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Flat Glass Products - Tempering
Insulating - Beveling - Edgework
All-Glass Doors - Shower Enclosures
StoreFront and Curtain Wall Systems
Aluminum Entrances

April 20, 2020

Dear Valued Customer:

The State of New York is adopting new versions of the International Code Council (ICC) Model Building Codes, including the three codes that most affect the glass and glazing industries:

2020 Building Code of New York State - Chapter 24 covers Glass and Glazing
2020 Residential Code of New York State- Section R 308 covers Glass and Glazing
2020 Energy Conservation Construction Code of New York State

All the codes can be viewed for some time free of charge at www.dos.NY.gov/DCEA/noticadopt.html.

The new codes are effective May 12, 2020.

There don't appear to be major changes in the Building Code or Residential Code concerning glass.

In the Energy Code, the maximum Solar Heat Gain Coefficient (SHGC) requirements have been reduced in Climate Zones 4 and 5 in the Prescriptive Compliance Method. The U-factor requirements have not changed in this new code.

Visit our homepage, www.syracuseglass.com if you would like a packet of information on the new Energy Code that includes:

- combined center of glass and framing U-factor and SHGC requirements in the different climate zones,
- a list of NY State counties by climate zone,
- charts from Tubelite that provide the combined center of glass AND framing U-factors, and
- center of glass U-factors and SHGC values for common insulating glass make-ups,

We have the glass products, and the Tubelite doors and framing materials that can meet or exceed energy code requirements. Our staff can help you learn how to select them and document code compliance, or prepare a proposal for a building owner seeking an energy efficient job.

Thanks for your attention and support.

Sincerely,

A handwritten signature in cursive script that reads "John Dwyer".

John Dwyer
President

2020 Energy Conservation Construction Code of NY State (effective May 12, 2020)

CODE REQUIREMENTS (COMBINED FRAMING AND CENTER-OF-GLASS)

	Zone 4	Zone 5	Zone 6	
U-Factor				
Fixed	.38	.38	.36	maximum values
Doors	.77	.77	.77	
SHGC				
PF<.2	.36	.38	.40	maximum values
.2-.5	.43	.46	.48	
>.5	.58	.61	.64	

COMMON LOW E GLASS PRODUCTS CENTER-OF-GLASS PERFORMANCE

	U-Factor		SHGC	NOTE: SHGC is improved by about 2 points by shading provided by framing
	Air	Argon		
Guardian SN-68 Clear	.29	.25	.38	
Vitro SB 60 Clear	.29	.24	.39	
Pilkington Energy Advan.	.33	.29	.62	

COMMON GLASS AND FRAMING COMBINED PERFORMANCE

U-Factor	SHGC	
.38	.36	SN-68 or SB60, Air, Warm Edge Spacer, T14000 thermally broken .
.38	.36	SN-68 or SB60, Argon, Warm Edge Spacer, T14000 thermally insulated
.34	.36	SN-68 or SB60, Argon, Warm Edge Spader, T14000 thermally broken
.36	.60	Pilk En Adv, Argon, Warm Edge Spacer, TU24000 double thermal
.68		Narrow Stile Door, Pilk En Adv, Aluminum Spacer

U-FACTOR TOOLS

- Low E Coatings (#2 Surface)
- Multiple Airspaces (Double, Triple)
- Warm Edge Spacer
- Argon Gas
- 4th Surface Low E Coating
- Thermally Insulated Framing
- Thermally Broken Framing
- Double Thermally Broken Framing

SHGC TOOLS

- Solar Control or Reflective LowE
- Tinted Glass
- Ceramic Frit Dots or Lines
- Overhangs
- Eaves
- Solar Shading Devices

Note = SHGC Projection Factor (PF) is =

$$PF = \frac{\text{Distance measured horizontally from farthest point of overhang, eave or shading device from glass surface}}{\text{Distance measured vertically from bottom of glazing to underside of overhang, eave, shading device}}$$

R_{aged} = The aged solar reflectance.

$R_{initial}$ = The initial solar reflectance determined in accordance with CRRC-S100.

C402.4 Fenestration (Prescriptive). Fenestration shall comply with Sections C402.4.1 through C402.4.5 and Table C402.4. Daylight responsive controls shall comply with this section and Section C405.2.3.1.

[NY] TABLE C402.4
BUILDING ENVELOPE FENESTRATION MAXIMUM U-FACTOR
AND SHGC REQUIREMENTS

CLIMATE ZONE	4	5	6
Vertical fenestration			
U-factor			
Fixed fenestration	0.38	0.38	0.36
Operable fenestration	0.45	0.45	0.43
Entrance doors	0.77	0.77	0.77
SHGC			
PF < 0.2	0.36	0.38	0.40
0.2 ≤ PF < 0.5	0.43	0.46	0.48
PF ≥ 0.5	0.58	0.61	0.64
Skylights			
U-factor	0.50	0.50	0.50
SHGC	0.40	0.40	0.40

PF = Projection Factor.

C402.4.1 Maximum area. The vertical fenestration area, not including opaque doors and opaque spandrel panels, shall be not greater than 30 percent of the gross above-grade wall area. The skylight area shall be not greater than 3 percent of the gross roof area.

C402.4.1.1 Increased vertical fenestration area with daylight responsive controls. In *Climate Zones* 1 through 6, not more than 40 percent of the gross above-grade wall area shall be vertical fenestration, provided that all of the following requirements are met:

1. In buildings not greater than two stories above

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2020 Energy Conservation Construction Code
of New York State

CHAPTER 3 [CE]
GENERAL REQUIREMENTS

SECTION C301
CLIMATE ZONES

[NY] C301.1 General. *Climate zones* from Table C301.1 shall be used for determining the applicable requirements from Chapter 4.

[NY] TABLE C301.1
NEW YORK STATE CLIMATE ZONES BY COUNTY

Zone 4A	Zone 5A	Zone 6A
Bronx	Albany	Allegany
Kings	Cayuga	Broome
Nassau	Chautauqua	Cattaraugus
New York	Chemung	Chenango
Queens	Columbia	Clinton
Richmond	Cortland	Delaware
Suffolk	Dutchess	Essex
Westchester	Erie	Franklin
	Genesee	Fulton
	Greene	Hamilton
	Livingston	Herkimer
	Monroe	Jefferson
	Niagara	Lewis
	Ondaga	Madison
	Ontario	Montgomery
	Orange	Oneida
	Orleans	Otsego
	Oswego	Schoharie
	Putnam	Schuyler
	Rensselaer	Steuben
	Rockland	St. Lawrence
	Saratoga	Sullivan
	Schenectady	Tompkins
	Seneca	Ulster
	Tioga	Warren
	Washington	Wyoming
	Wayne	
	Yates	

SECTION C302
DESIGN CONDITIONS

C302.1 Interior design conditions. The interior design temperatures used for heating and cooling load calculations shall be a maximum of 72°F (22°C) for heating and minimum of 75°F (24°C) for cooling.

[NY] TABLE C301.3(2)
INTERNATIONAL CLIMATE ZONE DEFINITIONS
THERMAL CRITERIA

SECTION C303
MATERIALS, SYSTEMS

C303.1 Identification. Materials shall be identified in a manner of compliance with the applicable

C303.1.1 Building thermal value identification mark shall be affixed to each piece of building material thicker than 1/2 inch (12 inches (305 mm) or greater). Insulation installers shall provide the name, type, manufacturer and R-value of each element of the building assembly in or sprayed fiberglass and mineral wool installed thickness, setting density, coverage installed shall be listed on the manufacturer's literature. For polyurethane foam (SPF) insulation, the R-value shall be listed on the manufacturer's literature. For other materials, the R-value shall be listed on the manufacturer's literature. The installer shall sign, date and affix the identification mark in a conspicuous location on the job.

Exception: For roof decks, the R-value shall be determined by material standards specified in the *Building Code of New York State*.

C303.1.1.1 Blown-in insulation. The thickness of cellulose roof/ceiling and cellulose roof/ceiling insulation shall be installed in attics through the roof joists. The insulation shall be affixed to the joists. The minimum initial thickness shall be not less than 1 inch (25 mm) and shall face the attic access. The insulation foam thickness and installation shall be certified by the manufacturer's certification provided.

2020 Energy Conservation Construction Code
of New York State

STANDARD ENTRANCE SYSTEM U-FACTOR (BTU/hr-ft²°F)

DOOR TYPE	SPACER	CENTER OF GLASS U-FACTOR (BTU/hr-ft ² °F)							
		0.18	0.20	0.22	0.24	0.26	0.28	0.29	0.30
SINGLE									
NARROW	aluminum	0.61	0.62	0.63	0.65	0.66	0.67	0.68	0.68
NARROW	warm edge	0.60	0.61	0.62	0.64	0.65	0.67	0.67	0.68
MEDIUM	aluminum	0.70	0.71	0.71	0.73	0.74	0.75	0.75	0.76
MEDIUM	warm edge	0.69	0.70	0.71	0.72	0.73	0.74	0.75	0.75
WIDE	aluminum	0.74	0.74	0.75	0.76	0.77	0.78	0.78	0.79
WIDE	warm edge	0.73	0.74	0.74	0.76	0.77	0.78	0.78	0.79
SINGLE – 10" bottom rail									
NARROW	aluminum	0.64	0.65	0.66	0.68	0.69	0.70	0.71	0.71
NARROW	warm edge	0.64	0.65	0.66	0.67	0.68	0.70	0.70	0.71
MEDIUM	aluminum	0.72	0.72	0.73	0.74	0.75	0.76	0.77	0.77
MEDIUM	warm edge	0.71	0.72	0.73	0.74	0.75	0.76	0.76	0.77
WIDE	aluminum	0.75	0.76	0.76	0.78	0.78	0.79	0.80	0.80
WIDE	warm edge	0.75	0.75	0.76	0.77	0.78	0.79	0.79	0.80
DOUBLE									
NARROW	aluminum	0.55	0.56	0.57	0.59	0.60	0.62	0.62	0.63
NARROW	warm edge	0.55	0.56	0.57	0.59	0.60	0.61	0.62	0.63
MEDIUM	aluminum	0.65	0.66	0.66	0.68	0.69	0.70	0.71	0.71
MEDIUM	warm edge	0.64	0.65	0.66	0.68	0.69	0.70	0.71	0.71
WIDE	aluminum	0.69	0.69	0.70	0.71	0.72	0.73	0.74	0.74
WIDE	warm edge	0.68	0.69	0.70	0.71	0.72	0.73	0.74	0.74
DOUBLE – 10" bottom rail									
NARROW	aluminum	0.59	0.60	0.61	0.63	0.64	0.65	0.66	0.66
NARROW	warm edge	0.59	0.60	0.60	0.62	0.63	0.65	0.65	0.66
MEDIUM	aluminum	0.67	0.67	0.68	0.70	0.71	0.72	0.72	0.73
MEDIUM	warm edge	0.66	0.67	0.68	0.69	0.70	0.71	0.72	0.72
WIDE	aluminum	0.70	0.71	0.72	0.73	0.74	0.75	0.75	0.76
WIDE	warm edge	0.70	0.71	0.71	0.73	0.74	0.74	0.75	0.75

These tables are for reference only. Please contact a Tubelite representative for system U-Factors using project specific glass on standard system with 1-3/4" x 4-1/2" non-thermal frame and determined in accordance with NFRC 100 for single and double configurations configuration. Glass makeup: 1" IGU: 1/4" ext, 1/2" space, 1/4" int.

14000 SYSTEM U-FACTOR
 (BTU/hr-ft²-°F)

CENTER OF GLASS U-FACTOR (BTU/hr-ft ² -°F)	E14000 (non-thermal) <i>aluminum spacer</i>	E14000 (non-thermal) <i>warm edge spacer</i>	T14000 (thermally insulated) <i>aluminum spacer</i>	T14000 (thermally insulated) <i>warm edge spacer</i>	T14000 (thermally broken) <i>aluminum spacer</i>	T14000 (thermally broken) <i>warm edge spacer</i>
0.30	0.52	0.53	0.44	0.43	0.41	0.39
0.29	0.51	0.50	0.43	0.42	0.40	0.38
0.28	0.50	0.49	0.42	0.41	0.39	0.37
0.26	0.49	0.48	0.41	0.39	0.38	0.35
0.24	0.48	0.47	0.39	0.38	0.36	0.33
0.22	0.46	0.48	0.36	0.35	0.33	0.30
0.20	0.45	0.44	0.35	0.34	0.32	0.29
0.18	0.44	0.43	0.34	0.32	0.31	0.28

NOTE: The above table for reference only. Please contact a Tubelite representative for system U-Factors using project specific glass and framing. Values based on 4 1/2" standard system and determined in accordance with NFRC 100 for a glazed wall configuration. Glass makeup: 1" IGU with 1/4" lites, and 1/2" gap.

- [ForceFront Storm](#) - Hurricane Impact Systems
- [ForceFront Blast](#) - Blast Hazard Mitigation Systems
- [Therml=Block TU24000](#) - Architectural Aluminum Finishes
- [Therml=Block TU2465](#)
- [Therml=Block Thermo](#)
- [Therml=Block TerraPc](#)
- [300ES® Curtainwall](#)
- [400TU Therml=Block](#)
- [© 2020 TUBELITE I](#)
- [900RW Thermal Ribb](#)
- [Phantom Vent 5000 Z](#)
- [FORCEFRONT STORM](#) - Hurricane Impact System
- [FORCEFRONT BLAST](#) - Blast Hazard Mitigation S
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Leaders in Eco-Efficient Storefront, Curtainwall & Entrance Systems

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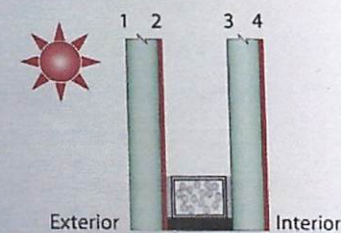
TU24000 SYSTEM U-FACTOR (BTU/hr-ft ² -°F)		
CENTER OF GLASS U-FACTOR (BTU/hr-ft ² -°F)	TU24000 (dual thermal) <i>aluminum spacer</i>	TU24000 (dual thermal) <i>warm edge spacer</i>
0.30	0.39	0.36
0.29	0.38	0.36
0.28	0.37	0.35
0.26	0.35	0.33
0.24	0.33	0.31
0.22	0.31	0.28
0.20	0.29	0.27
0.18	0.28	0.26

NOTE: The above table for reference only. Please contact a Tubelite representative for system U-Factors using t Values based on 4-1/2" system depth and determined in accordance with NFRC 100 for a glazed wall configuration. Glass makeup: Glass makeup: 1" IGU: 1/4" ext, 1/2" space, 1/4" int.

PERFORMANCE DATA - SUPERNEUTRAL



Product	Outboard - Inboard Substrate	Appearance	Transmission			Reflectance			U-Value Winter Nighttime		Relative Heat Gain	Shading Coefficient	Solar Heat Gain Coefficient	Light to Solar Gain (LSG)
			Visible Light %	Ultra-violet %	Solar Energy %	Visible Light Out %	Visible Light In %	Solar Energy Out %	Air	Argon				
SunGuard SuperNeutral														
Coating #2 Surface														
6 mm/12.7 mm a.s./6 mm														
SNX 62/27	UltraWhite - UltraWhite	Ultra Clear	63	7	24	11	12	48	0.29	0.24	65	0.31	0.27	2.36
	Clear - Clear	Clear	62	6	23	11	12	39	0.29	0.24	65	0.31	0.27	2.30
	Green - Clear	Green	52	3	18	9	11	11	0.29	0.24	59	0.28	0.25	2.13
	TwilightGreen - Clear	Dark Green	46	2	16	8	11	8	0.29	0.24	54	0.25	0.22	2.08
	CrystalGray - Clear	Light Gray	45	4	17	8	11	19	0.29	0.24	55	0.25	0.22	1.99
	Gray - Clear	Gray	31	3	12	6	10	19	0.29	0.24	45	0.21	0.18	1.71
SNX 51/23	UltraWhite - UltraWhite	Light Blue	52	11	20	14	13	42	0.29	0.24	57	0.27	0.23	2.24
	Clear - Clear	Light Blue	51	10	19	14	13	35	0.29	0.24	57	0.27	0.23	2.18
	Green - Clear	Blue-Green	43	5	15	11	13	11	0.29	0.24	53	0.25	0.22	1.99
	TwilightGreen - Clear	Dark Green	38	3	13	10	13	8	0.29	0.24	49	0.22	0.20	1.93
	CrystalGray - Clear	Light Gray	37	6	14	9	13	17	0.29	0.24	49	0.23	0.20	1.85
	Gray - Clear	Gray	26	5	10	7	12	17	0.29	0.24	41	0.18	0.16	1.57
SN 68	UltraWhite - UltraWhite	Ultra Clear	69	32	36	11	12	39	0.29	0.25	93	0.44	0.39	1.79
	Clear - Clear	Clear	68	29	33	11	12	32	0.29	0.25	90	0.43	0.38	1.80
	Green - Clear	Green	58	14	24	9	11	9	0.29	0.25	73	0.34	0.30	1.91
	TwilightGreen - Clear	Dark Green	51	9	20	8	11	7	0.29	0.25	64	0.30	0.27	1.93
	CrystalGray - Clear	Light Gray	49	17	24	8	11	16	0.29	0.25	72	0.34	0.30	1.65
	Gray - Clear	Gray	34	13	18	6	10	16	0.29	0.25	61	0.29	0.25	1.37
SN 54	UltraWhite - UltraWhite	Ultra Clear	55	17	25	13	18	40	0.29	0.24	69	0.33	0.28	1.93
	Clear - Clear	Clear	54	15	23	13	18	33	0.29	0.24	68	0.32	0.28	1.91
	Green - Clear	Green	46	7	17	10	18	10	0.29	0.24	59	0.27	0.24	1.88
	TwilightGreen - Clear	Dark Green	41	4	15	9	17	8	0.29	0.24	53	0.25	0.22	1.86
	CrystalGray - Clear	Light Gray	39	9	17	9	17	17	0.29	0.24	57	0.26	0.23	1.68
	Gray - Clear	Gray	27	7	13	7	17	17	0.29	0.24	48	0.22	0.20	1.40
SNR 43	UltraWhite - UltraWhite	Light Silver	44	18	20	28	14	50	0.29	0.24	56	0.26	0.23	1.92
	Clear - Clear	Light Silver	43	17	19	27	14	42	0.29	0.24	56	0.26	0.23	1.89
	Green - Clear	Green	36	8	14	21	14	14	0.29	0.24	50	0.23	0.20	1.78
	TwilightGreen - Clear	Dark Green	32	5	12	18	13	11	0.29	0.24	46	0.21	0.19	1.73
	CrystalGray - Clear	Silver Gray	31	10	13	17	13	21	0.29	0.24	48	0.22	0.19	1.60
	Gray - Clear	Silver Gray	22	8	10	11	13	19	0.29	0.24	41	0.19	0.17	1.31



PERFORMANCE DATA WITH SUNGUARD IS 20

Product	Outboard - Inboard Substrate	Appearance	Transmission			Reflectance			U-Value Winter Nighttime		Relative Heat Gain	Shading Coefficient	Solar Heat Gain Coefficient	Light to Solar Gain (LSG)
			Visible Light %	Ultra-violet %	Solar Energy %	Visible Light Out %	Visible Light In %	Solar Energy Out %	Air	Argon				
SunGuard SuperNeutral + IS 20														
Coating #2 & IS 20 #4 Surface														
6 mm/12.7 mm a.s./6 mm														
SNX 62/27 + IS 20	UltraWhite - UltraWhite	Ultra Clear	61	6	23	11	12	48	0.23	0.20	62	0.30	0.26	2.38
	Clear - Clear	Clear	60	6	22	11	13	40	0.23	0.20	62	0.29	0.26	2.33
SNX 51/23 + IS 20	UltraWhite - UltraWhite	Light Blue	50	10	19	14	14	42	0.23	0.20	54	0.26	0.22	2.26
	Clear - Clear	Light Blue	49	10	18	14	14	35	0.23	0.20	54	0.26	0.22	2.22
SN 68 + IS 20	UltraWhite - UltraWhite	Ultra Clear	67	30	34	11	13	39	0.24	0.20	89	0.43	0.37	1.80
	Clear - Clear	Clear	66	28	32	11	13	32	0.24	0.20	86	0.42	0.36	1.82
SN 54 + IS 20	UltraWhite - UltraWhite	Ultra Clear	53	16	24	13	18	41	0.24	0.20	66	0.31	0.27	1.95
	Clear - Clear	Clear	52	14	23	13	18	33	0.24	0.20	65	0.31	0.27	1.94
SNR 43 + IS 20	UltraWhite - UltraWhite	Light Silver	43	17	19	28	14	50	0.23	0.20	53	0.25	0.22	1.94
	Clear - Clear	Light Silver	42	16	18	28	14	42	0.23	0.20	53	0.25	0.22	1.92

NOTES SPECIFIC TO THE SUNGUARD SUPERNEUTRAL w/IS 20 TABLE ABOVE:

- SunGuard IS 20 is on the #4 surface.
- SunGuard IS 20 is also available with SunGuard High Performance and Solar products.

Solarban® 60 Glass

Fabrication and Availability

Solarban® 60 glass is available exclusively through the Vitro Certified™ Network. Vitro Certified™ Fabricators can meet tight construction deadlines and accelerate the delivery of replacement glass before, during and after construction. Solarban® 60 glass is manufactured using the sputter-coating process and is available for annealed, laminated, heat-strengthened and tempered applications.

Request Samples

To obtain samples of any Vitro Glass product, call 1-855-VTRO-GLS (877-6457) or visit samples.vitroglazings.com.

Insulating Glass Unit Performance Comparisons | 1-inch (25mm) units with 1/2-inch (13mm) airspace and two 1/4-inch (6mm) lites

Outdoor Lite: Coating if Any (Surface) Glass	Glass Type + Indoor Lite: Coating if Any (Surface) Glass	Visible Light Transmittance (VLT)	Visible Light Reflectance		(BTU/hr ² ft ² °F) NFRC U-Value		Solar Heat Gain Coefficient (SHGC)	Light to Solar Gain (LSG)
			Exterior %	Interior %	Winter Nighttime	Winter Argon		
Solarban® 60 Solar Control Low-E Glass								
Solarban® 60 (2) Clear + Clear		70	11	12	0.29	0.24	0.39	1.79
Solarban® 60 (2) Starphire® + Starphire®		74	11	12	0.29	0.24	0.41	1.80
Solarban® 60 (2) Solexia® + Clear		61	9	12	0.29	0.24	0.32	1.91
Solarban® 60 (2) Atlantica® + Clear		53	8	11	0.29	0.24	0.27	1.96
Solarban® 60 (2) Azuria® + Clear		54	8	11	0.29	0.24	0.28	1.93
Solarban® 60 (2) Solarblue® + Clear		45	7	11	0.29	0.24	0.26	1.61
Solarban® 60 (2) Pacifica® + Clear		34	6	10	0.29	0.24	0.22	1.55
Solarban® 60 (2) Solarbronze® + Clear		42	7	11	0.29	0.24	0.28	1.50
Solarban® 60 (2) Optigray® + Clear		50	8	11	0.29	0.24	0.30	1.67
Solarban® 60 (2) Solargray® + Clear		35	6	10	0.29	0.24	0.25	1.40
Solexia® + Solarban® 60 (3) Clear		61	10	10	0.29	0.24	0.37	1.65
Atlantica® + Solarban® 60 (3) Clear		53	9	10	0.29	0.24	0.31	1.71
Azuria® + Solarban® 60 (3) Clear		54	9	10	0.29	0.24	0.31	1.74
Solarblue® + Solarban® 60 (3) Clear		45	7	9	0.29	0.24	0.33	1.36
Pacifica® + Solarban® 60 (3) Clear		34	6	9	0.29	0.24	0.25	1.36
Solarbronze® + Solarban® 60 (3) Clear		42	7	9	0.29	0.24	0.32	1.31
Optigray® + Solarban® 60 (3) Clear		50	8	9	0.29	0.24	0.35	1.43
Solargray® + Solarban® 60 (3) Clear		35	7	9	0.29	0.24	0.29	1.21
GraylitE II + Solarban® 60 (3) Clear		7	4	8	0.29	0.24	0.13	0.54

~~Vistacool® and Solarcool® with Solarban® 60 Solar Control Low-E (3)*~~

Vistacool® (2) Azuria® + Solarban® 60 (3) Clear	42	20	24	0.29	0.24	0.26	1.62
Vistacool® (2) Pacifica® + Solarban® 60 (3) Clear	26	11	23	0.29	0.24	0.21	1.24
Solarcool® (2) Solexia® + Solarban® 60 (3) Clear	24	24	29	0.29	0.24	0.19	1.26
Solarcool® (2) Azuria® + Solarban® 60 (3) Clear	21	19	29	0.29	0.24	0.17	1.24
Solarcool® (2) Solarblue® + Solarban® 60 (3) Clear	17	14	29	0.29	0.24	0.18	0.94
Solarcool® (2) Pacifica® + Solarban® 60 (3) Clear	13	10	29	0.29	0.24	0.15	0.87
Solarcool® (2) Solarbronze® + Solarban® 60 (3) Clear	17	14	29	0.29	0.24	0.18	0.94
Solarcool® (2) Solargray® + Solarban® 60 (3) Clear	14	11	29	0.29	0.24	0.17	0.82

* Data based on using Starphire® glass for both interior and exterior lites.
All performance data calculated using LBNL Window 7.3 software and represents center of glass performance data. For detailed information on the methodologies used to calculate the aesthetic and performance values in this table, please visit www.ppgideas.com or request our Architectural Glass Catalog.

For more information about Solarban® 60 low-e glass and other Cradle to Cradle Certified™ architectural glasses by Vitro Glass, visit vitroglazings.com, or call 1-855-VTRO-GLS (877-6457).



Solarban® 70 glass

Insulating Glass Unit Performance Comparisons 1-inch (25mm) units with 1/2-inch (13mm) airspace and two 1/4-inch (6mm) lites								
Outdoor Lite: Coating if Any (Surface) Glass	Glass Type + Indoor Lite: Coating if Any (Surface) Glass	Visible Light Transmittance (VLT)	Visible Light Reflectance		(BTU/hr ² ft ² °F) NFRC U-Value		Solar Heat Gain Coefficient (SHGC)	Light to Solar Gain (LSG)
			Exterior %	Interior %	Winter Nighttime	Winter Argon		
Solarban® 70 Solar Control Low-E Glass								
	Solarban® 70 (2) + Clear	64	12	13	0.28	0.24	0.27	2.37
	Solarban® 70 (2) Solexia® + Clear	58	10	10	0.28	0.24	0.27	2.15
	Solarban® 70 (2) Atlantica® + Clear	51	9	12	0.28	0.24	0.24	2.10
	Solarban® 70 (2) Azuria® + Clear	52	9	12	0.28	0.24	0.25	2.00
	Solarban® 70 (2) Solarblue® + Clear	42	8	12	0.28	0.24	0.20	1.80
	Solarban® 70 (2) Pacifica® + Clear	32	6	12	0.28	0.24	0.19	1.60
	Solarban® 70 (2) Solarbronze® + Clear	40	7	12	0.28	0.24	0.21	1.90
	Solarban® 70 (2) Optigray® + Clear	47	8	12	0.28	0.24	0.21	1.96
	Solarban® 70 (2) Solargray® + Clear	34	6	12	0.28	0.24	0.20	1.70
	Solexia® + Solarban® 70 (3) Clear	56	11	12	0.28	0.24	0.32	1.75
	Atlantica® + Solarban® 70 (3) Clear	49	10	11	0.28	0.24	0.28	1.75
	Azuria® + Solarban® 70 (3) Clear	49	9	11	0.28	0.24	0.29	1.69
	Solarblue® + Solarban® 70 (3) Clear	40	8	11	0.28	0.24	0.27	1.48
	Pacifica® + Solarban® 70 (3) Clear	31	6	10	0.28	0.24	0.22	1.41
	Solarbronze® + Solarban® 70 (3) Clear	38	8	11	0.28	0.24	0.26	1.46
	Optigray® + Solarban® 70 (3) Clear	45	9	11	0.28	0.24	0.29	1.55
	Solargray® + Solarban® 70 (3) Clear	32	7	11	0.28	0.24	0.24	1.33
	Graylite® II + Solarban® 70 (3) Clear	6	4	10	0.28	0.24	0.11	0.55
Vistacool® and Solarcool® with Solarban® 70 Solar Control Low-E (3)*								
	Vistacool® (2) Azuria® + Solarban® 70 (3)	38	21	23	0.28	0.24	0.24	1.58
	Vistacool® (2) Pacifica® + Solarban® 70 (3)	24	11	22	0.28	0.24	0.19	1.26
	Solarcool® (2) Solexia® + Solarban® 70 (3)	22	24	27	0.28	0.24	0.17	1.29
	Solarcool® (2) Azuria® + Solarban® 70 (3)	19	19	27	0.28	0.24	0.15	1.27
	Solarcool® (2) Solarblue® + Solarban® 70 (3)	16	14	27	0.28	0.24	0.15	1.07
	Solarcool® (2) Pacifica® + Solarban® 70 (3)	12	10	27	0.28	0.24	0.13	0.92
	Solarcool® (2) Solarbronze® + Solarban® 70 (3)	15	14	27	0.28	0.24	0.15	1.00
	Solarcool® (2) Solargray® + Solarban® 70 (3)	13	11	27	0.28	0.24	0.14	0.98

*Solarban® 70 glass for annealed applications is applied to Starphire® glass, heat treated applications will require either clear or Starphire® glass depending on manufacturing process. All performance data calculated using LBNL Window 7.3 software and represents center of glass performance data. For detailed information on the methodologies used to calculate the aesthetic and performance values in this table, please visit vitroglazings.com or request our Architectural Glass Catalog.

Fabrication and Availability

Solarban® 70 glass is available exclusively through the Vitro Certified™ Network. Vitro Certified™ Fabricators can meet tight construction deadlines and accelerate the delivery of replacement glass before, during and after construction. Solarban® 70 glass is manufactured using the sputter-coating process and is available for annealed, heat-strengthened and tempered applications.

Additional Resources

To obtain samples of any Vitro Glass product, call 1-855-VTRO-GLS (877-6457) or visit samples.vitroglazings.com. For videos, design insights and technical education, visit the Vitro Glass Education Center at glassed.vitroglazings.com. For glass comparison and configuration tools, visit tools.vitroglazings.com.

For more information about Solarban® low-e glass and other Cradle to Cradle Certified™ architectural glasses by Vitro Glass, visit vitroglazings.com, or call 1-855-VTRO-GLS (887-6457).



Insulating units constructed of equal glass thicknesses and 1/2" (12.7mm) airspace

Product	Nominal Glass Thickness		Visible Light ²			Solar Energy ²			U-Factor ⁵						Solar Heat Gain Coefficient ⁷	Shading Coefficient ⁸
			Transmittance ³	Reflectance ⁴ %		Transmittance ³	Reflectance ⁴ %	UV Transmittance ²	U.S. Summer		U.S. Winter		European ⁶			
	in.	mm		%	Outside				Inside	%	%	%	Air	Argon		

Pilkington Uncoated Float Glass Outer Lite and **Energy Advantage™** Low-E Glass Inner Lite (#3 Surface)

Optifloat Clear	3/32	2.5	76	18	17	62	17	48	0.33	0.28	0.34	0.29	1.9	1.6	0.73	0.84
	1/8	3	75	18	17	59	16	45	0.33	0.28	0.33	0.29	1.9	1.6	0.71	0.82
	5/32	4	74	17	16	56	16	42	0.33	0.28	0.33	0.29	1.9	1.6	0.69	0.80
	3/16	5	74	17	17	55	15	41	0.33	0.28	0.33	0.29	1.9	1.6	0.68	0.79
	1/4	6	73	17	16	52	14	37	0.33	0.28	0.33	0.29	1.8	1.5	0.67	0.77
	5/16	8	71	16	15	47	13	32	0.33	0.28	0.33	0.28	1.8	1.5	0.63	0.72
	3/8	10	69	16	15	43	12	29	0.32	0.28	0.33	0.28	1.8	1.5	0.60	0.70
Optifloat Grey Tint	1/8	3	50	10	15	41	11	24	0.33	0.28	0.33	0.29	1.9	1.6	0.53	0.61
	3/16	5	42	8	15	32	8	17	0.33	0.28	0.33	0.29	1.9	1.6	0.45	0.51
	1/4	6	36	7	14	27	7	13	0.33	0.28	0.33	0.29	1.8	1.6	0.40	0.46
Optifloat Bronze Tint	1/8	3	57	12	15	45	12	25	0.33	0.28	0.33	0.29	1.9	1.6	0.57	0.66
	3/16	5	49	10	15	38	10	19	0.33	0.28	0.33	0.29	1.9	1.6	0.50	0.58
	1/4	6	42	8	14	32	8	14	0.33	0.28	0.33	0.29	1.8	1.5	0.45	0.52
Optifloat Blue-Green Tint	1/4	6	62	13	15	34	9	21	0.33	0.28	0.33	0.29	1.8	1.6	0.45	0.52
EverGreen High-Performance Tint	1/8	3	64	14	16	35	9	18	0.33	0.28	0.33	0.29	1.9	1.6	0.46	0.53
	3/16	5	61	13	16	31	8	14	0.33	0.28	0.33	0.29	1.9	1.6	0.41	0.47
	1/4	6	54	11	14	24	7	9	0.33	0.28	0.33	0.29	1.8	1.5	0.35	0.40
Arctic Blue High-Performance Tint	1/4	6	43	9	14	23	7	13	0.33	0.28	0.33	0.29	1.8	1.5	0.34	0.39
SuperGrey High-Performance Tint	1/8	3	21	5	14	15	5	4	0.33	0.28	0.33	0.29	1.9	1.6	0.26	0.30
	3/16	5	10	4	14	7	4	2	0.33	0.28	0.33	0.29	1.9	1.6	0.18	0.21
	1/4	6	7	4	13	5	4	1	0.33	0.28	0.33	0.29	1.8	1.5	0.15	0.18

Pilkington Eclipse Advantage™ Reflective Low-E Glass Outer Lite (#2 Surface) and Energy Advantage™ Low-E Glass Inner Lite (#3 Surface)

Eclipse Advantage Clear	1/4	6	56	30	30	41	22	19	0.30	0.25	0.31	0.26	1.7	1.4	0.53	0.6
Eclipse Advantage Grey	1/4	6	27	11	29	20	9	7	0.30	0.25	0.31	0.26	1.7	1.4	0.31	0.39
Eclipse Advantage Bronze	1/4	6	32	13	29	24	11	7	0.30	0.25	0.31	0.26	1.7	1.4	0.36	0.4
Eclipse Advantage Blue-Green	1/4	6	48	22	29	26	13	10	0.30	0.25	0.31	0.26	1.7	1.4	0.36	0.4
Eclipse Advantage EverGreen	1/4	6	40	18	29	18	9	5	0.30	0.25	0.31	0.26	1.7	1.4	0.27	0.3
Eclipse Advantage Arctic Blue	1/4	6	33	14	29	17	9	7	0.30	0.25	0.31	0.26	1.7	1.4	0.27	0.3
Eclipse Advantage Gold	1/4	6	35	34	39	31	23	5	0.31	0.26	0.32	0.27	1.8	1.5	0.43	0.5

Pilkington Energy Advantage™ Low-E Glass Outer Lite (#2 Surface) and Clear Float Glass Inner Lite

Energy Advantage Low-E	3/32	2.5	76	17	18	62	16	48	0.33	0.28	0.34	0.29	1.9	1.6	0.67	0.77
	1/8	3	75	17	18	59	15	45	0.33	0.28	0.33	0.29	1.9	1.6	0.65	0.77
	5/32	4	74	16	17	56	14	42	0.33	0.28	0.33	0.29	1.9	1.6	0.63	0.77
	3/16	5	74	17	17	55	14	41	0.33	0.28	0.33	0.29	1.9	1.6	0.63	0.77
	1/4	6	73	16	17	52	13	37	0.33	0.28	0.33	0.29	1.8	1.5	0.62	0.77
	5/16	8	71	15	16	47	12	32	0.33	0.28	0.33	0.28	1.8	1.5	0.58	0.66
	3/8	10	69	15	16	43	12	29	0.32	0.27	0.33	0.28	1.8	1.5	0.56	0.66

Pilkington Solar-E™ Solar Control Low-E Glass Outer Lite (#2 Surface) and Clear Float Glass Inner Lite

Solar-E Solar Control Low-E	1/8	3	54	11	16	39	10	38	0.33	0.28	0.34	0.29	1.9	1.6	0.46	0.5
	5/32	4	54	10	16	38	9	36	0.33	0.28	0.34	0.29	1.9	1.6	0.47	0.5
	3/16	5	53	10	15	36	9	34	0.33	0.28	0.33	0.29	1.9	1.6	0.45	0.5
	1/4	6	53	11	15	35	9	33	0.33	0.28	0.33	0.29	1.9	1.6	0.45	0.5
	5/16	8	52	10	15	32	8	29	0.33	0.28	0.33	0.29	1.8	1.5	0.43	0.5

Per ASTM C 1036; with exception of **Texture™** and **Optiwhite™**

Size listed may, in some cases, be too large to meet applicable static load requirements.

Certain other thicknesses and sizes may be available upon request

Based on the mean of the thickness range. Note glass density = 158 lb./cu. ft.

Typical production nominal glass thickness in bold typeface

Pilkington **Optifloat™** Blue-Green Glass: 1/8" and 5mm are not standard products

11.0 CERTIFICATE OF COMPLIANCE

Please [click here](#) for a downloadable Word version of this form (clicking on the link may open a new Internet browser window).

Certificate Authorization

Name: _____

Signature: _____

OVERALL RATING	
U-Factor: (Btu/h·ft ² ·°F)	
SHGC:	

Directions: Fill out form completely. Determine the Overall Rating for this project by using the C.O.G. U-Factor and C.O.G. SHGC from Table 1 and looking up the overall rating from Table 2. Indicate the Overall Rating in the space above. Linear interpolation is permitted.

Company: _____

Date: _____

CERTIFIES THAT THE MATERIALS LISTED ON THIS CERTIFICATE WERE INSTALLED ON THE PROJECT IDENTIFIED BELOW.

PROJECT INFORMATION:			
Street Address: _____			
City: _____	State: _____	Zip: _____	
GLAZING CONTRACTOR / INSTALLER:		Contact Person: _____	
Street Address: _____		Phone Number: _____	
City: _____	State: _____	Zip: _____	

TABLE 1 - GLAZING	GLAZING MATERIAL SUPPLIER:		Contact Person: _____	
	Street Address: _____		Phone Number: _____	
	City: _____	State: _____	Zip: _____	
	Glass and Spacer Type: _____			
	Center-of-glass (C.O.G.) U-factor: _____		Center-of-glass (C.O.G.) SHGC: _____	

Btu/h·ft²·°F

TABLE 2 - FRAMING	FRAMING MATERIAL SUPPLIER:		Contact Person: _____	
	Street Address: _____		Phone Number: _____	
	City: _____	State: _____	Zip: _____	
			Product Line: _____	
			The overall ratings for U-factor and SHGC are based on a size of _____ mm x _____ mm (_____ in x _____ in) as required in NFRC 100.	
			Overall U-factors and Solar Heat Gain Coefficients (SHGC) listed in the matrix were determined in accordance with NFRC 100 and NFRC 200 respectively by a NFRC accredited laboratory.	
			ACCREDITED LABORATORY: _____	
			Reference Test Report #: _____	