#### **ELITE GROUP OF COMPANIES**

Innovation and leadership are two terms usually associated with Elite Group of Companies. Driven by passion and dedication, we offer you world class products, solutions and systems in aluminum architectural & non architectural applications. The role of fine-tuned solutions in construction is huge. Whatever the size of the business may be, companies need top quality services that the professional team at Elite Group promise. When it comes to end-to-end solutions and professional management expertise, Elite Group of Companies has always given its best.

An ISO 9001:2008 certified organizations; our group has been at the apex of providing a vast array of commendable services. Since its inception, the endeavor for each group' subsidiary has been to deliver excellence in terms of quality products and services.

Continuous investments and continuous process improvement aim, we have been successful at making a positive impact on our global customers through sheer dedication and commitment.

Elite Group has developed a stronghold in the international arena. Innovation, integrity, and respect, defines our culture. We have an extensive network of clientele that seek our in-house expertise in all necessary disciplines. With a strong management ethos and

adopting a proactive approach, we have successfully catered to every demand and requirement of our valuable customers. This evolution is continuing through an increasing focus on the mentioned scope in which Elite group of companies has taken the lead.

Elite Group takes pride in being a unique organization that has the capability to link the raw material with end user. Our subsidiaries can transform the base material into the defined application, in a continuous supply chain.

The core competencies of the Elite Group include several manufacturing plants equipped with state-of-the art European technology for a full group capacity of more than 60,000 MT/year of production of extruded profiles and 24,000 MT/year of aluminum rolled products.

Premises and staff to control the extrusion lines and the continuous rolling casters along with ancillary and support equipment, makes Elite Group one of the main player in the Middle East aluminum industry to cater the global demand.

Group coating capacity is about 55,000 MT/year with 4 coating lines for profiles, 1 coating line for coils, in addition to the wood coating line and anodizing line for profiles finishing. The extrusion is supported with 3 die shops for design, manufacturing and correction of the tools. Furthermore engineering and calculation offices to serve and support the customer requirements.

#### **INTRODUCTION TO SYSTEM**

Elite Group is oriented to fulfill the obligation to both its customers and to the community at large. Accordingly, while we have been developing aluminium profiles for the general use, we introduced the ecofriendly and energy saving thermally broken profiles; the ECO-500 Series.

The ECO-500 Series comes in sliding and casement options.

While the profiles are automatically guaranteed for superior quality by strict adherence to quality standards on the in-house manufacturing process, the thermal insulating polyamide strips are imported directly from world class European suppliers. The system in Euro-groove compatible and hence, goes with standard European accessories suppliers.

If need, our Technical Department can render all technical support and service.

The improved version **ECO-500 Series**, which superseds the earlier issue, has been engineered to synergize aesthetics with case of fabrication.

Please note we have withdrawn the earlier version of the catalogue and hence, customers are requested to order based only on this updated catalogue.

### ECO-500 THERMALLY BROKEN SLIDING SERIES

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9.S		
Certificate of	f Testing	THOMAS BELL-WRIGHT
Certificate Number:	CHF02	THOMAS BELL-WRIGHT INTERNATIONAL CONSULTANTS
Date:	2007, June	
Project:	Seven Tides Ibn Batt at Gardens Mall	uta Complex
System Supplier:	Al Hamad Industries (L.L.C.) Extrusion Division P.O. Box 6275 Sharjah, U.A.E.	Со.,
System:	ECO - 500 Thermal Window	Break Sliding
Tested for:	Air Infiltration Static Water Penetra Structural Load Operation Force Tes Structural Load to Sa	Pass   Pass
This certificate to		ASTM, or industry standards. In with the full report of testing.
Thomas Bell-Wright Inte	ernational Consultan	ts
Sandy Dweik Sandy Dweik Quality Manage		Clarence P. Facun Testing Engineer
Date: <u>19 June 2007</u>		
P.O. BOX 26385 DUBAI, U	J.A.E. TEL: (+9714) 333-2692	FAX: (+9714) 333-2693 WEB: www.bell-wright.com

(

<b>PROJECT NAME:</b>			SEVEN TIDES, IBN BATTUTA COMPLEX	S, IBN BA <sup>-</sup>	<b>LTUTA COM</b>	PLEX	
AIR INFILTRATION TEST ASTM E 283	ST ASTM E 283						
AMBIENT CONDITIONS	SNOITIONS				Monday	Monday, April 30, 2007 9:30:00 AM	Reset Date
Air Temperature	37 °C		<b>Barometric Pressure</b>	10.15 mb	Rela	Relative Humidity	15 %
Wind Speed	m/s	>	Wind Direction	Deg			
TECTING ENCINEED	-			SDECTME	SPECIMEN TEST CRITERIA	DTA	
Clark Facun	Þ			Width	1.3 m	Height	1.4 m
				Test Pressure		300 Pa	
Inlet Nozzle Size	56 ▼ mm				Area 1.82	1.82 m <sup>2</sup>	
Nozzle Connection	A- PT L1	•		Length of opening joint		0.0 m	Update Links
Chamber Connection	B- PT L2	•	Pe	Permitted Leakage area		2.00 m <sup>3</sup> /hr/m <sup>2</sup>	1
		1	Permitted Leakage(Meter opening joint)	e(Meter opening		0.0 m <sup>3</sup> /hr/m	Zero Pressure
			To	Total permitted Leakage		3.6 m³/hr	
<b>READINGS</b>	AL WITH PO	SEAL WITH POLYETHYLENE		READINGS		WITHOUT POLYETHYLENE	
Chamber Pressure	ssure	300 Pa		Ÿ	Chamber Pressure	300 Pa	
Nozzle Pressure	ure	34 Pa		No	Nozzle Pressure	82 Pa	
Differential Pressure	essure	0 Pa	Display 1	Diff	Differential Pressure	266 Pa	Display 2
Flow		0 m3/hr		Flow	~	175 m3/hr	3/hr
Nozzle Flow		62.2 m3/hr	Stop 1	No	Nozzle Flow	96.7 m3/hr	3/hr Stop 2
Data Recorded at		9:50:00 AM		Dai	Data Recorded at	10:40:00 AM	
		SUMMARY RESULTS	SULTS				
Perm	Permitted Leakage	4 m <sup>3</sup> /hr	Specimen Leakage	<mark>34.55</mark> m³/hr			
		Conclusion	ion Pass			Signature	

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## ECO - 500 SLIDING

SEVEN TIDES, IBN BATTUTA COMPLEX		Reset Date 10:55:00 AM	mb Relative Humidity 15 %	SPECIMEN TEST CRITERIA	Height 1.4	st of3rows of3NozzlesTest Pressure240PaUpdate Links	Start/reset timer   11:00:00 AM     Calculated finishing time   11:15:00 AM     Actual when timer stopped   11:25:00 AM	Conclusion Pass
SEVEN TIDES, I	T to ASTM E 331		Barometric Pressure 10.14	m/s SPECI		The spray rack will consist of Test P		240 start stop
PROJECT NAME:	STATIC WATER PENETRATION TEST to ASTM E 331	AMBIENT CONDITIONS	39	Wind Speed m TESTING ENGINEER	Clark Facun	Chamber Connection B- PT L2		Zero

b. Static water penetration test

Test Certificate of Sliding Window



PROJECT NAME:	SEVEN TIDES, IBN BATTUTA COMPLEX	TUTA COMI	PLEX		144	05.2	1	0107	
STRUCTURAL WIND LOAD - SERVICEABILITY	SERVICEABILITY				_	270	1	2000	_
AMBIENT CONDITIONS	VS Reset Date		<u>Monday, 30 April 2007</u> 11·30·00 AM	0 April 2007			•	100	
Air Temperature	39 °C		1				_		1
Barometric Pressure	10.15 mb	Relative Humidity	15 %	. 0					002
TESTING ENGINEER	SPECIMEN TEST CRITERIA	TERIA			-				
Clark Facun					0011	•	•	100	T
			Update Links	nks	2	11		11	
Chamber Connection	Design Wind Pressure 1211 Pa	2a	-			1	-		00
C- PT I ▼	Mullion Length to be tested 1.4 m	٤				1		5	<u>12</u>
	Transom Length to be tested 1.3 m	٤					_		
	Max. Allowable Deformation-Mullion 8 mm	nm						100	1
	Max. Allowable Deformation-Transom	7 mm			-		1300		_
LIVE READINGS	POSITIVE WIND LOAD								
Chamber Pressure	1211 Pa								
Top Center Member LDT 1	4.3 mm	Chamb	Chamber Pressure	1211	Pa	Design W	Design WL Pressure	1211	Pa
Middle Center Member LDT 2	4.6 mm	Actual Mullion Deflection	n Deflection	-	mm	Actual I	Actual Mullion Def	-	mm
Bottom Center Member LDT 3	3.1 mm			Pass				Pass	
Top Right Member LDT 4	3.8 mm								
Middle Right Memeber LDT 5	3.8 mm	Chamb	Chamber Pressure	1211	Ра	Design W	Design WL Pressure	1211	Ра
Bottom Right Member LDT 6	3.1 mm	Actual Transom Deflection	n Deflection	0	mm	Actual Tr	Actual Transom Def	0	mm
Glass LDT 7	0.0 mm			Pass				Pass	
LDT 8	0.0 mm	RESIDUAL	LDT 1	LDT 2	LDT 3	LDT 4	LDT 5	LDT 6	
	Data recorded @ 11:40:20 AM								

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THOMAS BELL-WRIGHT INTERNATIONAL CONSULTANTS

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<b>PROJECT NAME:</b>	SEVEN TIDES, IBN BATTUTA COMPLEX	TTUTA COMPLEX	650	100
STRUCTURAL WIND LOAD - SERVICEABILITY	SERVICEABILITY			
AMBIENT CONDITIONS	VS Reset Date	Monday, 3		•
Air Temperature		11:45:00 AM		(
Barometric Pressure	10.15 mb	Relative Humidity 15 %		102
			=	-
TESTING ENGINEER	SPECIMEN TEST CRITERIA	RITERIA	1400	
Clark Facun	_		11	0
	Design Wind Pressure 1211 Pa	Pa	11	002
Chamber Connection		E		
C- PT I ◀	Transom Length to be tested 1.3 m	Ε	•	
	Max. Allowable Deformation-Mullion 8 r	8 mm		1
	Max. Allowable Deformation-Transom	7 mm		]
LIVE READINGS	NEGATIVE WIND LOAD			
Chamber Pressure	1211 Pa			
Top Center Member LDT 1	3.8 mm	Chamber Pressure 1211	Pa Design WL Pressure	1211 Pa
Middle Center Member LDT 2	4.8 mm	Actual Mullion Deflection 1	mm Actual Mullion Def.	1 mm
Bottom Center Member LDT 3	3.1 mm	Pass		Pass
Top Right Member LDT 4	3.1 mm			
Middle Right Memeber LDT 5	3.8 mm	Chamber Pressure 1211	Pa Design WL Pressure	1211 Pa
Bottom Right Member LDT 6	3.1 mm	Actual Transom Deflection 1	mm Actual Transom Def	1 mm
Glass LDT 7	0.0 mm	Pass	H A A A A A A A A A A A A A A A A A A A	Pass
LDT 8	0.0 mm	RESIDUAL LDT 1 LDT 2	LDT 3   LDT 4   LDT 5   L	LDT 6
	Data recorded @ 12:07:18 PM			

d. Structural negative wind load - serviceability test

## ECO - 500 SLIDING

e. Post Structural - Static water penetration test

<b>PROJECT NAME:</b>	SEVEN TIDES, IBN BATTUTA COMPLEX	UTA COMPLEX
POST STRUCTURAL - STATIC M	POST STRUCTURAL - STATIC WATER PENETRATION TEST to ASTM E 331	
	Reset Date	Monday, 3
AMBIENT CONDITIONS		12:10:00 PM
Air Temperature 39	°C Barometric Pressure 10.16 mb	Relative Humidity 18 %
Wind Speed	m/s	DITEDIA
TESTING ENGINEER		
Clark Facun	Width 1.3 m	Height 1.4 m
: : : ;	The spray rack will consist of 3	rows of 3 Nozzles
	Test Pressure	240 Pa Update Links
B- PI L2		
READINGS	Hours Minutes Seconds	
0	- - -	
	Timer	Start/reset timer 12:20:00 PM
	L	
		Calculated finishing time 12:35:00 PM
	Chamber Pressure	Artial when timer ctonned 12.40.00 BM
	240	Conclusion Pass
Zero	o Stop	
		Siganture

# THOMAS BELL-WRIGHT INTERNATIONAL CONSULTANTS

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## ECO - 500 SLIDING

<b>PROJECT NAME:</b>		SEVEN T	IDES, IBN B/	SEVEN TIDES, IBN BATTUTA COMPLEX	LEX	
POST STRUCTURAL - STATIC WATER PEN		ETRATION TEST to ASTM E 331	31			
			Reset	Reset Date	Mor	Monday, 30 April 2007
AMBIENT CONDITIONS						3:00 PM
Air Temperature 38	ç	Barometric Pressure	10.06 mb	Relative Humidity	y 19	%
Wind Speed	m/s		SDECIMEN TEST CDITEDIA		1	
TESTING ENGINEER			OF ECLIMEN IE			
Clark Facun	Þ	Width	1.3 m	Height	1.4	Ε
	[	The spray rack will consist of	nsist of 3	s rows of	e	Nozzles
B- PT 12			Test Pressure	240	Pa L	Update Links
7 - - -						
READINGS	Hours	Minutes Seconds	S			
	•	15	P			
		Timer		St	Start/reset timer	ner 3:50:00 PM
	C	L		)		
	0	CT		Calculated	Calculated finishing time	me3:05:00 PM
	Chan	mber Pressure		Actual when timer stonned	timer stonn	3.07.00 PM
		240			Conclusion	ion Pass
	Zero	Start	d			
					Siganture	

f. Post Structural - Static water penetration test

Test Certificate of Sliding Window



0.50		Monday, 30 April 2007		90£ 		1 1 1 7 7 7	Update Links				1.100 NUM	1300			e 1817 Pa Design WL Pressure 1817 Pa	n 2 mm Actual Mullion Def 2 mm	Pass		e 1817 Pa Design WL Pressure 1817 Pa	1 mm Actual Transom Def 1 mm	Pass	
DES, IBN BATTUTA COMPLEX		Reset Date Monday, 30		Relative Humidity 19	CRITERIA		Update	1817 Pa	1.4 m	1.3 m	3 mm	3 mm			Chamber Pressure	Actual Mullion Deflection			Chamber Pressure	Actual Transom Deflection		PTOID I I DT 4
SEVEN TIDES, IBN B	(FETY		37 °C	10.06 mb	SPECIMEN TEST CRITERIA	_		Design Wind Pressure 18	Mullion Length to be tested	Transom Length to be tested	Max. Allowable Deformation-Mullion	Max. Allowable Deformation-Transom	POSITIVE WIND LOAD	1817 Pa	5.6 mm	6.4 mm	4.0 mm	4.3 mm	5.1 mm	4.6 mm	0.0 mm	
PROJECT NAME:	STRUCTURAL WIND LOAD - SAFETY	AMBIENT CONDITIONS	Air Temperature	Barometric Pressure	TESTING ENGINEER	Clark Facun		Chamber Connection	C- PT I 🗸				LIVE READINGS	Chamber Pressure	Top Center Member LDT 1	Middle Center Member LDT 2	Bottom Center Member LDT 3	Top Right Member LDT 4	Middle Right Memeber LDT 5	Bottom Right Member LDT 6	Glass LDT 7	

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17

0.64

0.51

0.25

0.25

0.25

0.38

4:18 PM

Data recorded @

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PROJECT NAME:	SEVEN TIDES, IBN BATTUTA COMPLEX	<b>ITUTA COMPLEX</b>		630 222	650	
STRUCTURAL WIND LOAD - SAFETY	AFETY					1
AMBIENT CONDITIONS	Reset Date	Monday, 30		. 101		
Air Temperature	37 °C	4:25:00 PM	5			0
Barometric Pressure	e mb	Relative Humidity 19 %				0Z
			0			
TESTING ENGINEER	SPECIMEN TEST CRITERIA	TERIA	141	•		-
Clark Facun				11	1	
	Design Wind Pressure 1817 Pa	Pa Update Links		1	1	002
Chamber Connection	be tested	E	_			_
C- PT I -	Transom Length to be tested 1.3 m	E	-		•	1
	Max. Allowable Deformation-Mullion 3 r	3 mm				
	Max. Allowable Deformation-Transom 3 r	3 mm	J			
LIVE READINGS	NEGATIVE WIND LOAD					
Chamber Pressure	1817 Pa					
Top Center Member LDT 1	5.6 mm	Chamber Pressure 1817	Ра	Design WL Pressure	sure 1817 Pa	
Middle Center Member LDT 2	6.6 mm	Actual Mullion Deflection 2	шш	Actual Mullion Def.	Def. 2 mm	Ę
Bottom Center Member LDT 3	4.3 mm	Pass			Pass	
Top Right Member LDT 4	3.3 mm					
Middle Right Memeber LDT 5	4.8 mm	Chamber Pressure 1817	Ра	Design WL Pressure	sure 1817 Pa	
Bottom Right Member LDT 6	4.1 mm	Actual Transom Deflection 1	mm	Actual Transom Def	Def 1 mm	Ę
Glass LDT 7	0.0 mm	Pass			Pass	
LDT 8	0.0 mm	RESIDUAL LDT 1 LDT 2	LDT 3	LDT 4   LDT 5	5 LDT 6	
		0.25 0.51	0.25	0.25 0.51	1 0.38	
	Data recorded @ 4:38 PM					
	-					

h. Structural negative wind load @ 1.5 times design wind load

ECO - 500 SLIDING

i. Post Structural - Air infiltration test

PROJECT NAME:			SEVEN TIDES	TIDES, IBN BATTUTA COMPLEX	UTA COMI	PLEX	
POST STRUCTURAL - AIR INFILTRATION TEST	AIR INFILT		ASTM E 283		Tuesday, M	2001 MG	Reset Date
AMBIENT CONDITIONS	DITTONS						
Air Temperature	41 °C		Barometric Pressure	10.02 mb	Relative Humidity	Humidity 14	4 %
Wind Speed	m/s		Wind Direction	Deg			
<b>TESTING ENGINEER</b>	R			SPECIMEN TI	SPECIMEN TEST CRITERIA		
Clark Facun							
	•			Width	1.3 m	Height	1.4 m
				Test Pressure	e 75 Pa		
Inlet Nozzle Size	56 <del>v</del> mm			Area	a 1.82 m <sup>2</sup>		
Nozzle Connection	A- PT L1	Þ		Length of opening joint	t 0.0 m		Update Links
Chamber Connection	В- РТ L2	Þ	Ре	Permitted Leakage area	a 5.00 m <sup>3</sup> /hr/m <sup>2</sup>		(
			Permitted Leakage	Permitted Leakage(Meter opening joint)	) 0.0 m <sup>3</sup> /hr/m		Zero Pressure
			Tot	Total permitted Leakage	9.1 m <sup>3</sup> /hr	'/hr	
READINGS SE/	<b>NL WITH PO</b>	SEAL WITH POLYETHYLENE		READINGS	WITHOUT POLYETHYLENE	YETHYLENE	
Chamber Pressure	sure	75 Pa		Chambe	Chamber Pressure	75 Pa	
Nozzle Pressure	re	11 Pa		Nozzle	Nozzle Pressure	14 Pa	
Differential Pressure	ssure	61 Pa	Display 1	Different	Differential Pressure	0 Pa	Display 2
Flow		83 m3/hr		Flow		0 m3/hr	
Nozzle Flow		35.3 m3/hr	Stop 1	Nozzle Flow	-low	39.8 m3/hr	r Stop 2
Data Recorded at	l at	2:45 PM		Data Re	Data Recorded at	2:53 PM	
		SUMMARY RESULTS	RESULTS				
Permi	Permitted Leakage	<mark>9</mark> m³/hr	Specimen Leakage	4.54 m³/hr			
		Concl	Conclusion Pass			Signature	

ECO - 500 SLIDING

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THOMAS BELL-WRIGHT INTERNATIONAL CONSULTANTS

ECO-500 SLIDING

. Post Structural - Air infiltration test	ir infiltration test					
PROJECT NAME:		SEVEN TIDES, IBN BATTUTA COMPLEX	IBN BA	TTUTA CO	MPLEX	
POST STRUCTURAL - AIR INFILTRATION TEST		ASTM E 283				
A MBIENT CONDITIONS	TONG	1		Tuesday	Tuesday, May 15, 2007 2:30:12 PM	Reset Date
Air Temperature 41	S	Barometric Pressure	10.02 mb	Relat	Relative Humidity	14 %
Wind Speed	m/s	Wind Direction	Deg			
TESTING ENGINEER			SPECIME	SPECIMEN TEST CRITERIA	IA	
	Þ		Width	1.3 m	Height	1.4 m
			Test Pressure	ssure 100 Pa	Pa	
Inlet Nozzle Size 56	mm			Area 1.82 m <sup>2</sup>	m²	
Nozzle Connection A-	A- PT L1 💌	Len	Length of opening joint	j joint 0.0 m	E	Update Links
Chamber Connection B-	B-PTL2 🔻	Perm	Permitted Leakage area		5.00 m <sup>3</sup> /hr/m <sup>2</sup>	)
	1	Permitted Leakage(Meter opening joint)	Meter opening		0.0 m³/hr/m	Zero Pressure
		Total	Total permitted Leakage		9.1 m³/hr	
READINGS SEAL W	SEAL WITH POLYETHYLENE		READINGS		WITHOUT POLYETHYLENE	
Chamber Pressure	100 Pa		Ch	Chamber Pressure	100 Pa	1
Nozzle Pressure	11 Pa		Noz	Nozzle Pressure	17 Pa	
Differential Pressure	e 0 Pa	Display 1	Diff	Differential Pressure	0 Pa	Display 2
Flow	0 m3/hr		Flow	~	0 m3/hr	/hr
Nozzle Flow	35.3 m3/hr	Stop 1	Noz	Nozzle Flow	43.9 m3/hr	/hr Stop 2
Data Recorded at	2:45 PM		Dat	Data Recorded at	2:53 PM	
	SUMMARY	RY RESULTS				
Permitted Leakage	Leakage 9 m³/hr	Specimen Leakage	<mark>8.61</mark> m³/hr			
	Conc	Conclusion Pass			Signature	
		Labo			JIJIIau	<u>ש</u>

THOMAS BELL-WRIGHT INTERNATIONAL CONSULTANTS

#### THERMAL TRANSMITTANCE ACCORDING TO EN ISO 10077-2

#### Theory

The thermal transmittance of a frame according to EN ISO 10077-2:

$$U_{f} = \frac{L_{2D} - U_{p} * l_{p}}{l_{f}} \quad \text{and} \quad L_{2D} = \frac{q_{I,tot}}{\Delta \theta}$$

with:

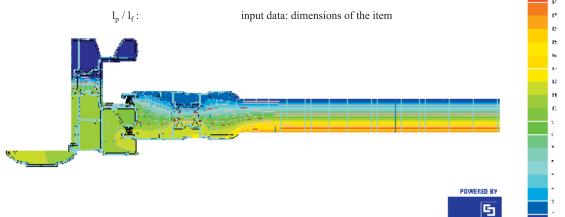
 $U_{\rm f}$ : thermal transmittance of the window frame [W/m  $^2$ K]

- $U_p$ : thermal transmittance of the flanking panel [W/m  $^2$ K]
- $l_{\rm p}$  : projected width of the flanking panel [m]
- $l_f$ : projected width of the window frame [m]
- L<sub>2D</sub>: two-dimensional coupling coefficient [W/mK]
- $q_{l,\text{tot}}$  : total heat flow through the window frame and the flanking panel [W/m]
- $\Delta \theta$ : temperature difference between inside ( $\theta$ i) and outside ( $\theta$ e) [K]

Calculation	It	em:	elite slidir	ng bisco re		
input data:	-	16.738 0.0 20.0	°C		$R_{se} =$ $R_{si} =$	0.04 m <sup>2</sup> K/W 0.13 m <sup>2</sup> K/W
		0.0241 0.035 1.165 0.190 0.1163	W/m*K W/m <sup>2</sup> K m	calculation results:	$L_{2D} = U_f =$	0.84 W/mK 5.29 W/m <sup>2</sup> K

$q_{l,tot}$ :	alphanumeric output heat losses per boundary condition
$\Delta \theta$ :	input data, surface boundary conditions: inside temperature minus outside temperature
U <sub>p</sub> :	calculation, using the following formula:

$$U_{p} = \left[\frac{1}{h_{e}} + \sum_{p} \frac{d_{p}}{\lambda_{p}} + \frac{1}{h_{i}}\right]$$
  
with:  $h_{e} / h_{i}$  ext./int. surface heat transfer coeff. [W/m<sup>2</sup>K  
 $d_{p}$  thickness of panel p [m]  
 $\lambda_{p}$  thermal conductivity of panel p [W/mK]



#### POWERED BY

TECHNOFORM BAUTEC

#### **THERMAL TRANSMITTANCE ACCORDING TO EN ISO 10077-2**

#### Theory

The thermal transmittance of a frame according to EN ISO 10077-2:

$$U_{f} = \frac{L_{2D} - U_{p} * l_{p}}{l_{f}} \qquad \text{and} \qquad L_{2D} = \frac{q_{l,tot}}{\Delta \theta}$$

with:

 $U_{f}$ : thermal transmittance of the window frame [W/m <sup>2</sup>K]

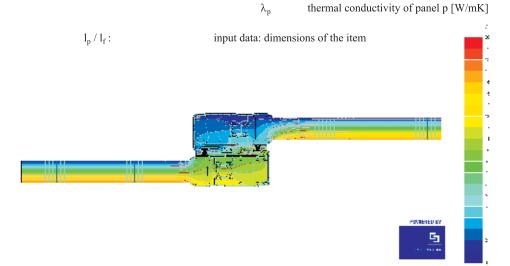
- $U_{p}$ : thermal transmittance of the flanking panel [W/m<sup>2</sup>K]
- l<sub>p</sub>: projected width of the flanking panel [m]
- l<sub>f</sub>: projected width of the window frame [m]
- L<sub>2D</sub>: two-dimensional coupling coefficient [W/mK]
- $q_{l,tot}$  : total heat flow through the window frame and the flanking panel  $\left[W/m\right]$
- $\Delta \theta$  : temperature difference between inside (  $\theta i)$  and outside (  $\theta e)$  [K]

Calculation	It	em:	elite slidi	ng central bisco re		
input data:	$\boldsymbol{\theta}_i =$	17.246 0.0 20.0	°C °C		$R_{se} =$ $R_{si} =$	0.04 m <sup>2</sup> K/W 0.13 m <sup>2</sup> K/W
	$U_p = l_p =$	1.165 0.380	W/m*K W/m <sup>2</sup> K m	calculation results:	$L_{2D} = U_f =$	0.86 W/mK <b>4 99 W/m<sup>2</sup>K</b>
	$l_{\rm f} =$	0.0841	m		$\mathbf{U}_{\mathbf{f}}$ =	4.99 W/m <sup>2</sup> K

$q_{l,tot}$ :	alphanumeric output heat losses per boundary condition
$\Delta \theta$ :	input data, surface boundary conditions: inside temperature minus outside temperature
U <sub>p</sub> :	calculation, using the following formula:
	$U = \left[\frac{1}{1+\sum} \frac{d_p}{p+1}\right]^{-1}$

$$U_{p} = \left[\frac{1}{h_{e}} + \sum_{p} \frac{\alpha_{p}}{\lambda_{p}} + \frac{1}{h_{i}}\right]$$
  
with:  $h_{e}/h_{i}$  ext./int. surface heat transfer coeff. [W/m<sup>2</sup>K d<sub>p</sub> thickness of panel p [m]

thickness of panel p [m] thermal conductivity of panel p [W/mK]

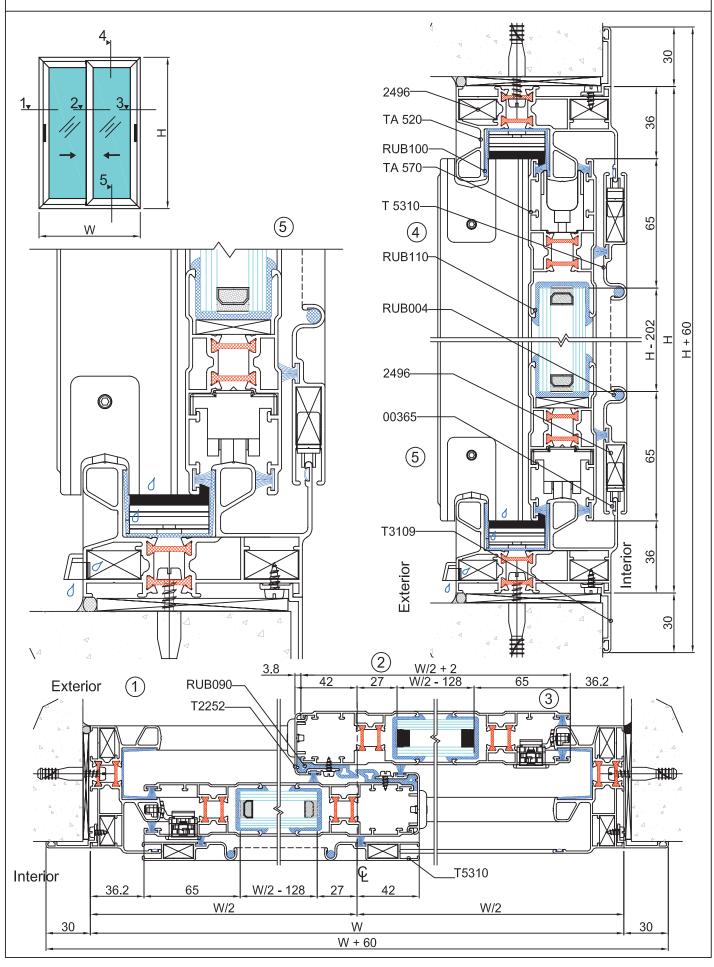


#### **POWERED BY**

TECHNOFORM BAUTEC

## SLIDING SERIES THERMAL BREAK WINDOWS AND DOORS SECTIONS

### ECO - 500



#### THERMAL BREAK DOUBLE SLIDING WINDOW

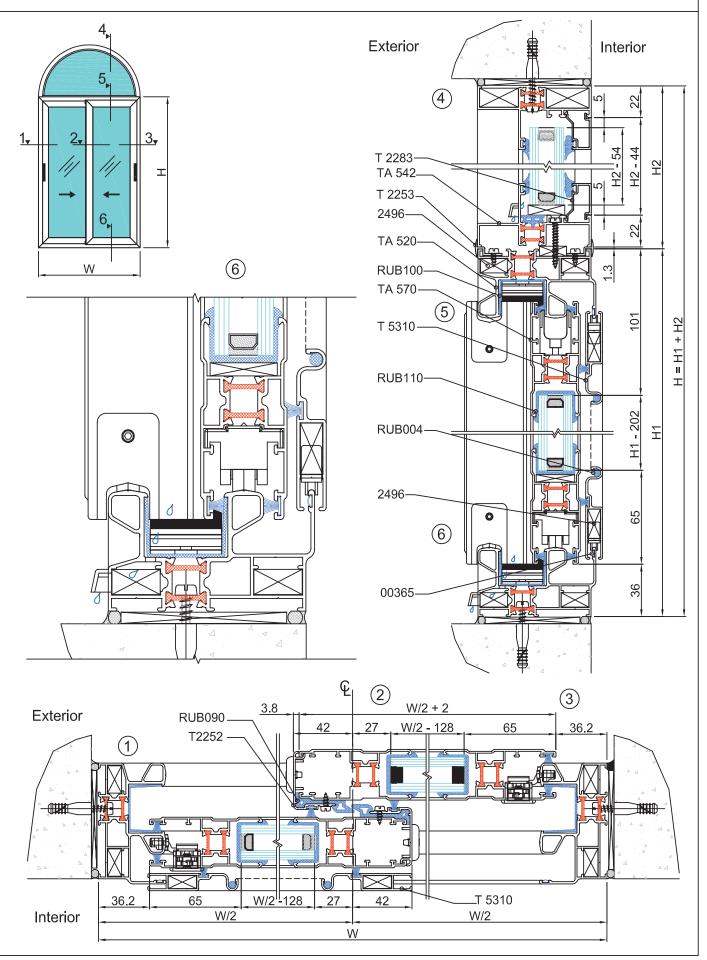
### ECO - 500

ITEM No.DESCRIPTION & SECTION SHAPEPROFILE No.PROFILE CUTTING ANGLECUTTING SIZENo. OF PIECESR1. $\begin{array}{c} \begin{array}{c} FRAME \\ WIDTH \end{array} \end{array}$ TA 520 $\begin{array}{c} \begin{array}{c} \begin{array}{c} 45^{\circ} \\ 45^{\circ} \end{array} \end{array}$ W022. $\begin{array}{c} \begin{array}{c} FRAME \\ HEIGHT \end{array} \end{array}$ TA 520 $\begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} 45^{\circ} \\ 45^{\circ} \end{array} \end{array}$ H023. $\begin{array}{c} \begin{array}{c} \begin{array}{c} SASH \\ HEIGHT \end{array} \end{array}$ TA 570 $\begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} 45^{\circ} \\ 45^{\circ} \end{array} \end{array}$ W/2 + 2044. $\begin{array}{c} \begin{array}{c} \begin{array}{c} SASH \\ HEIGHT \end{array} \end{array}$ TA 570 $\begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} 45^{\circ} \\ 45^{\circ} \end{array} \end{array}$ H - 72.6045. $\begin{array}{c} \end{array} \end{array}$ INTER LOCK \\ HEIGHT \end{array}T2252H - 72.602026. $\begin{array}{c} \begin{array}{c} FLY SCREEN \\ WIDTH \end{array}$ T5310 $\begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} 45^{\circ} \\ 45^{\circ} \end{array} \end{array}$ W/2 + 202	REMARKS W/2 + 2 H - 72.6 H - 72.6
1.Invasile WIDTHTA 520W022.FRAME HEIGHTTA 520 $45^{\circ}$ H023.Image: Sash WIDTHTA 570 $45^{\circ}$ W/2 + 2044.Image: Sash HEIGHTTA 570 $45^{\circ}$ H - 72.6045.Inter LOCK HEIGHTT2252H - 72.602	H - 72.6
2.HeiGHTTA 520H023. $\overrightarrow{\mathbf{IL}}$ $\overrightarrow{\mathbf{SASH}}$ TA 570 $\overrightarrow{\mathbf{45^{\circ}}}$ W/2 + 2044. $\overrightarrow{\mathbf{IL}}$ $\overrightarrow{\mathbf{SASH}}$ TA 570 $\overrightarrow{\mathbf{45^{\circ}}}$ H - 72.6045. $\overrightarrow{\mathbf{INTER LOCK}}$ T2252 $\overrightarrow{\mathbf{H-72.6}}$ 02	H - 72.6
3.   Image: Second product of the second pro	H - 72.6
4.     TA     5.     INTER LOCK HEIGHT     TA 570     H - 72.6     04       5.     INTER LOCK HEIGHT     T2252     H - 72.6     02	
HEIGHT 12252	H - 72.6
6. FLY SCREEN T5310 45° W/2 + 2 02	
7.     FLY SCREEN HEIGHT     T5310     45° H - 83     H - 83     02	
8.     J     ARCHITRIVE WIDTH     T 3109     45°     W + 60     02	
9.     J     ARCHITRIVE HEIGHT     T 3109     45°     H + 60     02	
10.     CORNER CLEAT FOR FRAME     2496     19.5     08	
11. CORNER CLEAT FOR FLY SCREEN 5278 8.5 04	
12.     CORNER CLEAT FOR SASH     5576     2.5     16	
ACCESSORIES LIST E.P.D.M. GASKET L	LIST
ITEM ACCESSORY No. CODE No. DESCRIPTION FINISH QTY ITEM GASKET DESCRIPTION No. CODE No. DESCRIPTION	DN QTY
	J GASKET 2W + 4H
2.     A1500     NYLON CORNER FOR SASH     M. F     08     2.     RUB 100     SLIDING FRAME	
3. 2314 DRAIN HOLE COVER M. F 02 3. RUB 090 INTER LOCK	
4. 03144 BUMP RUBBER M. F 04 4. RUB 004 FLY SCREEN	
5.     03143     DUST PLUG     M. F     02     5.     PB69-800-3P-HF     WEATHER PILE FOR       6.     03115     ROLLER     M. F     04     6.     PB69-800-4P     WEATHER PILE FOR FLY S	
6.     03115     ROLLER     M. F     04     6.     PB69-800-4P     WEATHER PILE FOR FLY 3       7.     02983     HANDLE     P. C     02     Image: Constraint of the second	SCREEN 1W + 2H
7.     02903     HANDLE     F. C     02       8.     03085     HANDLE KIT     M. F     02	

NOTE: SCREWS, FLY SCREEN ROLLER, ALUMINIUM MESH, SILICON & GLASS ARE NOT INCLUDED IN THE CUTTING LIST

## SLIDING SERIES THERMAL BREAK WINDOWS AND DOORS SECTIONS

ECO - 500



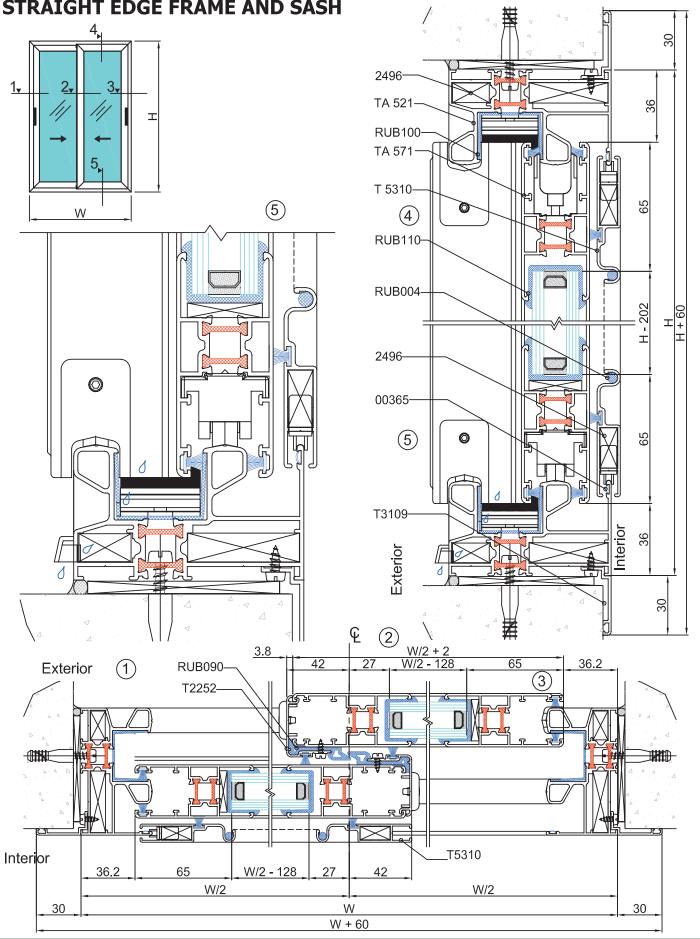
DO		SLIDING	WINDC	w w	ІТН -	ΓΟΙ	PF	IXLIT	E E C	CO - 5	O(			
			Р	ROFILE	CUTT	ING	LIS	ST	1	1				
EM No.		CRIPTION & ION SHAPE	PROFILE No.	PROFILE		angi	LE	CUTTING SIZE	No. OF PIECES	REMARKS				
1.		FRAME WIDTH	TA 520		45°	$\sum$		W	02					
2.		FRAME HEIGHT	TA 520		45°	$\geq$		Н	02					
3.	I	SASH WIDTH	TA 570	45° W/2 + 2 04 W/				W/2 -	2 + 2					
4.	I	SASH HEIGHT	TA 570		45°	$\geq$		H - 72.6	04	H - 7	2.6			
5.	_ <u>_</u>	INTER LOCK HEIGHT	T2252			]		H - 72.6	02	H - 7	2.6			
6.	Ċ H	FLY SCREEN WIDTH	T5310		45°	$\geq$		W/2 + 2	02	02				
7.	Ç H	FLY SCREEN HEIGHT	T5310		45°	$\geq$		H - 83	02					
8.	Ĵ	ARCHITRIVE WIDTH	T 3109		45°	$\geq$		W + 60	02					
9.	j	ARCHITRIVE HEIGHT	T 3109	45°			H + 60	02						
10.	-	CORNER CLEAT FOR FRAME	2496				19.5	08						
11.	F F	CORNER CLEAT FOR FLY SCREEN	5278			8.5	04							
12.		CORNER CLEAT FOR SASH	5576			2.5	16							
13.	<mark>, la</mark> rı	FIXLITE FRAME WIDTH	TA 542		45°	$\geq$		W	01					
14.		T4) ARCH FRAME	TA 542	45°		45°		(3.14 X D)/2	01	(3.14)	X D)/2			
15.	Л	GLASS BEAD FOR FIXLITE	T 2283			]		W - 44	01					
16.	Л	(T4) GLASS BEAD FOR FIXLITE	T 2283	45°	$\frown$	45°		∠ 45°		(3.14 X D)/2	01 (;		3.14 X D)/2	
17.	-4	ADOPTER	T 2253					W	02					
18.		CORNER CLEAT	2261			]		28	02	MILL F	INISH			
			 :с і іст					27		GASKET LIST				
ГЕМ	ACCESSOR	Y				ITEM		GASKET			SINGLE			
No.	CODE N			FINISH	QTY	No.	С	ODE No.	DESCRIPTION		LEAF			
1. 2.	00365 A1500	ALIGNMEN NYLON CORNE		M.F M.F	04 08	1. 2.		3 110 3 100			2W + 4H 2W + 2H			
2. 3.	2314		HOLE COVER	M.F M.F	08	2.		3 100 3 090	5LI	DING FRAME GASKET	200 + 2H			
3. 4.	03144		JMP RUBBER	M.F M.F	04	3. 4.		3 090 3 004		FLY SCREEN GASKET	1W + 2H			
4. 5.	03144		DUST PLUG	M.F M.F	04	4. 5.		3 004 3 010		IAL BARRIER GASKET	1W + 2H			
5. 6.	03143		ROLLER	M.F	02	5. 6.		3 055		IAL GLAZING GASKET	1W + 2H			
7.	02983		HANDLE	P.C	04	7.		3 065		AL GLAZING GASKET	1W + 2H			
8.	02905		HANDLE KIT	M.F	02	8.		9-800-3P-HF		THER PILE FOR SASH	4W + 6H			

NOTE: SCREWS, FLY SCREEN ROLLER, ALUMINIUM MESH, SILICON & GLASS ARE NOT INCLUDED IN THE CUTTING LIST

#### **SLIDING SERIES THERMAL BREAK** WINDOWS AND DOORS SECTIONS

#### STRAIGHT EDGE FRAME AND SASH





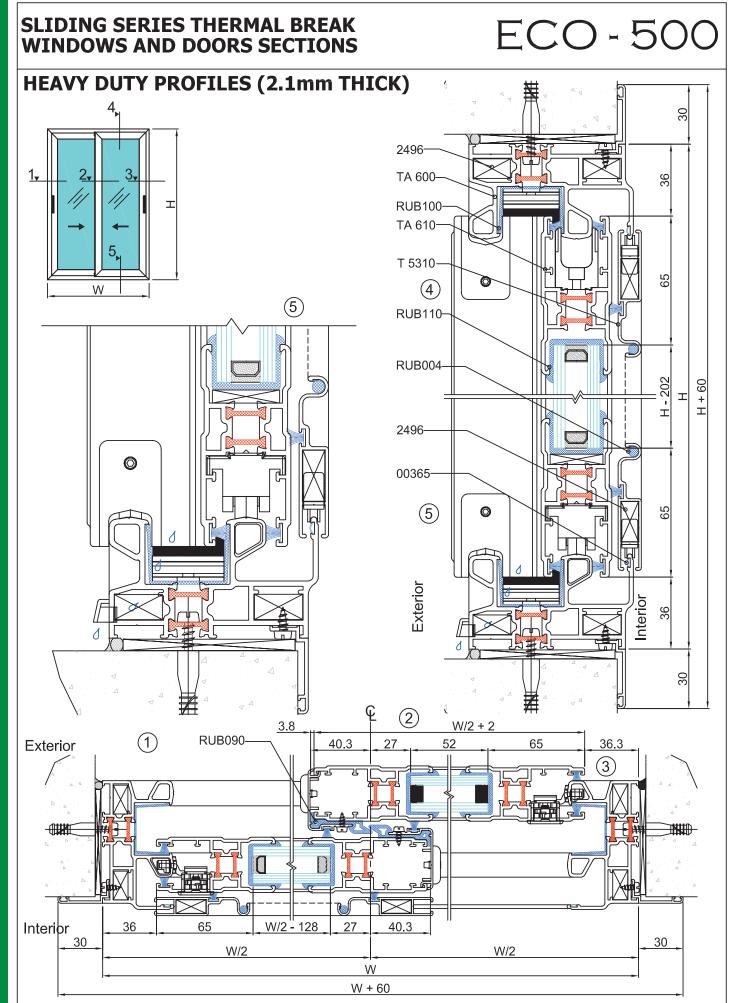
Windows and Doors Elevation sectional details

#### THERMAL BREAK DOUBLE SLIDING WINDOW STRAIGHT EDGE FRAME AND SASH

	PROFILE CUTTING LIST											
ITEM No.		RIPTION & N SHAPE	PROFILE No.	PROFILE		ANGI	.E	CUTTING SIZE	No. OF PIECES	REMARKS		
1.	3.el	FRAME WIDTH	TA 521		45°	2		W	02			
2.	3.el	FRAME HEIGHT	TA 521		45°	2		Н	02			
3.		SASH WIDTH	TA 571		45°	$\geq$		W/2 + 2	04	W/2 + 2		
4.		SASH HEIGHT	TA 571		45°	$\geq$		H - 72.6	04	H - 72	2.6	
5.	INTER LOCK T2252		T2252				H - 72.6	02	H - 72.6			
6.	FLY SCREEN T5310		45°				W/2 + 2	02				
7.	Î	FLY SCREEN HEIGHT	T5310		45°	$\geq$		H - 83	02			
8.	ARCHITRIVE T 3109						W + 60	02				
9.	j	ARCHITRIVE HEIGHT	T 3109			2		H + 60	02			
10.	je C	FOR FRAME	2496					19.5	08			
11.		ORNER CLEAT	5278		]		8.5	04				
12.	C C	FOR SASH	5576			]		2.5	16			
		CESSORIE	S LIST					E	P.D.M. C	SASKET LIST		
ITEM No.	ACCESSORY CODE No.	DESCRIPT	ION	FINISH	QTY	ITEM No.		GASKET CODE No.	D	ESCRIPTION	QTY	
1.	00365	ALIGNMEN		M.F	04	1.		3 110			2W + 4H	
2.	A1500	NYLON CORNE		M.F	08	2.	-	3 100			2W + 2H	
3.	2314		IOLE COVER	M.F	02	3.		3 090	INTER LOCK GASKET		2H	
4.	03144	BL	JMP RUBBER	M.F	04	4.		3 004		FLY SCREEN GASKET	1W + 2H	
5.	03143		DUST PLUG	M.F	02	5.		9-800-3P-HF		THER PILE FOR SASH	4W + 6H	
6.	03115		ROLLER	M.F	04	6.	PB6	9-800-4P	WEATHERF	PILE FOR FLY SCREEN	1W + 2H	
7.	02983			P.C	02							
↓ <sup>0</sup> .	03094		HANDLE KIT	M.F	02							

ECO - 500

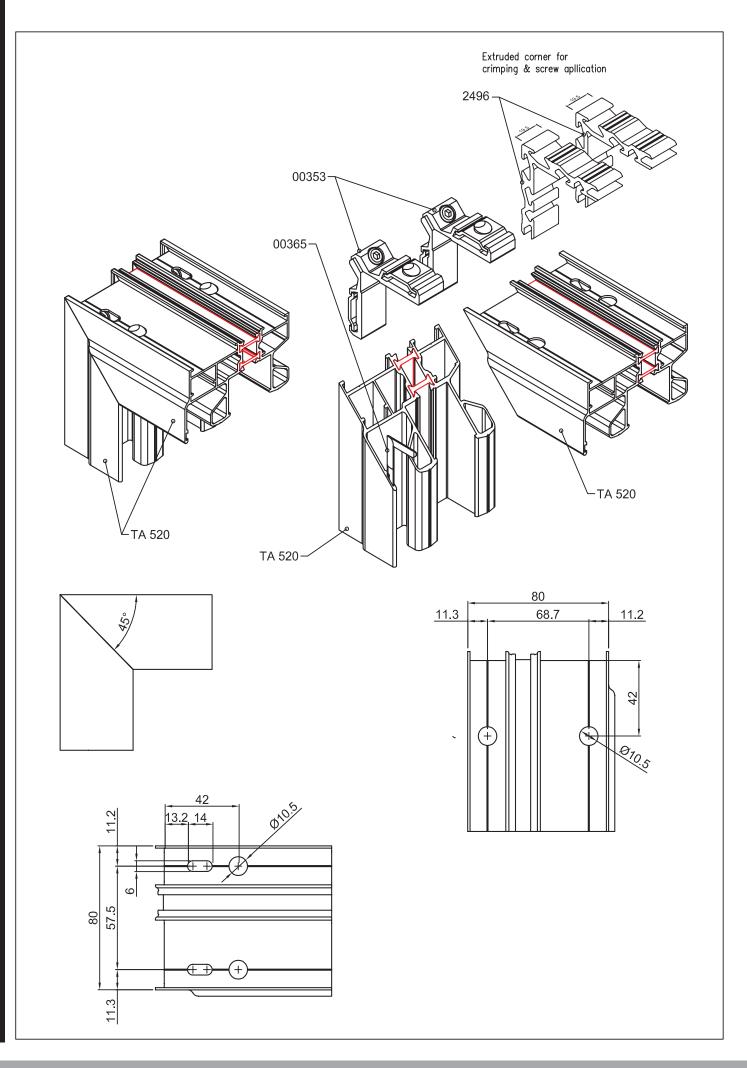
NOTE: SCREWS, FLY SCREEN ROLLER, ALUMINIUM MESH, SILICON & GLASS ARE NOT INCLUDED IN THE CUTTING LIST

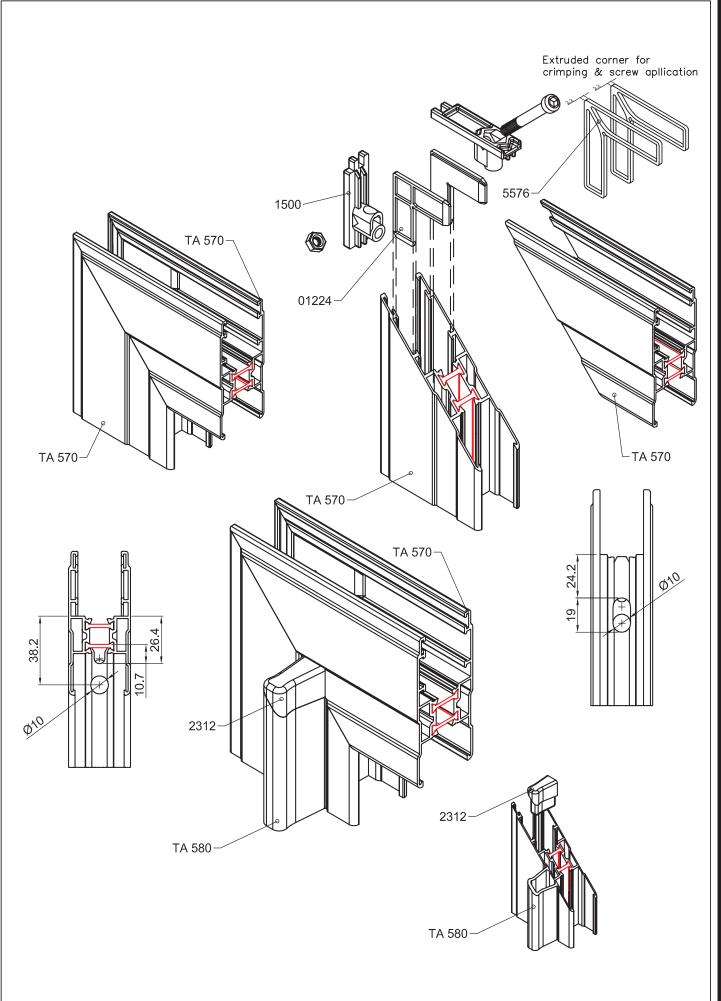


#### THERMAL BREAK DOUBLE SLIDING WINDOW HEAVY DUTY PROFILES (2.1mm THICK) ECO - 500

			P	ROFILE	CUTT	ING	LIS	БТ					
ITEM No.		RIPTION & ON SHAPE	PROFILE No.	PROFILE		angi	_E	CUTTING SIZE	No. OF PIECES	REMARKS			
1.	S El	FRAME WIDTH	TA 600		45°	$\geq$		W	02				
2.	9 PJ	FRAME HEIGHT	TA 600		45°	$\geq$		Н	02				
3.		SASH WIDTH	TA 610		45°	$\geq$		W/2 + 2	04	W/2 + 2			
4.		SASH HEIGHT	TA 610		45°	$\geq$		H - 72.6	04	H - 72	72.6		
5.	_ <u></u> _	INTER LOCK HEIGHT T2252					H - 72.6	02	H - 72	2.6			
6.	<b>Č</b>	FLY SCREEN WIDTH	T5310		45°	$\geq$		W/2 + 2	02				
7.	r H	FLY SCREEN HEIGHT	T5310		45°	$\geq$		H - 83	02				
8.	j	ARCHITRIVE WIDTH	T 3109		45°		45°			W + 60	02		
9.	j	ARCHITRIVE HEIGHT	T 3109	45°		$\geq$		H + 60	02				
10.	je C	FOR FRAME	2496					19.5	08				
11.		CORNER CLEAT OR FLY SCREEN	5278					8.5	04				
12.		FOR SASH	5576			]		2.5	16				
	A	CCESSORIE	S LIST					E	P.D.M. C	SASKET LIST			
ITEM No.	ACCESSORY CODE No.	DESCRIPT	ION	FINISH	QTY	ITEM No.		GASKET CODE No.	DE	SCRIPTION	QTY		
1.	00365	ALIGNMEN	L CORNER	M.F	04	1.	RUE	3 110			2W + 4H		
2.	A1500	NYLON CORNE		M.F	08	2.		3 100			2W + 2H		
3.	2314		IOLE COVER	M.F	02	3.		3 090	INTER LOCK GASKET		2H		
4.	03144	BL	JMP RUBBER	M.F	04	4.		3 004	10.000	FLY SCREEN GASKET	1W + 2H		
5.	03143		DUST PLUG	M.F	02	5.	<u> </u>	9-800-3P-HF		THER PILE FOR SASH	4W + 6H		
6. 7.	03115		ROLLER HANDLE	M.F P.C	04 02	6.	1PB6	9-800-4P	WEATHERF	PILE FOR FLY SCREEN	1W + 2H		
8.	02985		HANDLE KIT	M.F	02								
°.	03003				02								

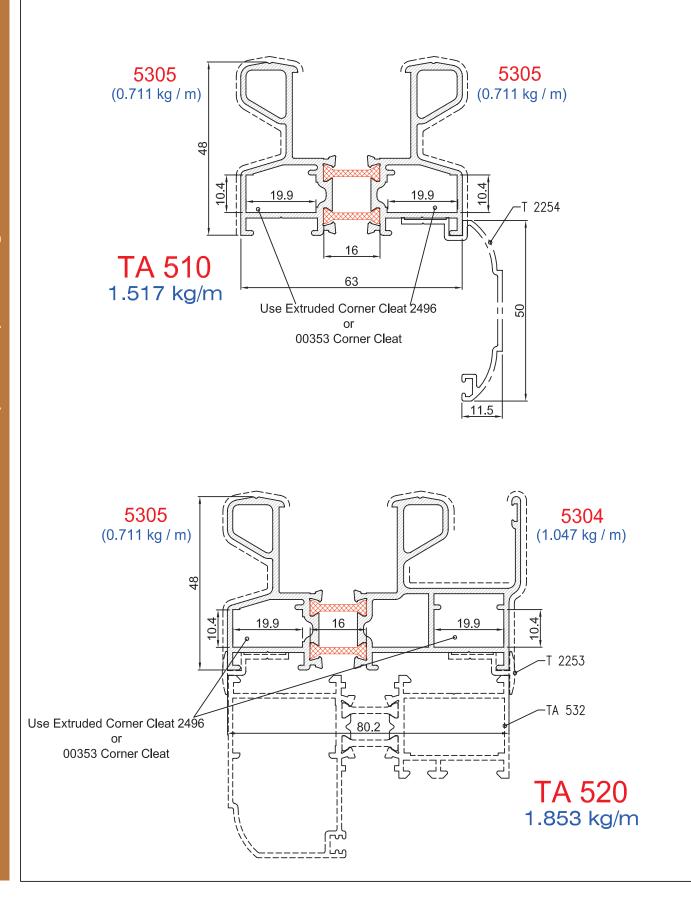
NOTE: SCREWS, FLY SCREEN ROLLER, ALUMINIUM MESH, SILICON & GLASS ARE NOT INCLUDED IN THE CUTTING LIST





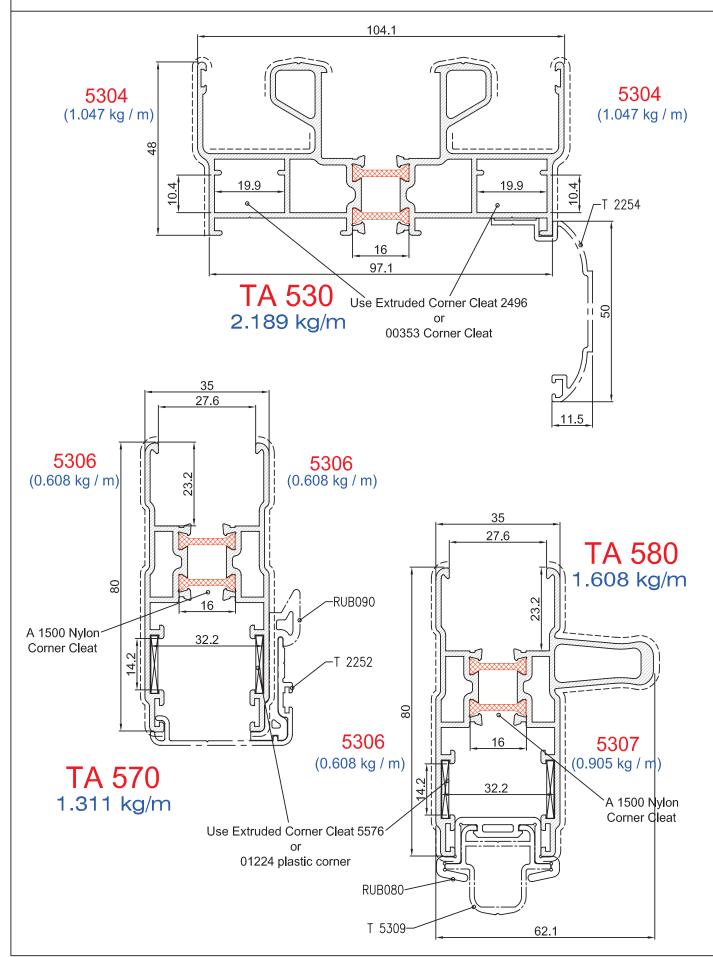
#### **SLIDING SERIES THERMAL BREAK WINDOWS AND DOORS SECTIONS**

## ECO - 500

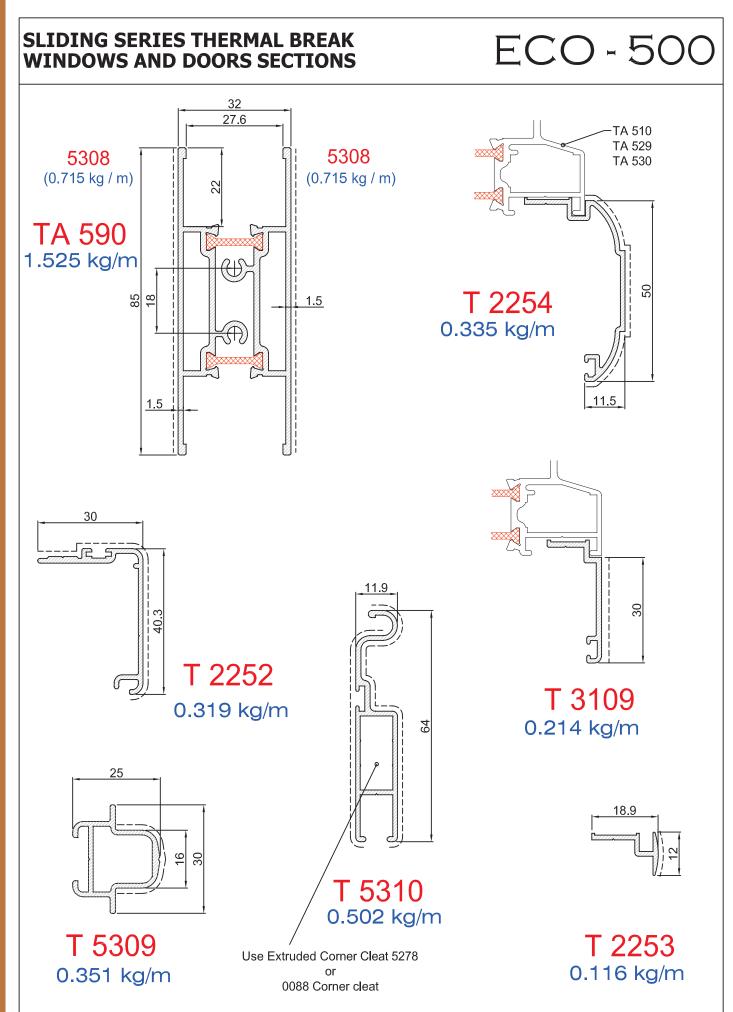


#### **SLIDING SERIES THERMAL BREAK WINDOWS AND DOORS SECTIONS**



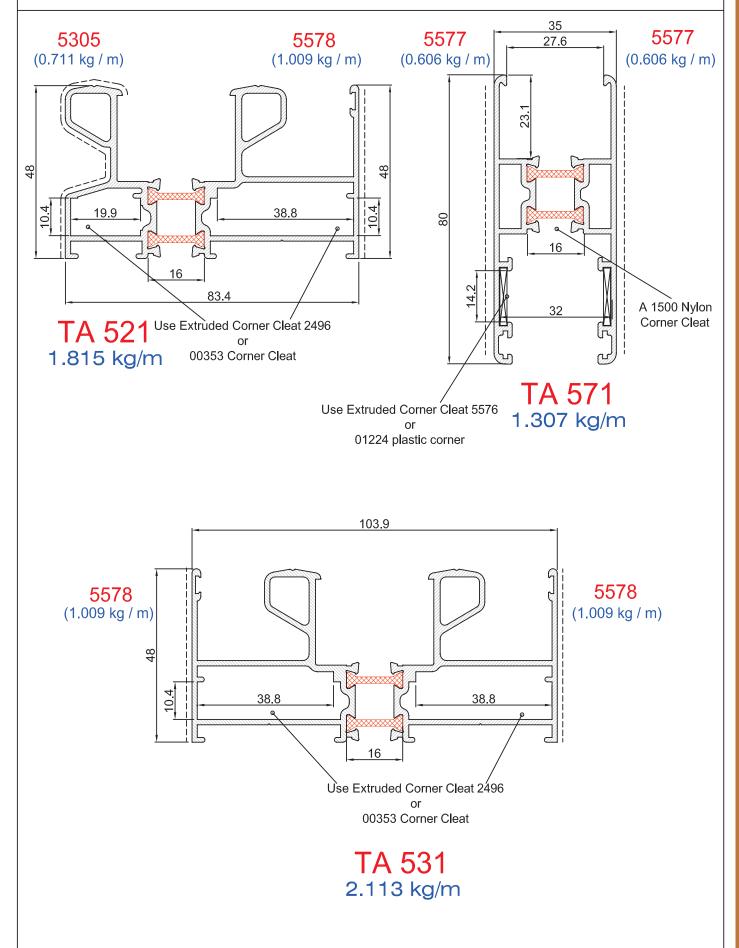


Sections (Profiles) Drawings



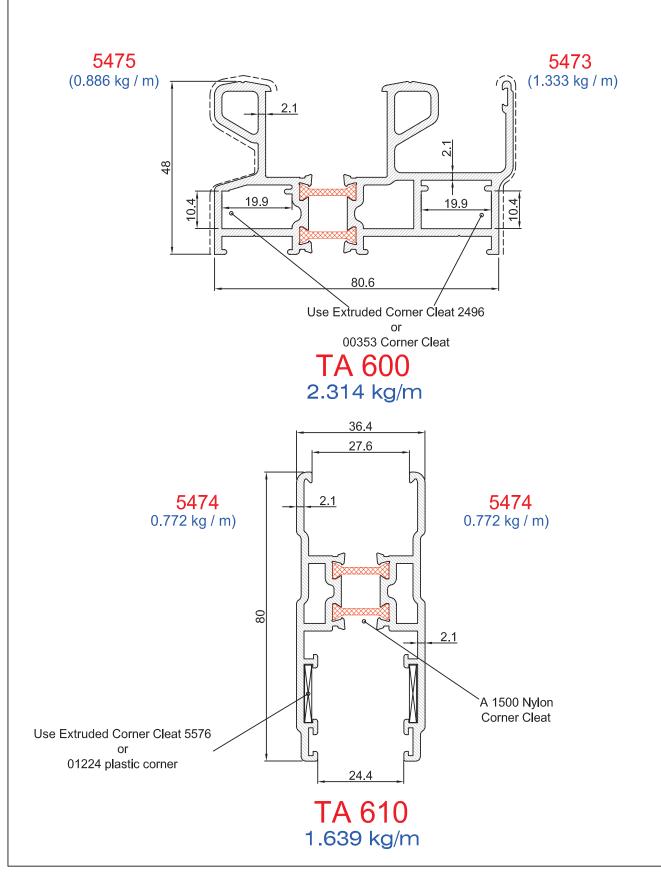
Sections (Profiles) Drawings

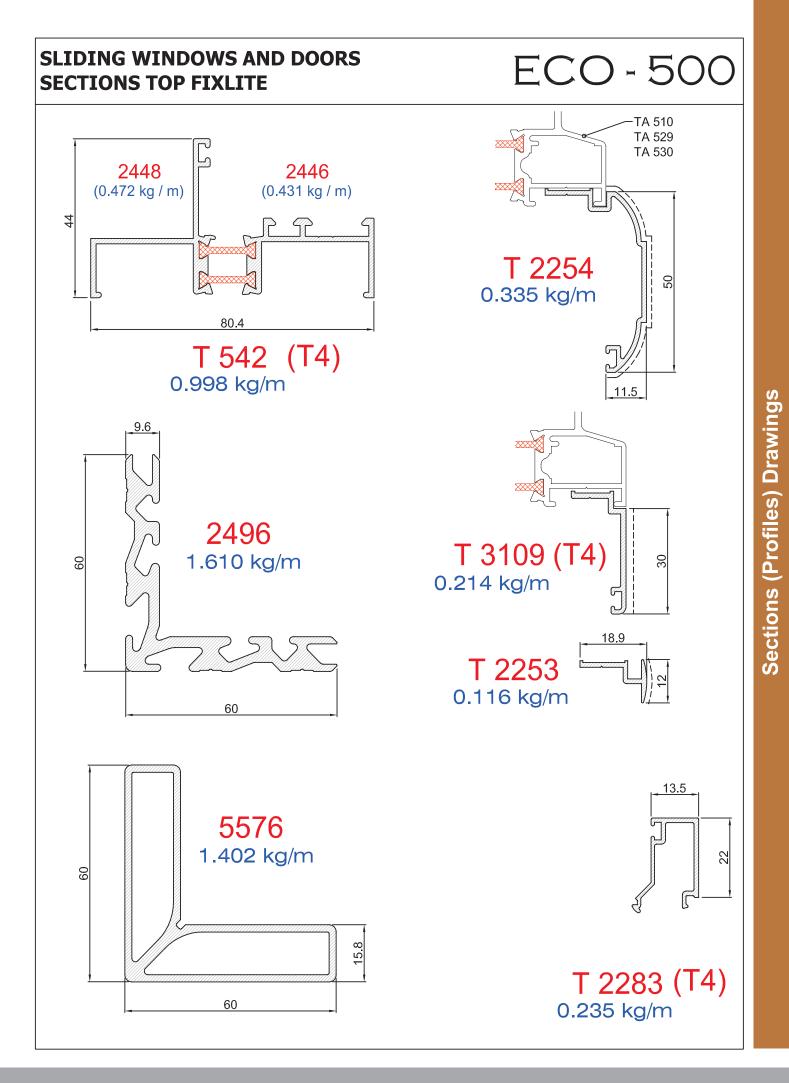
#### SLIDING SERIES THERMAL BREAK WINDOWS AND DOORS SECTIONS



#### SLIDING SERIES THERMAL BREAK WINDOWS AND DOORS SECTIONS HEAVY DUTY PROFILES (2.1mm THICK)

ECO - 500





#### THERMAL BREAK SLIDING SERIES SECTIONS MOMENT OF INERTIA



×   × ×	Sec. No.	<b> XX'</b> (CM <sup>4</sup> )	lyy <sup>ı</sup> (CM⁴)		Sec. No.	IXX <sup>I</sup> (CM <sup>4</sup> )	(CM <sup>4</sup> )	
	TA 510	11.51	22.20					
	TA 511	14.64	64.74					
	TA 512	19.61	72.83					
	TA 520	13.29	44.07					
	TA 521	13.24	45.12					
	TA 530	15.06	76.12					
	TA 531	14.96	77.66					
	TA 542	17.71	03.50					
	TA 570	19.09	08.84					
	TA 571	19.13	08.96					
	TA 580	20.97	19.43					
	TA 590	21.98	07.64					
	TA 600	16.34	58.83					
	TA 610	24.40	12.09					