NFRC THERMAL SIMULATION REPORT

U-Factor (ANSI/NFRC 100-2017), CR (NFRC 500-2017) SHGC and VT (ANSI/NFRC 200-2017)

Fenestration Product:	**PVC Sliding French Door**
Report#:	**SIM18D-005**
Series#:	S-7000/7500
Submitted To:	Rey Nea
Manufacturer:	**GREEN WORLD WINDOWS**
Address:	4195 Chino Hills Parkway, Ste. 508, Chino Hills, CA 91709
Phone#:	(909) 923-8618

Baseline Product: [2000 mm (±25mm)] [79''(±1'')] X [2000 mm (±25mm)] [79''(±1'')]

Product # 011: SB70 / ARGON / CLEAR_3mm _ A8-D spacer: [U = 0.28 Btu/hr*ft^2*F]

Per ANSI/NFRC 100-2017: Sec. 4.2.6: The individual product selected as the baseline product shall have a simulated U-factor within 0.6 W/m^2-K (0.1 Btu/h.ft^2.deg F) or 20% of the lowest simulated U-factor, whichever is greater.

Baseline Simulation Date:	01/09/2018
Expiration Date:	Five years from the date of the oldest physical test conducted for the latest certification ratings
Revision Date:	n/a
Product Type:	PVC Sliding Glass Door
Simulator:	Anis Jan
Simulator-in-Charge:	Anis Jan
Simulation Method:	Approved NFRC software THERM7 and WINDOW7 and NFRC WINDOW/THERM simulation manual

Model/Type:	DDSG
Size:	{2000 mm x 2000 mm} / [79" x 79"]
Frame Type and Finish:	Vinyl
Sash Type and Finish:	Vinyl w/ Reinforcement – Both Interlocks, and lock & fixed stile, (steel-galvanized sheet), stated per client
IG Glass Parameters:	Glass from PPG. 3mm glass with 1/2" gap. Low-e coating glass from PPG: SB90/e=0.023, SB70/e=0.018 applied on srf# 2.
Glazing Method:	Glass is wet glazed onto silicone sealant from exterior with PVC glazing bead applied full perimeter from exterior.
Gas Fill Method:	Argon 90% & Air 10% gas fill using Evacuated chamber fill technique.
Spacers:	A8-D = supersure seal spacer II, dual sealed with hot melt butyl (with rigid pvc strip, both flat and corrugated strips) stated per client, and
	A8-D = supersure seal spacer regular, dual sealed with hot melt butyl (with rigid pvc strip for flat strip and corrugated aluminum-mill finish for bottom strip) stated per client
Dividers:	Aluminum painted exterior, unpainted interior
	Rectangular grid: 0.188" x 0.625" x 0.02" (<1", 0.75" grid size), and Contour grid: 0.313" x 0.984" x 0.02" (<1", 0.75" grid size).
	Grid pattern: NFRC Standard
	6 horizontal x 3 vertical strips/panel

Grouping:

Center-of-Glazing:	No
Frame:	No
Spacer:	No
Divider:	No

Miscellaneous:

SHGC and VT:	Default Frame Absorptivity 0.3, per ANSI/NFRC 200-2017 Sec. 4.5.D.

Glazing Matrix

Glz ID	Name	Group	UCOG	Thick. (inch)	ID1	Gap fill %	ID2
1	CLEAR / AIR / CLEAR_(DS-DS)	L1	0.481	0.736	5009	AIR	5009
2	SB90 / AIR / CLEAR_(DS-DS)	L2	0.290	0.736	5444	AIR	5009
3	SB70 / AIR / CLEAR_(DS-DS)	L3	0.288	0.736	5432	AIR	5009
4	CLEAR / ARG90% / CLEAR_(DS-DS)	L4	0.455	0.736	5009	ARG(90)	5009
5	SB90 / ARG90% / CLEAR_(DS-DS)	L5	0.243	0.736	5444	ARG(90)	5009
6	SB70 / ARG90% / CLEAR_(DS-DS)	L6	0.240	0.736	5432	ARG(90)	5009

Note: L denotes the group leader per ANSI/NFRC 100-2017.

SHGC 0 and 1 & VT 0 and 1

	No-divider	Divider < 25.4 mm	Divider >= 25.4 mm
SHGC0	0.007143	0.010006	0.012654
SHGC1	0.630142	0.545962	0.468100
VT0	0	0	0
VT1	0.622998	0.535956	0.455446

$SHGC = SHGC0 + SHGCc * (SHGC1 - SHGC0)$
$VT = VT0 + VTc * (VT1 - VT0)$

$SHGCc$ = center of glass SHGC value only
VTc = center of glass VT value only

	Operator Type:	DDSG	2014 Model Size:	2000 mm x 2000 mm
Mfr Name: Green World Windows	Frame Type:	VY	Residential Size:	
Series/Model#: S-7000/7500	Sash Type:	VV	Non Res Size:	
	Thermal Break Type:	N		

Sim Lab Code:	SFSE
Sim Report#:	SIM18D-005
Sim Rpt date:	1/9/2018
Sim Rpt revision date:	
Frame Absorptance:	0.3
Rating Procedure:	2014

Mfr Prod. Code	Product Num	Pane Thick. 1	Pane Thick. 2	Pane Thick. 3	Gap 1	Gap 2	Emiss 1	Emiss 2	Emiss 3	Emiss 4	Emiss 5	Emiss 6	Spacer Type	Grid	Grid Size	U factor cog	SHGC cog	VT cog	Total U-factor	Total SHGC	Total VT	Total CR
CLEAR / AIR / CLEAR_(DS-DS) - supersure seal spacer II	001	0.118	0.118		0.500								A8-D	N		0.48	0.756099	0.813306	**0.42**	0.48	0.51	46
CLEAR / AIR / CLEAR_(DS-DS) - supersure seal spacer II – rectangular grid	001-0001	0.118	0.118		0.500								A8-D	G	0.75	0.48	0.756099	0.813306		0.42	0.44	
CLEAR / AIR / CLEAR_(DS-DS) - supersure seal spacer II - contour grid	002	0.118	0.118		0.500								A8-D	G	0.75	0.48	0.756099	0.813306	**0.43**	0.42	0.44	46
SB90 / AIR / CLEAR_(DS-DS) - supersure seal spacer II	003	0.118	0.118		0.500			0.023					A8-D	N		0.29	0.231486	0.524806	**0.31**	0.15	0.33	59
SB90 / AIR / CLEAR_(DS-DS) - supersure seal spacer II – rectangular grid	003-0001	0.118	0.118		0.500			0.023					A8-D	G	0.75	0.29	0.231486	0.524806		0.13	0.28	
SB90 / AIR / CLEAR_(DS-DS) - supersure seal spacer II - contour grid	004	0.118	0.118		0.500			0.023					A8-D	G	0.75	0.29	0.231486	0.524806	**0.33**	0.13	0.28	59
SB70 / AIR / CLEAR_(DS-DS) - supersure seal spacer II	005	0.118	0.118		0.500			0.018					A8-D	N		0.29	0.277053	0.641005	**0.31**	0.18	0.40	59
SB70 / AIR / CLEAR_(DS-DS) - supersure seal spacer II – rectangular grid	005-0001	0.118	0.118		0.500			0.018					A8-D	G	0.75	0.29	0.277053	0.641005		0.16	0.34	
SB70 / AIR / CLEAR_(DS-DS) - supersure seal spacer II - contour grid	006	0.118	0.118		0.500			0.018					A8-D	G	0.75	0.29	0.277053	0.641005	**0.33**	0.16	0.34	59
CLEAR / ARG90% / CLEAR_(DS-DS) - supersure seal spacer II	007	0.118	0.118		0.500								A8-D	N		0.46	0.756646	0.813306	**0.41**	0.48	0.51	48
CLEAR / ARG90% / CLEAR_(DS-DS) - supersure seal spacer II – rectangular grid	007-0001	0.118	0.118		0.500								A8-D	G	0.75	0.46	0.756646	0.813306		0.42	0.44	48
CLEAR / ARG90% / CLEAR_(DS-DS) - supersure seal spacer II - contour grid	008	0.118	0.118		0.500								A8-D	G	0.75	0.46	0.756646	0.813306	**0.42**	0.42	0.44	48
SB90 / ARG90% / CLEAR_(DS-DS) - supersure seal spacer II	009	0.118	0.118		0.500			0.023					A8-D	N		0.24	0.226010	0.524806	**0.28**	0.15	0.33	63
SB90 / ARG90% / CLEAR_(DS-DS) - supersure seal spacer II – rectangular grid	009-0001	0.118	0.118		0.500			0.023					A8-D	G	0.75	0.24	0.226010	0.524806		0.13	0.28	
SB90 / ARG90% / CLEAR_(DS-DS) - supersure seal spacer II - contour grid	010	0.118	0.118		0.500			0.023					A8-D	G	0.75	0.24	0.226010	0.524806	**0.30**	0.13	0.28	63
SB70 / ARG90% / CLEAR_(DS-DS) - supersure seal spacer II	011	0.118	0.118		0.500			0.018					A8-D	N		0.24	0.272124	0.641005	**0.28**	0.18	0.40	63
SB70 / ARG90% / CLEAR_(DS-DS) - supersure seal spacer II – rectangular grid	011-0001	0.118	0.118		0.500			0.018					A8-D	G	0.75	0.24	0.272124	0.641005		0.16	0.34	
SB70 / ARG90% / CLEAR_(DS-DS) - supersure seal spacer II - contour grid	012	0.118	0.118		0.500			0.018					A8-D	G	0.75	0.24	0.272124	0.641005	**0.29**	0.16	0.34	63
CLEAR / AIR / CLEAR_(DS-DS) - supersure seal spacer_regular	013	0.118	0.118		0.500								A8-D	N		0.48	0.756099	0.813306	**0.43**	0.48	0.51	44
CLEAR / AIR / CLEAR_(DS-DS) - supersure seal spacer_regular – rectangular grid	013-0001	0.118	0.118		0.500								A8-D	G	0.75	0.48	0.756099	0.813306		0.42	0.44	

Total Window U-Factor, SHGC & VT Values

Mfr Prod. Code	Product Num	Pane Thick. 1	Pane Thick. 2	Pane Thick. 3	Gap 1	Gap 2	Emiss 1	Emiss 2	Emiss 3	Emiss 4	Emiss 5	Emiss 6	Spacer Type	Grid	Grid Size	U factor cog	SHGC cog	VT cog	Total U-factor	Total SHGC	Total VT	Total CR
CLEAR / AIR / CLEAR_(DS-DS) - supersure seal spacer_regular - contour grid	014	0.118	0.118		0.500								A8-D	G	0.75	0.48	0.756099	0.813306	**0.44**	0.42	0.44	44
SB90 / AIR / CLEAR_(DS-DS) - supersure seal spacer_regular	015	0.118	0.118		0.500			0.023					A8-D	N		0.29	0.231486	0.524806	**0.32**	0.15	0.33	55
SB90 / AIR / CLEAR_(DS-DS) - supersure seal spacer_regular – rectangular grid	015-0001	0.118	0.118		0.500			0.023					A8-D	G	0.75	0.29	0.231486	0.524806		0.13	0.28	
SB90 / AIR / CLEAR_(DS-DS) - supersure seal spacer_regular - contour grid	016	0.118	0.118		0.500			0.023					A8-D	G	0.75	0.29	0.231486	0.524806	**0.34**	0.13	0.28	55

Mfr Prod. Code	Product Num	Pane Thick. 1	Pane Thick. 2	Pane Thick. 3	Gap 1	Gap 2	Emiss 1	Emiss 2	Emiss 3	Emiss 4	Emiss 5	Emiss 6	Spacer Type	Grid	Grid Size	U factor cog	SHGC cog	VT cog	Total U-factor	Total SHGC	Total VT	Total CR
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SB70 / AIR / CLEAR_(DS-DS) - supersure seal spacer_regular - contour grid	018	0.118	0.118		0.500			0.018					A8-D	G	0.75	0.29	0.277053	0.641005	**0.34**	0.16	0.34	55
CLEAR / ARG90% / CLEAR_(DS-DS) - supersure seal spacer_regular	019	0.118	0.118		0.500								A8-D	N		0.46	0.756646	0.813306	**0.42**	0.48	0.51	45
CLEAR / ARG90% / CLEAR_(DS-DS) - supersure seal spacer_regular – rectangular grid	019-0001	0.118	0.118		0.500								A8-D	G	0.75	0.46	0.756646	0.813306		0.42	0.44	
CLEAR / ARG90% / CLEAR_(DS-DS) - supersure seal spacer_regular - contour grid	020	0.118	0.118		0.500								A8-D	G	0.75	0.46	0.756646	0.813306	**0.42**	0.42	0.44	45
SB90 / ARG90% / CLEAR_(DS-DS) - supersure seal spacer_regular	021	0.118	0.118		0.500			0.023					A8-D	N		0.24	0.226010	0.524806	**0.29**	0.15	0.33	58
SB90 / ARG90% / CLEAR_(DS-DS) - supersure seal spacer_regular – rectangular grid	021-0001	0.118	0.118		0.500			0.023					A8-D	G	0.75	0.24	0.226010	0.524806		0.13	0.28	
SB90 / ARG90% / CLEAR_(DS-DS) - supersure seal spacer_regular - contour grid	022	0.118	0.118		0.500			0.023					A8-D	G	0.75	0.24	0.226010	0.524806	**0.31**	0.13	0.28	58
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SB70 / ARG90% / CLEAR_(DS-DS) - supersure seal spacer_regular - contour grid	024	0.118	0.118		0.500			0.018					A8-D	G	0.75	0.24	0.272124	0.641005	**0.30**	0.16	0.34	58

A8-D = exposed corrugated aluminum spacer with butyl- dual sealed
Product# 001 to 012 with supersure seal spacer II (see page 2 for more detail)
Product# 013 to 024 with supersure seal spacer regular (see page 2 for more detail)

SUMMARY AND ASSUMPTIONS:

1. For glass info., refer to Glazing Matrix detail this report.

2. This PVC sliding french door consists of 7 frame cross-sections.
Frame weather-strip: strip of mohair, facing exterior and interior, full perimeter.
Sash weather-strip: snap-in interlock has strip of mohair full perimeter, facing exterior & interior.
Both the interlocks, fixed & lock stiles, were reinforced with steel-galvanized sheet (per client).

3. 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.

4. As per ANSI/NFRC 200:2017: For SHGC & VT, actual glazing infill pane thicknesses in Table 4-1 for the range of glazing infill pane thicknesses were used.

5. For SHGC ratings, the values are calculated for the best glazing option model with the highest frame and edge U-factor frame per ANSI/NFRC 200-2017. The values calculated from that one case are then used to calculate the SHGC & VT for any other glazing options using Equations 4-1 and 4-2 in ANSI/NFRC 200-2017.

6. Drawings will be sent as a separate package and that the product simulated confirms to drawings supplied by manufacturer.

WINDOW SIMULATION REPORT:

The fenestration products documented in this report were simulated in accordance with the ANSI/NFRC 100-2017: Procedure for Determining Fenestration Product Thermal Performance & NFRC 500-2017. The fenestration products were simulated using computer programs Therm 7.4.4, Window 7.4.14 & Spectral Data # 58.0 as specified in ANSI/NFRC 100-2017 and ANSI/NFRC 200-2017 (SHGC/VT). The WINDOW program models the one-dimensional heat flow through the center-of-glass portion of the window. The Therm program models the two-dimensional heat flow through the frame, edge-of-glass, divider, and divider-edge portions of the fenestration product. The input data for both programs is based on manufacturer's specifications. Defaults for material thermal and optical properties are given in the computer programs. When values other than defaults were used, they are documented.

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It is the policy of this laboratory to prepare a report and submit it to the manufacturer for his approval. Upon notification in writing from the manufacturer that he approves of the report, (in approving report, manufacturer takes responsibility of all information provided to this laboratory) the report is sent to the certification agency. The data shall be kept for a period of five years after which they may be destroyed.

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F. Name and signature of the individual performing the simulations and accepting the responsibility for the technical accuracy of this simulation report.

Anis Jan

Anis Jan
Simulator-in-responsible-charge