intertek
Total Quality. Assured.

SUZHOU TRYBA BUILDING MATERIALS TECHNOLOGY CO., LTD

COMPUTER SIMULATION REPORT

SCOPE OF WORK
THERMALLY BROKEN ALUMINUM TILT TURN - NFRC 100/200/500

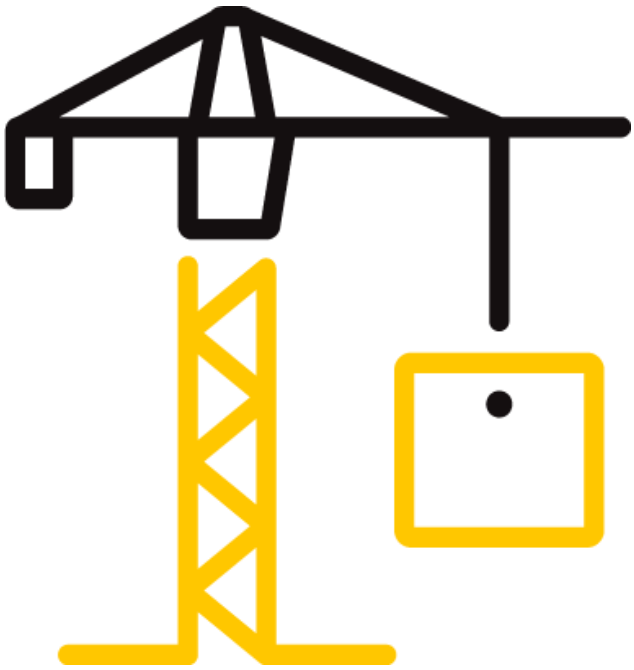
REPORT NUMBER
R7712.01-116-45 R0

TEST DATE
01/07/25

ISSUE DATE
01/07/25

PAGES
30

DOCUMENT CONTROL NUMBER
RT-R-AMER-Test-4044 (04/11/22)



130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

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
36th floor, Jinhe International Building
Suzhou City, China Enter Zip Code

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:

COMPLETED BY:	Jacob R. Points	**REVIEWED BY:**	Eric S. Leitner
TITLE:	Simulation Technician	**TITLE:**	Manager - Simulations and Thermal Testing, SIRC
SIGNATURE:	Digitally Signed by: Jacob Points	**SIGNATURE:**	Digitally Signed by: Eric S. Leitner
DATE:	01/07/25	**DATE:**	01/07/25

JRP:jrp

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

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.

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

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

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

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.*

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

TEST REPORT FOR SUZHOU TRYBA BUILDING MATERIALS TECHNOLOGY CO., LTD
Report No: R7712.01-116-45 R0
Date: 01/07/25

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

$$SHGC = SHGC0 + SHGCc\ (SHGC1 - SHGC0)$$

$$VT = VT0 + VTc\ (VT1 - VT0)$$

intertek
Total Quality. Assured.

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

TEST REPORT FOR SUZHOU TRYBA BUILDING MATERIALS TECHNOLOGY CO., LTD
Report No: R7712.01-116-45 R0
Date: 01/07/25

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**

intertek
Total Quality. Assured.

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

TEST REPORT FOR SUZHOU TRYBA BUILDING MATERIALS TECHNOLOGY CO., LTD
Report No: R7712.01-116-45 R0
Date: 01/07/25

SECTION 6 (Continued)
SIMULATION RESULTS

TOTAL PRODUCT CALCULATIONS (Thermally Broken Aluminum Tilt Turn)

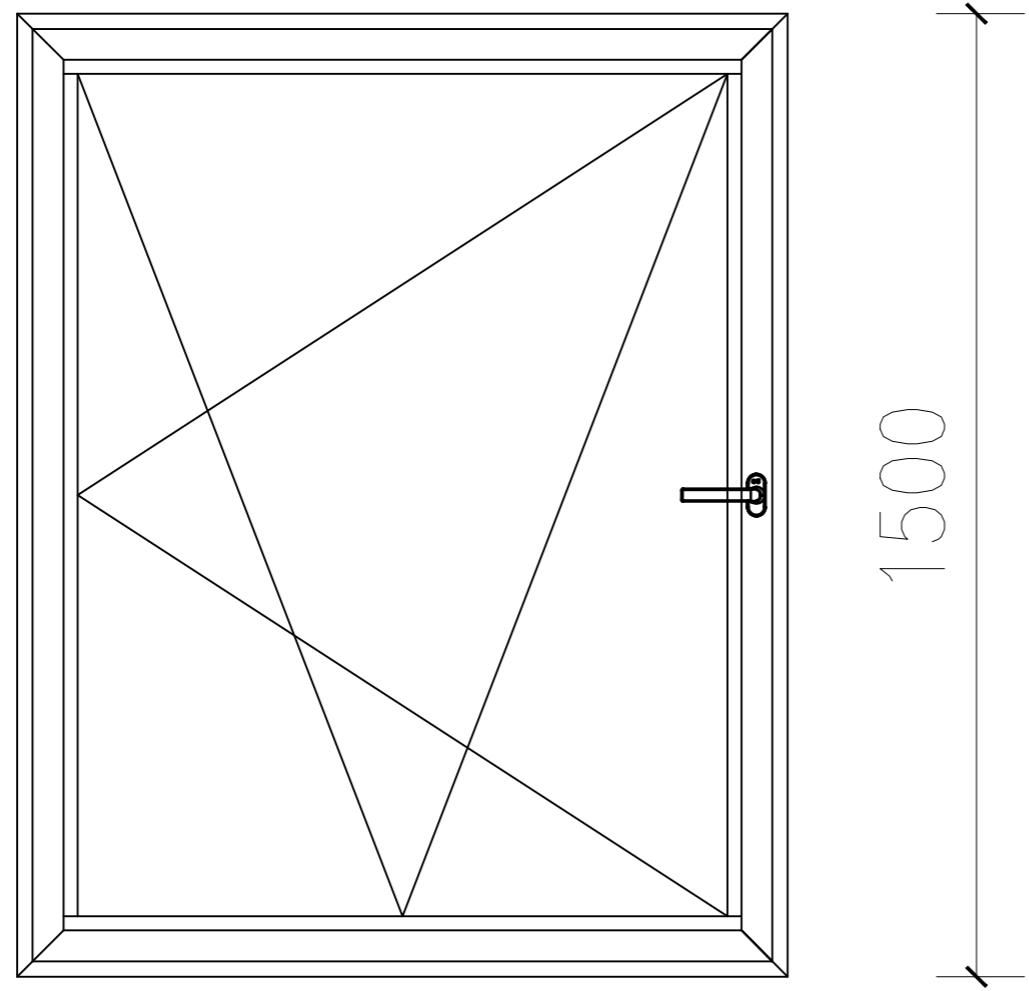
Option Number	Pane Thickness 1 (in)	Gap Width 1 (in)	Pane Thickness 2 (in)	Gap Width 2 (in)	Pane Thickness 3 (in)	Gap Width 3 (in)	Pane Thickness 4 (in)	Gap Fill	Low-e (Surface #)	Tint	Spacer	Grid Type
	U-Factor (Btu/Hr-Ft2-F)			Solar Heat Gain Coefficient (SHGC) Grids (None / <1 / >=1)					Visible Transmittance (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**

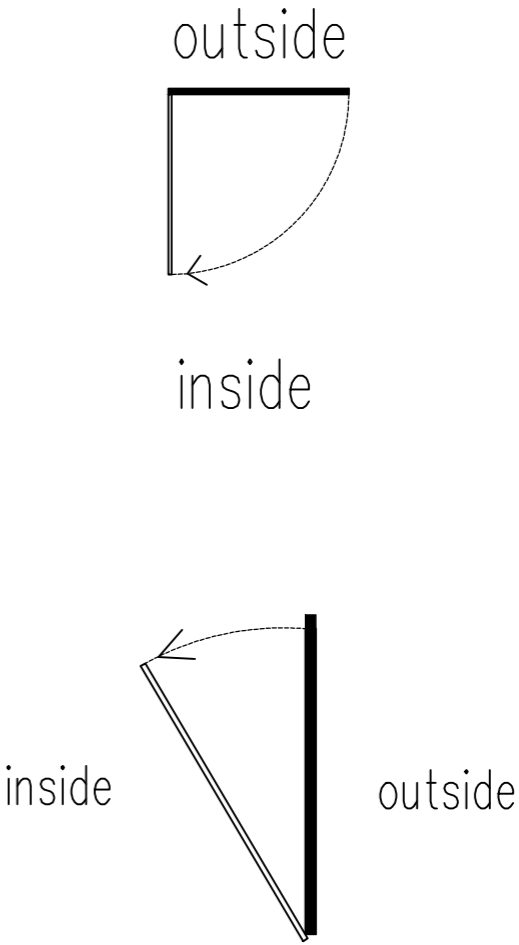
130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

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.





Report #: R7712-116-45
Date: 01/07/25
Verified by:

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

TEST REPORT FOR SUZHOU TRYBA BUILDING MATERIALS TECHNOLOGY CO., LTD
Report No: R7712.01-116-45 R0
Date: 01/07/25

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.