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FENESTRATION SIMULATION ENGINEERING ***S***

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NFRC Accredited Computer Modeling & Simulation Laboratory

NFRC THERMAL SIMULATION REPORT

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

Fenestration Product:	**PVC Single Hung**
Report#:	**SIM13V-017-5**
Series#:	Platinum S-2000/2800-SH
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:

This is a simple addendum report to original simulation report# SIM13V-017, prepared on 05/20/2013 by FSE. Revised to add “SB90 glass options.” No other changes were made per client. For baseline product detail, refer to original sim report# SIM13V-017. No additional validation test required.

Baseline Simulation Date:	05/20/2013
Expiration Date:	Five years from the date of the oldest physical test conducted for the latest certification ratings
Revision Date:	12/20/2017
Product Type:	PVC Single Hung
Simulator:	Anis Jan
Simulator-in-Charge:	Anis Jan
Simulation Method:	Approved NFRC software THERM7 and WINDOW7 and NFRC WINDOW/THERM simulation manual

Model/Type:	VSSH
Size:	{1200 mm x 1500 mm} / [47” x 59”]
Frame Type and Finish:	Vinyl
Sash Type and Finish:	Vinyl w/ Reinforcement – Interlocks
IG Glass Parameters:	Glass from PPG. 2mm & 3mm glass with 1/2" gap. Glass was grouped with 2mm being the glass group leader. Low-e coating glass from PPG: SB90/e=0.023 applied on srf# 2
Glazing Method:	Glass is drop glazed from exterior onto double side foam tape 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 for both strips, per client) and A8-D = supersure seal spacer regular, dual sealed with hot melt butyl (with rigid PVC on top strip and corrugated aluminum-mill finish for bottom strip, 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 2 horizontal x 3 vertical strips/panel
Grouping:	
Center-of-Glazing:	Yes
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.	ID1	Gap fill (%)	ID2
1	SB90 / AIR / CLEAR_2mm	L1	0.291	0.697	5443	AIR	5008
2	SB90 / AIR / CLEAR_3mm	1	0.29	0.736	5444	AIR	5009
3	SB90 / ARG90% / CLEAR_2mm	L2	0.243	0.697	5443	ARG(90)	5008
4	SB90 / ARG90% / CLEAR_3mm	2	0.243	0.736	5444	ARG(90)	5009
50	SB70 / ARG / CLEAR_2mm	L50	0.241	0.697	5431	ARG(90)	5008

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	0.005201	0.007995	0.010630
SHGC1	0.789969	0.707980	0.630671
VT0	0	0	0
VT1	0.784768	0.699985	0.620042

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

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

Series#: Platinum S-2000/2800-SH
Product: PVC Single Hung

Total Window U-Factor, SHGC & VT Values

Report: SIM13V-017-5
Report Date: 12/20/2017

						Sim Lab Code:	SFSE
		Operator Type:	VSSH	***2014 Model Size:***	1200 mm x 1500 mm	***Sim Report#:***	SIM13V-017-5
Mfr Name:	Green World Windows	***Frame Type:***	VY	***Residential Size:***		***Sim Rpt date:***	5/20/2013
Series/Model#:	Platinum S-2000/2800	***Sash Type:***	VI	***Non Res Size:***		***Sim Rpt revision date:***	12/20/2017
		Thermal Break Type:	N			***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
SB90 / AIR / CLEAR_2mm - supersure seal spacer	001	0.098	0.098		0.500			0.023					A8-D	N		0.29	0.230377	0.531174	**0.33**	0.19	0.42	54
SB90 / AIR / CLEAR_2mm - supersure seal spacer – rectangular grid	001-0001	0.098	0.098		0.500			0.023					A8-D	G	0.75	0.29	0.230377	0.531174		0.17	0.37	
SB90 / AIR / CLEAR_3mm - supersure seal spacer	001-0002	0.118	0.118		0.500			0.023					A8-D	N		0.29	0.231486	0.524806		0.19	0.41	
SB90 / AIR / CLEAR_3mm - supersure seal spacer – rectangular grid	001-0003	0.118	0.118		0.500			0.023					A8-D	G	0.75	0.29	0.231486	0.524806		0.17	0.37	
SB90 / AIR / CLEAR_2mm - supersure seal spacer - contour grid	002	0.098	0.098		0.500			0.023					A8-D	G	0.75	0.29	0.230377	0.531174	**0.35**	0.17	0.37	54
SB90 / AIR / CLEAR_3mm - supersure seal spacer - contour grid	002-0001	0.118	0.118		0.500			0.023					A8-D	G	0.75	0.29	0.231486	0.524806		0.17	0.37	
SB90 / ARG90% / CLEAR_2mm - supersure seal spacer	003	0.098	0.098		0.500			0.023					A8-D	N		0.24	0.225516	0.531174	**0.30**	0.18	0.42	57
SB90 / ARG90% / CLEAR_2mm - supersure seal spacer – rectangular grid	003-0001	0.098	0.098		0.500			0.023					A8-D	G	0.75	0.24	0.225516	0.531174		0.17	0.37	
SB90 / ARG90% / CLEAR_3mm - supersure seal spacer	003-0002	0.118	0.118		0.500			0.023					A8-D	N		0.24	0.226010	0.524806		0.18	0.41	
SB90 / ARG90% / CLEAR_3mm - supersure seal spacer – rectangular grid	003-0003	0.118	0.118		0.500			0.023					A8-D	G	0.75	0.24	0.226010	0.524806		0.17	0.37	
SB90 / ARG90% / CLEAR_2mm - supersure seal spacer - contour grid	004	0.098	0.098		0.500			0.023					A8-D	G	0.75	0.24	0.225516	0.531174	**0.31**	0.17	0.37	57
SB90 / ARG90% / CLEAR_3mm - supersure seal spacer - contour grid	004-0001	0.118	0.118		0.500			0.023					A8-D	G	0.75	0.24	0.226010	0.524806		0.17	0.37	
SB90 / AIR / CLEAR_2mm - supersure seal spacer	005	0.098	0.098		0.500			0.023					A8-D	N		0.29	0.230377	0.531174	**0.32**	0.19	0.42	58
SB90 / AIR / CLEAR_2mm - supersure seal spacer – rectangular grid	005-0001	0.098	0.098		0.500			0.023					A8-D	G	0.75	0.29	0.230377	0.531174		0.17	0.37	
SB90 / AIR / CLEAR_3mm - supersure seal spacer	005-0002	0.118	0.118		0.500			0.023					A8-D	N		0.29	0.231486	0.524806		0.19	0.41	
SB90 / AIR / CLEAR_3mm - supersure seal spacer – rectangular grid	005-0003	0.118	0.118		0.500			0.023					A8-D	G	0.75	0.29	0.231486	0.524806		0.17	0.37	
SB90 / AIR / CLEAR_2mm - supersure seal spacer - contour grid	006	0.098	0.098		0.500			0.023					A8-D	G	0.75	0.29	0.230377	0.531174	**0.34**	0.17	0.37	58
SB90 / AIR / CLEAR_3mm - supersure seal spacer - contour grid	006-0001	0.118	0.118		0.500			0.023					A8-D	G	0.75	0.29	0.231486	0.524806		0.17	0.37	
SB90 / ARG90% / CLEAR_2mm - supersure seal spacer	007	0.098	0.098		0.500			0.023					A8-D	N		0.24	0.225516	0.531174	**0.28**	0.18	0.42	62
SB90 / ARG90% / CLEAR_2mm - supersure seal spacer – rectangular grid	007-0001	0.098	0.098		0.500			0.023					A8-D	G	0.75	0.24	0.225516	0.531174		0.17	0.37	
SB90 / ARG90% / CLEAR_3mm - supersure seal spacer	007-0002	0.118	0.118		0.500			0.023					A8-D	N		0.24	0.226010	0.524806		0.18	0.41	
SB90 / ARG90% / CLEAR_3mm - supersure seal spacer – rectangular grid	007-0003	0.118	0.118		0.500			0.023					A8-D	G	0.75	0.24	0.226010	0.524806		0.17	0.37	
SB90 / ARG90% / CLEAR_2mm - supersure seal spacer - contour grid	008	0.098	0.098		0.500			0.023					A8-D	G	0.75	0.24	0.225516	0.531174	**0.30**	0.17	0.37	62
SB90 / ARG90% / CLEAR_3mm - supersure seal spacer - contour grid	008-0001	0.118	0.118		0.500			0.023					A8-D	G	0.75	0.24	0.226010	0.524806		0.17	0.37	

A8-D = supersure seal spacer, dual sealed with hot melt butyl
Product# 001 to 004 with supersure seal spacer regular (see page 2 for more detail)
Product# 005 to 008 with supersure seal spacer II (see page 2 for more detail)

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.

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.

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It is the policy for this laboratory to verify as much information about the product being tested and simulated. However, not all information provided to the laboratory can be verified, such as physical properties of low-e coating, heat mirror, gas fills spacer, and others. Therefore, all information provided to the laboratory is the manufacturer’s responsibility as to its accuracy.

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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

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Simulator-in-responsible-charge