

## PRODUCT DESCRIPTION

Solarcool® Solargray® coated glass by Vitro Architectural Glass is a medium gray tinted float glass with a durable, light and heat reflective, metallic oxide coating applied during the float process. The reflective coating side of the glass can be glazed on either the first or second surface. On the first surface, it creates a bright metallic appearance and mutes the gray tinted glass substrate color. On the second surface, it adds reflectivity and deepens the hue of the gray tinted glass substrate.

## APPROXIMATE WEIGHTS

Per m <sup>2</sup>		Per ft <sup>2</sup>	
thickness	weight	thickness	weight
6.0 mm	14.2 kg	¼	2.9 lbs

## COLOR

	6.0mm
Transmitted Color: D65, 10° L*	66.6
a*	-2.7
b*	4.7
Hue Angle (°)	120.1
Dominant wavelength: C, 2°	564.7 nm

## CHEMICAL COMPOSITION

SiO <sub>2</sub>	73%
Na <sub>2</sub> O	14%
CaO	10%
MgO and Trace elements	3%

## MECHANICAL PROPERTIES

Knoop Hardness Number (indentation hardness) indenter load--500 gm	470 kgf/mm <sup>2</sup>	
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 <sup>3</sup>	157 lb/ft <sup>3</sup>

## 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 <sup>-6</sup> / °C	4.9*10 <sup>-6</sup> / °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)	0.937 W/m-K	0.542 Btu/hr-ft-°F
Softening Point	724°C	1336°F
Annealing Point	547°C	1016°F
Strain Point	507°C	944°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)



## HEAT TREATMENT GUIDELINES

The coating on Solarcool® Solargray® glass is permanent, allowing the glass to be heat treated to satisfy increased strength or safety glazing requirements. While heat treating Solarcool® Solargray® coated glass, face the coating away from the furnace rolls to reduce the risk of introducing scratches to the coated surface. Process the glass the same as uncoated glass. The coating on Solarcool® Solargray® does not appreciably reflect furnace heat since the coating emissivity is essentially the same as uncoated glass. Glass heat-up time will remain nearly identical as for the same uncoated Solargray® tinted glass. **Turn off SO<sub>2</sub> in the furnace.** SO<sub>2</sub> may cause an appreciable loss in durability of the Solarcool® coating. Degradation is the result of the SO<sub>2</sub> reducing the atmosphere causing potential damage to the coating.

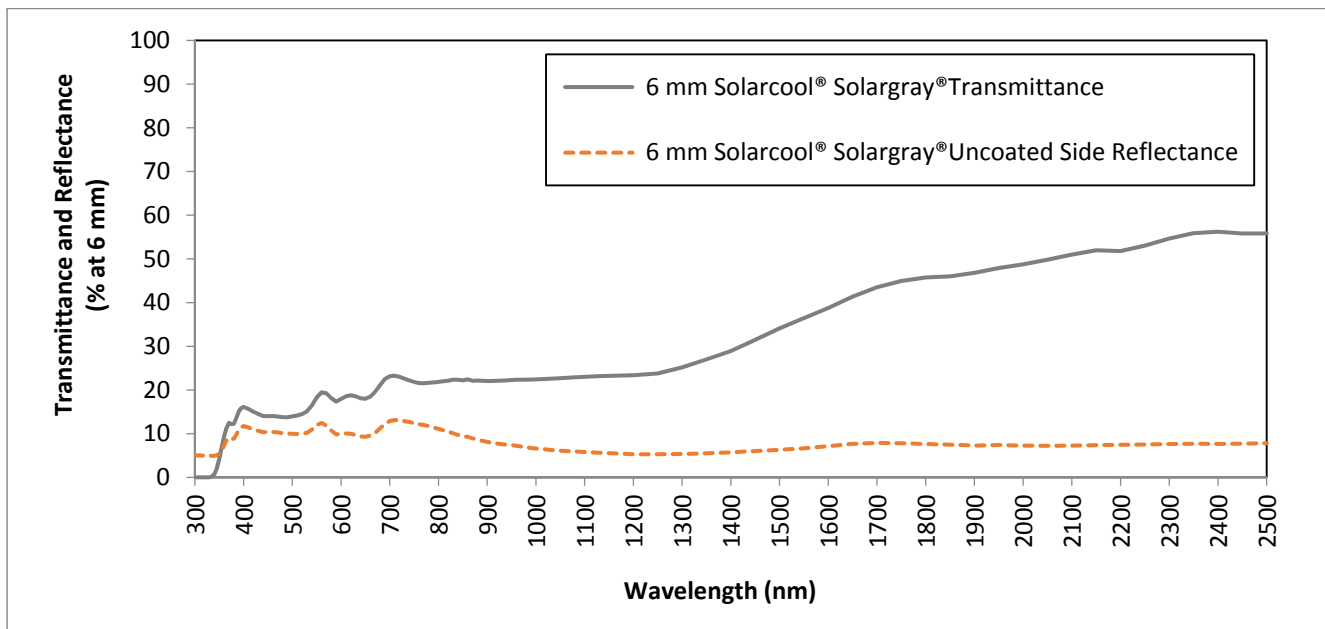
## SOLAR PERFORMANCE VALUES COATED SURFACE <sup>[1]</sup>

Glass Thickness		Transmittance				Reflectance	
inches	mm	Ultra-violet (%)	Visible (%)	Infrared (%)	Total Solar (%)	Visible (%)	Total Solar (%)
¼	6.0	7	17	28	23	36	30

<sup>[1]</sup> 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.

6 mm Solarcool® Solargray® Transmittance and Uncoated Side Reflectance (% at 6 mm/0.223")

Wavelength (nm)	%T	%R	Wavelength (nm)	%T	%R	Wavelength (nm)	%T	%R	Wavelength (nm)	%T	%R	Wavelength (nm)	%T	%R
300	0.0	5.1	430	14.5	10.7	660	18.5	9.6	890	22.1	8.4	1600	38.8	7.2
305	0.0	5.0	440	14.1	10.4	670	19.6	10.2	900	22.1	8.1	1650	41.4	7.7
310	0.0	5.0	450	14.0	10.4	680	21.1	11.2	910	22.1	7.9	1700	43.5	7.9
315	0.0	5.0	460	14.0	10.4	690	22.5	12.3	920	22.1	7.7	1750	45.0	7.8
320	0.0	5.0	470	13.9	10.3	700	23.2	12.9	930	22.1	7.6	1800	45.8	7.6
325	0.0	4.9	480	13.8	10.1	710	23.3	13.1	940	22.2	7.5	1850	46.0	7.5
330	0.0	5.0	490	13.8	10.0	720	23.0	13.1	950	22.3	7.4	1900	46.8	7.3
335	0.2	4.9	500	14.0	10.0	730	22.6	12.9	960	22.4	7.2	1950	47.9	7.4
340	0.7	4.9	510	14.1	9.9	740	22.2	12.7	970	22.4	7.1	2000	48.8	7.3
345	2.1	5.1	520	14.5	10.0	750	21.8	12.4	980	22.3	6.9	2050	49.8	7.2
350	4.2	5.5	530	15.1	10.2	760	21.6	12.2	990	22.4	6.7	2100	51.0	7.3
355	6.8	6.3	540	16.5	10.9	770	21.5	12.0	1000	22.4	6.6	2150	52.0	7.4
360	9.3	7.3	550	18.3	12.0	780	21.6	11.7	1050	22.7	6.1	2200	51.8	7.5
365	11.3	8.5	560	19.5	12.5	790	21.7	11.4	1100	23.0	5.8	2250	53.0	7.5
370	12.5	9.1	570	19.3	11.9	800	21.9	11.1	1150	23.2	5.6	2300	54.6	7.6
375	12.2	8.9	580	18.1	10.7	810	22.0	10.8	1200	23.4	5.3	2350	55.9	7.7
380	12.3	8.9	590	17.3	9.9	820	22.1	10.5	1250	23.8	5.3	2400	56.2	7.7
385	13.6	9.8	600	17.9	9.9	830	22.4	10.1	1300	25.2	5.4	2450	55.8	7.7
390	15.1	10.8	610	18.5	10.1	840	22.4	9.7	1350	27.0	5.5	2500	55.8	7.8
395	15.8	11.5	620	18.8	10.0	850	22.2	9.4	1400	28.9	5.7			
400	16.1	11.7	630	18.5	9.7	860	22.4	9.3	1450	31.5	6.0			
410	15.7	11.4	640	18.1	9.4	870	22.1	8.9	1500	34.1	6.3			
420	15.0	11.0	650	18.0	9.3	880	22.2	8.7	1550	36.5	6.7			



## CLEANING AND COATING CARE RECOMMENDATIONS

1. Solarcool® coated glass can be cleaned following normal commercial glass cleaning practices. It should be washed periodically using soft, grit-free cloths and mild soap or detergents; **acidic cleaning solutions, fluoride salts, hydrogen producing compounds, and abrasive cleaners should not be used.**
2. Immediately after washing, the entire surface should be rinsed with clean water, and a soft smooth squeegee used to remove excess rinse water. If it is necessary to use commercial solvents, such as xylene, toluene, mineral spirits, or naphtha, to remove grease or glazing compounds, the glass should be washed and rinsed afterward. Care should be taken to protect glazing sealants and other materials when using these commercial solvents.
3. If an installation positions the Solarcool® coated glass near or below weather exposed concrete or masonry surfaces, it should be washed more frequently to remove deposits that may reside on the glass. Some glazing sealants may exude, bleed, or leach onto the glass surface. If sealant-type contaminants are not removed in a timely manner, it could lead to a residue that is very difficult to remove or a permanent stain.
4. The Solarcool® coating is a durable metallic oxide coating that requires no different cleaning care than standard accepted practices for normal float glass. However, because the coated surface is more reflective than ordinary uncoated glass, fingerprints, grease stains, smears, dirt, scum and scratches/abrasions (on either surface) may be more noticeable. Cleaning schedules may need to be altered to accommodate this condition.
5. Solarcool® coated glass that is glazed with the coating exposed to the outdoors should be cleaned more frequently (a minimum of 3 to 4 times per year). Materials, such as rundown from metals and masonry, such as concrete, stucco, etc. should be cleaned from the glass as soon as they occur so that they are not permitted a long residence time on the coated glass surface. If such rundown is not quickly removed, permanent staining and/or glass damage may occur.

For more information related to cleaning instructions, please see Vitro Technical Documents, TD-107 *Residue on Glass* and TD-142 *Glass Cleaning Recommendations* available on the Vitro website at <http://www.vitroglazings.com>.

## ADDITIONAL INFORMATION/DOCUMENTS

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

Solarcool® Solargray® Performance Data, Vitro Solarcool® Coated Glass Warranty, Vitro Pyrolytic Coated Glass SDS, C2C Material Health Certificate, Vitro Processed Glass EPD