

# ALUMINTECHNO, JLLC COMPUTER SIMULATION REPORT

SCOPE OF WORK W72 FIXED WINDOW - NFRC 100/200/500

**REPORT NUMBER** L3930.01-116-45 R1

**TEST DATE** 03/29/21

 ISSUE DATE
 REVISION DATE

 04/15/21
 04/28/21

**RECORD RETENTION END DATE** 03/29/26

PAGES

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#### **TEST REPORT FOR ALUMINTECHNO, JLLC**

Report No: L3930.01-116-45 R1 Date: 04/28/21

#### **REPORT ISSUED TO**

# ALUMINTECHNO, JLLC

Selitskogo str., 12/211 FEZ "Minsk" Minsk Region, Minsk Area 220075, **REPUBLIC OF BELARUS** 

# **SECTION 1**

SUMMARY

# SERIES/MODEL: W72 Fixed Window

Architectural Testing, Inc. (an Intertek company) dba Intertek Building & Construction (B&C) was contracted to perform U-Factor, Solar Heat Gain Coefficient, Visible Transmittance and Condensation Resistance simulations in accordance with the National Fenestration Rating Council (NFRC).

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. Intertek B&C will service this report for the entire test record retention period. The test record retention period ends five years after the test date. Test records, such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation, will be retained for the entire test record retention period.

FOR INTERTEK B&C:				
COMPLETED BY:	Jonathan Spencer	<b>REVIEWED BY:</b>	Eric S. Leitner	
			Manager - Simulations	
TITLE:	Project Engineer	TITLE:	and Thermal Testing, SIRC	
SIGNATURE:		SIGNATURE:		
DATE:	04/28/21	DATE:	04/28/21	
JPS:jps				

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# SECTION 2 TEST METHODS

The products were evaluated in accordance with the following:

ANSI/NFRC 100-2020, Procedure for Determining Fenestration Product U-Factors

**ANSI/NFRC 200-2020,** Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence

*NFRC 500-2017, Procedure for Determining Fenestration Product Condensation Resistance Values* 

\*Condensation Resistance results obtained from this procedure are for controlled laboratory conditions and do not include the effects of air movement through the specimen, solar radiation, and the thermal bridging that may occur due to the specific design and construction of the fenestration system opening.

Ratings values included in this report are for submittals to an NFRC-licensed IA and are not meant to be used directly for labeling purposes. Only those values identified on a valid Certificate of Authorization (CA) by an NFRC accredited Inspection Agency (IA) are to be used for labeling purposes. The ratings values were rounded in accordance with NFRC 601, NFRC Unit and Measurement Policy.

Intertek B&C is an NFRC accredited simulation laboratory and all simulations were conducted in full compliance with NFRC approved procedures and specifications. The values included in this report are not considered in compliance with ANSI/NFRC 100, ANSI/NFRC 200, and/or NFRC 500 unless the associated validation test requirements have been satisfied, as applicable.



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# SECTION 3

**TEST PROCEDURE** 

The total product, including specific frame, spacer, and glass details, was modeled using NFRC approved software.

FRAME AND EDGE MODELING	THERM 7.4.4
CENTER-OF-GLASS MODELING	WINDOW 7.4.14
TOTAL PRODUCT CALCULATIONS	WINDOW 7.4.14
SPECTRAL DATA LIBRARY	IGDB 78.0

# Modeling Assumptions / Technical Interpretations

Any modeling assumptions and technical interpretations required to model this product are listed below.

1) To prevent air infiltration, tape was applied to all interior sash crack locations.

# **SECTION 4**

# SIMULATION SPECIMEN DESCRIPTION

SERIES/MODEL	W72 Fixed Window
PRODUCT TYPE	Fixed, 4-Sided
FRAME MATERIAL	AT - Aluminum w/ Thermal Breaks - All Members
SASH MATERIAL	NA - Not Applicable
STANDARD SIZE	1200mm x 1500mm



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# **SECTION 4 (Continued)**

# SIMULATION SPECIMEN DESCRIPTION

SPACER OPTIONS				
TYPE PRIMARY SEAL SECONDARY SEAL CODE				
Ensinger Thermix TX.N spacer	Butyl Rubber	Butyl Rubber	TS-D	

GRID OPTIONS		
GRID SIZE	GRID TYPE	GRID PATTERN
8mm x 18mm	Aluminum Contour Grid (Painted)	NFRC Standard
8mm x 25mm	Aluminum Contour Grid (Painted)	NFRC Standard
17mm, 27mm, 47mm	SDL Bar	

REINFORCEMENT OPTIONS		
LOCATION MATERIAL		
None	-	

GAS FILLING TECHNIQUE		
FILL TYPE	METHOD	
90% Argon	Evacuated Chamber	
97% Argon	Evacuated Chamber	

EDGE-OF-GLASS CONSTRUCTION		
INTERIOR CONDITION Aluminum glazing bead with EPDM gasket against glass		
EXTERIOR CONDITION		

WEATHERSTRIPPING			
ТҮРЕ	QUANTITY	LOCATION	
None	-	-	

FRAME/SASH MATERIALS FINISH		
INTERIOR	Painted Aluminum	
EXTERIOR	Painted Aluminum	

VALIDATION MATRIX*	
PRODUCT LINE	REPORT NUMBER
None	-

\*These products are part of a validation matrix. Only one is required for validation testing.



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# SECTION 5

# SPECIALTY PRODUCTS TABLE

The specialty products method allows the manufacturer to determine the overall product SHGC and VT for any glazing option. The center of glass SHGC and/or VT must be determined using WINDOW 7.4.14. The method calculates overall product SHGC and VT indexed on center of glass properties. All values used in the calculations are truncated to six decimal place precision.

	No Dividers	Dividers < 1	Dividers > 1
SHGC0	0.004595	0.007464	0.010173
SHGC1	0.830211	0.746094	0.666656
VT0	0.000000	0.000000	0.000000
VT1	0.825617	0.738630	0.656483

SHGC = SHGC0 + SHGCc (SHGC1 - SHGC0)

VT = VT0 + VTc (VT1 - VT0)



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# **SECTION 6**

### SIMULATION RESULTS

ΤΟΤΑ	L PRO	DUCT (	CALCU	LATIOI	<mark>NS (W</mark>	72 Fixe	d Win	dow)				
lumber	Pane Thickness 1 (in)	Gap Width 1 (in)	Pane Thickness 2 (in)	Gap Width 2 (in)	Pane Thickness 3 (in)	Gap Width 3 (in)	Pane Thickness 4 (in)	Gap Fill	Low-e (Surface #)	Tint	Spacer	Grid Type
Option Number		J-Facto J/Hr-Ft				t Gain ( (SHGC) lone / <			Visible Transmit (VT) Grids (None / <1		Resi	ensation stance CR)
1	SB60 / a	arg90 /	clr (6mn	n/6mm)	25.4mr	n						
	0.223	0.500	0.223					ARG90	0.035(#2)	CL	TS-D	N,G,S
	U-Facto	or	0.28	SHGC(N/	<1/>1)	0.3	2 / 0.29	/ 0.26	vt(n/<1/>1) 0.58 / 0.5	2 / 0.46	CR	60
2	SB67 / a	arg90/	clr (6mn	n/6mm)	25.4mr	n		_		-		
	0.223	0.500						ARG90	0.035(#2)	CL	TS-D	N,G,S
	U-Facto	or	0.28	SHGC(N/	<1/>1)	0.2	4 / 0.22	/ 0.20	vt(n/<1/>1) <b>0.44 / 0.4</b>	0 / 0.35	CR	60
3	SB70 / a	arg90/	clr (6mn	n/6mm)	25.4mr	n						
	0.223	0.500	0.223					ARG90	0.018(#2)	CL	TS-D	N,G,S
	U-Facto			SHGC(N/				-	vt(n/<1/>1) 0.53 / 0.4	8 / 0.42	CR	61
4 SunGuard SN 70/3				/ arg90	/ clr (61	mm/6mi	m) 30m	m				
	0.230	0.709	0.230					ARG90	( )	CL	TS-D	N,G,S
	U-Facto			SHGC(N/					vt(n/<1/>1) 0.57 / 0.5	<mark>1 / 0.45</mark>	CR	61
5		-		60 / arg9	0 / clr (	6mm/6n	nm) 30r			1		
		0.709	0.230					ARG90	( )	CL	TS-D	N,G,S
	U-Facto			SHGC(N/					vt(n/<1/>1) <b>0.46 / 0.4</b>	1 / 0.36	CR	60
6				-	SunGua	rd SN 70	)/35 HT		imm) 30mm	1		
		0.709	0.230						0.026(#2) / 0.025(#3)		TS-D	N,G,S
<u> </u>	U-Facto			SHGC(N/				/ 0.17	vt(n/<1/>1) 0.42 / 0.3	8 / 0.34	ĊR	62
7				/ clr (6n	nm/6mr	n) 32mn	1					
		0.787	0.223					ARG90		CL	TS-D	N,G,S
	U-Facto			SHGC(N/				-	vt(n/<1/>1) 0.58 / 0.5	2 / 0.46	CR	59
8				/ Planib								
	0.230								0.021(#2) / 0.04(#3)		TS-D	N,G,S
	U-Facto			SHGC(N/·				/ 0.24	vt(n/<1/>1) 0.57 / 0.5	1/0.45	CR	60
9			-	/ clr (6m	im/6mr	n) 32mn	1		0.005(110)	C	TCD	NGG
	0.233	0.787	0.223					ARG90		CL	TS-D	N,G,S
10	U-Facto			SHGC(N/			9 / 0.26	-	vt(n/<1/>1) 0.55 / 0.4	9/0.44	CK	59
10			1	/ Planib	ентор N	1+1 (6mr	n/omm	1	0.025(#2) / 0.04(#2)	C		NICC
	0.233	0.787	0.230						0.025(#2) / 0.04(#3)		TS-D	N,G,S
	U-Facto	or 👘	0.28	SHGC(N/	<1/>1)	0.2	9 / 0.26	/ 0.23	vt(n/<1/>1) 0.54 / 0.4	8/0.43	CR	60



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# SECTION 6 (Continued)

# SIMULATION RESULTS

TOTA	OTAL PRODUCT CALCULATIONS (W72 Fixed Window)											
lumber	Pane Thickness 1 (in)	Gap Width 1 (in)	Pane Thickness 2 (in)	Gap Width 2 (in)	Pane Thickness 3 (in)	Gap Width 3 (in)	Pane Thickness 4 (in)	Gap Fill	Low-e (Surface #)	Tint	Spacer	Grid Type
Option Number	U-Factor (Btu/Hr-Ft2-F)			Solar Heat Gain Coefficient (SHGC) Grids (None / <1 / >=1)			Visible Transmit (VT) Grids (None / <1		Resi	ensation stance CR)		
11	Suncoo	l 70/35	/ arg90	/ Planib	el Top N	l+T (6mr	n/6mm	) 32mm				
	0.230	0.787	0.230					ARG90	0.021(#2) / 0.04(#3)	CL	TS-D	N,G,S
	U-Facto	or	0.29	SHGC(N/	<1/>1)	0.3	0 / 0.27		VT(N/<1/>1) 0.57 / 0.5		CR	60
12	Suncoo	l 70/35	/ arg97	/ Optith	erm S3	ProT (6r	nm/6m	m) 32mı	m			
	0.230	0.787	0.229					ARG97	0.021(#2) / 0.037(#3)	CL	TS-D	N,G,S
	U-Facto	or	0.28	SHGC(N/	<1/>1)	0.3	0 / 0.27	/ 0.24	vt(n/<1/>1) 0.57 / 0.5	1 / 0.46	CR	60
13	Suncoo	l 66/33	/ arg90	/ Planib	el Top N	l+T (6mr	n/6mm	) 32mm				
	0.233	0.787	0.230					ARG90	0.025(#2) / 0.04(#3)	CL	TS-D	N,G,S
	U-Facto	or	0.29	SHGC(N/·	<1/>1)	0.2	9 / 0.26	/ 0.23	vt(n/<1/>1) 0.54 / 0.4	8 / 0.43	CR	60
14 Suncool 66/33 / arg97 / Optitherm S3 ProT (6mm/6mm) 32mm				m	-							
	0.233	0.787	0.229					ARG97	0.025(#2) / 0.037(#3)	CL	TS-D	N,G,S
	U-Facto			SHGC(N/				-	vt(n/<1/>1) 0.55 / 0.4	9 / 0.43	CR	60
15			/ arg90	/ Strato	phone 6	6.2 (6m	m/12m					
	0.230	0.787	0.491					ARG90		CL	TS-D	N,G,S
	U-Facto			SHGC(N/					vt(n/<1/>1) 0.56 / 0.5	0 / 0.45	CR	60
16												
	0.333	0.787	0.491						0.038(#2) / 0.033(#3)		TS-D	N,G,S
	U-Facto			SHGC(N/					VT(N/<1/>1) 0.59 / 0.5			64
17			-	-		rg97/ Տւ	unGuarc		35 HT (6mm/6mm/6			
	0.230	0.709							0.025(#2) / 0.025(#5)		TS-D	N,G,S
	U-Facto			SHGC(N/					VT(N/<1/>1) 0.44 / 0.3		CR	66
18									6mm/6mm/6mm) 54			
			-						0.021(#2) / 0.037(#5)		TS-D	N,G,S
40	U-Facto			SHGC(N/					VT(N/<1/> 1) 0.51 / 0.4		CR	66
19	-		1	1		977 Plan	ibel lop		nm/6mm/6mm) 58m		TOD	NGG
	0.230	0.787	0.223						0.021(#2) / 0.04(#5)		TS-D	N,G,S
20	U-Facto			SHGC(N/·			-	-	VT(N/<1/>) 0.51 / 0.4	-		<b>66</b>
20	-	-	-	-		-			g97/ Planibel Top N+T (4)			
	0.152	0.551	0.152	0.630	0.152						TS-D	N,G,S
	U-Facto	or	0.13	SHGC(N/	<1/>1)	0.3	4 / 0.31	/ 0.28	VT(N/<1/>1) 0.51 / 0.4	5 / 0.40	CR	66



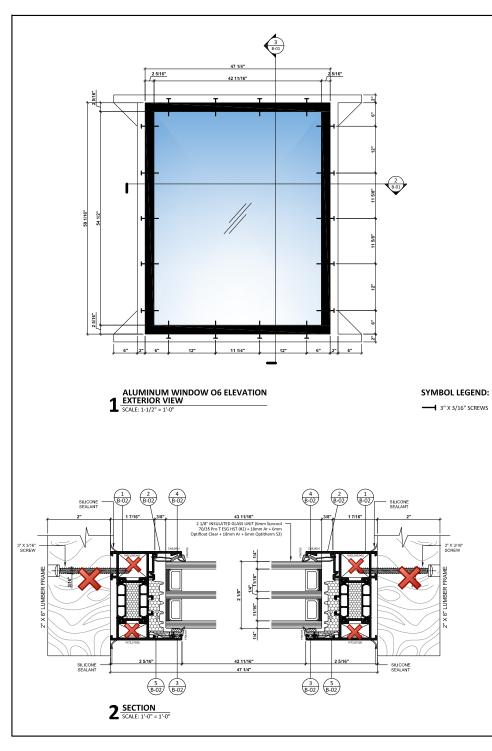
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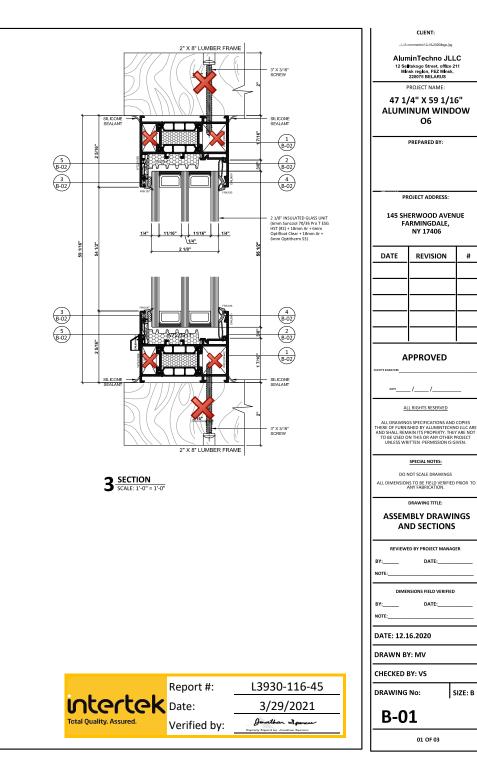
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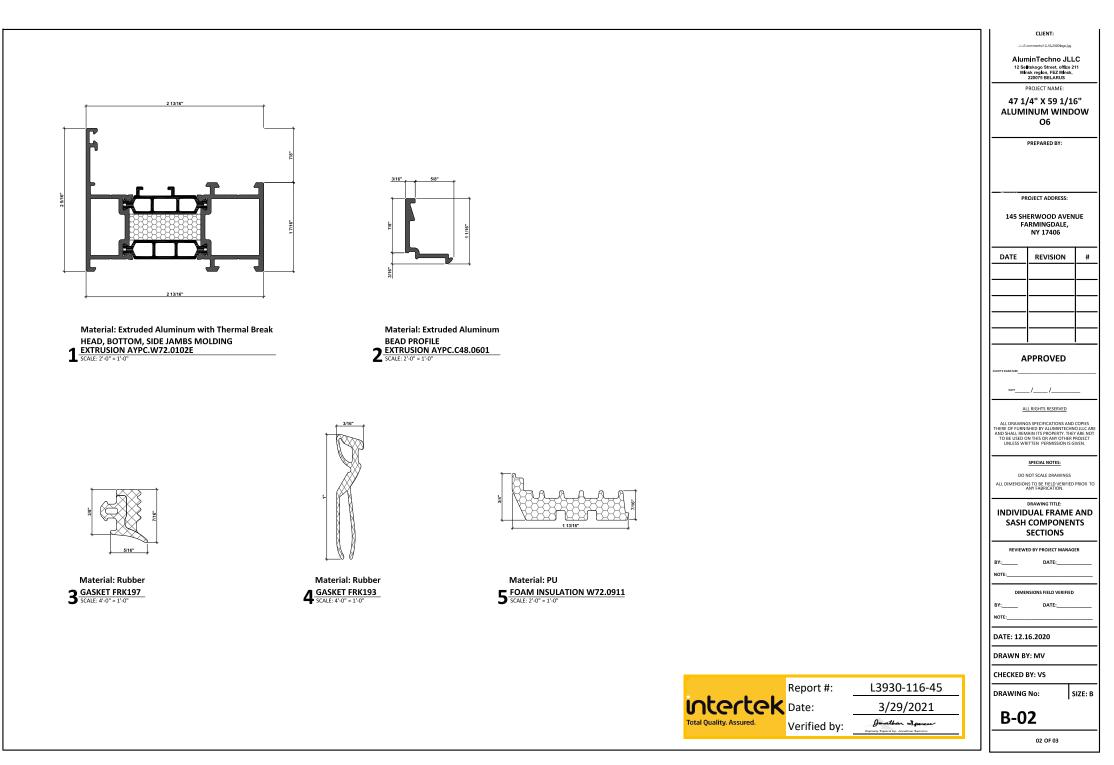
# **SECTION 7**

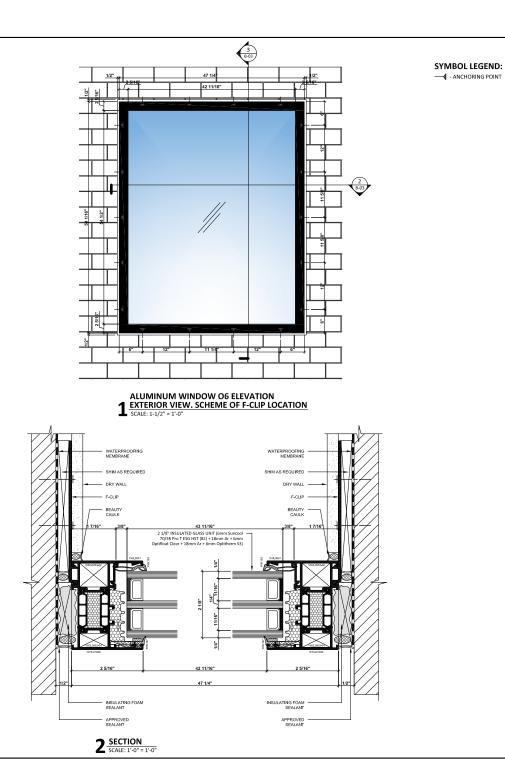
**DRAWINGS / BILL OF MATERIALS** 

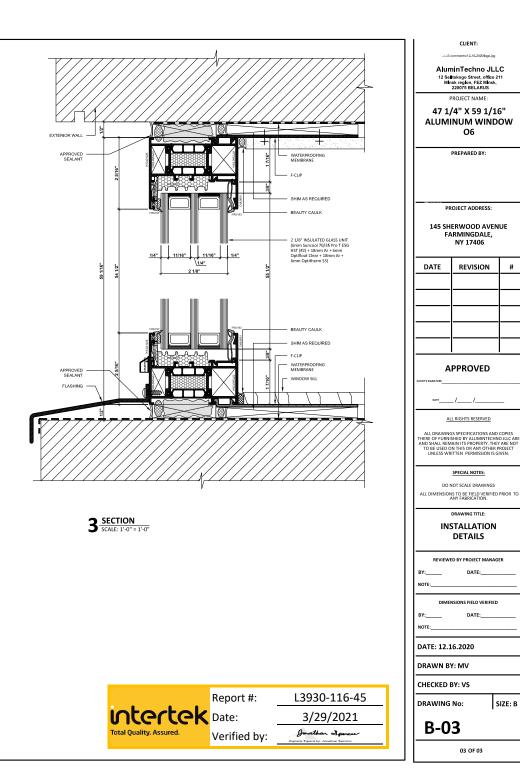
The drawings which follow have been reviewed by Intertek B&C and are representative of the simulation results reported herein. Any deviations are documented herein or on the drawings.



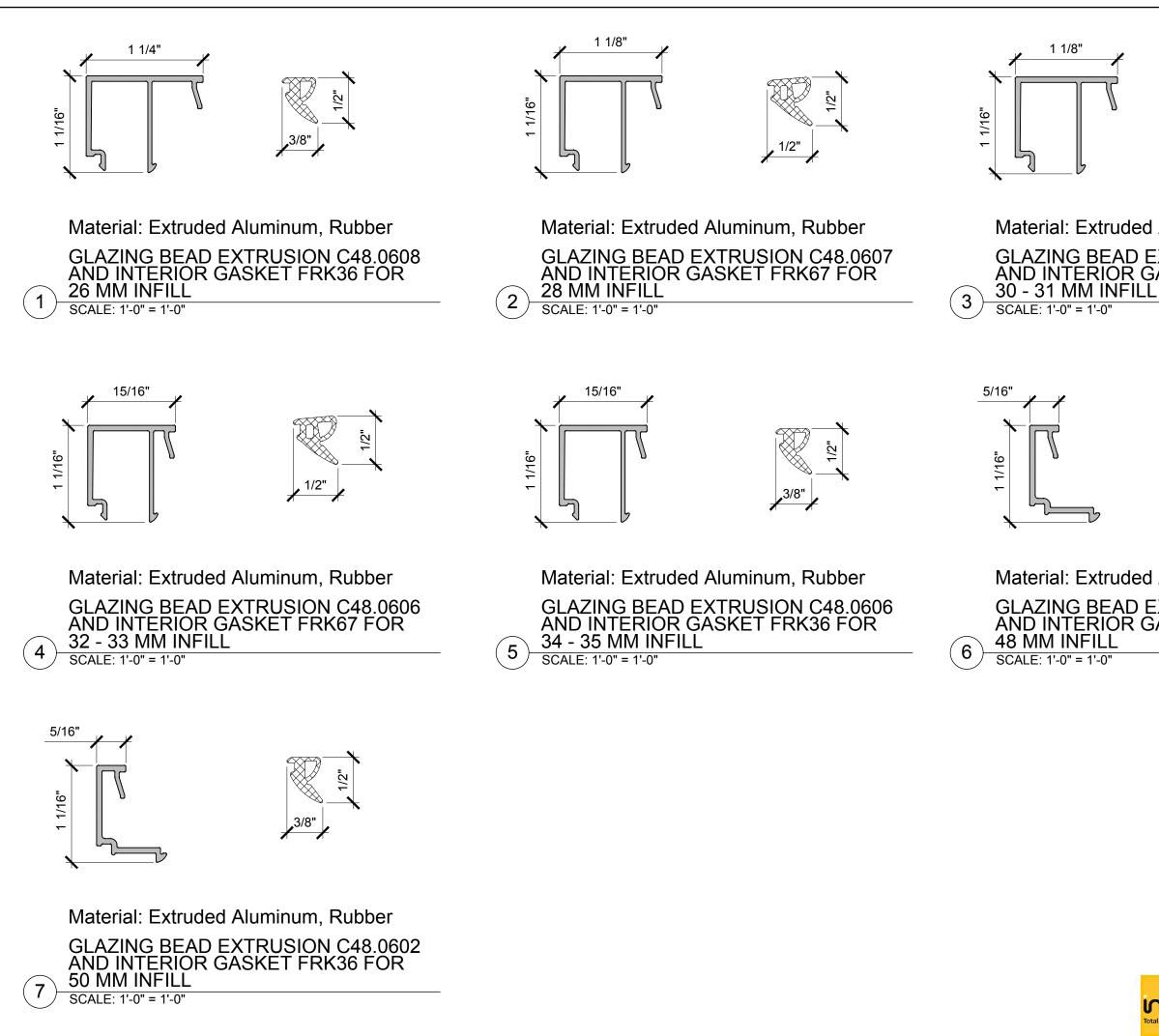


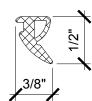






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Aluminum						
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AGRET FI			130 DERF	RY CT YORK, PA	17406	
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1/2"	<b>\</b>			PPROVED		
			DATE	_//		
			A	LL RIGHTS RESERVED		
Aluminum	n, Rubbe	er	ALL DRAWINGS SPECIFICATIONS AND COPIES THERE OF FURNISHED BY CAD SHOPS AND SHALL REMAIN ITS PROPERTY. THEY ARE NOT TO BE USED ON THIS OR ANY OTHER PROJECT UNLESS WRITTEN PERMISSION IS GIVEN.			
XTRUSIC	RK67 F0	DR	·			
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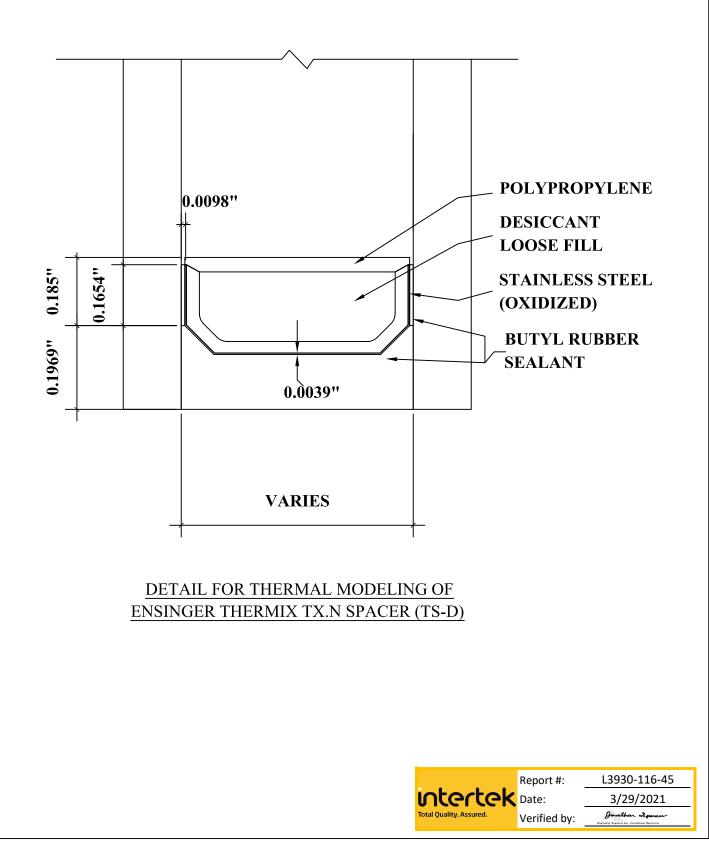
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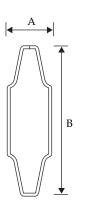
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# Contour Muntin Bar Aluminum: Painted, <del>Mill Finish, Clear & Color-In™ Anodized</del>



SPECIAL NOTICE Cleaning and Handling of Muntin Bar

We recommend muntin bar to be wiped clean before installation into an insulating glass unit. A household grade liquid cleaner may be used for this purpose.

To avoid breakdown of painted surfaces, do not use M.E.K., Triethane, Alcohol or like substances for the cleaning of painted muntin bar.

When machining and processing muntin bar in your plant, keep saw tables and work areas free of saw cut filings to avoid scratching the painted surfaces.

	Packaging Information						
	Muntin Bar Size Millimeter	Part #	Pieces Per Shipping Carton 12' 8'' Lengths	Lineal Feet Per Shipping Carton 12' 8" Lengths			
I	5.5 x 18	124040	170	2153			
l	8 x 18	123911	120	1520			
I	8 x 25	124307	84	1064			
I							
l							

TOLERANCE

A, ± .005 (.127mm)

 $B_{t} \pm .005$  (.127mm)

Specification In Inches					
Muntin Bar Size Millimeter	Α	В			
5.5 x 18	.217	.709			
8 x 18	.315	.709			
8 x 25	.315	.984			

# Part numbers shown are standard white color.

Available in solid & tutone colors.

Please see Color Selection Chart located in front of catalog.

# Material Thickness: .016: 5.5 x 18mm and 8 x 18mm.

.0185: 8 x 25mm.

Note: Available in pre-cut lengths and pre-notched; tutone and post-painted. Custom colors also available. Painted seam available in limited colors upon request.

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intertek	Date:	3/29/2021
Total Quality. Assured.	Verified by:	Jonathan Spercer Bigmenty Signed by, Jonuthum Spencer



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# **SECTION 8**

**REVISION LOG** 

<b>REVISION #</b>	DATE	PAGES	REVISION
.01 R0	04/15/21	N/A	Original report issue.
.01 R1	04/28/21	N/A	Revise options 8,10,11,13,18,19.