



# NATIONAL CERTIFIED TESTING LABORATORIES

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## U-Factor, Solar Heat Gain Coefficient, Visible Transmittance and Condensation Resistance Calculation Report

**REPORT NO:** NCTL-110-18674-1E0A0  
**SIMULATION DATE:** 5/25/2016  
**REPORT DATE:** 6/2/2016

**Client:** Glass Flooring Systems  
10 Leslie Court  
Whippany, NJ 07981

**Product Line:** Glass Flooring Systems' Thermally Broken Aluminum Walkable Skylight

**Specification:** ANSI/NFRC 100-2014: "Procedure for Determining Fenestration Product U-Factors".  
ANSI/NFRC 200-2014: "Procedure for Determining Fenestration Product Solar Heat Gain Coefficients and Visible Transmittance at Normal Incidence".  
NFRC 500-2014: "Procedure for Determining Fenestration Product Condensation Resistance Values".  
Therm 6.x / Window 6.x NFRC Simulation Manual (Approved at test date)  
Technical Interpretation Manual (2010)

**Procedures and Compliance:** All U-factor, Solar Heat Gain Coefficients, Visible Transmittance and Condensation Resistance values were calculated using the following characteristics: a default value of 0.30 solar absorptance for all products other than window glazed wall and sloped glazing which have a solar absorptance of 0.50. The best glazing option was used as the configuration for SHGC and VT specialty products table. NCTL is a NFRC accredited simulation laboratory and this simulation was conducted in full compliance with NFRC requirements. This report does not constitute an opinion or endorsement by the laboratory. Ratings values included in this report are for submittal to an NFRC-licensed IA and are not meant to be used directly for labeling purposes. Only those values identified on a valid Certification Authorization Report (CAR) by an NFRC accredited Inspection Agency (IA) are to be used for labeling purposes. Rounding per NFRC 601-2014: "NFRC Unit and Measurement Policy". 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. Component 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 approved and identified on a valid CMA Label Certificate are to be used for labeling purposes. The component(s) values included in this report are not considered in compliance with ANSI/NFRC 100 or ANSI/NFRC 200 unless the associated validation test requirements have been satisfied, as applicable.

**PRODUCT LINE DESCRIPTION**

**General:** Glass Flooring Systems' Thermally Broken Aluminum Walkable Skylight

**Model Size Simulations:** 1200 mm x 1200 mm (47.00" x 47.00")

**Weatherseals:** Not applicable

**Gas Fillings:** Not applicable.

Gas Type	Filling Technique	Percentage
Argon	Single probe	90%
Krypton	Single probe	90%

**Reinforcement:** Not applicable

**Edge – of - Glass – Construction:** Exterior silicone back bedding with backer-rod. Interior EPDM gasket.

**Finish:** Anodized Aluminum,

**Frame Description:**

Code	Type	Definition
AT	Aluminum w/ Thermal Breaks – All Members	All members contain thermal breaks

**Sash Description:**

Code	Type	Definition
N	Not applicable	Product component does not require a code

**Spacer and Sealant:**

Code	Type	Definition
A1-D	Aluminum	Aluminum spacer system
ZF-S	Silicone Foam	Silicone foam spacer system

**Dividers:** Where applicable, dividers were not modeled because the gap between dividers and lites were greater than 3mm. For Solar Heat Gain and Visual Light Transmittance default dividers less than 1" and greater or equal to 1" and default patterns were used for simulations.

**Divider Description:** Not applicable.

**Foam fillings:** Not applicable

**Continuous Hardware Description:** Not applicable.

**Laminate Description:**

Window5 ID	Glass 1	Interlayer 1	Glass 2	Interlayer 2	Glass 3
30001	892	.060 SGP	892	.060 SGP	892
30002	887	.035 SGP	887		
30005	892	.060 PBV	892	.060 PBV	892
30115	5432	.035 SGP	5001		
30117	3233	.035 SGP	887		
30118	5281	.035 SGP	887		
30119	5444	.035 SGP	887		
30120	11452	.035 SGP	887		
30126	11505	.060 SGP	11505	.060 SGP	11534
30127	11501	.035 SGP	11536		
35000	5444	.035 SGP	887		

**Modeling Assumptions and Comments Deemed Important:****Sealing Rules:**

All cavities that are opened to the exterior within a frame section shall be modeled according to ISO 15099, Section 6.7.1, which states that cavities greater than 2mm but equal to or less than 10 mm shall be modeled as “slightly ventilated air cavities”. For physical testing purposes the product is sealed at the inside surface with tape or equivalent to prevent air infiltration. Air cavities created by this sealing technique must be simulated with the standard NFRC “Frame Cavity” material. If cavities on the frame are sealed (covered) to the surround panel with tape or equivalent, those cavities are also filled with NFRC “Frame Cavity” material within the simulation model. If the frame is not covered or sealed, those areas are left hollow or opened within the simulation model.

**Continuous elements:**

All elements continuous within the product line are identified from the Bill-of-Materials and detailed drawings via the referenced dimensions and cut lengths as compared to the overall size of the product.

**General Notes:**

The 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.

**Miscellaneous assumptions:**

1. The screen extrusions were not modeled.
2. All radii are simulated at angles.
3. The modeling was performed in accordance with the manufacturer's assembly drawing.

**Component Area and Frame Heights:**

Frame heights, calculated areas, area weighted values for U-factor, SHGC, and VT, and center –of-glazing are located in approved NFRC simulation programs for all individual products.

**NCTL Therm Section Filename Methodology**

Filename Codes Example: HD-CU-D-F1_003.THM	
HD	Frame Section (Head)
CU-D	Spacer (Intercept)
F1	Frame Description
_003	Glazing ID #3

PRODUCT	Product Number	Pane ID #1	Pane ID #2	Pane Thickness #1	Pane Thickness #2	Gap 1	Gap Fill 1	% of Gap Fill 1	Emissivity Surface 1	Emissivity Surface 2	Emissivity Surface 3	Emissivity Surface 4	Tint	Spacer	Grid Type	Grid Size	U-factor	Condensation Resistance	SHGC NO GRID	SHGC GRID<1"	SHGC GRID>=1"	VT NO GRID	VT GRID<1"	VT GRID >=1"
Rated on 20 Degree Slope, No Grids	1	10 mm Extra Clear/060SGP/10 mm Extra Clear/060SGP/10 mm ClimaGuard 1.0	4 mm Extra Clear/035SGP/4 mm Extra Clear	1.260	0.337	0.438	KRY	90	0.023			0.200	CL	ZF-S	N		0.49	53	0.32			0.49		
Rated on 20 Degree Slope, No Grids	2	10 mm Clear/060SGP/10 mm Clear/060SGP/10 mm Clear	3 mm Solarban 90/035SGP/3 mm Clear	1.230	0.281	0.470	ARG	90			0.023	0.200	CL	A1-D	N		0.53	48	0.28			0.34		
Rated on 20 Degree Slope, No Grids	3	10 mm Clear/060SGP/10 mm Clear/060SGP/10 mm Clear	3 mm Clear/035SGP/3 mm Clear	1.230	0.281	0.470	ARG	90					CL	A1-D	N		0.68	48	0.43			0.52		
Rated on 20 Degree Slope, No Grids	4	10 mm Clear/060PVB/10 mm Clear/060PVB/10 mm Clear	3 mm Clear/030PVB/3 mm Clear	1.230	0.264	0.470	ARG	90					CL	A1-D	N		0.68	48	0.43			0.52		
Rated on 20 Degree Slope, No Grids	5	10 mm Clear/060SGP/10 mm Clear/060SGP/10 mm Clear	3 mm Solarban 70 XL/035SGP/3 mm Starphire	1.230	0.281	0.470	ARG	90		0.018			CL	A1-D	N		0.57	52	0.30			0.41		
Rated on 20 Degree Slope, No Grids	6	10 mm Clear/060SGP/10 mm Clear/060SGP/10 mm Clear	3 mm DISC 71X/035SGP/3 mm Clear	1.230	0.281	0.470	ARG	90		0.027			CL	A1-D	N		0.57	52	0.34			0.45		
Rated on 20 Degree Slope, No Grids	7	10 mm Clear/060SGP/10 mm Clear/060SGP/10 mm Clear	3 mm Solarban 60/035SGP/3 mm Clear	1.230	0.281	0.470	ARG	90			0.035		CL	A1-D	N		0.57	52	0.34			0.47		
Rated on 20 Degree Slope, No Grids	8	10 mm Clear/060SGP/10 mm Clear/060SGP/10 mm Clear	3 mm Solarban 90/035SGP/3 mm Clear	1.230	0.281	0.470	ARG	90			0.023		CL	A1-D	N		0.57	52	0.28			0.34		
Rated on 20 Degree Slope, No Grids	9	10 mm Clear/060SGP/10 mm Clear/060SGP/10 mm Clear	3 mm Cool Lite Xtreme 60/035SGP/3 mm Clear	1.230	0.281	0.470	ARG	90			0.013		CL	A1-D	N		0.57	52	0.29			0.40		

A baseline product test in accordance with the "NFRC 102: Test Procedure for Measuring the Steady-State Thermal Transmittance of Fenestration Systems" is required in order to validate the "Model Size Matrix of U-Values" as previously indicated. Per Section 1.4.3 of ANSI/NFRC 100-2014, "the baseline product is the individual product selected for validation testing". **The individual product selected as the baseline product shall be the lowest simulated individual product or an individual product having a simulated U-factor within 0.60 W/ (m<sup>2</sup>\*K) (0.10 BTU/HR/ft<sup>2</sup>/°F) or 20% of the listed lowest simulated U-factor.**

**Note:**

1. For lowest U-factor listings where multiple individual products are shown, validation testing can be conducted on any within 20% of the lowest simulated u-factor.
2. Actual simulated individual products are required for product line validation testing.

-----> Res sizes

For the purposes of validation testing, production line units and sizes shall be used to represent the baseline product. Per the client, the model size is manufactured as part of their product line; therefore the previously listed model size can be used for baseline product validation testing.

-----> Deviation Sizes

For the purposes of validation testing, production line units and sizes shall be used to represent the baseline products. Representative sizes are therefore defined as the production sizes with the least deviation (D) from the model sizes, calculated per ANSI/NFRC 100. The previously listed model sizes shall be used for baseline product validation testing.

Copies of this report and the detailed product drawings will be retained by NCTL for a period of four (4) years. This report may not be reproduced, except in full, without the approval of NCTL. Results apply only to the fenestration product simulated. The attached data file(s) contain(s) all required NFRC data and software files.

**NATIONAL CERTIFIED TESTING LABORATORIES**

Performed by:

  
**John W. Gordon**  
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**MARK BENNETT**  
 NFRC Certified Simulator  
 Simulator-In-Responsible-Charge

Attachments

**Report Log**

**Product Line:** Glass Flooring Systems' Thermally Broken Aluminum Walkable Skylight

**Date:**  
**6/2/2016** - Original Report issued to Company and Inspection Agency

***ATTACHMENT A***

**Product Drawings**