

PRODUCT DESCRIPTION

Starphire® glass by Vitro Architectural Glass is a ultra-clear soda-lime float glass product. Its high visible light transmittance (>91% at 6 mm) and its brilliant azure edge are two characteristics unique to Starphire® glass. This glass is a low iron composition with mechanical and physical properties similar to ordinary clear soda-lime float glass

APPROXIMATE WEIGHTS

Per m ²		Per ft ²	
thickness	weight	thickness	weight
3.0 mm	8.2 kg	1/8	1.5 lbs
4.0 mm	9.9 kg	5/32	2.0 lbs
5.0 mm	11.9 kg	3/16	2.4 lbs
6.0 mm	14.2 kg	1/4	2.9 lbs
8.0 mm	19.8 kg	5/16	4.1 lbs
10.0 mm	23.8 kg	3/8	4.9 lbs
12.0 mm	31.8 kg	1/2	6.5 lbs
16.0 mm	41.0 kg	5/8	8.0 lbs
19.0 mm	50.9 kg	3/4	10.0 lbs

COLOR

	3.2mm	6.0mm
Transmitted Color: D65, 10° L*	92.0	96.5
a*	-0.4	-0.2
b*	2.1	0.1
Hue Angle (°)	101	155
Dominant wavelength: C, 2°	573 nm	502 nm

CHEMICAL COMPOSITION

SiO ₂	73%
Na ₂ O	14%
CaO	10%
MgO and Trace elements	3%

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	6,000 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) glass / coating	0.84 / 0.14	
Expansion Coefficient (linear) 20 to 300°C (68 to 572°F)	8.7*10 ⁻⁶ /°C	4.9*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	721°C	1329°F
Annealing Point	545°C	1014°F
Strain Point	509°C	949°F

SUSTAINABILITY

To provide architects with the assurance and documentation they need to meet and verify their sustainability goals, Vitro Architectural Glass participates in a range of programs and initiatives. Resources available include, but are not limited to:

- Type III Environmental Product Declarations
- Cradle to Cradle Certified™ Bronze with associated Gold Material Health Certificate
- LEED® and Living Building Challenge documentation
- Material Ingredient Disclosure and Safety Data Sheets
- Annual Corporate Sustainability Report

Further information is available through VitroGlazings.com or by calling 855-887-6457 (VTRO GLS)



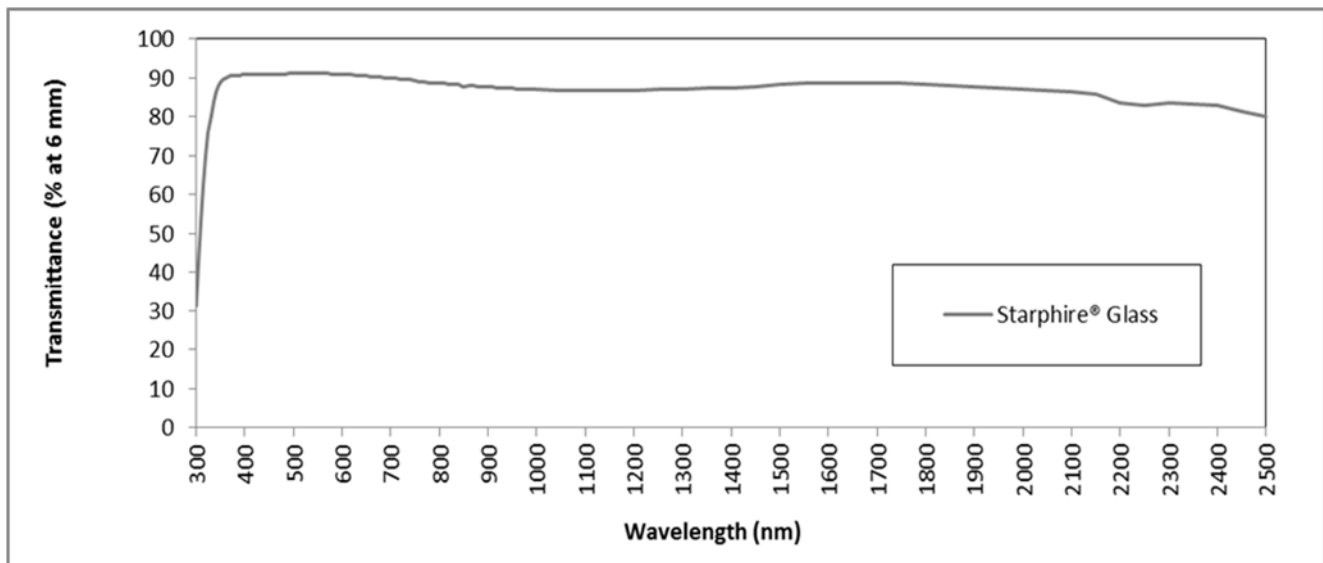
SOLAR PERFORMANCE VALUES ^[1]

Glass Thickness		Transmittance				Reflectance	
inches	mm	Ultra-violet (%)	Visible (%)	Infrared (%)	Total Solar (%)	Visible (%)	Total Solar (%)
1/8	3.2	89	91	89	90	8	8
5/32	4.0	88	91	89	90	8	8
3/16	5.0	88	91	88	90	8	8
1/4	6.0	87	91	87	89	8	8
5/16	8.0	86	91	86	88	8	8
3/8	10.0	85	91	84	87	8	8
1/2	12.0	83	90	82	86	8	8
5/8	16.0	81	90	80	84	8	8
3/4	19.0	80	90	78	83	8	7

^[1] Figures may vary due to manufacturing tolerances. All tabulated solar performance data are based on the methodology prescribed in ISO 9050, 2003 except Infrared, which is based on the solar irradiance data prescribed by ISO 9050, 2003 from 780 to 2500 nm. Slight changes in transmitted optical properties may occur on exposure to sunlight.

Transmittance (% at 6 mm/0.223")

Wavelength (nm)	Starphire® Glass %T	Wavelength (nm)	Starphire® Glass %T	Wavelength (nm)	Starphire® Glass %T	Wavelength (nm)	Starphire® Glass %T	Wavelength (nm)	Starphire® Glass %T
300	31.4	430	90.9	660	90.4	890	87.8	1600	88.8
305	42.8	440	90.9	670	90.3	900	87.7	1650	88.9
310	53.1	450	90.9	680	90.2	910	87.6	1700	88.8
315	62.2	460	91.0	690	90.1	920	87.5	1750	88.6
320	69.9	470	91.0	700	89.9	930	87.5	1800	88.3
325	75.9	480	91.1	710	89.9	940	87.4	1850	88.0
330	80.6	490	91.1	720	89.7	950	87.3	1900	87.7
335	84.0	500	91.2	730	89.6	960	87.3	1950	87.5
340	86.4	510	91.2	740	89.5	970	87.2	2000	87.1
345	88.0	520	91.2	750	89.3	980	87.2	2050	86.8
350	89.0	530	91.2	760	89.2	990	87.1	2100	86.5
355	89.7	540	91.2	770	89.1	1000	87.1	2150	85.8
360	90.1	550	91.2	780	88.9	1050	86.9	2200	83.7
365	90.4	560	91.2	790	88.8	1100	86.8	2250	83.0
370	90.5	570	91.2	800	88.7	1150	86.8	2300	83.6
375	90.6	580	91.1	810	88.6	1200	86.9	2350	83.5
380	90.6	590	91.0	820	88.4	1250	87.0	2400	83.0
385	90.7	600	91.0	830	88.4	1300	87.2	2450	81.3
390	90.8	610	90.9	840	88.3	1350	87.4	2500	80.1
395	90.8	620	90.8	850	87.9	1400	87.4		
400	90.8	630	90.7	860	88.0	1450	87.8		
410	90.8	640	90.6	870	88.0	1500	88.3		
420	90.8	650	90.5	880	87.9	1550	88.6		



ADDITIONAL INFORMATION/DOCUMENTS

The following documents can be referenced for additional information regarding Starphire® glass:

Starphire® Performance Data, Starphire® Edge Color Brochure, Vitro Float Glass Warranty, Vitro Float Glass SDS, C2C Material Health Certificate, Vitro Float Glass EPD