



PPG Industries, Inc
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Product Description: SOLARPHIRE PV glass is an ultra-clear soda-lime float glass product. In 3.2 mm thickness, visible light transmittance is >91% and solar energy transmittance is >90%, making SOLARPHIRE PV glass an excellent product for solar applications. This glass is a low iron composition with mechanical and physical properties similar to ordinary clear soda-lime float glass.¹

Mechanical Properties

Knoop Hardness Number (indentation hardness) indenter load--500 gm	470 kgf/mm ²	
Poisson's Ratio	0.22	
Modulus of Elasticity (Young's)	73.1 GPa	10,600,000 psi
Tensile Strength (Determined as Modulus of Rupture, ultimate)	41.4 MPa	6000 psi
Density at 21°C (70°F)	2.51 g/cm ³	157 lb/ft ³

Thermal Properties

Hemispherical Emissivity at -18 to 66 °C (0 to 150°F)	0.84	
Expansion Coefficient (linear) 20 to 300°C (68 to 572°F)	9.28*10 ⁻⁶ / °C	5.16*10 ⁻⁶ / °F
Specific heat at 0 to 100°C (32 to 212°F)	858 J/kg-K	0.205 BTU/lb-°F
Thermal Conductivity (k) at 50°C (122°F)	1.00 W/m-K	0.58 Btu/hr-ft-°F
Softening Point	710°C	1310°F
Annealing Point	547°C	1017°F
Strain Point	513°C	955°F
Transformation temperature (Tg)	556°C	1033°F
Yield point (At), (intenerate temperature)	606°C	1123°F

Chemical Properties

SiO ₂	73%
Na ₂ O	15
CaO	11
Trace elements	1

Electric Properties

Dielectric Constant (measured at 1 MHz)	5.7
Surface Resistivity	106-108 ohms/sq.

Refractive Indices and Color

Refractive indices: nF	486.1 nm	1.5245 +/- 0.0005
nD	589.3 nm	1.5183 +/- 0.0005
nC	656.3 nm	1.5158 +/- 0.0005
Abbe number (nD-1)/(nF-nC)	60	
Color at 6 mm : D65, 10 L*	96.5	
a*	-0.24	
b*	0.10	
Dominant wavelength	500 nm	

Approximate weights

Per m ²		Per ft ²	
thickness	weight	thickness	weight
3.3 mm	8.2 kg	1/8"	1.7 lbs
4 mm	9.9 kg	5/32"	2.0 lbs
5 mm	11.9 kg	3/16"	2.4 lbs
6 mm	14.2 kg	1/4"	2.9 lbs
8 mm	19.8 kg	5/16"	4.1 lbs
10 mm	23.8 kg	3/8"	4.9 lbs
12 mm	31.8 kg	1/2"	6.5 lbs

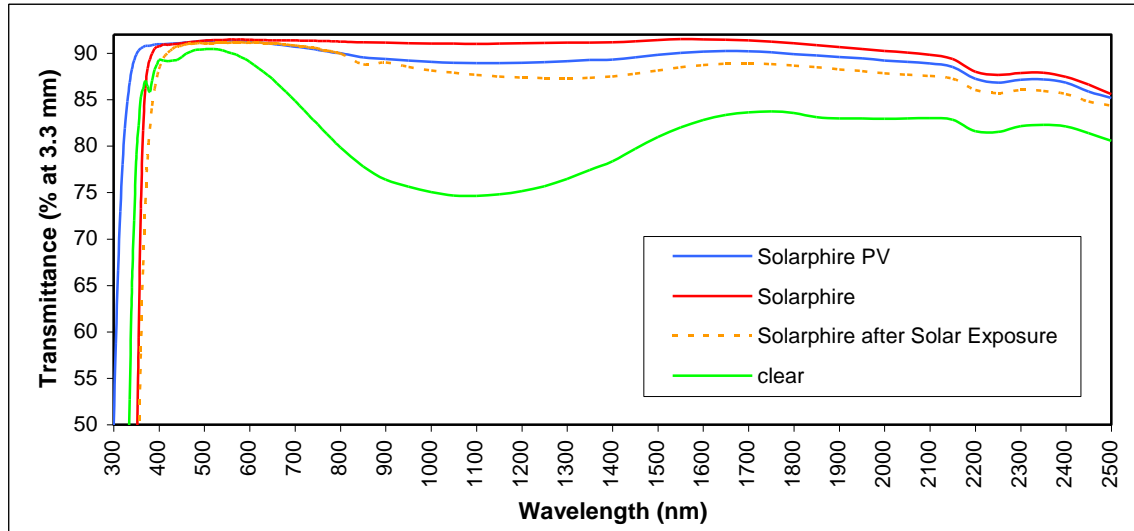
¹ Figures in tables may vary due to manufacturing tolerances.

Visible and Glazing Performance²

Glass Thickness		Transmittance				Reflectance		U-value BTU/hr-ft ²		K-value W/hr-m ²		Shading coefficient	Solar Heat Gain Coefficient
inches	mm	Ultra-violet (%)	Visible (%)	Infrared (%)	Total Solar (%)	Visible (%)	Total Solar (%)	Winter	Summer	Winter	Summer		
1/8	3.3	89	91	90	90	8	8	1.04	0.94	5.9	5.3	1.04	0.91
5/32	4	88	91	89	90	8	8	1.04	0.93	5.9	5.3	1.04	0.90
3/16	5	88	91	88	89	8	8	1.03	0.93	5.9	5.3	1.04	0.90
1/4	6	87	91	87	89	8	8	1.03	0.93	5.8	5.3	1.03	0.90
5/16	8	86	91	86	88	8	8	1.01	0.91	5.7	5.2	1.03	0.89
3/8	10	85	91	85	87	8	8	1.00	0.91	5.7	5.1	1.02	0.89
1/2	12	83	90	83	86	8	8	0.99	0.89	5.6	5.1	1.01	0.88

Transmittance (% at 3.3 mm/0.129")

Wave-length (nm)	Solarphire PV	Solarphire	Solarphire After Solar Exposure	Wave-length (nm)	Solarphire PV	Solarphire	Solarphire After Solar Exposure	Wave-length (nm)	Solarphire PV	Solarphire	Solarphire After Solar Exposure
300	49.5	0.0	0.0	590	91.3	91.5	91.2	1250	89.0	91.1	87.3
310	66.5	0.0	0.0	610	91.2	91.4	91.2	1300	89.1	91.2	87.3
320	78.0	0.0	0.0	630	91.1	91.4	91.1	1350	89.3	91.1	87.4
330	84.8	0.7	0.1	650	91.0	91.4	91.0	1400	89.3	91.2	87.5
340	88.3	10.1	7.9	670	90.9	91.4	91.0	1450	89.5	91.3	87.8
350	89.8	40.7	30.9	690	90.8	91.4	90.8	1500	89.8	91.4	88.1
360	90.5	73.3	57.9	710	90.7	91.4	90.8	1550	90.0	91.5	88.5
370	90.8	86.2	73.9	730	90.5	91.3	90.6	1600	90.2	91.5	88.7
380	90.8	89.3	81.8	750	90.3	91.3	90.5	1650	90.2	91.5	88.9
390	90.9	90.5	86.1	770	90.2	91.3	90.3	1700	90.2	91.4	88.9
410	91.0	90.9	89.5	800	90.0	91.2	90.0	1750	90.1	91.2	88.8
430	91.0	91.0	90.5	850	89.5	91.2	88.8	1800	89.9	91.1	88.7
450	91.1	91.1	90.8	900	89.4	91.1	89.0	1850	89.7	90.9	88.5
470	91.2	91.2	91.0	950	89.2	91.1	88.5	1900	89.6	90.7	88.2
490	91.3	91.3	91.1	1000	89.0	91.0	88.2	1950	89.4	90.4	88.1
510	91.4	91.4	91.1	1050	88.9	91.0	87.9	2000	89.2	90.2	87.8
530	91.4	91.4	91.1	1100	88.9	91.0	87.7	2050	89.0	90.1	87.7
550	91.4	91.5	91.1	1150	88.9	91.0	87.5	2100	88.9	89.8	87.6
570	91.3	91.5	91.2	1200	89.0	91.1	87.4	2150	88.5	89.4	87.2



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² Figures may vary due to manufacturing tolerances. All tabulated glazing performance data are based on NFRC methodology using LBL Window 5.2 software except IR which is based on P. Moon solar irradiance, 800-2100 nm. . Slight changes in transmitted optical properties may occur on exposure to sunlight.