

SUZHOU TRYBA BUILDING MATERIALS TECHNOLOGY CO., LTD COMPUTER SIMULATION REPORT

SCOPE OF WORK

THERMALLY BROKEN ALUMINUM TILT TURN - NFRC 100/200/500

REPORT NUMBER

R7712.01-116-45 R0

TEST DATE

01/07/25

ISSUE DATE

01/07/25

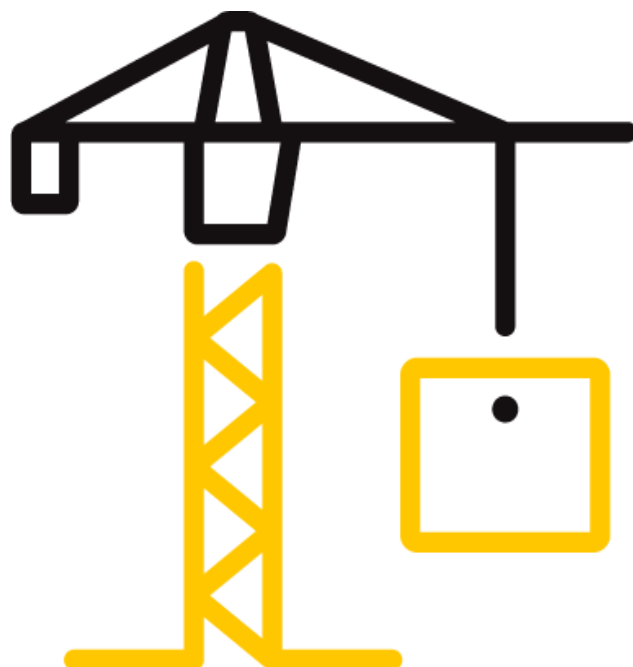
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TEST REPORT FOR SUZHOU TRYBA BUILDING MATERIALS TECHNOLOGY CO., LTD

Report No: R7712.01-116-45 R0

Date: 01/07/25

REPORT ISSUED TO

SUZHOU TRYBA BUILDING MATERIALS TECHNOLOGY CO., LTD

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SECTION 1

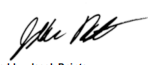
SUMMARY

SERIES/MODEL: Thermally Broken Aluminum Tilt Turn

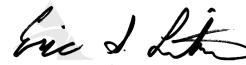
Architectural Testing, Inc. (an Intertek company) dba Intertek Building & Construction (B&C) was contracted to perform U-Factor, Solar Heat Gain Coefficient, Visible Transmittance and Condensation Resistance simulations in accordance with the National Fenestration Rating Council (NFRC).

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:

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SECTION 2**TEST METHODS**

The products were evaluated in accordance with the following:

ANSI/NFRC 100-2023, Procedure for Determining Fenestration Product U-Factors

ANSI/NFRC 200-2023, 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 7.8.71
CENTER-OF-GLASS MODELING	WINDOW 7.8.71
TOTAL PRODUCT CALCULATIONS	WINDOW 7.8.71
SPECTRAL DATA LIBRARY	IGDB 102.0

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	Thermally Broken Aluminum Tilt Turn
PRODUCT TYPE	Dual Action (Tilt Turn)
FRAME MATERIAL	AT - Aluminum w/ Thermal Breaks
SASH MATERIAL	AT - Aluminum w/ Thermal Breaks
STANDARD SIZE	1200mm x 1500mm

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SECTION 4 (Continued)
SIMULATION SPECIMEN DESCRIPTION

SPACER OPTIONS			
TYPE	PRIMARY SEAL	SECONDARY SEAL	CODE
Aluminum Spacer	Butyl Rubber	Butyl Rubber	A1-D
Technoform SP13 Spacer	Polyisobutylene	Silicone	TS-D

GRID OPTIONS		
GRID SIZE	GRID TYPE	GRID PATTERN
11mm x 18mm	Aluminum Rectangular Grid (Painted)	NFRC Standard

REINFORCEMENT OPTIONS	
LOCATION	MATERIAL
-	-

GAS FILLING TECHNIQUE	
FILL TYPE	METHOD
90% Argon	Single Probe

EDGE-OF-GLASS CONSTRUCTION	
INTERIOR CONDITION	EPDM between glass and aluminum bead
EXTERIOR CONDITION	EPDM between glass and aluminum frame

WEATHERSTRIPPING		
TYPE	QUANTITY	LOCATION
EPDM seal	1 row	Frame and sash perimeter.

FRAME/SASH MATERIALS FINISH	
INTERIOR	Aluminum (Painted or Anodized)
EXTERIOR	Aluminum (Painted or Anodized)

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 7.8.71. 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	0.014824	0.016811	0.018691
SHGC1	0.608586	0.549911	0.494356
VT0	0.000000	0.000000	0.000000
VT1	0.593762	0.533100	0.475664

$$\text{SHGC} = \text{SHGC0} + \text{SHGCc} (\text{SHGC1} - \text{SHGC0})$$

$$\text{VT} = \text{VT0} + \text{VTc} (\text{VT1} - \text{VT0})$$

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SECTION 6
SIMULATION RESULTS

TOTAL PRODUCT CALCULATIONS (Thermally Broken Aluminum Tilt Turn)												
Option Number	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
	U-Factor (Btu/Hr-Ft2-F)			Solar Heat Gain Coefficient (SHGC) Grids (None / <1 / >=1)				Visible Transmittance (VT) Grids (None / <1 / >=1)		Condensation Resistance (CR)		
1	Clear / Air / Clear (5mm/5mm) - 24mm IG											
	0.191	0.551	0.191					AIR		CL	A1-D	N
	U-Factor 0.53			SHGC(N) 0.46				VT(N) 0.48		CR 43		
2	Clear / Air / Clear (5mm/5mm) - 24mm IG											
	0.191	0.551	0.191					AIR		CL	A1-D	G
	U-Factor 0.54			SHGC(<1) 0.41				VT(<1) 0.43		CR 43		
3	Optilite S1.16 / Air / Clear (5mm/5mm) - 24mm IG											
	0.189	0.551	0.191					AIR	0.076(#2)	CL	A1-D	N
	U-Factor 0.44			SHGC(N) 0.35				VT(N) 0.47		CR 52		
4	XENE0186 / Air / Clear (5mm/5mm) - 24mm IG											
	0.189	0.551	0.191					AIR	0.113(#2)	CL	A1-D	N
	U-Factor 0.45			SHGC(N) 0.42				VT(N) 0.47		CR 51		
5	Clear / Air / Clear (6mm/6mm) - 24mm IG											
	0.231	0.472	0.231					AIR		CL	A1-D	N
	U-Factor 0.53			SHGC(N) 0.46				VT(N) 0.48		CR 43		
6	XETN0187 / Air / Clear (6mm/6mm) - 24mm IG											
	0.232	0.472	0.231					AIR	0.094(#2)	CL	A1-D	N
	U-Factor 0.44			SHGC(N) 0.34				VT(N) 0.45		CR 51		
7	Optilite S81 / Air / Clear (6mm/6mm) - 24mm IG											
	0.229	0.472	0.231					AIR	0.150(#2)	CL	A1-D	N
	U-Factor 0.45			SHGC(N) 0.39				VT(N) 0.44		CR 50		
8	XENE0186 / Air / Clear / Air / Clear (5mm/5mm/5mm) - 39mm IG											
	0.189	0.472	0.191	0.472	0.191			AIR	0.113(#2)	CL	A1-D	N
	U-Factor 0.39			SHGC(N) 0.38				VT(N) 0.43		CR 52		
9	Optilite S1.16 / Air / Clear / Air / Clear (5mm/5mm/5mm) - 39mm IG											
	0.189	0.472	0.191	0.472	0.191			AIR	0.076(#2)	CL	A1-D	G
	U-Factor 0.40			SHGC(<1) 0.29				VT(<1) 0.38		CR 52		
10	XENE0186 Lami / Air / Clear (5mm 1.14 Saflex Clear 5mm/6mm) - 31mm IG											
	0.424	0.472	0.424					AIR	0.113(#2) / 0.113(#4)	CL	A1-D	N
	U-Factor 0.44			SHGC(N) 0.37				VT(N) 0.46		CR 52		

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SECTION 6 (Continued)
SIMULATION RESULTS

TOTAL PRODUCT CALCULATIONS (Thermally Broken Aluminum Tilt Turn)												
Option Number	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
	U-Factor (Btu/Hr-Ft2-F)			Solar Heat Gain Coefficient (SHGC) Grids (None / <1 / >=1)				Visible Transmittance (VT) Grids (None / <1 / >=1)		Condensation Resistance (CR)		
11	XETN0187 Lami / Air / Clear (6mm 0.76 Saflex Clear 6mm/10mm) - 35mm IG											
	0.493	0.472	0.390					AIR	0.094(#2)	CL	A1-D	N
	U-Factor 0.43			SHGC(N) 0.31				VT(N) 0.43		CR 52		
12	XENE0186 Lami / Air / Clear Lami (5mm 0.76 Saflex Clear 5mm/5mm 0.76 Saflex Clear 5mm) - 34mm IG											
	0.409	0.472	0.411					AIR	0.113(#2)	CL	A1-D	N
	U-Factor 0.43			SHGC(N) 0.37				VT(N) 0.45		CR 52		
13	XDTN0179-D / Arg90 / Clear (6mm/6mm) - 24mm IG											
	0.232	0.472	0.231					ARG90	0.048(#2)	CL	TS-D	N
	U-Factor 0.38			SHGC(N) 0.26				VT(N) 0.43		CR 58		
14	Optisolar D80 / Arg90 / Clear (6mm/6mm) - 24mm IG											
	0.235	0.472	0.231					ARG90	0.072(#2)	CL	TS-D	N
	U-Factor 0.38			SHGC(N) 0.24				VT(N) 0.41		CR 58		
15	XETN0187 / Arg90 / Clear / Arg90 / Clear (6mm/6mm/6mm) - 42mm IG											
	0.232	0.472	0.231	0.472	0.231			ARG90	0.094(#2)	CL	TS-D	N
	U-Factor 0.33			SHGC(N) 0.32				VT(N) 0.41		CR 57		
16	Optilite S81 / Arg90 / Clear / Arg90 / Clear (6mm/6mm/6mm) - 42mm IG											
	0.229	0.472	0.231	0.472	0.231			ARG90	0.150(#2)	CL	TS-D	N
	U-Factor 0.34			SHGC(N) 0.35				VT(N) 0.40		CR 57		
17	XDTN0179-D / Arg90 / Clear / Arg90 / Clear (6mm/6mm/6mm) - 42mm IG											
	0.232	0.472	0.231	0.472	0.231			ARG90	0.048(#2)	CL	TS-D	N
	U-Factor 0.33			SHGC(N) 0.24				VT(N) 0.39		CR 57		
18	SJ70s-1 / Arg90 / Clear / Arg90 / Clear (6mm/6mm/6mm) - 42mm IG											
	0.233	0.472	0.231	0.472	0.231			ARG90	0.028(#2)	CL	TS-D	N
	U-Factor 0.32			SHGC(N) 0.17				VT(N) 0.34		CR 57		
19	SJ70s-1 / Arg90 / SJ70s-1 / Arg90 / Clear (6mm/6mm/6mm) - 42mm IG											
	0.233	0.472	0.233	0.472	0.231			ARG90	0.028(#2) / 0.028(#4)	CL	TS-D	N
	U-Factor 0.29			SHGC(N) 0.14				VT(N) 0.26		CR 57		
20	XETN0087-T / Arg90 / Clear (8mm/8mm) - 30mm IG											
	0.311	0.551	0.311					ARG90	0.078(#2)	CL	TS-D	N
	U-Factor 0.38			SHGC(N) 0.36				VT(N) 0.45		CR 57		



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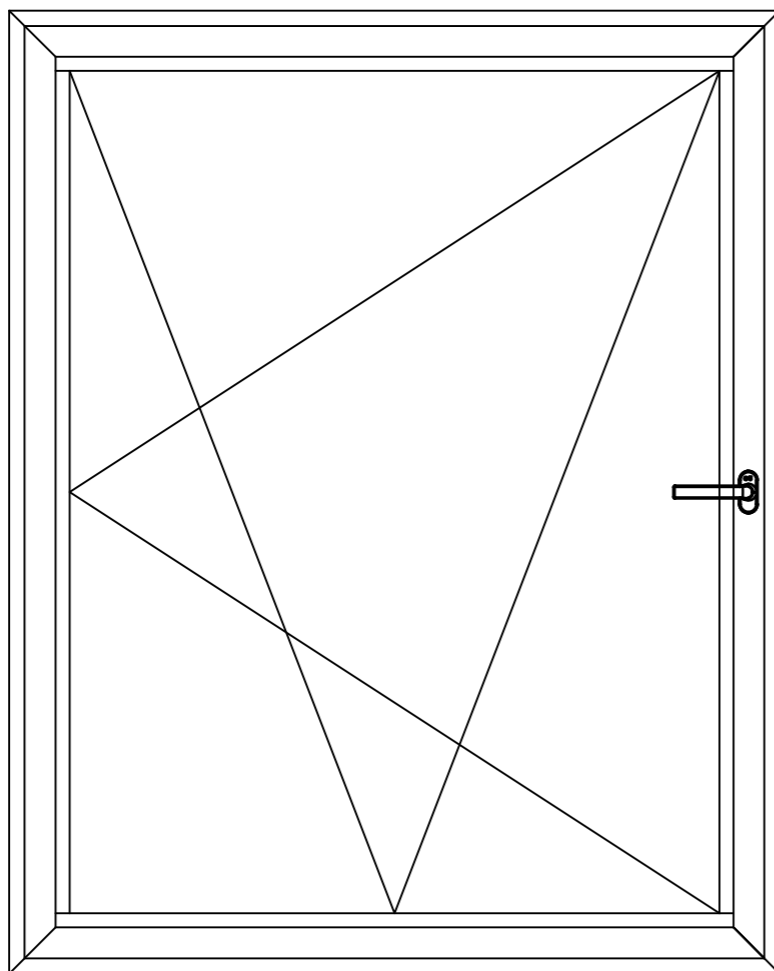
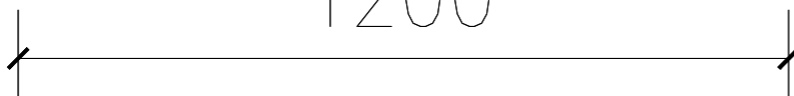
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SECTION 7

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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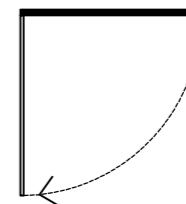


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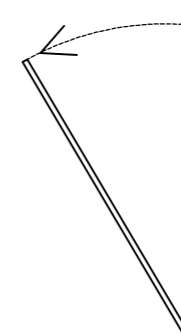
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SECTION 8

REVISION LOG

REVISION #	DATE	PAGES	REVISION
.01 R0	01/07/25	N/A	Original report issued to Suzhou TRYBA Building Materials Technology Co., LTD.
