



COMPARISONS

for One-Inch Insulating Glass Units

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

Outdoor Lite: Coating if Any (Surface) Glass	Glass Type +	Indoor Lite: Coating if Any (Surface) Glass	Visible Light Transmittance (VLT) ² %	Visible Light Reflectance ²		(Btu/hr·ft ² ·°F) NFRC U-Value ³		Solar Heat Gain Coefficient (SHGC) ⁴	Light-to-Solar Gain (LSG) ⁵
				Exterior %	Interior %	Winter Nighttime	Winter Argon		
Uncoated									
	CLEAR Glass + Clear		79	15	15	0.47	0.45	0.70	1.13
	ACUITY™ + ACUITY™		82	15	15	0.47	0.45	0.78	1.05
	STARPHIRE® + STARPHIRE®		84	15	15	0.47	0.45	0.82	1.02
	SOLEXIA® + Clear		69	13	15	0.47	0.45	0.50	1.38
	ATLANTICA® + Clear		60	10	14	0.47	0.45	0.40	1.50
	AZURIA® + Clear		61	11	14	0.47	0.45	0.39	1.56
	SOLARBLUE® + Clear		50	9	13	0.47	0.45	0.49	1.02
	PACIFICA® + Clear		38	7	13	0.47	0.45	0.36	1.06
	SOLARBRONZE® + Clear		47	8	13	0.47	0.45	0.51	0.92
	OPTIGRAY® + Clear		56	10	13	0.47	0.45	0.52	1.08
	SOLARGRAY® + Clear		40	7	13	0.47	0.45	0.46	0.87
	GRAYLITE®II + Clear		8	4	12	0.47	0.45	0.22	0.36
Coated									

SUNGATE® 400 Low-E Glass

	SUNGATE 400 (2) Clear + Clear		76	14	14	0.32	0.28	0.60	1.27
	SUNGATE 400 (2) STARPHIRE + STARPHIRE		80	14	14	0.32	0.28	0.68	1.18
	CLEAR + SUNGATE 400 (3) Clear		76	14	14	0.32	0.28	0.63	1.21
	SOLEXIA + SUNGATE 400 (3) Clear		66	11	13	0.32	0.28	0.44	1.50
	ATLANTICA + SUNGATE 400 (3) Clear		58	9	12	0.32	0.28	0.35	1.66
	AZURIA + SUNGATE 400 (3) Clear		59	10	12	0.32	0.28	0.34	1.74
	SOLARBLUE + SUNGATE 400 (3) Clear		48	8	12	0.32	0.28	0.42	1.14
	PACIFICA + SUNGATE 400 (3) Clear		37	7	11	0.32	0.28	0.30	1.23
	SOLARBRONZE + SUNGATE 400 (3) Clear		46	8	12	0.32	0.28	0.44	1.05
	OPTIGRAY + SUNGATE 400 (3) Clear		54	9	12	0.32	0.28	0.46	1.17
	SOLARGRAY + SUNGATE 400 (3) Clear		38	7	12	0.32	0.28	0.39	0.97
	GRAYLITE II + SUNGATE 400 (3) Clear		8	4	11	0.32	0.28	0.15	0.53

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) ACUITY + ACUITY		73	11	12	0.29	0.24	0.41	1.78
	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	0.29	1.55
	SOLARBAN 60 (2) PACIFICA + Clear		34	6	10	0.29	0.24	0.23	1.48
	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	8	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

SOLARBAN® 67 Solar Control Low-E Glass

	SOLARBAN 67 (2) Clear + Clear		54	19	16	0.29	0.24	0.29	1.86
	SOLARBAN 67 (2) ACUITY + ACUITY		56	19	16	0.29	0.24	0.30	1.87
	SOLARBAN 67 (2) STARPHIRE + STARPHIRE		57	20	16	0.29	0.24	0.30	1.90
	SOLARBAN 67 (2) SOLEXIA + Clear		47	16	16	0.29	0.24	0.25	1.88
	SOLARBAN 67 (2) ATLANTICA + Clear		41	13	16	0.29	0.24	0.22	1.86
	SOLARBAN 67 (2) AZURIA + Clear		42	13	16	0.29	0.24	0.23	1.83

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

Outdoor Lite: Coating if Any (Surface) Glass	Glass Type + Indoor Lite: Coating if Any (Surface) Glass	Visible Light Transmittance (VLT) ² %	Visible Light Reflectance ²		(Btu/hr·ft ² ·°F) NFRC U-Value ³		Solar Heat Gain Coefficient (SHGC) ⁴	Light-to-Solar Gain (LSG) ⁵
			Exterior %	Interior %	Winter Nighttime	Winter Argon		

Coated

SOLARBAN® 67 Solar Control Low-E Glass (Continued)

SOLARBAN 67 (2) OPTIBLUE + Clear	39	12	15	0.29	0.24	0.25	1.56
SOLARBAN 67 (2) SOLARBLUE + Clear	34	10	15	0.29	0.24	0.23	1.48
SOLARBAN 67 (2) PACIFICA + Clear	26	8	15	0.29	0.24	0.19	1.37
SOLARBAN 67 (2) SOLARBRONZE + Clear	32	10	15	0.29	0.24	0.22	1.45
SOLARBAN 67 (2) OPTIGRAY + Clear	38	12	15	0.29	0.24	0.24	1.58
SOLARBAN 67 (2) SOLARGRAY + Clear	27	8	15	0.29	0.24	0.20	1.35
ATLANTICA + SOLARBAN 67 (3) Clear	41	11	18	0.29	0.24	0.29	1.41
AZURIA + SOLARBAN 67 (3) Clear	42	11	18	0.29	0.24	0.29	1.45
SOLARBLUE + SOLARBAN 67 (3) Clear	34	9	18	0.29	0.24	0.30	1.13
PACIFICA + SOLARBAN 67 (3) Clear	26	7	18	0.29	0.24	0.23	1.13
SOLARBRONZE + SOLARBAN 67 (3) Clear	32	9	18	0.29	0.24	0.29	1.10
OPTIGRAY + SOLARBAN 67 (3) Clear	38	10	18	0.29	0.24	0.32	1.19
SOLARGRAY + SOLARBAN 67 (3) Clear	27	8	18	0.29	0.24	0.26	1.04
GRAYLITE II + SOLARBAN 67 (3) Clear	5	4	18	0.29	0.24	0.12	0.42

SOLARBAN® 70 Solar Control Low-E Glass[†] (formerly Solarban® 70XL Glass)

SOLARBAN 70 (2) [†] + Clear	64	13	14	0.28	0.24	0.27	2.37
SOLARBAN 70 (2) SOLEXIA + Clear	56	11	14	0.28	0.24	0.26	2.15
SOLARBAN 70 (2) ATLANTICA + Clear	49	10	13	0.28	0.24	0.23	2.13
SOLARBAN 70 (2) AZURIA + Clear	50	10	13	0.28	0.24	0.24	2.08
SOLARBAN 70 (2) SOLARBLUE + Clear	41	8	13	0.28	0.24	0.22	1.86
SOLARBAN 70 (2) PACIFICA + Clear	31	7	13	0.28	0.24	0.19	1.63
SOLARBAN 70 (2) SOLARBRONZE + Clear	39	8	13	0.28	0.24	0.20	1.95
SOLARBAN 70 (2) OPTIGRAY + Clear	46	9	13	0.28	0.24	0.23	2.00
SOLARBAN 70 (2) SOLARGRAY + Clear	32	7	13	0.28	0.24	0.19	1.68
SOLEXIA + SOLARBAN 70 (3) [†]	56	11	12	0.28	0.24	0.32	1.75
ATLANTICA + SOLARBAN 70 (3) [†]	48	9	11	0.28	0.24	0.28	1.71
AZURIA + SOLARBAN 70 (3) [†]	49	9	11	0.28	0.24	0.29	1.69
SOLARBLUE + SOLARBAN 70 (3) [†]	41	8	12	0.28	0.24	0.27	1.52
PACIFICA + SOLARBAN 70 (3) [†]	31	6	10	0.28	0.24	0.22	1.41
SOLARBRONZE + SOLARBAN 70 (3) [†]	38	8	11	0.28	0.24	0.26	1.46
OPTIGRAY + SOLARBAN 70 (3) [†]	46	9	12	0.28	0.24	0.28	1.64
SOLARGRAY + SOLARBAN 70 (3) [†]	32	7	11	0.28	0.24	0.24	1.33
GRAYLITE II + SOLARBAN 70 (3) [†]	6	4	10	0.28	0.24	0.11	0.55

SOLARBAN® 72 Solar Control Low-E Glass

SOLARBAN 72 (2) ACUITY + ACUITY	67	13	14	0.28	0.24	0.28	2.39
SOLARBAN 72 (2) STARPHIRE + STARPHIRE	68	13	14	0.28	0.24	0.28	2.43

SOLARBAN® 90 Solar Control Low-E Glass

SOLARBAN 90 (2) Clear + Clear	51	12	19	0.29	0.24	0.23	2.22
SOLARBAN 90 (2) ACUITY + ACUITY	53	12	19	0.29	0.24	0.23	2.30
SOLARBAN 90 (2) STARPHIRE + STARPHIRE	54	13	20	0.29	0.24	0.23	2.35
SOLARBAN 90 (2) SOLEXIA + Clear	44	10	19	0.29	0.24	0.22	2.00
SOLARBAN 90 (2) ATLANTICA + Clear	39	9	19	0.29	0.24	0.20	1.95
SOLARBAN 90 (2) AZURIA + Clear	39	9	19	0.29	0.24	0.21	1.86
SOLARBAN 90 (2) OPTIBLUE + Clear	37	8	19	0.29	0.24	0.20	1.85
SOLARBAN 90 (2) SOLARBLUE + Clear	32	8	18	0.29	0.24	0.19	1.68
SOLARBAN 90 (2) PACIFICA + Clear	24	6	18	0.29	0.24	0.17	1.41
SOLARBAN 90 (2) SOLARBRONZE + Clear	31	7	18	0.29	0.24	0.18	1.72
SOLARBAN 90 (2) OPTIGRAY + Clear	36	8	19	0.29	0.24	0.20	1.80
SOLARBAN 90 (2) SOLARGRAY + Clear	26	6	18	0.29	0.24	0.17	1.53
SOLEXIA + SOLARBAN 90 (3) Clear	44	16	12	0.29	0.24	0.30	1.47
ATLANTICA + SOLARBAN 90 (3) Clear	39	13	12	0.29	0.24	0.26	1.50
AZURIA + SOLARBAN 90 (3) Clear	39	13	12	0.29	0.24	0.27	1.44
SOLARBLUE + SOLARBAN 90 (3) Clear	32	10	11	0.29	0.24	0.25	1.28
PACIFICA + SOLARBAN 90 (3) Clear	24	8	11	0.29	0.24	0.21	1.14
SOLARBRONZE + SOLARBAN 90 (3) Clear	30	10	11	0.29	0.24	0.24	1.25

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				Exterior %	Interior %	Winter Nighttime	Winter Argon		

Coated

SOLARBAN® 90 Solar Control Low-E Glass (Continued)

OPTIGRAY + SOLARBAN 90 (3) Clear			36	12	11	0.29	0.24	0.27	1.33
SOLARGRAY + SOLARBAN 90 (3) Clear			25	8	11	0.29	0.24	0.22	1.14
GRAYLITE II + SOLARBAN 90 (3) Clear			5	4	11	0.29	0.24	0.11	0.45

SOLARBAN® z50 Solar Control Low-E Glass^{††}

SOLARBAN 60 (2) OPTIBLUE + Clear			51	8	11	0.29	0.24	0.32	1.59
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SOLARBAN® z75 Solar Control Low-E Glass^{††}

SOLARBAN 70 (2) OPTIBLUE + Clear			46	9	13	0.28	0.24	0.23	2.00
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SOLARBAN® R100 Solar Control Low-E Glass

SOLARBAN R100 (2) Clear + Clear			42	32	14	0.29	0.25	0.23	1.83
SOLARBAN R100 (2) ACUITY + ACUITY			43	33	13	0.29	0.25	0.23	1.87
SOLARBAN R100 (2) STARPHIRE + STARPHIRE			44	33	14	0.29	0.25	0.23	1.91
SOLARBAN R100 (2) SOLEXIA + Clear			36	25	13	0.29	0.25	0.21	1.71
SOLARBAN R100 (2) ATLANTICA + Clear			31	20	13	0.29	0.25	0.19	1.63
SOLARBAN R100 (2) AZURIA + Clear			32	21	13	0.29	0.25	0.19	1.68
SOLARBAN R100 (2) OPTIBLUE + Clear			30	19	13	0.29	0.25	0.20	1.50
SOLARBAN R100 (2) SOLARBLUE + Clear			26	15	13	0.29	0.25	0.19	1.37
SOLARBAN R100 (2) PACIFICA + Clear			20	11	13	0.29	0.25	0.16	1.25
SOLARBAN R100 (2) SOLARBRONZE + Clear			25	15	13	0.29	0.25	0.18	1.39
SOLARBAN R100 (2) OPTIGRAY + Clear			29	18	13	0.29	0.25	0.20	1.45
SOLARBAN R100 (2) SOLARGRAY + Clear			21	12	13	0.29	0.25	0.17	1.24

VISTACOOl® Subtly Reflective Glass

VISTACOOl (2) AZURIA + Clear			47	21	32	0.47	0.45	0.34	1.38
VISTACOOl (2) PACIFICA + Clear			29	11	31	0.47	0.45	0.32	0.91

SOLARCOOL® Reflective Glass

SOLARCOOL (2) AZURIA + Clear			24	20	38	0.47	0.45	0.25	0.96
SOLARCOOL (2) PACIFICA + Clear			15	10	38	0.47	0.45	0.25	0.60
SOLARCOOL (2) SOLARBLUE + Clear			20	15	38	0.47	0.45	0.32	0.63
SOLARCOOL (2) SOLARBRONZE + Clear			19	14	38	0.47	0.45	0.34	0.56
SOLARCOOL (2) SOLARGRAY + Clear			16	11	38	0.47	0.45	0.32	0.50

VISTACOOl® and SOLARCOOL® with SOLARBAN® 60 Solar Control Low-E Glass (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	0.22	1.18
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

VISTACOOl® and SOLARCOOL® with SOLARBAN® 70 Solar Control Low-E Glass (3)[†] (formerly Solarban® 70XL Glass)

VISTACOOl (2) AZURIA + SOLARBAN 70 [†]			38	21	23	0.28	0.24	0.24	1.58
VISTACOOl (2) PACIFICA + SOLARBAN 70 [†]			24	11	22	0.28	0.24	0.19	1.26
SOLARCOOL (2) AZURIA + SOLARBAN 70 [†]			19	19	27	0.28	0.24	0.16	1.19
SOLARCOOL (2) SOLARBLUE + SOLARBAN 70 [†]			16	14	27	0.28	0.24	0.15	1.07
SOLARCOOL (2) PACIFICA + SOLARBAN 70 [†]			12	10	27	0.28	0.24	0.13	0.92
SOLARCOOL (2) SOLARBRONZE + SOLARBAN 70 [†]			15	14	27	0.28	0.24	0.15	1.00
SOLARCOOL (2) SOLARGRAY + SOLARBAN 70 [†]			13	11	27	0.28	0.24	0.14	0.93

[†] Solarban® 70 (formerly Solarban® 70XL) for annealed applications is applied to low-iron glass; heat treated applications will require either clear or low-iron glass depending on manufacturing process.

^{††} Optiblue® is a unique substrate by Vitro Glass designed for use with several Solarban® coatings.

1. Data is based on center of glass performance of representative factory production samples. Actual values may vary due to the production process and manufacturing tolerances. All tabulated data is based on NFRC methodology using the LBNL Window 7.3 software.
2. Transmittance and Reflectance values based on spectrophotometric measurements and energy distribution of solar radiation.

3. U-Value - A measure of the insulating characteristics of the glass or how much heat gain or loss occurs through the glass due to the difference between indoor and outdoor temperatures and is measured Btu/hr·ft²·F. The lower the number, the better the insulating performance. This number is the reciprocal of the R-value. Winter argon represents the winter nighttime U-value performance when the cavity is filled with a 90% argon/10% air/gas mixture.

4. Solar Heat Gain Coefficient (SHGC) - Measures how well a window blocks (or shades) the heat from sunlight. SHGC is the fraction of solar radiation transmitted through a window or skylight, as well as the amount that is absorbed by the glass and reradiated to the interior. SHGC is expressed as a number between 0 and 1. The lower a window's SHGC, the less solar heat it transmits and the greater the shading ability. The SHGC is similar to the Shading Coefficient (SC), but also accounts for absorbed, converted and inwardly radiated solar energy.

5. Light-to-solar gain (LSG) ratio is the ratio of visible light transmittance to solar heat gain coefficient.

