



## NATIONAL CERTIFIED TESTING LABORATORIES

5 LEIGH DRIVE  
YORK, PA 17406  
(717)846-1200

● 8350 PARKLINE BLVD  
ORLANDO, FL 32809  
(407)240-1356

● 3310 HILL AVE  
EVERETT, WA 98201  
(425)259-4936

## SIMULATION TEST REPORT

**NCTL-610-20870-1<sub>E0A0</sub>**

**REPORT TO:**

ClimateGuard Manufacturing  
2500 North Pulaski Rd.  
Chicago, IL 60639

**SIMULATION DATE:** 04/26/18

**PRODUCT:**

2000 Series Vinyl Horizontal Slider

**PRODUCT CPD DESIGNATION:**  
RSC-A-8

This report is for recertification of an existing product line.



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**Simulation Standards**

ANSI/NFRC 100-2017 "Procedure for Determining Fenestration Product U-factors"  
ANSI/NFRC 200-2017 "Procedure for Determining Fenestration Product Solar Heat Gain Coefficients and Visible Transmittance at Normal Incidence"  
NFRC 500-2017 "Procedure for Determining Fenestration Product Condensation Resistance Values"  
THERM 7 / WINDOW 7 NFRC Simulation Manual (July 2017)  
NFRC 2010 Technical Interpretations Manual (November 2017)

**Approved Simulation Software**

Center of Glass    Window 7.4  
2-D Heat Transfer    THERM 7.4  
Total Product Calculations                              Window 7.4

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Note: All dimensions are in the order (Width x Height) unless otherwise noted.

**Report Number**    NCTL-610-20870-1<sub>E0AO</sub>

**Model/ Series**    2000 Series Vinyl Horizontal Slider

**Operator Type**    Horizontal Slider (HSXX)

**Simulation Size**                                        1500 mm x 1200 mm (59" x 47")

**Frame Type**    Vinyl (VY)  
    Vinyl with foam-filled insulation (VF)

**Nail Fin**    Removable and simulated without

**Sash Type**     Vinyl (VY)  
    Vinyl with foam-filled insulation (VF)

**Frame/Sash Material & Finish** Rigid vinyl (PVC)

**Frame Option(s)**                                        Frame 1  
    Vinyl  
Frame 2  
    Vinyl with foam filled frame and sash

**Reinforcement**    Not applicable

**Thermal Break(s)**                                        Not applicable (N)

**Foam Fill**Right Head

Two bottom right cavities of frame and left most cavity of sash as represented in drawing 1000

Right Jamb

Two bottom right cavities of frame and left most cavity of sash as represented in drawing 1000

Right Sill

Two bottom right cavities of frame and left most cavity of sash as represented in drawing 1000

Meeting Stile

Left most cavity of lock and keeper stile as represented in drawing 1000

Left Head

Two bottom right cavities of frame and left most cavity of sash as represented in drawing 1000

Left Jamb

Two bottom right cavities of frame and left most cavity of sash as represented in drawing 1000

Left Sill

Two bottom right cavities of frame and left most cavity of sash as represented in drawing 1000

**Foam Type**

Polyurethane foam insulation (spray applied) with a conductivity of 0.0240 W/m-K

**Weather Seal(s)**Right Head

(3) Strips mohair

Right Jamb

(3) Strips mohair

Right Sill

(3) Strips mohair

Meeting Stile

(4) Strips mohair

Left Head

(3) Strips mohair

Left Jamb

(3) Strips mohair

Left Sill

(3) Strips mohair

**Edge of Glass**

Interior glazed with a rigid vinyl glazing bead with flexible vinyl fins and a silicone back bedding with a flexible vinyl fin.

**Spacer System(s)**

Coated Steel U-shaped spacer system embedded in sealant - single sealed (CU-S)

**Gas Fillings**

Argon 95% dual probe per the client (ARG)

<b>Divider(s)</b>	<u>Grid 1</u> 0.1875" x 0.610" painted aluminum rectangle
<b>Divider Notes</b>	Where the space between lite and divider is greater than 3 mm, dividers are not modeled. Solar Heat Gain Coefficient (SHGC) and Visible Light Transmittance (VT) are calculated using default dividers of less than 1" and greater than/ equal to 1".  For U-factor, SHGC, and VT calculations the standard default grid pattern of 12" is used, as established by the Window 7 program.

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**Notes, Additional Information, Comments, and Assumptions**

All simulations use the emissivity from the approved ANSI/NFRC spectral data files with the International Glazing Database (IGDB).

For Solar Heat Gain and Visible Light Transmittance; all frame, divider and glass options are grouped using the best case center of glass/ worst-case frame values from the "U" Factor calculations as required by ANSI/NFRC 200-2017.

A default frame absorptance of 0.30 is assumed for all products except glazing window walls, glazing curtain walls, and sloped glazing wall - all of which will have a frame absorptance of 0.50

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Supporting information including THERM 7 and WINDOW 7 files are being submitted as part of this report. The simulation matrix is being submitted electronically.

Detailed assembly drawings, horizontal and vertical cross-sectional drawings, profile drawings, parts drawings, and a bill of materials as supplied by the client were used as the basis for performing the simulations. Copies are attached to this report. The results were secured by using the designated methods and NFRC approved simulation programs as required by, and in full compliance with, NFRC procedures.

This report does not constitute certification of this product. The results in this report apply only to the sample as shown in the attached drawings, using the components and construction methods described herein. NCTL does not warrant the accuracy of the computer programs used to obtain the results. Client request for work performed by NCTL and its associated documentation constitute approval by client for Inspection Agency (IA) submission.

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 Certification Authorization Report (CAR) by an NFRC accredited Inspection Agency (IA) are to be used for labeling purposes.

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.

Units and rounding is in accordance with NFRC 601, *Units and Measurement Policy* except that all units may be reported in IP as the primary units after conversion and any matrix is reported in IP units only unless requested otherwise by the client.

The manufacturer is capable of producing, in its normal manufacturing process, products in sizes identical to the model sizes listed in the ANSI/NFRC 100 Table 4-3 and have a least deviation of 0 within the tolerances of ANSI/NFRC 100. All simulations are performed in the sizes and configurations listed in ANSI/NFRC 100 Table 4-3 except that a non-standard size may be simulated and identified in the matrix to match the

manufacturer's physical test sample. Glass and glazing types, Low-E placement, finishes and other required information is included in the NFRC U-Factor Simulation Summary Report and/ or the NFRC SHGC/ VT Simulation Summary Report included in this document. Additional supporting information and modeling assumptions are included in the individual reports obtained from the approved simulation programs and in the notes following the required summary reports.

**National Certified Testing Laboratories**

Performed by:



**KEVIN TRACY**  
NFRC Certified Simulator

Reviewed by:

  
DIGITAL SIGNATURE

**MARK BENNETT**  
NFRC Certified Simulator  
Simulator-In-Responsible-Charge

## Attachments

- Glazing Matrix
- Appendix A - Revision Summary
- Appendix B - Product Drawings

VT GRID >=1"									
VT GRID<1"									
VT NO GRID									
SHGC GRID>=1"									
SHGC GRID<1"									
SHGC NO GRID									
Condensation Resistance									
U-factor									
Grid Size									
Grid Type									
Spacer									
Tint									
Emissivity Surface 6									
Emissivity Surface 5									
Emissivity Surface 4									
Emissivity Surface 3									
Emissivity Surface 2									
Emissivity Surface 1									
% of Gap Fill 2									
% of Gap Fill 1									
Gap Fill 2									
Gap Fill 1									
Gap 2									
Gap 1									
Pane Thickness #3									
Pane Thickness #2									
Pane Thickness #1									
Pane ID #3									
Pane ID #2									
Pane ID #1									
Product Number									
No Foam, Grids /lo Grids	1	2 mm Clear	2 mm Clear		0.090	0.090	AIR		
No Foam, Grids /lo Grids	2	3 mm Clear	3 mm Clear		0.118	0.118	AIR		
No Foam, Grids /lo Grids	3	2 mm Clear	2 mm Clear		0.090	0.090	0.290	AIR	AIR
No Foam, Grids /lo Grids	4	2 mm i89	2 mm Clear		0.097	0.090	0.678	ARG	95
No Foam, Grids /lo Grids	5	3 mm i89	3 mm Clear		0.117	0.118	0.639	ARG	95
No Foam,	6	2 mm i89	2 mm Clear		0.097	0.090	0.290	0.290	ARG
No Foam, Grids /lo Grids	7	2mm LoE <sup>2</sup> 366	2 mm Clear		0.097	0.090	0.678	ARG	95
No Foam, Grids /lo Grids	8	3mm LoE <sup>2</sup> 366	3 mm Clear		0.117	0.118	0.639	ARG	95
No Foam,	9	2mm LoE <sup>2</sup> 366	2 mm Clear		0.097	0.090	0.290	0.290	ARG
No Foam,	10	2mm LoE <sup>2</sup> 366	2 mm Clear		0.097	0.090	0.087	0.290	ARG
No Foam, Grids /lo Grids	11	2mm LoE <sup>2</sup> 270	2 mm Clear		0.097	0.090	0.678	ARG	95
No Foam, Grids /lo Grids	12	3mm LoE <sup>2</sup> 270	3 mm Clear		0.118	0.118	0.639	ARG	95
No Foam,	13	2mm LoE <sup>2</sup> 270	2 mm Clear		0.097	0.090	0.090	0.290	ARG
No Foam, Grids /lo Grids	14	2mm LoE <sup>2</sup> 270	2 mm i89		0.097	0.087	0.678	ARG	95
No Foam, Grids /lo Grids	15	3mm LoE <sup>2</sup> 270	3 mm i89		0.118	0.117	0.639	ARG	95
No Foam,	16	2mm LoE <sup>2</sup> 270	2 mm Clear		0.097	0.090	0.087	0.290	ARG
No Foam, Grids /lo Grids	17	2mm LoE <sup>2</sup> 270	3 mm Bronze		0.097	0.125	0.658	ARG	95
No Foam, Grids /lo Grids	18	3mm LoE <sup>2</sup> 270	3 mm Bronze		0.118	0.125	0.639	ARG	95
No Foam,	19	2mm LoE <sup>2</sup> 270	2 mm Clear	3 mm Bronze	0.097	0.090	0.125	0.280	ARG
Foam Frame & Sash Grids / No Grids	20	2mm LoE <sup>2</sup> 366	2 mm Clear		0.097	0.090	0.678	ARG	95
Foam Frame & Sash Grids / No Grids	21	3mm LoE <sup>2</sup> 366	3 mm Clear		0.117	0.118	0.639	ARG	95
Foam Frame & Sash Grids / Sash Grids	22	2mm LoE <sup>2</sup> 366	2 mm Clear		0.097	0.090	0.090	0.290	ARG
Foam Frame & Sash Grids / Sash Grids	23	2mm LoE <sup>2</sup> 366	2 mm Clear		0.097	0.090	0.087	0.290	ARG
Foam Frame & Sash Grids / Sash Grids	24	2mm LoE <sup>2</sup> 270	2 mm Clear		0.097	0.090	0.678	ARG	95

VT GRID >=1"									
VT GRID<1"									
VT NO GRID									
SHGC GRID>=1"									
SHGC GRID<1"									
SHGC NO GRID									
Condensation Resistance									
U-factor									
Grid Size									
Grid Type									
Spacer									
Tint									
Emissivity Surface 6									
Emissivity Surface 5									
Emissivity Surface 4									
Emissivity Surface 3									
Emissivity Surface 2									
Emissivity Surface 1									
% of Gap Fill 2									
% of Gap Fill 1									
Gap Fill 2									
Gap Fill 1									
Gap 2									
Gap 1									
Pane Thickness #3									
Pane Thickness #2									
Pane Thickness #1									
Pane ID #3									
Pane ID #2									
Pane ID #1									
Product Number									
Foam Frame & Sash, Grids / No Grids									
25	3 mm LoE <sup>2</sup> 270	3 mm Clear	0.118	0.118	0.639	ARG	95	0.037	CL CU-S NG
Foam Frame & Sash,	2 mm LoE <sup>2</sup> 270	2 mm Clear	0.087	0.090	0.290	ARG	95	0.037	CL CU-S N
Foam Frame & Sash, Grids / No Grids	27	2 mm LoE <sup>2</sup> 270	2 mm I89	0.087	0.087	0.678	ARG	95	0.149
Foam Frame & Sash, Grids / No Grids	28	3 mm LoE <sup>2</sup> 270	3 mm I89	0.118	0.117	0.639	ARG	95	0.037
Foam Frame & Sash, Grids / No Grids	29	2 mm LoE <sup>2</sup> 270	2 mm Clear	0.087	0.090	0.290	ARG	95	0.037
Foam Frame & Sash,	30	2 mm LoE <sup>2</sup> 270	3 mm Bronze	0.087	0.125	0.658	ARG	95	0.037
No Foam, 0.1875" x 0.610 Rectangular	33	2 mm Clear	0.090	0.090	0.290	ARG	AIR		CL CU-S G
No Foam, 0.1875" x 0.610 Rectangular	34	2 mm I89	0.090	0.090	0.290	ARG	ARG	0.149	CL CU-S G
No Foam, 0.1875" x 0.610 Rectangular	35	2 mm LoE <sup>2</sup> 366	2 mm Clear	0.087	0.090	0.290	ARG	ARG	0.022
No Foam, 0.1875" x 0.610 Rectangular	36	2 mm LoE <sup>2</sup> 366	2 mm Clear	0.087	0.090	0.290	ARG	ARG	0.022
No Foam, 0.1875" x 0.610 Rectangular	37	2 mm LoE <sup>2</sup> 270	2 mm Clear	0.087	0.090	0.290	ARG	ARG	0.037
No Foam, 0.1875" x 0.610 Rectangular	38	2 mm LoE <sup>2</sup> 270	2 mm Clear	0.087	0.090	0.290	ARG	ARG	0.037
No Foam, 0.1875" x 0.610 Rectangular	39	2 mm LoE <sup>2</sup> 270	3 mm Bronze	0.087	0.090	0.125	0.280	ARG	0.037
No Foam, 0.1875" x 0.610 Rectangular	40	2 mm LoE <sup>2</sup> 366	2 mm Clear	0.087	0.090	0.290	ARG	ARG	0.022
Foam Frame & Sash, 0.1875" x 0.610 Rectangular	41	2 mm LoE <sup>2</sup> 366	2 mm Clear	0.087	0.090	0.087	0.290	ARG	0.022
Foam Frame & Sash, 0.1875" x 0.610 Rectangular	42	2 mm LoE <sup>2</sup> 270	2 mm Clear	0.087	0.090	0.080	0.290	ARG	0.037
Foam Frame & Sash, 0.1875" x 0.610 Rectangular	43	2 mm LoE <sup>2</sup> 270	2 mm Clear	0.087	0.090	0.087	0.290	ARG	0.037
Foam Frame & Sash, 0.1875" x 0.610 Rectangular	44	2 mm LoE <sup>2</sup> 270	2 mm Clear	0.087	0.090	0.125	0.280	ARG	0.037
Foam Frame & Sash, Validation,	0	2 mm LoE <sup>2</sup> 270	2 mm Clear	0.087	0.090	0.087	0.290	ARG	0.037

## **Appendix A**

### **Revision Summary**

<u>Identification</u>	<u>Date</u>	<u>Revision</u>
Original Issue	04/26/18	Report issued to ClimateGuard Manufacturing and Inspection Agency