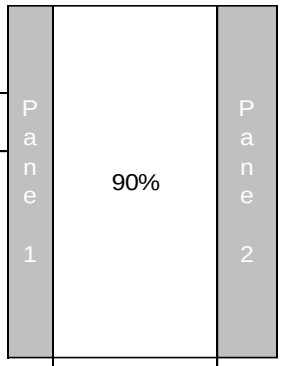
Number of spaces
1

Help

Spaces 1

Glazing orientation		
	Vertical	
Resistivity panes	1	m·K/W

Outside



Calculate

			Gas	
			Argon	
Thickness (mm)	4.0	20		4.0
Normal emissivity		0.89	0.05	
$\sum d_j \cdot r_j$=	0.008			

Uncoated

For uncoated surfaces input 0.89 for normal emissivity, which corresponds to a corrected emissivity of 0.837

External, R_{se}	0.04	$(m^2 \cdot K)/W$
Internal, R_{si}	0.13	$(m^2 \cdot K)/W$

Iteration number	U value	$\sum 1/h_s$	λeff	ΔT
	W/(m²·K)	(m²·K)/W	W/(mK)	
1	1.219	0.6423	0.0311	15
2	1.219	0.6423	0.0311	15

Spacer Conductivity

May 2014 – No. W21 – Revision Index 3-06/2021 – valid until June 30th, 2023

'WARM EDGE' WORKING PARTY

Data sheet Psi values for windows

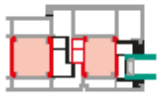
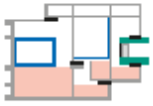
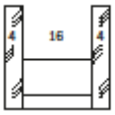
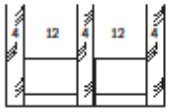
Only valid for use with hotmelt-sealant

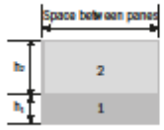
based on determination of the equivalent thermal conductivity of spacers by measurement

Edgetech

Edgetech Europe GmbH
Gladbacher Straße 23
D-52525 Heinsberg

Profile description		Spacer height h in mm	Material	Thickness d in mm
	Super Spacer Premium	4.7	Mylar foil	0.10
		Spacer category E	Silicone foam	4.7

	Representative glass constructions	Metal with thermal break	Plastic	Wood	Wood/Metal
Representative frame profiles					
Representative psi value double-sheet thermally insulating glass W/mK	 Double-sheet insulating glass U_g=1.1 W/m²K	0.035	0.031	0.030	0.031
Representative psi value triple-sheet thermally insulating glass W/mK	 Triple-sheet insulating glass U_g=0.7 W/m²K	0.030	0.029	0.028	0.029

Two Box model Characteristic values	Space between panes in mm	$\lambda_{eq,2B}$ in W/mK	
		Box 1 - h_1 = 5 mm	Box 2 - h_2 = 4.7 mm
	Can be used for all spacer widths	0.24	0.15

Explanations

The equivalent thermal conductivity has been determined in accordance with the ift guideline WA-17engl/1 "Thermally improved spacers – Determination of the equivalent thermal conductivity by measurement". The representative linear heat transfer coefficients calculated in this way (representative psi values) apply to typical frame profiles and glazing for the determination of the heat transfer coefficient U_w of windows. They have been determined under the boundary conditions (frame profiles, glazing, glass mounting depth, back covering, primary and secondary sealant) defined in the ift guideline WA-08engl/3 "Thermally improved spacers – Part 1: Determination of the representative Psi value for window frame profiles". This guideline also governs the area of validity and application of the representative psi values. In order to avoid rounding errors, the psi values in the data sheet have been given at 0.001 W/mK. The method for the arithmetical determination of the psi values has an accuracy of ± 0.003 W/mK. Differences of less than 0.005 W/mK are not significant. For further information, refer to the Bulletin 004/2008 "Guide to Warm Edge" of Bundesverband Flachglas.

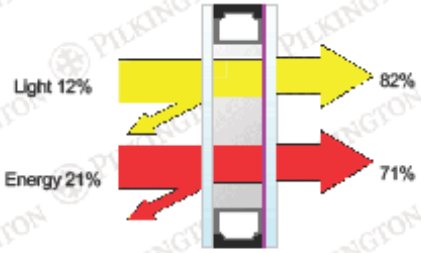
Characteristic values determined by:

ift ROSENHEIM

G-Value Source

PILKINGTON

NSG GROUP



DESCRIPTION

Position	Product	Process	Thickness (nominal) mm	Weight kg/m²
Pilkington Insulight™ Therm				
Glass 1	Pilkington Optifloat™ Clear	Annealed	4.0	
Cavity 1	Argon (90%)		20.0	
Glass 2	Pilkington K Glass™ S	Annealed	4.0	
Product Code	4-20Ar-KS4		28.0	20.00

PERFORMANCE

Light		
Transmittance	LT	82%
	UV %	38%
Reflectance Out	LR out	12%
Reflectance In	LR in	13%

Performance Code	
U_g-value/Light/Energy	1.2 / 82 / 71
Ra	98

The values of some of characteristics are displayed as NPD. This stands for No Performance Determined.

Energy		
Direct Transmittance	ET	62%
Reflectance	ER	21%
Absorptance	EA	17%
Total Transmittance	g	71%
Shading Coefficient Total		0.82
Shading Coefficient Shortwave		0.71
Sound Reduction	R_w (C;C_{tr}) dB	31 (-2; -5)
Thermal Transmittance	W/m²K	1.2

Pilkington Spectrum allows you to combine a wide range of products available from Pilkington and determine their key properties such as light transmittance, g value and U value. The program includes restrictions that prevent some combinations being selected that may be considered unwise or impractical. Even with these restrictions, it is still possible to create product combinations that may not be available from your supplier. Please check with your supplier that your chosen product combination is possible, available in the sizes required and in a timescale appropriate to your project. Furthermore, it is essential that you check that your product combination is appropriate for satisfying local, regional, national and other project-specific requirements.

Calculations are made according to EN standards 410 and 673/12898

Pilkington Spectrum Version UK:7.3.1 06/05/2022

NSG GROUP

Air Leakage Test Evidence

Glazing Component	Specification
Overall sealed unit: 1. Thickness (mm)	 1. 28mm
1. Outer pane 2. Cavity 3. Inner pane	1. 4mm clear toughened glass 2. 20mm 3. 4mm clear toughened glass

The above specimen description has been supplied by the client and not verified by Build Check.

Dimensions: Outer frame (w x h): 2500mm x 2180mm

3. Test Details

Test Date: 14 April 2022

Test performed by: Angelo Wells

Test carried out at Build Check Ltd's test laboratory, Unit 3 Lincoln Park Business Centre, Lincoln Road, High Wycombe, HP12 3RD

Test conditions in accordance with standard.

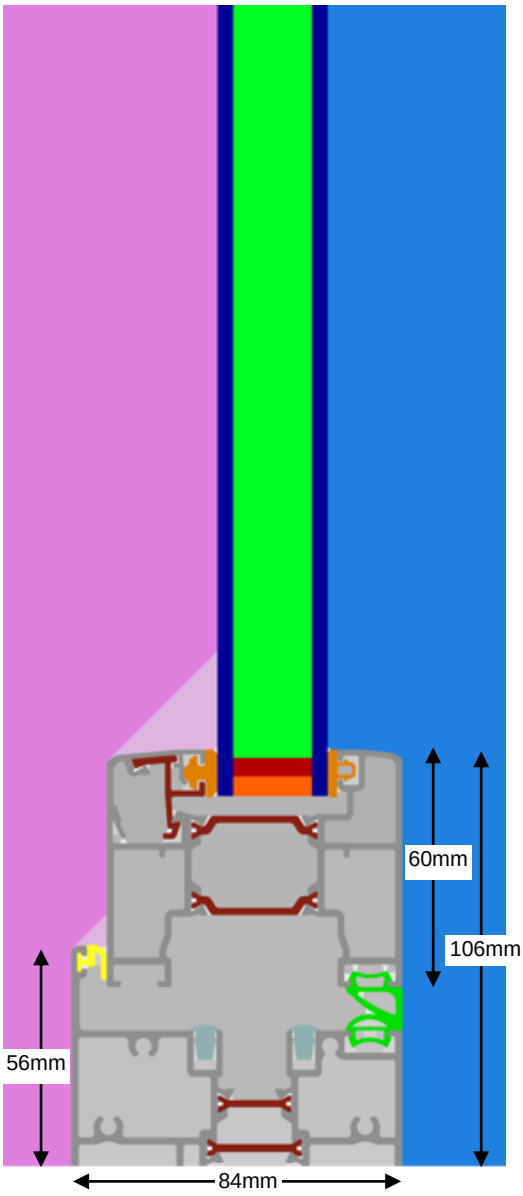
4. Results

Average between positive and negative pressure						
	Positive pressure		Negative pressure		Mean	
Air Pressure (Pa)	Net permeability per m^2 area ($m^3/h \cdot m^2$)	Net permeability per m opening length ($m^3/h \cdot m$)	Net permeability per m^2 area ($m^3/h \cdot m^2$)	Net permeability per m opening length ($m^3/h \cdot m$)	Per m^2 area ($m^3/h \cdot m$)	Per m opening length ($m^3/h \cdot m$)
50	0.15	0.06	0.10	0.04	0.13	0.05

** During the test, the chamber leakage was greater than 30% of the combined chamber and specimen leakage rate.*

Appendix - Profile Drawings

Head



BISCO Calculation Results

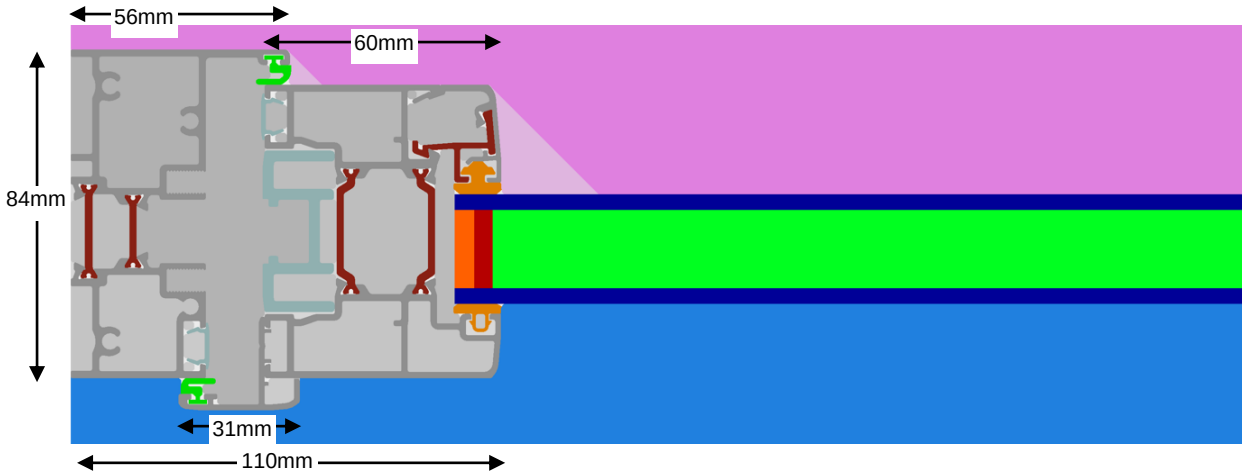
BISCO data file: A-04105 head.bsc

Number of nodes = 68371
Heat flow divergence for total object = 0.00047665
Heat flow divergence for worst node = 0.568572

Thermal transmittance of frame (EN 10077-2)
Uf = (Q/(ti-te) - Up1*wp1 - Up2*wp2) / wf = -3.472 W/(m².K)
Thermal coupling coefficient
L2D = Q/(ti-te) = 0.593 W/(m.K)
Q = 11.857 W/m
ti = 20.00°C
te = 0.00°C
Up1 = 5.054 W/(m².K) (top edge of bitmap)
wp1 = 0.1900 m (distance no. 2)
Up2 = 0.000 W/(m².K)
wp2 = 0.0000 m
wf = 0.1058 m (distance no. 1)

	Material	Thermal Conductivity W/(m.K)
	PVC-U Rigid, BS EN 10077-2	0.17
	PVC Flexible, BS EN 10077-2	0.14
	Aluminium, BS EN 10077-2	160.0
	Soda Lime Glass, BS EN 10077-2	1.0
	Superspacer Premium, IFT Rosenheim report 13-002649-PR02 (declared value)	0.15
	Hot Melt Butyl, BS EN 10077-2	0.24
	Polyurethane Foam, BS 10456	0.05
	EPDM, BS EN 10077-2	0.25
	Polyamide, BS EN 10077-2	0.30

Left Jamb

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BISCO Calculation Results

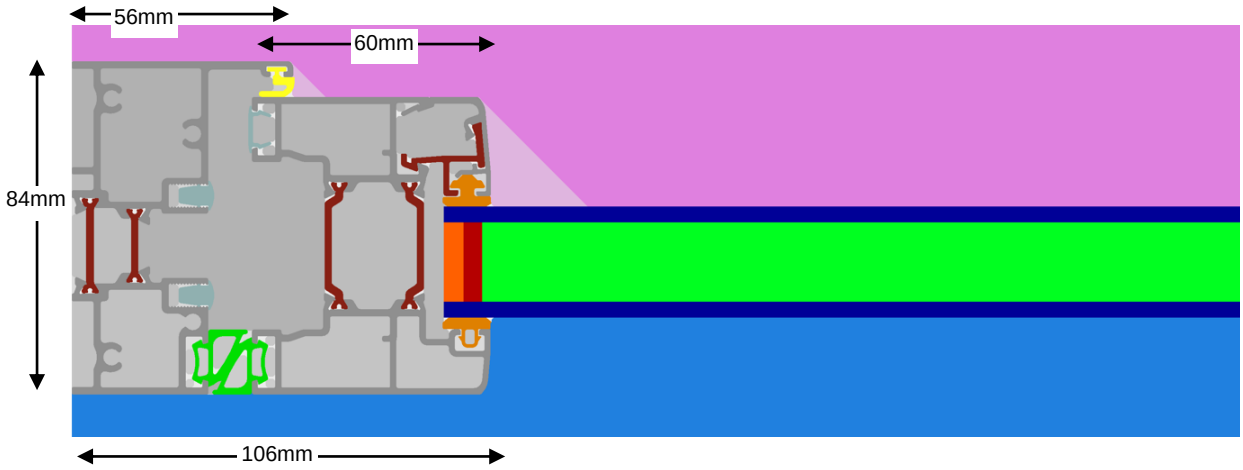
BISCO data file: A-04104 left jamb.bsc

Number of nodes = 71341
Heat flow divergence for total object = 0.00091044
Heat flow divergence for worst node = 0.674075

Thermal transmittance of frame (EN 10077-2)
Uf = (Q/(ti-te) - Up1*wp1 - Up2*wp2) / wf = 3.238 W/(m².K)
Thermal coupling coefficient
L2D = Q/(ti-te) = 0.587 W/(m.K)
  Q = 11.745 W/m
  ti = 20.00°C
  te = 0.00°C
  Up1 = 1.218 W/(m².K)   (right edge of bitmap)
  wp1 = 0.1900 m         (distance no. 2)
  Up2 = 0.000 W/(m².K)
  wp2 = 0.0000 m
  wf = 0.1099 m          (distance no. 1)
```

	Material	Thermal Conductivity W/(m.K)
	PVC-U Rigid, BS EN 10077-2	0.17
	PVC Flexible, BS EN 10077-2	0.14
	Aluminium, BS EN 10077-2	160.0
	Soda Lime Glass, BS EN 10077-2	1.0
	Superspacer Premium, IFT Rosenheim report 13-002649-PR02 (declared value)	0.15
	Hot Melt Butyl, BS EN 10077-2	0.24
	Polyurethane Foam, BS 10456	0.05
	EPDM, BS EN 10077-2	0.25
	Polyamide, BS EN 10077-2	0.30

Right Jamb




```
BISCO Calculation Results

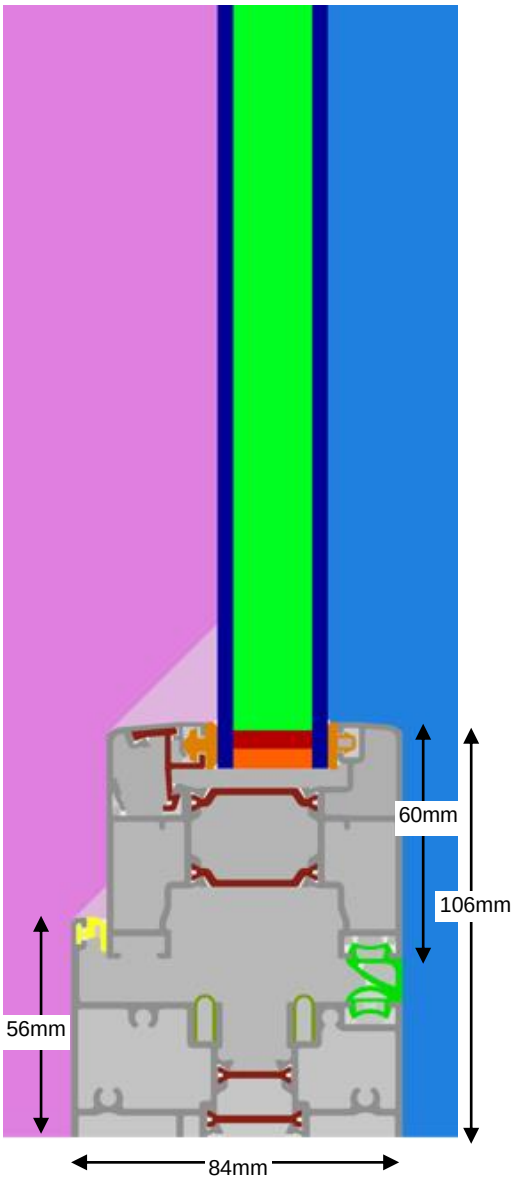
BISCO data file: A-04103 right jamb.bsc

Number of nodes = 68138
Heat flow divergence for total object = 0.000940014
Heat flow divergence for worst node = 0.861953

Thermal transmittance of frame (EN 10077-2)
Uf = (Q/(ti-te) - Up1*wp1 - Up2*wp2) / wf = -3.495 W/(m².K)
Thermal coupling coefficient
L2D = Q/(ti-te) = 0.590 W/(m.K)
  Q = 11.802 W/m
  ti = 20.00°C
  te = 0.00°C
  Up1 = 5.054 W/(m².K)   (right edge of bitmap)
  wp1 = 0.1900 m         (distance no. 2)
  Up2 = 0.000 W/(m².K)
  wp2 = 0.0000 m
  wf = 0.1059 m          (distance no. 1)
```

	Material	Thermal Conductivity W/(m.K)
	PVC-U Rigid, BS EN 10077-2	0.17
	PVC Flexible, BS EN 10077-2	0.14
	Aluminium, BS EN 10077-2	160.0
	Soda Lime Glass, BS EN 10077-2	1.0
	Superspacer Premium, IFT Rosenheim report 13-002649-PR02 (declared value)	0.15
	Hot Melt Butyl, BS EN 10077-2	0.24
	Polyurethane Foam, BS 10456	0.05
	EPDM, BS EN 10077-2	0.25
	Polyamide, BS EN 10077-2	0.30

Threshold



BISCO Calculation Results

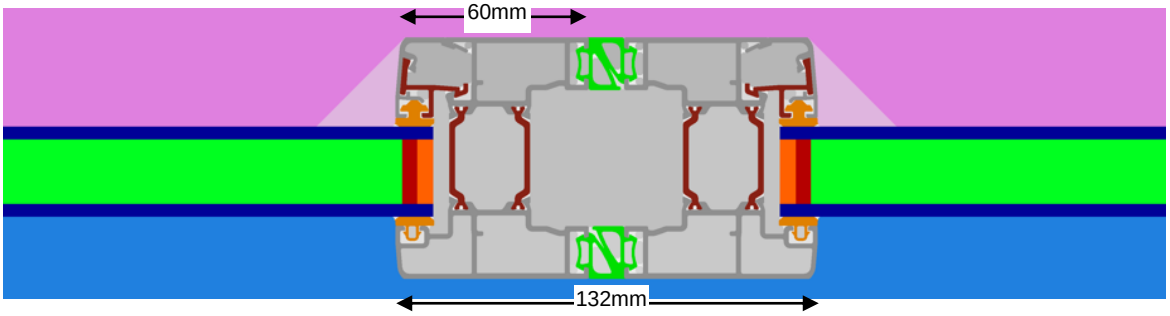
BISCO data file: A-04114 threshold.bsc

Number of nodes = 67652
Heat flow divergence for total object = 0.000896211
Heat flow divergence for worst node = 0.710278

Thermal transmittance of frame (EN 10077-2)
Uf = (Q/(ti-te) - Up1*wp1 - Up2*wp2) / wf = -3.474 W/(m².K)
Thermal coupling coefficient
L2D = Q/(ti-te) = 0.593 W/(m.K)
Q = 11.853 W/m
ti = 20.00°C
te = 0.00°C
Up1 = 5.054 W/(m².K) (top edge of bitmap)
wp1 = 0.1900 m (distance no. 2)
Up2 = 0.000 W/(m².K)
wp2 = 0.0000 m
wf = 0.1058 m (distance no. 1)

	Material	Thermal Conductivity W/(m.K)
	PVC-U Rigid, BS EN 10077-2	0.17
	PVC Flexible, BS EN 10077-2	0.14
	Aluminium, BS EN 10077-2	160.0
	Soda Lime Glass, BS EN 10077-2	1.0
	Superspacer Premium, IFT Rosenheim report 13-002649-PR02 (declared value)	0.15
	Hot Melt Butyl, BS EN 10077-2	0.24
	Polyurethane Foam, BS 10456	0.05
	EPDM, BS EN 10077-2	0.25
	Polyamide, BS EN 10077-2	0.30

Meeting Stile




```
BISCO Calculation Results

BISCO data file: A-04117 meeting stile.bsc

Number of nodes = 100401
Heat flow divergence for total object = 8.2593e-05
Heat flow divergence for worst node = 0.212354

Thermal transmittance of frame (EN 10077-2)
Uf = (Q/(ti-te) - Up1*wp1 - Up2*wp2) / wf = -7.877 W/(m².K)
Thermal coupling coefficient
L2D = Q/(ti-te) = 0.883 W/(m.K)
  Q = 17.660 W/m
  ti = 20.00°C
  te = 0.00°C
  Up1 = 5.054 W/(m².K)   (left edge of bitmap)
  wp1 = 0.1900 m         (distance no. 2)
  Up2 = 5.054 W/(m².K)   (right edge of bitmap)
  wp2 = 0.1900 m         (distance no. 3)
  wf = 0.1317 m          (distance no. 1)
```

	Material	Thermal Conductivity W/(m.K)
	PVC-U Rigid, BS EN 10077-2	0.17
	PVC Flexible, BS EN 10077-2	0.14
	Aluminium, BS EN 10077-2	160.0
	Soda Lime Glass, BS EN 10077-2	1.0
	Superspacer Premium, IFT Rosenheim report 13-002649-PR02 (declared value)	0.15
	Hot Melt Butyl, BS EN 10077-2	0.24
	Polyurethane Foam, BS 10456	0.05
	EPDM, BS EN 10077-2	0.25
	Polyamide, BS EN 10077-2	0.30