

# One-Inch Insulating Glass Unit Comparisons with PPG Glass

Insulating Vision Unit Performance Comparisons *1 1-inch (25mm) units with 1/2-inch (13mm) airspace and two 1/4-inch (6mm) lites; interior lite clear 1												
Glass Type	Transmittance <sup>2</sup>			Reflectance <sup>2</sup>		U-Value <sup>3</sup> (Imperial)		K-Value <sup>3</sup> (Metric)		Shading Coefficient <sup>4</sup>	Solar Heat Gain Coefficient <sup>5</sup>	Light to Solar Gain (LSG) <sup>6</sup>
	Ultra-violet %	Visible %	Total Solar Energy %	Visible Light %	Total Solar Energy %	Winter Night-time	Summer Day-time	Winter Night-time	Summer Day-time			
<b>Uncoated</b>												
Clear Glass	50	79	61	15	12	0.47	0.50	2.67	2.84	0.81	0.70	1.13
STARPHIRE® Ultra-Clear Glass <sup>1</sup>	75	84	80	15	14	0.47	0.50	2.67	2.84	0.94	0.82	1.02
SOLEXIA™ Tinted Glass	25	69	39	13	8	0.47	0.50	2.67	2.84	0.57	0.49	1.41
ATLANTICA™ Tinted Glass	13	60	29	11	7	0.47	0.50	2.67	2.84	0.47	0.39	1.50
CARIBIA® Tinted Glass	20	60	28	11	7	0.47	0.50	2.67	2.84	0.45	0.39	1.54
AZURIA™ Tinted Glass	34	61	28	11	7	0.47	0.50	2.67	2.84	0.45	0.39	1.56
SOLARBRONZE® Tinted Glass	21	47	39	9	7	0.47	0.50	2.67	2.84	0.59	0.51	0.92
SOLARGRAY® Tinted Glass	20	40	33	7	7	0.47	0.50	2.67	2.84	0.52	0.45	0.89
OPTIGRAY® 23 Tinted Glass	6	21	15	6	5	0.47	0.50	2.67	2.84	0.34	0.29	0.72
GRAYLITE® Tinted Glass	6	12	19	5	5	0.47	0.50	2.67	2.84	0.39	0.34	0.35
<b>Coated</b>												
<b>SUNGATE® 500 Low-E Glass</b>												
SUNGATE 500 (2) Clear	42	74	52	17	14	0.35	0.35	1.99	1.99	0.71	0.62	1.19
SUNGATE 500 (3) SOLEXIA	21	64	33	14	9	0.35	0.35	1.99	1.99	0.51	0.45	1.42
SUNGATE 500 (3) ATLANTICA	11	56	25	12	7	0.35	0.35	1.99	1.99	0.41	0.35	1.60
SUNGATE 500 (3) CARIBIA	17	56	24	12	7	0.35	0.35	1.99	1.99	0.40	0.34	1.65
SUNGATE 500 (3) AZURIA	29	57	24	12	7	0.35	0.35	1.99	1.99	0.40	0.34	1.68
SUNGATE 500 (3) Bronze	18	44	33	9	9	0.35	0.35	1.99	1.99	0.53	0.46	0.96
SUNGATE 500 (3) Gray	17	37	28	8	8	0.35	0.35	1.99	1.99	0.47	0.40	0.93
SUNGATE 500 (3) OPTIGRAY 23	6	19	13	6	6	0.35	0.35	1.99	1.99	0.28	0.24	0.79
SUNGATE 500 (3) GRAYLITE	5	11	16	5	6	0.35	0.35	1.99	1.99	0.33	0.28	0.39
<b>SUNGATE® 100 Low-E Glass</b>												
SUNGATE 100 (2) Clear	35	73	44	12	20	0.31	0.30	1.76	1.70	0.59	0.52	1.40
SUNGATE 100 (3) SOLEXIA	18	63	30	10	10	0.31	0.30	1.76	1.70	0.48	0.41	1.54
SUNGATE 100 (3) ATLANTICA	10	55	23	9	7	0.31	0.30	1.76	1.70	0.39	0.33	1.67
SUNGATE 100 (3) CARIBIA	14	56	23	9	7	0.31	0.30	1.76	1.70	0.38	0.33	1.70
SUNGATE 100 (3) AZURIA	24	56	23	9	7	0.31	0.30	1.76	1.70	0.38	0.33	1.70
SUNGATE 100 (3) Bronze	15	44	28	7	12	0.31	0.30	1.76	1.70	0.46	0.40	1.10
SUNGATE 100 (3) Gray	14	36	24	7	10	0.31	0.30	1.76	1.70	0.41	0.35	1.03
SUNGATE 100 (3) OPTIGRAY 23	5	19	11	5	6	0.31	0.30	1.76	1.70	0.25	0.21	0.90
SUNGATE 100 (3) GRAYLITE	4	11	12	5	8	0.31	0.30	1.76	1.70	0.27	0.23	0.48
<b>SOLARBAN® 60 Solar Control Low-E Glass</b>												
SOLARBAN 60 (2) STARPHIRE <sup>1</sup>	18	73	38	12	40	0.29	0.28	1.64	1.57	0.47	0.41	1.78
SOLARBAN 60 (2) Clear	19	70	33	11	30	0.29	0.28	1.65	1.55	0.44	0.38	1.84
SOLARBAN 60 (3) SOLEXIA	8	60	25	11	11	0.29	0.28	1.65	1.55	0.42	0.37	1.62
SOLARBAN 60 (3) ATLANTICA	4	52	20	10	8	0.29	0.28	1.65	1.55	0.35	0.31	1.68
SOLARBAN 60 (3) CARIBIA	8	54	20	9	7	0.29	0.28	1.65	1.55	0.36	0.31	1.74
SOLARBAN 60 (3) AZURIA	10	54	21	9	7	0.29	0.28	1.65	1.55	0.36	0.31	1.74
SOLARBAN 60 (3) Bronze	8	41	20	8	17	0.29	0.28	1.65	1.55	0.37	0.32	1.35
SOLARBAN 60 (3) Gray	8	35	18	7	13	0.29	0.28	1.65	1.55	0.33	0.29	1.25
SOLARBAN 60 (3) OPTIGRAY 23	3	18	9	5	6	0.29	0.28	1.65	1.55	0.22	0.19	1.00
SOLARBAN 60 (3) GRAYLITE	2	11	8	5	10	0.29	0.28	1.65	1.55	0.21	0.18	0.65
<b>SOLARBAN® 80 Solar Control Low-E Glass</b>												
SOLARBAN 80 (2) Clear	13	47	20	33	38	0.29	0.27	1.65	1.55	0.28	0.24	1.96
<b>SOLARCOOL® Glass (Reflective)</b>												
SOLARCOOL (1) SOLEXIA	7	27	18	37	31	0.47	0.50	2.67	2.84	0.32	0.28	0.96
SOLARCOOL (2) SOLEXIA	7	27	19	24	12	0.48	0.50	2.73	2.84	0.36	0.31	0.87
SOLARCOOL (1) CARIBIA	6	23	12	37	30	0.47	0.50	2.67	2.84	0.25	0.22	1.05
SOLARCOOL (2) CARIBIA	6	24	12	19	9	0.48	0.50	2.73	2.84	0.30	0.25	0.96
SOLARCOOL (1) AZURIA	10	23	11	37	30	0.47	0.50	2.67	2.84	0.25	0.21	1.10
SOLARCOOL (2) AZURIA	10	24	12	20	10	0.48	0.50	2.73	2.84	0.29	0.25	0.96
SOLARCOOL (1) Bronze	6	18	21	37	31	0.47	0.50	2.67	2.84	0.35	0.31	0.58
SOLARCOOL (2) Bronze	6	19	21	14	12	0.48	0.50	2.73	2.84	0.40	0.34	0.56
SOLARCOOL (1) Gray	6	15	17	37	30	0.47	0.50	2.67	2.84	0.32	0.27	0.59
SOLARCOOL (2) Gray	6	15	18	11	10	0.48	0.50	2.73	2.84	0.36	0.31	0.52
SOLARCOOL (1) GRAYLITE	2	5	12	36	30	0.47	0.50	2.67	2.84	0.26	0.22	0.23
SOLARCOOL (2) GRAYLITE	2	5	12	5	6	0.48	0.50	2.73	2.84	0.31	0.26	0.19

\*1 Data based on using Starphire glass for both the interior and exterior lites.

# One-Inch Glass Unit Comparisons

## Using 1/4" (6mm) Glass\*

### Insulating Vision Unit Performance Comparisons\*<sup>1</sup> 1-inch (25mm) units with 1/2-inch (13mm) airspace and two 1/4-inch (6mm) lites; interior lite clear<sup>1</sup>

Glass Type	Transmittance <sup>2</sup>			Reflectance <sup>2</sup>		U-Value <sup>3</sup> (Imperial)		K-Value <sup>3</sup> (Metric)		Shading Coefficient <sup>4</sup>	Solar Heat Gain Coefficient <sup>5</sup>	Light to Solar Gain (LSG) <sup>6</sup>
	Ultra-violet %	Visible %	Total Solar Energy %	Visible Light %	Total Solar Energy %	Winter Night-time	Summer Day-time	Winter Night-time	Summer Day-time			
<b>Coated</b>												
<b>SOLARCOOL® Glass (Reflective) with SUNGATE® 500 Low-E (3)</b>												
SOLARCOOL (2) SOLEXIA + Low-E	6	25	15	24	13	0.35	0.35	1.99	1.99	0.31	0.26	0.96
SOLARCOOL (2) CARIBIA + Low-E	5	22	10	19	10	0.35	0.35	1.99	1.99	0.24	0.21	1.05
SOLARCOOL (2) AZURIA + Low-E	8	22	10	20	10	0.35	0.35	1.99	1.99	0.23	0.20	1.10
SOLARCOOL (2) Bronze + Low-E	5	18	17	14	13	0.35	0.35	1.99	1.99	0.34	0.29	0.62
SOLARCOOL (2) Gray + Low-E	5	15	14	11	10	0.35	0.35	1.99	1.99	0.30	0.26	0.58
SOLARCOOL (2) GRAYLITE + Low-E	1	5	9	5	7	0.35	0.35	1.99	1.99	0.25	0.21	0.24
<b>SOLARCOOL® Glass (Reflective) with SUNGATE® 100 Low-E (3)</b>												
SOLARCOOL (2) SOLEXIA + Low-E	5	25	13	24	14	0.31	0.30	1.76	1.70	0.26	0.23	1.09
SOLARCOOL (2) CARIBIA + Low-E	4	21	9	19	10	0.31	0.30	1.76	1.70	0.21	0.18	1.17
SOLARCOOL (2) AZURIA + Low-E	7	22	9	19	10	0.31	0.30	1.76	1.70	0.21	0.18	1.22
SOLARCOOL (2) Bronze + Low-E	4	17	13	14	15	0.31	0.30	1.76	1.70	0.28	0.24	0.71
SOLARCOOL (2) Gray + Low-E	4	14	11	11	12	0.31	0.30	1.76	1.70	0.25	0.22	0.64
SOLARCOOL (2) GRAYLITE + Low-E	1	4	7	5	8	0.31	0.30	1.76	1.70	0.20	0.17	0.24
<b>SOLARCOOL® (Reflective) Glass with SOLARBAN® 60 Solar Control Low-E (3)</b>												
SOLARCOOL (2) SOLEXIA + Low-E	3	24	10	24	15	0.29	0.28	1.65	1.55	0.22	0.19	1.26
SOLARCOOL (2) CARIBIA + Low-E	2	20	8	19	10	0.29	0.28	1.65	1.55	0.19	0.17	1.31
SOLARCOOL (2) AZURIA + Low-E	4	21	8	19	10	0.29	0.28	1.65	1.55	0.19	0.17	1.31
SOLARCOOL (2) Bronze + Low-E	3	17	9	14	18	0.29	0.28	1.65	1.55	0.21	0.18	0.94
SOLARCOOL (2) Gray + Low-E	2	14	7	11	14	0.29	0.28	1.65	1.55	0.20	0.17	0.88
SOLARCOOL (2) GRAYLITE + Low-E	1	4	4	5	10	0.29	0.28	1.65	1.55	0.15	0.13	0.33

\* Performance data is based on representative samples of factory production. Actual values may vary slightly due to variations in the production process.

- Figures may vary due to manufacturing tolerances. All tabulated data is based on NFRC methodology using the LBL Window 5.2 software. Variations from previously published data are due to minor changes in the LBL Window 5.2 software versus Version 4.1.
- Transmittance and reflectance values based on spectrophotometric measurements and energy distribution of solar radiation.
- U-value (K-value) is the overall coefficient of heat transmittance or heat flow measured in BTU/hr. • ft<sup>2</sup> • °F (watts/m<sup>2</sup>•°C). Lower U-values indicate better insulating performance.
- Shading coefficient is the ratio of the total amount of solar energy that passes through a glass relative to 1/8-in. (3.0mm) thick clear glass under the same design conditions. It includes both solar energy transmitted directly plus any absorbed solar energy re-radiated and convected.

- Lower shading coefficient values indicate better performance in reducing solar heat gain. Note: Performance values were calculated using the LBL Window 5.2 program using NFRC 100-2001 standard winter and summer design condition.
- Solar heat gain coefficient (SHGC) represents the solar heat gain through the glass relative to the incident solar radiation. It is equal to 86% of the shading coefficient.
  - Light to Solar Gain ratio (LSG) is the ratio of visible light transmittance to solar heat gain coefficient.

Important glass design considerations and technical information, including thermal stress and wind load data, are available at [www.ppglazing.com](http://www.ppglazing.com). Monolithic Glass Data can also be found at [www.ppglazing.com](http://www.ppglazing.com) or by calling 1-888-PPG-IDEA.

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