

TEMP / TEMP

Cardinal LoE 366

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	2154	2001	0.50	0.28	0.65	00468-00002
Solar Grey	5049	2154	0.50	0.29	0.43	00468-00004
Solar Bronze	5041	2154	0.50	0.31	0.48	00468-00003
Evergreen	9881	2154	0.50	0.33	0.55	00468-00006
Azuria	5033	2154	0.50	0.33	0.55	00468-00005

Cardinal LoE 272

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	2011	2001	0.50	0.42	0.72	00465-00002
	5049	2011	0.50	0.37	0.48	00465-00015
	5041	2011	0.50	0.40	0.53	00465-00014
	9881	2011	0.50	0.38	0.61	00465-00017
	5033	2011	0.50	0.38	0.61	00465-00016

Solar Ban 70XL

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5432	2001	0.50	0.28	0.64	00455-00003
	5049	5432	0.50	0.29	0.43	00455-00021
	5041	5432	0.50	0.31	0.48	00455-00020
	9881	5432	0.50	0.32	0.55	00455-00023
	5033	5432	0.50	0.33	0.55	00455-00022

Solar Ban 60

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5281	2001	0.50	0.40	0.73	00455-00002
	5049	5281	0.50	0.36	0.48	00455-00017
	5041	5281	0.50	0.39	0.54	00455-00016
	9881	5281	0.50	0.37	0.62	00455-00019
	5033	5281	0.50	0.37	0.62	00455-00018

TEMP / LAM

Cardinal LoE 366

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	2154	1810	0.50	0.28	0.63	00465-00005
Solar Grey	5049	30032	0.50	0.29	0.42	00465-00026
Solar Bronze	5041	30032	0.50	0.31	0.47	00465-00025
Evergreen	9881	30032	0.50	0.33	0.54	00465-00028
Azuria	5033	30032	0.50	0.33	0.54	00465-00027
White Lam	2154	1892	0.50	0.27	0.47	00465-00011

Cardinal LoE 272

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	2011	1810	0.51	0.41	0.70	00464-00005
	5049	5432	0.50	0.29	0.43	00455-00021
	5041	5432	0.50	0.31	0.48	00455-00020
	9881	5432	0.50	0.32	0.55	00455-00023
	5033	5432	0.50	0.33	0.55	00455-00022
	5432	1892	0.50	0.27	0.46	00455-00013

Solar Ban 70XL

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5432	1810	0.50	0.28	0.63	00455-00006
	5049	5432	0.50	0.29	0.43	00455-00021
	5041	5432	0.50	0.31	0.48	00455-00020
	9881	5432	0.50	0.32	0.55	00455-00023
	5033	5432	0.50	0.33	0.55	00455-00022
	5432	1892	0.50	0.27	0.46	00455-00013

Solar Ban 60

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5281	1810	0.51	0.40	0.71	00456-00004
	5049	5281	0.50	0.36	0.48	00455-00017
	5041	5281	0.50	0.39	0.54	00455-00016
	9881	5281	0.50	0.37	0.62	00455-00019
	5033	5281	0.50	0.37	0.62	00455-00018
	5281	1892	0.51	0.38	0.52	00456-00011

1" O.A. - Temp / Lam (3/16" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
SGP Lam	2156	2067	0.50	0.27	0.61	00468-00001

1" O.A. - Temp / Lam (3/16" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	2013	2067	0.50	0.27	0.61	00468-00001

TRIPLE PANE

Cardinal LoE 366 + 180

1-5/16" O.A. - Temp / Temp

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	2154	2001	0.35	0.24	0.57	00473-00011
Solar Grey	5049	2154	0.35	0.30	0.38	00473-00013
Solar Bronze	5041	2154	0.35	0.32	0.42	00473-00012
Evergreen	9881	2154	0.35	0.31	0.48	00473-00015
Azuria	5033	2154	0.35	0.30	0.49	00473-00014
	Pane 2	2191				

Cardinal LoE 366 + 180

1-5/16" O.A. - Temp / Lam

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	2154	1810	0.35	0.24	0.56	00474-00021
	5049	2154	0.35	0.30	0.38	00473-00013
	5041	2154	0.35	0.32	0.42	00473-00012
	9881	2154	0.35	0.31	0.48	00473-00015
	5033	2154	0.35	0.30	0.49	00473-00014
	Pane 2	2191				

PLASTIC GLAZING

Double Dome Glazing

	Panes	U-factor	SHGC	VT	CPD Line
Clear	30004	0.68	0.75	0.77	00479-00001
White	30007	0.68	0.52	0.43	00479-00002
Bronze	30010	0.68	0.41	0.22	00479-00003

Triple Dome Glazing

	Panes	U-factor	SHGC	VT	CPD Line
	30006	0.51	0.68	0.66	00481-00001
	30009	0.51	0.48	0.34	00481-00002
	30012	0.51	0.34	0.19	00481-00003

25mm Polycarb. MWS

	Panes	U-factor	SHGC	VT	CPD Line
Clear	30005	0.51	0.57	0.57	00480-00001
White	30008	0.51	0.41	0.41	00480-00002
Bronze	30011	0.51	0.41	0.41	00480-00003

White Dome / 25 mm Clear MWS

	Panes	U-factor	SHGC	VT	CPD Line
	30013	0.39	0.31	0.29	00482-00001

CLIMATE ZONE	U-FACTOR ¹	SHGC ²	
Northern	≤ 0.30	Any	Prescriptive
	= 0.31	> 0.35	Equivalent Energy Performance
	= 0.32	≥ 0.40	
North Central	≤ 0.30	≤ 0.40	
South Central	≤ 0.30	≤ 0.25	
Southern	≤ 0.40	≤ 0.25	

CLIMATE ZONE	U-FACTOR ¹	SHGC ²
Northern	≤ 0.50	Any
North Central	≤ 0.53	≤ 0.35
South Central	≤ 0.53	≤ 0.28
Southern	≤ 0.60	≤ 0.28

Air Leakage ≤ 0.3 cfm/ft²
¹ Btu/h ft² °F
² Solar Heat Gain Coefficient



- Northern
- North-Central
- South-Central
- Southern



Energy Code Prescriptive Maximum Requirements

	WINDOWS		SKYLIGHTS	
	U-factor	SHGC	U-factor	SHGC
2012 IECC (Zone 5 & Marine 4)	0.35	0.40	0.60	0.40
2015 IECC (Zone 5 & Marine 4)	0.32	NR	0.55	NR
WSEC (Residential)	0.30	NR	0.50	NR
WSEC (Commercial)	0.30	0.30	0.50	0.35
WSEC (Com. Metal Framing)	0.38	0.36		
SEC (Commercial)	0.30	0.35	0.45	0.32
SEC (Com. Metal Framing)	0.38	0.35		
SEC (Residential)	0.30	NR	0.50	NR

This REFERENCE GUIDE shows NFRC Certified values for our common glazing configurations. Please contact us if you have a specific glazing requirement not shown.

VT values for plastic glazing are not certified due to NFRC Test Procedure limitations. Values shown are center of glazing.



TEMP / TEMP

Cardinal LoE 366

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	2154	2001	0.48	0.27	0.64	00065-00001
Solar Grey	5049	2154	0.48	0.29	0.43	00065-00003
Solar Bronze	5041	2154	0.48	0.31	0.48	00065-00002
Evergreen	9881	2154	0.48	0.32	0.55	00065-00005
Azuria	5033	2154	0.48	0.33	0.55	00065-00004

TEMP / LAM

Cardinal LoE 366

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	2154	1810	0.45	0.28	0.63	00073-00001
White Lam	2154	1892	0.45	0.27	0.46	00073-00006

TRIPLE PANE

PLASTIC GLAZING

WINDOWS			
CLIMATE ZONE	U-FACTOR ¹	SHGC ²	
Northern	≤ 0.30	Any	Prescriptive
	= 0.31	≥ 0.35	Equivalent Energy Performance
	= 0.32	≥ 0.40	
North Central	≤ 0.30	≤ 0.40	
South Central	≤ 0.30	≤ 0.25	
Southern	≤ 0.40	≤ 0.25	

SKYLIGHTS		
CLIMATE ZONE	U-FACTOR ¹	SHGC ²
Northern	≤ 0.50	Any
North Central	≤ 0.53	≤ 0.35
South Central	≤ 0.53	≤ 0.28
Southern	≤ 0.60	≤ 0.28

Air Leakage ≤ 0.3 cfm/ft²
¹ Btu/h ft²·F
² Solar Heat Gain Coefficient



This REFERENCE GUIDE shows NFRC Certified values for our common glazing configurations. Please contact us if you have a specific glazing requirement not shown.



	WINDOWS		SKYLIGHTS	
	U-factor	SHGC	U-factor	SHGC
2012 IECC (Zone 5 & Marine 4)	0.35	0.40	0.60	0.40
2015 IECC (Zone 5 & Marine 4)	0.32	NR	0.55	NR
WSEC (Residential)	0.30	NR	0.50	NR
WSEC (Commercial)	0.30	0.30	0.50	0.35
WSEC (Com. Metal Framing)	0.38	0.36		
SEC (Commercial)	0.30	0.35	0.45	0.32
SEC (Com. Metal Framing)	0.38	0.35		
SEC (Residential)	0.30	NR		

TEMP / TEMP

Cardinal LoE 366

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	2154	2001	0.56	0.27	0.63	0841-00002
Solar Grey	5049	2154	0.56	0.29	0.42	0841-00004
Solar Bronze	5041	2154	0.56	0.30	0.47	0841-00003
Evergreen	9881	2154	0.56	0.32	0.54	0841-00006
Azuria	5033	2154	0.56	0.33	0.54	0841-00005

Cardinal LoE 272

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	2011	2001	0.56	0.41	0.70	0838-00002
Solar Grey	5049	2011	0.56	0.36	0.47	0838-00015
Solar Bronze	5041	2011	0.56	0.39	0.52	0838-00014
Evergreen	9881	2011	0.56	0.37	0.59	0838-00017
Azuria	5033	2011	0.56	0.37	0.60	0838-00016

Solar Ban 70XL

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	5432	2001	0.56	0.27	0.63	0828-00003
Solar Grey	5049	5432	0.56	0.28	0.42	0828-00021
Solar Bronze	5041	5432	0.56	0.30	0.46	0828-00020
Evergreen	9881	5432	0.56	0.32	0.53	0828-00023
Azuria	5033	5432	0.56	0.32	0.54	0828-00022

Solar Ban 60

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	5281	2001	0.56	0.40	0.71	0828-00002
Solar Grey	5049	5281	0.56	0.36	0.47	0828-00017
Solar Bronze	5041	5281	0.56	0.38	0.53	0828-00016
Evergreen	9881	5281	0.56	0.37	0.60	0828-00019
Azuria	5033	5281	0.56	0.36	0.61	0828-00018

TEMP / LAM

Cardinal LoE 366

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	2154	1810	0.56	0.27	0.62	0838-00005
Solar Grey	5049	30032	0.56	0.29	0.41	0838-00026
Solar Bronze	5041	30032	0.56	0.30	0.46	0838-00025
Evergreen	9881	30032	0.56	0.32	0.53	0838-00028
Azuria	5033	30032	0.56	0.32	0.53	0838-00027
White Lam	2154	1892	0.56	0.26	0.45	0838-00011

Cardinal LoE 272

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	5432	1810	0.56	0.27	0.61	0828-00006
Solar Grey	5049	5432	0.56	0.28	0.42	0828-00021
Solar Bronze	5041	5432	0.56	0.30	0.46	0828-00020
Evergreen	9881	5432	0.56	0.32	0.53	0828-00023
Azuria	5033	5432	0.56	0.32	0.54	0828-00022
White Lam	5432	1892	0.56	0.26	0.45	0828-00013

Solar Ban 70XL

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	5432	1810	0.56	0.27	0.61	0828-00006
Solar Grey	5049	5432	0.56	0.28	0.42	0828-00021
Solar Bronze	5041	5432	0.56	0.30	0.46	0828-00020
Evergreen	9881	5432	0.56	0.32	0.53	0828-00023
Azuria	5033	5432	0.56	0.32	0.54	0828-00022
White Lam	5432	1892	0.56	0.26	0.45	0828-00013

Solar Ban 60

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	5281	1810	0.57	0.39	0.69	0829-00004
Solar Grey	5049	5281	0.56	0.36	0.47	0829-00017
Solar Bronze	5041	5281	0.56	0.38	0.53	0829-00016
Evergreen	9881	5281	0.56	0.37	0.60	0829-00019
Azuria	5033	5281	0.56	0.36	0.61	0829-00018
White Lam	5281	1892	0.57	0.38	0.51	0829-00011

1" O.A. - Temp / Lam (3/16" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
SGP Lam	2156	2067	0.56	0.27	0.60	0841-00001

1" O.A. - Temp / Lam (3/16" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
SGP Lam	2013	2067	0.56	0.27	0.60	0841-00001

TRIPLE PANE

Cardinal LoE 366 + 180

1-5/16" O.A. - Temp / Temp

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	2154	2001	0.42	0.23	0.56	0847-00011
Solar Grey	5049	2154	0.42	0.29	0.37	0847-00013
Solar Bronze	5041	2154	0.42	0.32	0.41	0847-00012
Evergreen	9881	2154	0.42	0.30	0.47	0847-00015
Azuria	5033	2154	0.42	0.30	0.47	0847-00014
	Pane 2	2191				

Cardinal LoE 366 + 180

1-5/16" O.A. - Temp / Temp / Lam

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	2154	1810	0.42	0.23	0.54	0848-00021
Solar Grey	5049	2154	0.42	0.29	0.37	0847-00013
Solar Bronze	5041	2154	0.42	0.32	0.41	0847-00012
Evergreen	9881	2154	0.42	0.30	0.47	0847-00015
Azuria	5033	2154	0.42	0.30	0.47	0847-00014
	Pane 2	2191				

PLASTIC GLAZING

Double Dome Glazing

	Panes	U-factor	SHGC	VT	CPD Line
Clear	30004	0.73	0.73	0.77	0852-00001
White	30007	0.73	0.51	0.43	0852-00002
Bronze	30010	0.73	0.40	0.22	0852-00003

Triple Dome Glazing

	Panes	U-factor	SHGC	VT	CPD Line
Clear	30006	0.56	0.66	0.66	0853-00001
White	30009	0.56	0.47	0.34	0853-00002
Bronze	30012	0.56	0.33	0.19	0853-00003

25mm Polycarb. MWS

	Panes	U-factor	SHGC	VT	CPD Line
Clear	30005	0.57	0.56	0.57	0854-00001
White	30008	0.57	0.40	0.41	0854-00002
Bronze	30011	0.57	0.40	0.41	0854-00003

WINDOWS			
CLIMATE ZONE	U-FACTOR ¹	SHGC ²	
Northern	≤ 0.30	Any	Prescriptive
	= 0.31	> 0.35	Equivalent Energy Performance
	= 0.32	≥ 0.40	
North Central	≤ 0.30	≤ 0.40	
South Central	≤ 0.30	≤ 0.25	
Southern	≤ 0.40	≤ 0.25	

SKYLIGHTS		
CLIMATE ZONE	U-FACTOR ¹	SHGC ²
Northern	≤ 0.50	Any
North Central	≤ 0.53	≤ 0.35
South Central	≤ 0.53	≤ 0.28
Southern	≤ 0.60	≤ 0.28

Air Leakage ≤ 0.3 cfm/ft²
¹ Btu/h ft² °F
² Solar Heat Gain Coefficient



- Northern
- North-Central
- South-Central
- Southern



Energy Code Prescriptive Maximum Requirements

	WINDOWS		SKYLIGHTS	
	U-factor	SHGC	U-factor	SHGC
2012 IECC (Zone 5 & Marine 4)	0.35	0.40	0.60	0.40
2015 IECC (Zone 5 & Marine 4)	0.32	NR	0.55	NR
WSEC (Residential)	0.30	NR	0.50	NR
WSEC (Commercial)	0.30	0.30	0.50	0.35
WSEC (Com. Metal Framing)	0.38	0.36		
SEC (Commercial)	0.30	0.35	0.45	0.32
SEC (Com. Metal Framing)	0.38	0.35		
SEC (Residential)	0.30	NR	0.50	NR

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TEMP / TEMP

Cardinal LoE 366

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	2154	2001	0.49	0.25	0.57	0790-00002
Solar Grey	5049	2154	0.49	0.26	0.38	0790-00004
Solar Bronze	5041	2154	0.49	0.27	0.42	0790-00003
Evergreen	9881	2154	0.49	0.29	0.48	0790-00006
Azuria	5033	2154	0.49	0.29	0.48	0790-00005

Cardinal LoE 272

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	2011	2001	0.49	0.37	0.63	0787-00002
	5049	2011	0.49	0.33	0.42	0787-00015
	5041	2011	0.49	0.35	0.47	0787-00014
	9881	2011	0.49	0.33	0.53	0787-00017
	5033	2011	0.49	0.33	0.54	0787-00016

Solar Ban 70XL

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5432	2001	0.49	0.25	0.56	0777-00003
	5049	5432	0.49	0.26	0.38	0777-00021
	5041	5432	0.49	0.27	0.42	0777-00020
	9881	5432	0.49	0.28	0.48	0777-00023
	5033	5432	0.49	0.29	0.48	0777-00022

Solar Ban 60

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5281	2001	0.49	0.36	0.64	0777-00002
	5049	5281	0.49	0.32	0.42	0777-00017
	5041	5281	0.49	0.34	0.47	0777-00016
	9881	5281	0.49	0.33	0.54	0777-00019
	5033	5281	0.49	0.33	0.54	0777-00018

TEMP / LAM

Cardinal LoE 366

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	2154	1810	0.49	0.25	0.55	0787-00005
Solar Grey	5049	30032	0.49	0.26	0.37	0787-00026
Solar Bronze	5041	30032	0.49	0.27	0.41	0787-00025
Evergreen	9881	30032	0.49	0.29	0.47	0787-00028
Azuria	5033	30032	0.49	0.29	0.48	0787-00027
White Lam	2154	1892	0.49	0.23	0.41	0787-00011

Cardinal LoE 272

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5432	1810	0.49	0.25	0.55	0777-00006
	5049	5432	0.49	0.26	0.38	0777-00021
	5041	5432	0.49	0.27	0.42	0777-00020
	9881	5432	0.49	0.28	0.48	0777-00023
	5033	5432	0.49	0.29	0.48	0777-00022
	5432	1892	0.49	0.24	0.41	0777-00013

Solar Ban 70XL

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5432	1810	0.49	0.25	0.55	0777-00006
	5049	5432	0.49	0.26	0.38	0777-00021
	5041	5432	0.49	0.27	0.42	0777-00020
	9881	5432	0.49	0.28	0.48	0777-00023
	5033	5432	0.49	0.29	0.48	0777-00022
	5432	1892	0.49	0.24	0.41	0777-00013

Solar Ban 60

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5281	1810	0.50	0.35	0.62	0778-00004
	5049	5281	0.49	0.32	0.42	0777-00017
	5041	5281	0.49	0.34	0.47	0777-00016
	9881	5281	0.49	0.33	0.54	0777-00019
	5033	5281	0.49	0.33	0.54	0777-00018
	5281	1892	0.50	0.34	0.46	0778-00011

1" O.A. - Temp / Lam (3/16" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
SGP Lam	2156	2067	0.49	0.24	0.53	0790-00001

1" O.A. - Temp / Lam (3/16" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	2013	2067	0.49	0.24	0.53	0790-00001

TRIPLE PANE

Cardinal LoE 366 + 180

1-5/16" O.A. - Temp / Temp

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	2154	2001	0.35	0.21	0.50	0796-00011
Solar Grey	5049	2154	0.35	0.27	0.33	0796-00013
Solar Bronze	5041	2154	0.35	0.29	0.37	0796-00012
Evergreen	9881	2154	0.35	0.27	0.42	0796-00015
Azuria	5033	2154	0.35	0.27	0.43	0796-00014
	Pane 2	2191				

Cardinal LoE 366 + 180

1-5/16" O.A. - Temp / Lam

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	2154	1810	0.35	0.21	0.49	0797-00021
	5049	2154	0.35	0.27	0.33	0796-00013
	5041	2154	0.35	0.29	0.37	0796-00012
	9881	2154	0.35	0.27	0.42	0796-00015
	5033	2154	0.35	0.27	0.43	0796-00014
	Pane 2	2191				

PLASTIC GLAZING

Double Dome Glazing

	Panes	U-factor	SHGC	VT	CPD Line
Clear	30004	0.66	0.66	0.77	0801-00001
White	30007	0.66	0.46	0.43	0801-00002
Bronze	30010	0.66	0.36	0.22	0801-00003

Triple Dome Glazing

	Panes	U-factor	SHGC	VT	CPD Line
	30006	0.49	0.60	0.66	0802-00001
	30009	0.49	0.42	0.34	0802-00002
	30012	0.49	0.30	0.19	0802-00003

25mm Polycarb. MWS

	Panes	U-factor	SHGC	VT	CPD Line
Clear	30005	0.50	0.50	0.57	0803-00001
White	30008	0.50	0.36	0.41	0803-00002
Bronze	30011	0.50	0.36	0.41	0803-00003

CLIMATE ZONE	U-FACTOR ¹	SHGC ²	
Northern	≤ 0.30	Any	Prescriptive
	= 0.31	> 0.35	Equivalent Energy Performance
	= 0.32	> 0.40	
North Central	≤ 0.30	≤ 0.40	
South Central	≤ 0.30	≤ 0.25	
Southern	≤ 0.40	≤ 0.25	

CLIMATE ZONE	U-FACTOR ¹	SHGC ²
Northern	≤ 0.50	Any
North Central	≤ 0.53	≤ 0.35
South Central	≤ 0.53	≤ 0.28
Southern	≤ 0.60	≤ 0.28

Air Leakage ≤ 0.3 cfm/ft²
¹ Btu/h ft²·F
² Solar Heat Gain Coefficient



- Northern
- North-Central
- South-Central
- Southern



Energy Code Prescriptive Maximum Requirements

	WINDOWS		SKYLIGHTS	
	U-factor	SHGC	U-factor	SHGC
2012 IECC (Zone 5 & Marine 4)	0.35	0.40	0.60	0.40
2015 IECC (Zone 5 & Marine 4)	0.32	NR	0.55	NR
WSEC (Residential)	0.30	NR	0.50	NR
WSEC (Commercial)	0.30	0.30	0.50	0.35
WSEC (Com. Metal Framing)	0.38	0.36		
SEC (Commercial)	0.30	0.35	0.45	0.32
SEC (Com. Metal Framing)	0.38	0.35		
SEC (Residential)	0.30	NR	0.50	NR

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TEMP / TEMP

Cardinal LoE 366 1" O.A. - Temp / Temp (1/8" over 1/8")						Cardinal LoE 272 1" O.A. - Temp / Temp (1/8" over 1/8")						Solar Ban 70XL 1" O.A. - Temp / Temp (1/8" over 1/8")						Solar Ban 60 1" O.A. - Temp / Temp (1/8" over 1/8")					
Clear	Solar Grey	Solar Bronze	Evergreen	Azuria	CPD Line	Clear	Solar Grey	Solar Bronze	Evergreen	Azuria	CPD Line	Clear	Solar Grey	Solar Bronze	Evergreen	Azuria	CPD Line	Clear	Solar Grey	Solar Bronze	Evergreen	Azuria	CPD Line
2154	2001	0.60	0.28	0.65	00857-00002	2011	2001	0.60	0.42	0.72	00854-00002	5432	2001	0.60	0.28	0.64	00844-00003	5281	2001	0.60	0.40	0.73	00844-00002
5049	2154	0.60	0.29	0.43	00857-00004	5049	2011	0.60	0.37	0.48	00854-00015	5049	5432	0.60	0.29	0.43	00844-00021	5049	5281	0.60	0.36	0.48	00844-00017
5041	2154	0.60	0.31	0.48	00857-00003	5041	2011	0.60	0.40	0.53	00854-00014	5041	5432	0.60	0.30	0.47	00844-00020	5041	5281	0.60	0.38	0.54	00844-00016
9881	2154	0.60	0.33	0.55	00857-00006	9881	2011	0.60	0.38	0.61	00854-00017	9881	5432	0.60	0.32	0.54	00844-00023	9881	5281	0.60	0.37	0.61	00844-00019
5033	2154	0.60	0.33	0.55	00857-00005	5033	2011	0.60	0.38	0.61	00854-00016	5033	5432	0.60	0.33	0.55	00844-00022	5033	5281	0.60	0.37	0.62	00844-00018

TEMP / LAM

Cardinal LoE 366 1" O.A. - Temp / Lam (1/8" over 1/4")						Cardinal LoE 272 1" O.A. - Temp / Lam (1/8" over 1/4")						Solar Ban 70XL 1" O.A. - Temp / Lam (1/8" over 1/4")						Solar Ban 60 1" O.A. - Temp / Lam (1/8" over 1/4")									
Clear	Solar Grey	Solar Bronze	Evergreen	Azuria	White Lam	CPD Line	Clear	Solar Grey	Solar Bronze	Evergreen	Azuria	White Lam	CPD Line	Clear	Solar Grey	Solar Bronze	Evergreen	Azuria	White Lam	CPD Line	Clear	Solar Grey	Solar Bronze	Evergreen	Azuria	White Lam	CPD Line
2154	1810	0.60	0.28	0.63	00854-00005	00854-00005	5432	1810	0.60	0.28	0.63	00844-00006	00844-00006	5432	1810	0.60	0.28	0.63	00844-00006	00844-00006	5281	1810	0.61	0.40	0.71	00845-00004	00845-00004
5049	30032	0.60	0.29	0.42	00854-00026	00854-00026	5049	5432	0.60	0.29	0.43	00844-00021	00844-00021	5049	5432	0.60	0.29	0.43	00844-00021	00844-00021	5049	5281	0.60	0.36	0.48	00844-00017	00844-00017
5041	30032	0.60	0.31	0.47	00854-00025	00854-00025	5041	5432	0.60	0.30	0.47	00844-00020	00844-00020	5041	5432	0.60	0.30	0.47	00844-00020	00844-00020	5041	5281	0.60	0.38	0.54	00844-00016	00844-00016
9881	30032	0.60	0.32	0.54	00854-00028	00854-00028	9881	5432	0.60	0.32	0.54	00844-00023	00844-00023	9881	5432	0.60	0.32	0.54	00844-00023	00844-00023	9881	5281	0.60	0.37	0.61	00844-00019	00844-00019
5033	30032	0.60	0.33	0.54	00854-00027	00854-00027	5033	5432	0.60	0.33	0.55	00844-00022	00844-00022	5033	5432	0.60	0.33	0.55	00844-00022	00844-00022	5033	5281	0.60	0.37	0.62	00844-00018	00844-00018
2154	1892	0.60	0.27	0.46	00854-00011	00854-00011	5432	1892	0.60	0.27	0.46	00844-00013	00844-00013	5432	1892	0.60	0.27	0.46	00844-00013	00844-00013	5281	1892	0.61	0.38	0.52	00845-00011	00845-00011

1" O.A. - Temp / Lam (3/16" over 1/4")						1" O.A. - Temp / Lam (3/16" over 1/4")					
SGP Lam	CPD Line	U-factor	SHGC	VT	CPD Line	SGP Lam	CPD Line	U-factor	SHGC	VT	CPD Line
2156	2067	0.60	0.27	0.61	00857-00001	2013	2067	0.60	0.27	0.61	00857-00001

TRIPLE PANE

Cardinal LoE 366 + 180 1-5/16" O.A. - Temp / Temp						Cardinal LoE 366 + 180 1-5/16" O.A. - Temp / Lam					
Clear	Solar Grey	Solar Bronze	Evergreen	Azuria	CPD Line	Clear	Solar Grey	Solar Bronze	Evergreen	Azuria	CPD Line
2154	2001	0.45	0.24	0.57	00863-00011	2154	1810	0.45	0.24	0.55	00864-00021
5049	2154	0.45	0.30	0.38	00863-00013	5049	2154	0.45	0.30	0.38	00863-00013
5041	2154	0.45	0.32	0.42	00863-00012	5041	2154	0.45	0.32	0.42	00863-00012
9881	2154	0.45	0.31	0.48	00863-00015	9881	2154	0.45	0.31	0.48	00863-00015
5033	2154	0.45	0.30	0.48	00863-00014	5033	2154	0.45	0.30	0.48	00863-00014
	2191						2191				

PLASTIC GLAZING

Double Dome Glazing						Triple Dome Glazing							
Clear	White	Bronze	CPD Line	U-factor	SHGC	VT	Clear	White	Bronze	CPD Line	U-factor	SHGC	VT
30004	30007	30010	00868-00001	0.78	0.75	0.77	30006	30009	30012	00870-00001	0.61	0.68	0.66
			00868-00002	0.78	0.52	0.43				00870-00002	0.61	0.48	0.34
			00868-00003	0.78	0.41	0.22				00870-00003	0.61	0.34	0.19

25mm Polycarb. MWS						
Clear	White	Bronze	CPD Line	U-factor	SHGC	VT
30005	30008	30011	00869-00001	0.61	0.57	0.57
			00869-00002	0.61	0.41	0.41
			00869-00003	0.61	0.41	0.41

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WINDOWS			
CLIMATE ZONE	U-FACTOR ¹	SHGC ²	
Northern	≤ 0.30	Any	Prescriptive
	= 0.31	> 0.35	Equivalent Energy Performance
	= 0.32	≥ 0.40	
North Central	≤ 0.30	≤ 0.40	
South Central	≤ 0.30	≤ 0.25	
Southern	≤ 0.40	≤ 0.25	

SKYLIGHTS		
CLIMATE ZONE	U-FACTOR ¹	SHGC ²
Northern	≤ 0.50	Any
North Central	≤ 0.53	≤ 0.35
South Central	≤ 0.53	≤ 0.28
Southern	≤ 0.60	≤ 0.28

Air Leakage ≤ 0.3 cfm/ft²
¹ Btu/h ft² °F
² Solar Heat Gain Coefficient



- Northern
- North-Central
- South-Central
- Southern



Energy Code Prescriptive Maximum Requirements

	WINDOWS		SKYLIGHTS	
	U-factor	SHGC	U-factor	SHGC
2012 IECC (Zone 5 & Marine 4)	0.35	0.40	0.60	0.40
2015 IECC (Zone 5 & Marine 4)	0.32	NR	0.55	NR
WSEC (Residential)	0.30	NR	0.50	NR
WSEC (Commercial)	0.30	0.30	0.50	0.35
WSEC (Com. Metal Framing)	0.38	0.36		
SEC (Commercial)	0.30	0.35	0.45	0.32
SEC (Com. Metal Framing)	0.38	0.35		
SEC (Residential)	0.30	NR	0.50	NR

TEMP / TEMP

Cardinal LoE 366

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	2154	2001	0.44	0.27	0.63	0994-00002
Solar Grey	5049	2154	0.44	0.29	0.42	0994-00004
Solar Bronze	5041	2154	0.44	0.30	0.46	0994-00003
Evergreen	9881	2154	0.44	0.32	0.53	0994-00006
Azuria	5033	2154	0.44	0.33	0.54	0994-00005

Cardinal LoE 272

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	2011	2001	0.45	0.41	0.70	0991-00002
	5049	2011	0.45	0.36	0.46	0991-00015
	5041	2011	0.45	0.39	0.51	0991-00014
	9881	2011	0.45	0.37	0.59	0991-00017
	5033	2011	0.45	0.37	0.59	0991-00016

Solar Ban 70XL

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5432	2001	0.45	0.27	0.62	0981-00003
	5049	5432	0.45	0.28	0.42	0981-00021
	5041	5432	0.45	0.30	0.46	0981-00020
	9881	5432	0.45	0.31	0.53	0981-00023
	5033	5432	0.45	0.32	0.53	0981-00022

Solar Ban 60

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5281	2001	0.45	0.39	0.71	0981-00002
	5049	5281	0.45	0.35	0.47	0981-00017
	5041	5281	0.45	0.38	0.52	0981-00016
	9881	5281	0.45	0.36	0.60	0981-00019
	5033	5281	0.45	0.36	0.60	0981-00018

TEMP / LAM

Cardinal LoE 366

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	2154	1810	0.45	0.27	0.61	0991-00005
Solar Grey	5049	30032	0.45	0.29	0.41	0991-00026
Solar Bronze	5041	30032	0.45	0.30	0.45	0991-00025
Evergreen	9881	30032	0.45	0.32	0.52	0991-00028
Azuria	5033	30032	0.45	0.32	0.53	0991-00027
White Lam	2154	1892	0.45	0.26	0.45	0991-00011

Cardinal LoE 272

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5432	1810	0.45	0.27	0.61	0981-00006
	5049	5432	0.45	0.28	0.42	0981-00021
	5041	5432	0.45	0.30	0.46	0981-00020
	9881	5432	0.45	0.31	0.53	0981-00023
	5033	5432	0.45	0.32	0.53	0981-00022
	5432	1892	0.45	0.26	0.45	0981-00013

Solar Ban 70XL

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5432	1810	0.45	0.27	0.61	0981-00006
	5049	5432	0.45	0.28	0.42	0981-00021
	5041	5432	0.45	0.30	0.46	0981-00020
	9881	5432	0.45	0.31	0.53	0981-00023
	5033	5432	0.45	0.32	0.53	0981-00022
	5432	1892	0.45	0.26	0.45	0981-00013

Solar Ban 60

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5281	1810	0.46	0.39	0.69	0982-00004
	5049	5281	0.45	0.35	0.47	0981-00017
	5041	5281	0.45	0.38	0.52	0981-00016
	9881	5281	0.45	0.36	0.60	0981-00019
	5033	5281	0.45	0.36	0.60	0981-00018
	5281	1892	0.46	0.37	0.51	0982-00011

1" O.A. - Temp / Lam (3/16" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
SGP Lam	2156	2067	0.44	0.26	0.59	0994-00001

1" O.A. - Temp / Lam (3/16" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	2013	2067	0.44	0.26	0.59	0994-00001

TRIPLE PANE

Cardinal LoE 366 + 180

1-5/16" O.A. - Temp / Temp

	Pane 1	Pane 3	U-factor	SHGC	VT	CPD Line
Clear	2154	2001	0.29	0.23	0.55	1000-00011
Solar Grey	5049	2154	0.29	0.29	0.37	1000-00013
Solar Bronze	5041	2154	0.29	0.32	0.41	1000-00012
Evergreen	9881	2154	0.29	0.30	0.47	1000-00015
Azuria	5033	2154	0.29	0.29	0.47	1000-00014
	Pane 2	2191				

Cardinal LoE 366 + 180

1-5/16" O.A. - Temp / Temp / Lam

	Pane 1	Pane 3	U-factor	SHGC	VT	CPD Line
	2154	1810	0.29	0.23	0.54	1001-00021
	5049	2154	0.29	0.29	0.37	1000-00013
	5041	2154	0.29	0.32	0.41	1000-00012
	9881	2154	0.29	0.30	0.47	1000-00015
	5033	2154	0.29	0.29	0.47	1000-00014
	Pane 2	2191				

WINDOWS			
CLIMATE ZONE	U-FACTOR ¹	SHGC ²	
Northern	≤ 0.30	Any	Prescriptive
	= 0.31	> 0.35	Equivalent Energy Performance
	= 0.32	≥ 0.40	
North Central	≤ 0.30	≤ 0.40	
South Central	≤ 0.30	≤ 0.25	
Southern	≤ 0.40	≤ 0.25	

SKYLIGHTS		
CLIMATE ZONE	U-FACTOR ¹	SHGC ²
Northern	≤ 0.50	Any
North Central	≤ 0.53	≤ 0.35
South Central	≤ 0.53	≤ 0.28
Southern	≤ 0.60	≤ 0.28

Air Leakage ≤ 0.3 cfm/ft²
¹ Btu/h ft²·F
² Solar Heat Gain Coefficient



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	WINDOWS		SKYLIGHTS	
	U-factor	SHGC	U-factor	SHGC
2012 IECC (Zone 5 & Marine 4)	0.35	0.40	0.60	0.40
2015 IECC (Zone 5 & Marine 4)	0.32	NR	0.55	NR
WSEC (Residential)	0.30	NR	0.50	NR
WSEC (Commercial)	0.30	0.30	0.50	0.35
WSEC (Com. Metal Framing)	0.38	0.36		
SEC (Commercial)	0.30	0.35	0.45	0.32
SEC (Com. Metal Framing)	0.38	0.35		
SEC (Residential)	0.30	NR	0.50	NR

TEMP / TEMP

Cardinal LoE 366

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	2154	2001	0.49	0.27	0.62	0512-00002
Solar Grey	5049	2154	0.49	0.29	0.41	0512-00004
Solar Bronze	5041	2154	0.49	0.30	0.46	0512-00003
Evergreen	9881	2154	0.49	0.32	0.53	0512-00006
Azuria	5033	2154	0.49	0.32	0.53	0512-00005

Cardinal LoE 272

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	2011	2001	0.49	0.40	0.69	0509-00002
	5049	2011	0.49	0.36	0.46	0509-00015
	5041	2011	0.49	0.38	0.51	0509-00014
	9881	2011	0.49	0.37	0.59	0509-00017
	5033	2011	0.49	0.36	0.59	0509-00016

Solar Ban 70XL

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5432	2001	0.49	0.27	0.62	0499-00003
	5049	5432	0.49	0.28	0.41	0499-00021
	5041	5432	0.49	0.30	0.46	0499-00020
	9881	5432	0.49	0.31	0.52	0499-00023
	5033	5432	0.49	0.32	0.53	0499-00022

Solar Ban 60

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5281	2001	0.49	0.39	0.70	0499-00002
	5049	5281	0.49	0.35	0.47	0499-00017
	5041	5281	0.49	0.37	0.52	0499-00016
	9881	5281	0.49	0.36	0.59	0499-00019
	5033	5281	0.49	0.36	0.60	0499-00018

TEMP / LAM

Cardinal LoE 366

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	2154	1810	0.49	0.27	0.61	0509-00005
Solar Grey	5049	30032	0.49	0.28	0.41	0509-00026
Solar Bronze	5041	30032	0.49	0.30	0.45	0509-00025
Evergreen	9881	30032	0.49	0.31	0.52	0509-00028
Azuria	5033	30032	0.49	0.32	0.52	0509-00027
White Lam	2154	1892	0.49	0.26	0.45	0509-00011

Cardinal LoE 272

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5432	1810	0.49	0.27	0.61	0499-00006
	5049	5432	0.49	0.28	0.41	0499-00021
	5041	5432	0.49	0.30	0.46	0499-00020
	9881	5432	0.49	0.31	0.52	0499-00023
	5033	5432	0.49	0.32	0.53	0499-00022
	5432	1892	0.49	0.26	0.45	0499-00013

Solar Ban 70XL

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5432	1810	0.49	0.27	0.61	0499-00006
	5049	5432	0.49	0.28	0.41	0499-00021
	5041	5432	0.49	0.30	0.46	0499-00020
	9881	5432	0.49	0.31	0.52	0499-00023
	5033	5432	0.49	0.32	0.53	0499-00022
	5432	1892	0.49	0.26	0.45	0499-00013

Solar Ban 60

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5281	1810	0.50	0.39	0.68	0500-00004
	5049	5281	0.49	0.35	0.47	0499-00017
	5041	5281	0.49	0.37	0.52	0499-00016
	9881	5281	0.49	0.36	0.59	0499-00019
	5033	5281	0.49	0.36	0.60	0499-00018
	5281	1892	0.50	0.37	0.50	0500-00011

1" O.A. - Temp / Lam (3/16" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
SGP Lam	2156	2067	0.49	0.26	0.59	0512-00001

1" O.A. - Temp / Lam (3/16" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	2013	2067	0.49	0.26	0.59	0512-00001

TRIPLE PANE

Cardinal LoE 366 + 180

1-5/16" O.A. - Temp / Temp

	Pane 1	Pane 3	U-factor	SHGC	VT	CPD Line
Clear	2154	2001	0.34	0.23	0.55	0516-00011
Solar Grey	5049	2154	0.34	0.29	0.36	0516-00013
Solar Bronze	5041	2154	0.34	0.31	0.40	0516-00012
Evergreen	9881	2154	0.34	0.30	0.46	0516-00015
Azuria	5033	2154	0.34	0.29	0.47	0516-00014
	Pane 2	2191				

Cardinal LoE 366 + 180

1-5/16" O.A. - Temp / Temp / Lam

	Pane 1	Pane 3	U-factor	SHGC	VT	CPD Line
	2154	1810	0.34	0.23	0.53	0517-00021
	5049	2154	0.34	0.29	0.36	0516-00013
	5041	2154	0.34	0.31	0.40	0516-00012
	9881	2154	0.34	0.30	0.46	0516-00015
	5033	2154	0.34	0.29	0.47	0516-00014
	Pane 2	2191				

WINDOWS			
CLIMATE ZONE	U-FACTOR ¹	SHGC ²	
Northern	≤ 0.30	Any	Prescriptive
	= 0.31	> 0.35	Equivalent Energy Performance
	= 0.32	> 0.40	
North Central	≤ 0.30	≤ 0.40	
South Central	≤ 0.30	≤ 0.25	
Southern	≤ 0.40	≤ 0.25	

SKYLIGHTS		
CLIMATE ZONE	U-FACTOR ¹	SHGC ²
Northern	≤ 0.50	Any
North Central	≤ 0.53	≤ 0.35
South Central	≤ 0.53	≤ 0.28
Southern	≤ 0.60	≤ 0.28

Air Leakage ≤ 0.3 cfm/ft²
¹ Btu/h ft²·F
² Solar Heat Gain Coefficient



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	WINDOWS		SKYLIGHTS	
	U-factor	SHGC	U-factor	SHGC
2012 IECC (Zone 5 & Marine 4)	0.35	0.40	0.60	0.40
2015 IECC (Zone 5 & Marine 4)	0.32	NR	0.55	NR
WSEC (Residential)	0.30	NR	0.50	NR
WSEC (Commercial)	0.30	0.30	0.50	0.35
WSEC (Com. Metal Framing)	0.38	0.36		
SEC (Commercial)	0.30	0.35	0.45	0.32
SEC (Com. Metal Framing)	0.38	0.35		
SEC (Residential)	0.30	NR	0.50	NR

TEMP / TEMP

Cardinal LoE 366

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	2154	2001	0.42	0.25	0.55	00550-00002
Solar Grey	5049	2154	0.42	0.26	0.37	00550-00004
Solar Bronze	5041	2154	0.42	0.27	0.41	00550-00003
Evergreen	9881	2154	0.42	0.29	0.47	00550-00006
Azuria	5033	2154	0.42	0.29	0.47	00550-00005

Cardinal LoE 272

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	2011	2001	0.42	0.37	0.62	00547-00002
	5049	2011	0.42	0.33	0.41	00547-00015
	5041	2011	0.42	0.35	0.45	00547-00014
	9881	2011	0.42	0.33	0.52	00547-00017
	5033	2011	0.42	0.33	0.52	00547-00016

Solar Ban 70XL

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5432	2001	0.43	0.25	0.55	00537-00003
	5049	5432	0.43	0.26	0.37	00537-00021
	5041	5432	0.43	0.27	0.41	00537-00020
	9881	5432	0.43	0.28	0.47	00537-00023
	5033	5432	0.43	0.29	0.47	00537-00022

Solar Ban 60

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5281	2001	0.43	0.35	0.62	00537-00002
	5049	5281	0.43	0.32	0.41	00537-00017
	5041	5281	0.43	0.34	0.46	00537-00016
	9881	5281	0.43	0.33	0.53	00537-00019
	5033	5281	0.43	0.33	0.53	00537-00018

TEMP / LAM

Cardinal LoE 366

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	2154	1810	0.42	0.25	0.54	00547-00005
Solar Grey	5049	30032	0.42	0.26	0.36	00547-00026
Solar Bronze	5041	30032	0.42	0.27	0.40	00547-00025
Evergreen	9881	30032	0.42	0.29	0.46	00547-00028
Azuria	5033	30032	0.42	0.29	0.47	00547-00027
White Lam	2154	1892	0.42	0.24	0.40	00547-00011

Cardinal LoE 272

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5432	1810	0.43	0.25	0.54	00537-00006
	5049	5432	0.43	0.26	0.37	00537-00021
	5041	5432	0.43	0.27	0.41	00537-00020
	9881	5432	0.43	0.28	0.47	00537-00023
	5033	5432	0.43	0.29	0.47	00537-00022
	5432	1892	0.43	0.24	0.40	00537-00013

Solar Ban 70XL

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5432	1810	0.43	0.25	0.54	00537-00006
	5049	5432	0.43	0.26	0.37	00537-00021
	5041	5432	0.43	0.27	0.41	00537-00020
	9881	5432	0.43	0.28	0.47	00537-00023
	5033	5432	0.43	0.29	0.47	00537-00022
	5432	1892	0.43	0.24	0.40	00537-00013

Solar Ban 60

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5281	1810	0.44	0.35	0.61	00538-00004
	5049	5281	0.43	0.32	0.41	00537-00017
	5041	5281	0.43	0.34	0.46	00537-00016
	9881	5281	0.43	0.33	0.53	00537-00019
	5033	5281	0.43	0.33	0.53	00537-00018
	5281	1892	0.44	0.34	0.45	00538-00011

1" O.A. - Temp / Lam (3/16" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
SGP Lam	2156	2067	0.42	0.24	0.52	00550-00001

1" O.A. - Temp / Lam (3/16" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	2013	2067	0.42	0.24	0.52	00550-00001

TRIPLE PANE

Cardinal LoE 366 + 180

1-5/16" O.A. - Temp / Temp

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	2154	2001	0.27	0.21	0.49	00556-00011
Solar Grey	5049	2154	0.27	0.27	0.32	00556-00013
Solar Bronze	5041	2154	0.27	0.29	0.36	00556-00012
Evergreen	9881	2154	0.27	0.27	0.41	00556-00015
Azuria	5033	2154	0.27	0.27	0.42	00556-00014
	Pane 2	2191				

Cardinal LoE 366 + 180

1-5/16" O.A. - Temp / Temp / Lam

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	2154	1810	0.27	0.21	0.48	00557-00021
	5049	2154	0.27	0.27	0.32	00556-00013
	5041	2154	0.27	0.29	0.36	00556-00012
	9881	2154	0.27	0.27	0.41	00556-00015
	5033	2154	0.27	0.27	0.42	00556-00014
	Pane 2	2191				

PLASTIC GLAZING

25mm Polycarb. MWS

	Panes	U-factor	SHGC	VT	CPD Line
Clear	30005	0.43	0.50	0.57	00561-00001
White	30008	0.43	0.36	0.41	00561-00002
Bronze	30011	0.43	0.36	0.41	00561-00003

CLIMATE ZONE	U-FACTOR ¹	SHGC ²	
Northern	≤ 0.30	Any	Prescriptive
	= 0.31	> 0.35	Equivalent Energy Performance
	= 0.32	≥ 0.40	
North Central	≤ 0.30	≤ 0.40	
South Central	≤ 0.30	≤ 0.25	
Southern	≤ 0.40	≤ 0.25	

CLIMATE ZONE	U-FACTOR ¹	SHGC ²
Northern	≤ 0.50	Any
North Central	≤ 0.53	≤ 0.35
South Central	≤ 0.53	≤ 0.28
Southern	≤ 0.60	≤ 0.28

Air Leakage ≤ 0.3 cfm/ft²
¹ Btu/h ft²·°F
² Solar Heat Gain Coefficient



- Northern
- North-Central
- South-Central
- Southern



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Energy Code Prescriptive Maximum Requirements

	WINDOWS		SKYLIGHTS	
	U-factor	SHGC	U-factor	SHGC
2012 IECC (Zone 5 & Marine 4)	0.35	0.40	0.60	0.40
2015 IECC (Zone 5 & Marine 4)	0.32	NR	0.55	NR
WSEC (Residential)	0.30	NR	0.50	NR
WSEC (Commercial)	0.30	0.30	0.50	0.35
WSEC (Com. Metal Framing)	0.38	0.36		
SEC (Commercial)	0.30	0.35	0.45	0.32
SEC (Com. Metal Framing)	0.38	0.35		
SEC (Residential)	0.30	NR	0.50	NR

TEMP / TEMP

Cardinal LoE 366 1" O.A. - Temp / Temp (1/8" over 1/8")						Cardinal LoE 272 1" O.A. - Temp / Temp (1/8" over 1/8")						Solar Ban 70XL 1" O.A. - Temp / Temp (1/8" over 1/8")						Solar Ban 60 1" O.A. - Temp / Temp (1/8" over 1/8")									
	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line		Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line		Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line		Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	2154	2001	0.39	0.24	0.55	00513-00002		2011	2001	0.41	0.36	0.61	00510-00002		5432	2001	0.42	0.24	0.55	00500-00003		5281	2001	0.42	0.35	0.62	00500-00002
Solar Grey	5049	2154	0.39	0.26	0.37	00513-00004		5049	2011	0.41	0.32	0.41	00510-00015		5049	5432	0.42	0.25	0.36	00500-00021		5049	5281	0.42	0.31	0.41	00500-00017
Solar Bronze	5041	2154	0.39	0.27	0.40	00513-00003		5041	2011	0.41	0.34	0.45	00510-00014		5041	5432	0.42	0.27	0.40	00500-00020		5041	5281	0.42	0.33	0.46	00500-00016
Evergreen	9881	2154	0.39	0.28	0.46	00513-00006		9881	2011	0.41	0.33	0.52	00510-00017		9881	5432	0.42	0.28	0.46	00500-00023		9881	5281	0.42	0.32	0.52	00500-00019
Azuria	5033	2154	0.39	0.29	0.47	00513-00005		5033	2011	0.41	0.33	0.52	00510-00016		5033	5432	0.42	0.28	0.47	00500-00022		5033	5281	0.42	0.32	0.53	00500-00018

TEMP / LAM

Cardinal LoE 366 1" O.A. - Temp / Lam (1/8" over 1/4")						Cardinal LoE 272 1" O.A. - Temp / Lam (1/8" over 1/4")						Solar Ban 70XL 1" O.A. - Temp / Lam (1/8" over 1/4")						Solar Ban 60 1" O.A. - Temp / Lam (1/8" over 1/4")									
	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line		Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line		Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line		Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	2154	1810	0.41	0.24	0.54	00510-00005		5432	1810	0.42	0.24	0.53	00500-00006		5432	1810	0.42	0.24	0.53	00500-00006		5281	1810	0.43	0.35	0.60	00501-00004
Solar Grey	5049	30032	0.41	0.26	0.36	00510-00026		5049	5432	0.42	0.25	0.36	00500-00021		5049	5432	0.42	0.25	0.36	00500-00021		5049	5281	0.42	0.31	0.41	00500-00017
Solar Bronze	5041	30032	0.41	0.27	0.40	00510-00025		5041	5432	0.42	0.27	0.40	00500-00020		5041	5432	0.42	0.27	0.40	00500-00020		5041	5281	0.42	0.33	0.46	00500-00016
Evergreen	9881	30032	0.41	0.28	0.46	00510-00028		9881	5432	0.42	0.28	0.46	00500-00023		9881	5432	0.42	0.28	0.46	00500-00023		9881	5281	0.42	0.32	0.52	00500-00019
Azuria	5033	30032	0.41	0.29	0.46	00510-00027		5033	5432	0.42	0.28	0.47	00500-00022		5033	5432	0.42	0.28	0.47	00500-00022		5033	5281	0.42	0.32	0.53	00500-00018
White Lam	2154	1892	0.41	0.23	0.39	00510-00011		5432	1892	0.42	0.23	0.39	00500-00013		5432	1892	0.42	0.23	0.39	00500-00013		5281	1892	0.43	0.33	0.44	00501-00011

1" O.A. - Temp / Lam (3/16" over 1/4")						1" O.A. - Temp / Lam (3/16" over 1/4")							
	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line		Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
SGP Lam	2156	2067	0.39	0.24	0.52	00513-00001		2013	2067	0.39	0.24	0.52	00513-00001

TRIPLE PANE

Cardinal LoE 366 + 180 1-5/16" O.A. - Temp / Temp						Cardinal LoE 366 + 180 1-5/16" O.A. - Temp / Lam							
	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line		Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	2154	2001	0.24	0.21	0.48	00519-00011		2154	1810	0.24	0.21	0.47	00520-00021
Solar Grey	5049	2154	0.24	0.26	0.32	00519-00013		5049	2154	0.24	0.26	0.32	00519-00013
Solar Bronze	5041	2154	0.24	0.28	0.36	00519-00012		5041	2154	0.24	0.28	0.36	00519-00012
Evergreen	9881	2154	0.24	0.27	0.41	00519-00015		9881	2154	0.24	0.27	0.41	00519-00015
Azuria	5033	2154	0.24	0.26	0.41	00519-00014		5033	2154	0.24	0.26	0.41	00519-00014
	Pane 2	2191						Pane 2	2191				

PLASTIC GLAZING

25mm Polycarb. MWS					
	Panes	U-factor	SHGC	VT	CPD Line
Clear	30005	0.40	0.49	0.57	00524-00001
White	30008	0.40	0.35	0.41	00524-00002
Bronze	30011	0.40	0.35	0.41	00524-00003

WINDOWS			
CLIMATE ZONE	U-FACTOR ¹	SHGC ²	
Northern	≤ 0.30	Any	Prescriptive
	= 0.31	> 0.35	Equivalent Energy Performance
	= 0.32	≥ 0.40	
North Central	≤ 0.30	≤ 0.40	
South Central	≤ 0.30	≤ 0.25	
Southern	≤ 0.40	≤ 0.25	

SKYLIGHTS		
CLIMATE ZONE	U-FACTOR ¹	SHGC ²
Northern	≤ 0.50	Any
North Central	≤ 0.53	≤ 0.35
South Central	≤ 0.53	≤ 0.28
Southern	≤ 0.60	≤ 0.28

Air Leakage ≤ 0.3 cfm/ft²
¹ Btu/h ft² °F
² Solar Heat Gain Coefficient



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	WINDOWS		SKYLIGHTS	
	U-factor	SHGC	U-factor	SHGC
2012 IECC (Zone 5 & Marine 4)	0.35	0.40	0.60	0.40
2015 IECC (Zone 5 & Marine 4)	0.32	NR	0.55	NR
WSEC (Residential)	0.30	NR	0.50	NR
WSEC (Commercial)	0.30	0.30	0.50	0.35
WSEC (Com. Metal Framing)	0.38	0.36		
SEC (Commercial)	0.30	0.35	0.45	0.32
SEC (Com. Metal Framing)	0.38	0.35		
SEC (Residential)	0.30	NR	0.50	NR



NFRC Reference Guide 4000 Vertical Glazed Wall

4000-GWWW Product Code
CRY-M-3 CPD Product
Rev. 4/25/2016

TEMP / TEMP

Cardinal LoE 366

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	2154	2001	0.30	0.25	0.58	0306-00002
Solar Grey	5049	2154	0.30	0.26	0.39	0306-00004
Solar Bronze	5041	2154	0.30	0.28	0.43	0306-00003
Evergreen	9881	2154	0.30	0.29	0.49	0306-00006
Azuria	5033	2154	0.30	0.30	0.50	0306-00005

Cardinal LoE 272

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	2011	2001	0.30	0.38	0.65	0303-00002
	5049	2011	0.30	0.33	0.43	0303-00015
	5041	2011	0.30	0.36	0.48	0303-00014
	9881	2011	0.30	0.34	0.55	0303-00017
	5033	2011	0.30	0.33	0.55	0303-00016

Solar Ban 70XL

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5432	2001	0.32	0.25	0.58	0297-00003
	5049	5432	0.32	0.26	0.39	0297-00021
	5041	5432	0.32	0.28	0.43	0297-00020
	9881	5432	0.32	0.29	0.49	0297-00023
	5033	5432	0.32	0.29	0.49	0297-00022

Solar Ban 60

1" O.A. - Temp / Temp (1/8" over 1/8")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5281	2001	0.32	0.36	0.65	0297-00002
	5049	5281	0.32	0.33	0.44	0297-00017
	5041	5281	0.32	0.35	0.48	0297-00016
	9881	5281	0.32	0.33	0.55	0297-00019
	5033	5281	0.32	0.33	0.56	0297-00018

TEMP / LAM

Cardinal LoE 366

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
Clear	2154	1810	0.30	0.25	0.57	0303-00005
Solar Grey	5049	30032	0.30	0.26	0.38	0303-00026
Solar Bronze	5041	30032	0.30	0.28	0.42	0303-00025
Evergreen	9881	30032	0.30	0.29	0.48	0303-00028
Azuria	5033	30032	0.30	0.29	0.49	0303-00027
White Lam	2154	1892	0.30	0.24	0.42	0303-00011

Cardinal LoE 272

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5432	1810	0.32	0.25	0.57	0297-00006
	5049	5432	0.32	0.26	0.39	0297-00021
	5041	5432	0.32	0.28	0.43	0297-00020
	9881	5432	0.32	0.29	0.49	0297-00023
	5033	5432	0.32	0.29	0.49	0297-00022
	5432	1892	0.32	0.24	0.42	0297-00013

Solar Ban 70XL

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5432	1810	0.32	0.25	0.57	0297-00006
	5049	5432	0.32	0.26	0.39	0297-00021
	5041	5432	0.32	0.28	0.43	0297-00020
	9881	5432	0.32	0.29	0.49	0297-00023
	5033	5432	0.32	0.29	0.49	0297-00022
	5432	1892	0.32	0.24	0.42	0297-00013

Solar Ban 60

1" O.A. - Temp / Lam (1/8" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	5281	1810	0.34	0.36	0.64	0298-00004
	5049	5281	0.32	0.33	0.44	0297-00017
	5041	5281	0.32	0.35	0.48	0297-00016
	9881	5281	0.32	0.33	0.55	0297-00019
	5033	5281	0.32	0.33	0.56	0297-00018
	5281	1892	0.34	0.35	0.47	0298-00011

1" O.A. - Temp / Lam (3/16" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
SGP Lam	2156	2067	0.30	0.25	0.55	0306-00001

1" O.A. - Temp / Lam (3/16" over 1/4")

	Pane 1	Pane 2	U-factor	SHGC	VT	CPD Line
	2013	2067	0.30	0.25	0.55	0306-00001

WINDOWS				
CLIMATE ZONE	U-FACTOR ¹	SHGC ²		
Northern	≤ 0.30	Any	Prescriptive	
	= 0.31	> 0.35		Equivalent Energy Performance
	= 0.32	≥ 0.40		
North Central	≤ 0.30	≤ 0.40		
South Central	≤ 0.30	≤ 0.25		
Southern	≤ 0.40	≤ 0.25		

SKYLIGHTS		
CLIMATE ZONE	U-FACTOR ¹	SHGC ²
Northern	≤ 0.50	Any
North Central	≤ 0.53	≤ 0.35
South Central	≤ 0.53	≤ 0.28
Southern	≤ 0.60	≤ 0.28

Air Leakage ≤ 0.3 cfm/ft²
¹ Btu/h ft²·F
² Solar Heat Gain Coefficient



Energy Code Prescriptive Maximum Requirements

	WINDOWS		SKYLIGHTS	
	U-factor	SHGC	U-factor	SHGC
2012 IECC (Zone 5 & Marine 4)	0.35	0.40	0.60	0.40
2015 IECC (Zone 5 & Marine 4)	0.32	NR	0.55	NR
WSEC (Residential)	0.30	NR	0.50	NR
WSEC (Commercial)	0.30	0.30		
WSEC (Com. Metal Framing)	0.38	0.36	0.50	0.35
SEC (Commercial)	0.30	0.35		
SEC (Com. Metal Framing)	0.38	0.35	0.45	0.32
SEC (Residential)	0.30	NR	0.50	NR

This REFERENCE GUIDE shows NFRC Certified values for our common glazing configurations. Please contact us if you have a specific glazing requirement not shown.

VT values for plastic glazing are not certified due to NFRC Test Procedure limitations. Values shown are center of glazing.