

**NFRC U-FACTOR, SHGC, VT, &
CONDENSATION RESISTANCE
COMPUTER SIMULATION REPORT**

(Revised)

**Rendered to:
REMODELERS SUPPLY CENTER**

**SERIES/MODEL:
Platinum 7000 Double Hung**

Report Number: 79455.09-116-45
Original Report Date: 02/01/08
Expiration Date: 02/01/12
Revised Report Date: 05/04/10

**NFRC U-FACTOR, SHGC, VT, & CONDENSATION RESISTANCE
COMPUTER SIMULATION REPORT**

(Revised)

Rendered to:
REMODELERS SUPPLY CENTER
2622 North Pulaski Road
Chicago, Illinois 60639

Report Number: 79455.09-116-45
Simulation Date: 02/01/08
Original Report Date: 02/01/08
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Revised Report Date: 05/04/10

Project Summary:

Architectural Testing, Inc. was contracted to perform U-Factor, Solar Heat Gain Coefficient, Visible Transmittance, and Condensation Resistance* computer simulations in accordance with the National Fenestration Rating Council (NFRC). The products were evaluated in full compliance with NFRC requirements to the standards listed below.

**NFRC's Condensation Resistance rating is NOT equivalent to a Condensation Resistance Factor (CRF) determined in accordance with AAMA 1503.*

Standards:

NFRC 100-2004: Procedure for Determining Fenestration Product U-Factors
NFRC 200-2004: Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence
NFRC 500-2004: Procedure for Determining Fenestration Product Condensation Resistance Values

Software:

Frame and Edge Modeling: THERM 5.2.14
Center-of-Glass Modeling: WINDOW 5.2.17
Total Product Calculations: WINDOW 5.2.17
Spectral Data Library: 17.3

Simulations Specimen Description:

Series/Model: Platinum 7000 Double Hung
Type: Vertical Slider , Double Hung
Frame Material: VY Vinyl
Sash Material: VI Vinyl w/ Reinforcement - Interlock
Standard Size: 1200mm x 1500mm

Technical Interpretations:

- 1) None

Modeling Assumptions:

- 1) None

Specialty Products Table:

The specialty products method allow 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 5.2. The method gives 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	0.004990	0.007627	0.010105
SHGC1	0.712595	0.634842	0.561769
VT0	0.000000	0.000000	0.000000
VT1	0.707605	0.627215	0.551664

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

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

Spacer Option Description

<i>Spacer Type</i>	<i>Sealant</i>		
	<i>Primary</i>	<i>Secondary</i>	<i>Desiccant</i>
Tin-Plate Intercept Spacer	Butyl Rubber	Butyl Rubber	Yes

Grid Option Description

<i>Grid Size</i>	<i>Grid Type</i>	<i>Grid Pattern</i>
0.188" x 0.610"	Aluminum Rectangular Grid	NFRC

Reinforcement Option Description

<i>Location</i>	<i>Material</i>
Lock and Keeper Rails	Aluminum

Gas Filling Technique Description

<i>Fill Type</i>	<i>Method</i>
92% Argon	Single probe timed
95% Argon	Dual probe
22% Kry / 68% Arg	Dual probe

Edge-of-Glass Construction

<i>Interior Condition</i>	<i>Exterior Condition</i>
Foam weatherstrip against glass	PVC glazing bead against glass

Weatherstripping

<i>Type</i>	<i>Quantity</i>	<i>Location</i>
Finpile	3 rows	Top Rail, Jamb Stile
Finpile	2 rows	Lock Stile, Bottom Rail
Finpile	1 row	Keeper Rail, Head Adapter

Frame/Sash Materials Finish

<i>Interior</i>	<i>Exterior</i>
Vinyl	Vinyl

**NFRC 100/200/500 Summary Sheet
Platinum 7000 Double Hung**

ID	Pane Thickness 1	Gap Width 1	Pane Thickness 2	Gap Width 2	Pane Thickness 3	Gap Width 3	Pane Thickness 4	Gap Fill	Low-e (Surface#)	Tint	Spacer	Grid Type
	U-Factor			Solar Heat Gain Coefficient (SHGC) Grids (None / <1 / >=1)				Visible Transmittance (VT) Grids (None / <1 / >=1)			Condensation Resistance	
1	clr / air / clr (SS/SS) 1"											
	0.086	0.828	0.086					AIR		CL	CU-D	N,G
	U-Factor 0.47			SHGC (N / <1 / >1) 0.56 / 0.50 / 0.44				VT (N / <1 / >1) 0.58 / 0.52 / 0.45			CR 42	
	clr / air / clr (DS/DS) 1"											
	0.123	0.754	0.123					AIR		CL	CU-D	N,G
	U-Factor 0.47			SHGC (N / <1 / >1) 0.56 / 0.50 / 0.44				VT (N / <1 / >1) 0.58 / 0.52 / 0.45			CR 42	
2	204 / air / clr (SS/SS) 1"											
	0.086	0.828	0.086					AIR	0.204(#2)	LE	CU-D	N,G
	U-Factor 0.39			SHGC (N / <1 / >1) 0.47 / 0.42 / 0.37				VT (N / <1 / >1) 0.53 / 0.47 / 0.42			CR 48	
	204 / air / clr (DS/DS) 1"											
	0.122	0.754	0.123					AIR	0.204(#2)	LE	CU-D	N,G
	U-Factor 0.39			SHGC (N / <1 / >1) 0.47 / 0.42 / 0.37				VT (N / <1 / >1) 0.53 / 0.47 / 0.42			CR 48	
3	204 / arg / clr (SS/SS) 1"											
	0.086	0.828	0.086					ARG92	0.204(#2)	LE	CU-D	N,G
	U-Factor 0.36			SHGC (N / <1 / >1) 0.47 / 0.42 / 0.37				VT (N / <1 / >1) 0.53 / 0.47 / 0.42			CR 51	
	204 / arg / clr (DS/DS) 1"											
	0.122	0.754	0.123					ARG92	0.204(#2)	LE	CU-D	N,G
	U-Factor 0.36			SHGC (N / <1 / >1) 0.47 / 0.42 / 0.37				VT (N / <1 / >1) 0.53 / 0.47 / 0.42			CR 51	
4	clr / air / clr / air / clr (SS/SS/SS) 1"											
	0.086	0.371	0.086	0.371	0.086			AIR		CL	CU-D	N
	U-Factor 0.36			SHGC (N) 0.52				VT (N) 0.54			CR 53	
5	204 / air / clr / air / clr (SS/SS/SS) 1"											
	0.086	0.371	0.086	0.371	0.086			AIR	0.204(#2)	LE	CU-D	N
	U-Factor 0.32			SHGC (N) 0.44				VT (N) 0.50			CR 57	
6	204 / arg / clr / arg / clr (SS/SS/SS) 1"											
	0.086	0.371	0.086	0.371	0.086			ARG92	0.204(#2)	LE	CU-D	N
	U-Factor 0.30			SHGC (N) 0.44				VT (N) 0.50			CR 59	
7	034 / arg / clr (SS/SS) 1"											
	0.087	0.828	0.086					ARG92	0.034(#2)	LE	CU-D	N,G
	U-Factor 0.32			SHGC (N / <1 / >1) 0.34 / 0.30 / 0.27				VT (N / <1 / >1) 0.50 / 0.45 / 0.39			CR 53	

**NFRC 100/200/500 Summary Sheet
Platinum 7000 Double Hung**

ID	Pane Thickness 1	Gap Width 1	Pane Thickness 2	Gap Width 2	Pane Thickness 3	Gap Width 3	Pane Thickness 4	Gap Fill	Low-e (Surface#)	Tint	Spacer	Grid Type
	U-Factor			Solar Heat Gain Coefficient (SHGC) Grids (None / <1 / >=1)				Visible Transmittance (VT) Grids (None / <1 / >=1)			Condensation Resistance	
	034 / arg / clr (DS/DS) 1"											
	0.125	0.754	0.123					ARG92	0.033(#2)	LE	CU-D	N,G
	U-Factor 0.32			SHGC (N / <1 / >1) 0.34 / 0.30 / 0.27				VT (N / <1 / >1) 0.50 / 0.45 / 0.39			CR 53	
8	034 / arg / clr / arg / clr (SS/SS/SS) 1"											
	0.087	0.371	0.086	0.371	0.086			ARG92	0.034(#2)	LE	CU-D	N
	U-Factor 0.27			SHGC (N) 0.31				VT (N) 0.46			CR 61	
9	clr / air / clr / air / clr (SS/SS/SS) 1"											
	0.086	0.371	0.086	0.371	0.086			AIR		CL	CU-D	G
	U-Factor 0.37			SHGC (<1 / >1) 0.47 / 0.41				VT (<1 / >1) 0.48 / 0.42			CR 53	
10	204 / air / clr / air / clr (SS/SS/SS) 1"											
	0.086	0.371	0.086	0.371	0.086			AIR	0.204(#2)	LE	CU-D	G
	U-Factor 0.33			SHGC (<1 / >1) 0.39 / 0.35				VT (<1 / >1) 0.44 / 0.39			CR 57	
11	204 / arg / clr / arg / clr (SS/SS/SS) 1"											
	0.086	0.371	0.086	0.371	0.086			ARG92	0.204(#2)	LE	CU-D	G
	U-Factor 0.30			SHGC (<1 / >1) 0.39 / 0.35				VT (<1 / >1) 0.44 / 0.39			CR 59	
12	034 / arg / clr / arg / clr (SS/SS/SS) 1"											
	0.087	0.371	0.086	0.371	0.086			ARG92	0.034(#2)	LE	CU-D	G
	U-Factor 0.28			SHGC (<1 / >1) 0.28 / 0.25				VT (<1 / >1) 0.41 / 0.36			CR 61	
13	TiAC36 / arg / clr (SS/SS) 1"											
	0.087	0.828	0.086					ARG92	0.034(#2)	LE	CU-D	N,G
	U-Factor 0.32			SHGC (N / <1 / >1) 0.26 / 0.23 / 0.21				VT (N / <1 / >1) 0.48 / 0.43 / 0.37			CR 53	
13	TiAC36 / arg / clr (DS/DS) 1"											
	0.118	0.754	0.123					ARG92	0.034(#2)	LE	CU-D	N,G
	U-Factor 0.32			SHGC (N / <1 / >1) 0.26 / 0.23 / 0.21				VT (N / <1 / >1) 0.48 / 0.43 / 0.37			CR 53	
14	TiAC36 / arg / clr / arg / clr (SS/SS/SS) 1"											
	0.087	0.371	0.086	0.371	0.086			ARG92	0.034(#2)	LE	CU-D	N
	U-Factor 0.27			SHGC (N) 0.25				VT (N) 0.45			CR 61	
15	TiAC36 / arg / clr / arg / clr (SS/SS/SS) 1"											
	0.087	0.371	0.086	0.371	0.086			ARG92	0.034(#2)	LE	CU-D	G
	U-Factor 0.28			SHGC (<1 / >1) 0.22 / 0.20				VT (<1 / >1) 0.40 / 0.35			CR 61	

**NFRC 100/200/500 Summary Sheet
Platinum 7000 Double Hung**

ID	Pane Thickness 1	Gap Width 1	Pane Thickness 2	Gap Width 2	Pane Thickness 3	Gap Width 3	Pane Thickness 4	Gap Fill	Low-e (Surface#)	Tint	Spacer	Grid Type
	U-Factor			Solar Heat Gain Coefficient (SHGC) Grids (None / <1 / >=1)				Visible Transmittance (VT) Grids (None / <1 / >=1)			Condensation Resistance	
16	TiAC36 / arg / clr / arg / EPS (SS/SS/SS) 1-1/8"											
	0.087	0.422	0.086	0.422	0.087			ARG95	0.034(#2) / 0.148(#5)	LE	CU-D	N
	U-Factor 0.23			SHGC (N) 0.23				VT (N) 0.42			CR 56	
17	TiAC36 / arg / clr / arg / EPS (SS/SS/SS) 1-1/8"											
	0.087	0.422	0.086	0.422	0.087			ARG95	0.034(#2) / 0.148(#5)	LE	CU-D	G
	U-Factor 0.23			SHGC (<1 / >1) 0.21 / 0.19				VT (<1 / >1) 0.37 / 0.33			CR 56	
18	TiAC36 / arg / clr / arg / TiAC36 (SS/SS/SS) 1-1/8"											
	0.087	0.422	0.086	0.422	0.087			ARG95	0.034(#2) / 0.034(#5)	LE	CU-D	N
	U-Factor 0.22			SHGC (N) 0.22				VT (N) 0.37			CR 56	
19	TiAC36 / arg / clr / arg / TiAC36 (SS/SS/SS) 1-1/8"											
	0.087	0.422	0.086	0.422	0.087			ARG95	0.034(#2) / 0.034(#5)	LE	CU-D	G
	U-Factor 0.22			SHGC (<1 / >1) 0.20 / 0.18				VT (<1 / >1) 0.33 / 0.29			CR 56	
20	E366 / arg / clr / arg / E366 (SS/SS/SS) 1-1/8"											
	0.087	0.422	0.087	0.422	0.087			ARG95	0.022(#2) / 0.022(#5)	LE	CU-D	N
	U-Factor 0.22			SHGC (N) 0.17				VT (N) 0.33			CR 56	
21	E366 / arg / clr / arg / E366 (SS/SS/SS) 1-1/8"											
	0.087	0.422	0.087	0.422	0.087			ARG95	0.022(#2) / 0.022(#5)	LE	CU-D	G
	U-Factor 0.22			SHGC (<1 / >1) 0.16 / 0.14				VT (<1 / >1) 0.30 / 0.26			CR 56	
22	TiAC36 / arg-kry / clr / arg-kry / EPS (SS/SS/SS) 1-1/8"											
	0.087	0.422	0.086	0.422	0.087			AR368/22	0.034(#2) / 0.148(#5)	LE	CU-D	N
	U-Factor 0.23			SHGC (N) 0.23				VT (N) 0.42			CR 56	
23	TiAC36 / arg-kry / clr / arg-kry / EPS (SS/SS/SS) 1-1/8"											
	0.087	0.422	0.086	0.422	0.087			AR368/22	0.034(#2) / 0.148(#5)	LE	CU-D	G
	U-Factor 0.23			SHGC (<1 / >1) 0.21 / 0.19				VT (<1 / >1) 0.37 / 0.33			CR 56	
24	TiAC36 / arg-kry / clr / arg-kry / TiAC36 (SS/SS/SS) 1-1/8"											
	0.087	0.422	0.086	0.422	0.087			AR368/22	0.034(#2) / 0.034(#5)	LE	CU-D	N
	U-Factor 0.21			SHGC (N) 0.22				VT (N) 0.37			CR 56	
25	TiAC36 / arg-kry / clr / arg-kry / TiAC36 (SS/SS/SS) 1-1/8"											
	0.087	0.422	0.086	0.422	0.087			AR368/22	0.034(#2) / 0.034(#5)	LE	CU-D	G
	U-Factor 0.22			SHGC (<1 / >1) 0.20 / 0.18				VT (<1 / >1) 0.33 / 0.29			CR 56	

**NFRC 100/200/500 Summary Sheet
Platinum 7000 Double Hung**

ID	Pane Thickness 1	Gap Width 1	Pane Thickness 2	Gap Width 2	Pane Thickness 3	Gap Width 3	Pane Thickness 4	Gap Fill	Low-e (Surface#)	Tint	Spacer	Grid Type
	U-Factor			Solar Heat Gain Coefficient (SHGC) Grids (None / <1 / >=1)				Visible Transmittance (VT) Grids (None / <1 / >=1)			Condensation Resistance	
26	E366 / arg-kry / clr / arg-kry / E366 (SS/SS/SS) 1-1/8"											
	0.087	0.422	0.087	0.422	0.087			AR368/22	0.022(#2) / 0.022(#5)	LE	CU-D	N
	U-Factor 0.21			SHGC (N) 0.17				VT (N) 0.33			CR 56	
27	E366 / arg-kry / clr / arg-kry / E366 (SS/SS/SS) 1-1/8"											
	0.087	0.422	0.087	0.422	0.087			AR368/22	0.022(#2) / 0.022(#5)	LE	CU-D	G
	U-Factor 0.21			SHGC (<1 / >1) 0.16 / 0.14				VT (<1 / >1) 0.30 / 0.26			CR 56	
28	EPS / arg / clr (SS/SS) 1"											
	0.087	0.828	0.086					ARG95	0.148(#2)	LE	CU-D	N,G
	U-Factor 0.35			SHGC (N / <1 / >1) 0.46 / 0.41 / 0.37				VT (N / <1 / >1) 0.53 / 0.47 / 0.41			CR 52	
	EPS / arg / clr (DS/DS) 1"											
	0.123	0.754	0.123					ARG95	0.148(#2)	LE	CU-D	N,G
U-Factor 0.35			SHGC (N / <1 / >1) 0.46 / 0.41 / 0.37				VT (N / <1 / >1) 0.53 / 0.47 / 0.41			CR 52		
29	E366 / arg / clr (SS/SS) 1"											
	0.087	0.828	0.087					ARG95	0.022(#2)	LE	CU-D	N,G
	U-Factor 0.31			SHGC (N / <1 / >1) 0.20 / 0.18 / 0.16				VT (N / <1 / >1) 0.46 / 0.41 / 0.36			CR 54	
	E366 / arg / clr (DS/DS) 1"											
	0.117	0.754	0.117					ARG95	0.022(#2)	LE	CU-D	N,G
U-Factor 0.31			SHGC (N / <1 / >1) 0.20 / 0.18 / 0.16				VT (N / <1 / >1) 0.46 / 0.41 / 0.36			CR 54		
30	E270 / arg / clr (SS/SS) 1"											
	0.087	0.828	0.087					ARG95	0.037(#2)	LE	CU-D	N,G
	U-Factor 0.32			SHGC (N / <1 / >1) 0.26 / 0.24 / 0.21				VT (N / <1 / >1) 0.50 / 0.44 / 0.39			CR 53	
	E270 / arg / clr (DS/DS) 1"											
	0.118	0.754	0.117					ARG95	0.037(#2)	LE	CU-D	N,G
U-Factor 0.32			SHGC (N / <1 / >1) 0.26 / 0.24 / 0.21				VT (N / <1 / >1) 0.50 / 0.44 / 0.39			CR 53		
31	EPS / arg / clr / arg / clr (SS/SS/SS) 1"											
	0.087	0.371	0.086	0.371	0.086			ARG95	0.148(#2)	LE	CU-D	N
	U-Factor 0.29			SHGC (N) 0.45				VT (N) 0.50			CR 60	
32	EPS / arg / clr / arg / clr (SS/SS/SS) 1"											
	0.087	0.371	0.086	0.371	0.086			ARG95	0.148(#2)	LE	CU-D	G
	U-Factor 0.29			SHGC (<1 / >1) 0.40 / 0.36				VT (<1 / >1) 0.45 / 0.39			CR 60	

**NFRC 100/200/500 Summary Sheet
Platinum 7000 Double Hung**

ID	Pane Thickness 1	Gap Width 1	Pane Thickness 2	Gap Width 2	Pane Thickness 3	Gap Width 3	Pane Thickness 4	Gap Fill	Low-e (Surface#)	Tint	Spacer	Grid Type
	U-Factor			Solar Heat Gain Coefficient (SHGC) Grids (None / <1 / >=1)				Visible Transmittance (VT) Grids (None / <1 / >=1)			Condensation Resistance	
33	E366 / arg / clr / arg / clr (SS/SS/SS) 1"											
	0.087	0.371	0.087	0.371	0.087			ARG95	0.022(#2)	LE	CU-D	N
	U-Factor 0.27			SHGC (N) 0.18				VT (N) 0.43			CR 62	
34	E366 / arg / clr / arg / clr (SS/SS/SS) 1"											
	0.087	0.371	0.087	0.371	0.087			ARG95	0.022(#2)	LE	CU-D	G
	U-Factor 0.28			SHGC (<1 / >1) 0.17 / 0.15				VT (<1 / >1) 0.38 / 0.33			CR 62	
35	E270 / arg / clr / arg / clr (SS/SS/SS) 1"											
	0.087	0.371	0.087	0.371	0.087			ARG95	0.037(#2)	LE	CU-D	N
	U-Factor 0.27			SHGC (N) 0.25				VT (N) 0.46			CR 61	
36	E270 / arg / clr / arg / clr (SS/SS/SS) 1"											
	0.087	0.371	0.087	0.371	0.087			ARG95	0.037(#2)	LE	CU-D	G
	U-Factor 0.28			SHGC (<1 / >1) 0.22 / 0.20				VT (<1 / >1) 0.41 / 0.36			CR 61	

This report is reissued in the name of Remodelers Supply Center through written authorization of Veka Inc., to whom the original report was rendered. The original Veka Inc. report number is 79455.01-116-45.

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.

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 ratings values were rounded in accordance to NFRC 601, NFRC Unit and Measurement Policy.

Architectural Testing is an NFRC accredited simulation laboratory and all simulations were conducted in full compliance with NFRC approved procedures and specifications. The NFRC procedure requires that the computational results be verified through actual test results.

Detailed drawings, simulation data files, a copy of this report, or other pertinent project documentation will be retained by Architectural Testing, Inc. for a period of four years from the original test date. At the end of this retention period, such materials shall be discarded without notice and the service life of this report will expire. Results obtained are simulated values and were secured by using the designated test methods. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the product simulated. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC.:

SIMULATED BY:



Digitally Signed by: Eric S. Leitner

Eric S. Leitner
Simulation Technician

REVIEWED BY:



Digitally Signed by: Kristen L. Livelsberger

Kristen L. Livelsberger
Senior Simulation Technician
Simulator-In-Responsible-Charge

ESL:esl

79455.09-116-45

Attachments (pages): This report is complete only when all attachments listed are included.
Appendix A: Drawings and Bills of Material (3)

Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
.01R0	2/1/2008	All	- Original report issued
.02R0	2/1/2008	All	- Reissued report to Remodelers
.04R0	4/23/2008	All	- Corrected sill frame - Corrected SHGC / Vt table
.05R0	5/13/2009	All	- Added TiAC36 options (#13-15)
.09R0	5/4/2010	All	- Added Options #16-36