

## PRODUCT DESCRIPTION

Solarcool® Solarbronze® coated glass by Vitro Architectural Glass is a warm bronze 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 bronze tinted glass substrate color. On the second surface, it adds reflectivity and deepens the hue of the bronze 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*	-2.6
b*	4.8
Hue Angle (°)	119.1
Dominant wavelength: C, 2°	565.2 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	1335°F
Annealing Point	546°C	1015°F
Strain Point	505°C	941°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® Solarbronze® glass is permanent, allowing the glass to be heat treated to satisfy increased strength or safety glazing requirements. While heat treating Solarcool® Solarbronze® 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® Solarbronze® 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 Solarbronze® 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.

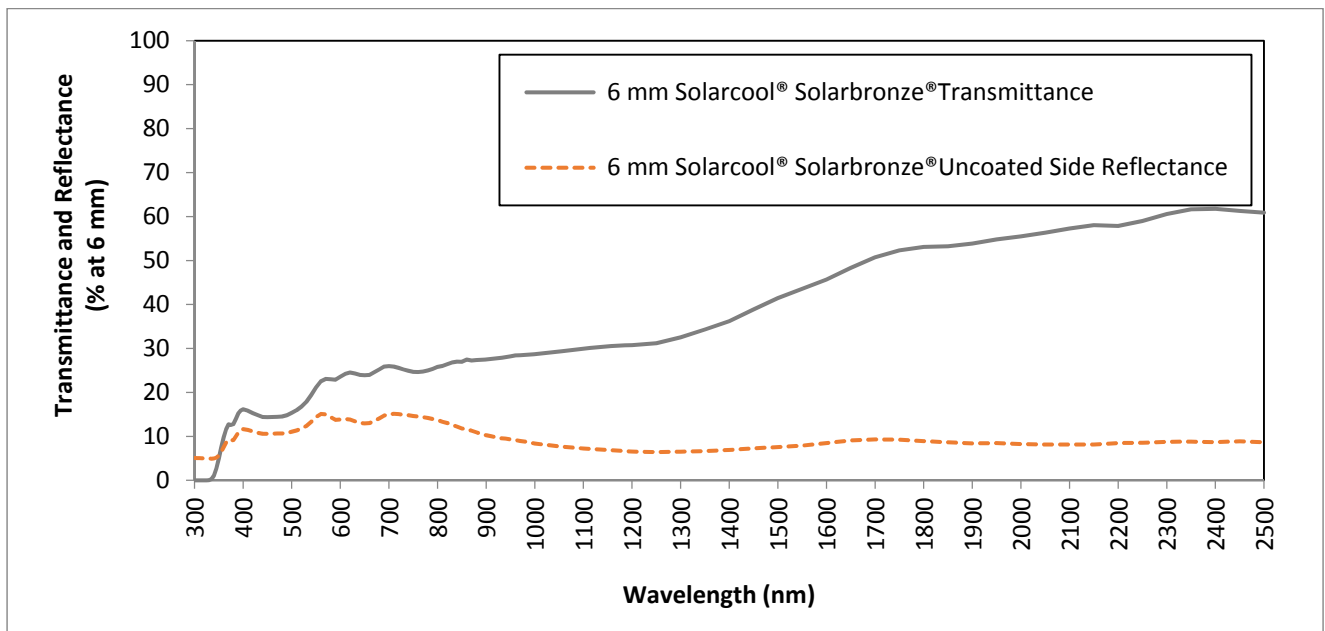
## SOLAR PERFORMANCE VALUES COATED SURFACE <sup>[1]</sup>

Glass Thickness		Transmittance				Reflectance	
inches	mm	Ultra-violet (%)	Visible (%)	Infrared (%)	Total Solar (%)	Visible (%)	Total Solar (%)
¼	6.0	7	21	34	27	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® Solarbronze® 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	14.8	10.8	660	24.0	13.1	890	27.4	10.6	1600	45.7	8.5
305	0.0	5.1	440	14.4	10.6	670	24.6	13.5	900	27.5	10.3	1650	48.3	9.1
310	0.0	5.1	450	14.4	10.6	680	25.2	14.1	910	27.6	10.1	1700	50.7	9.3
315	0.0	5.0	460	14.4	10.7	690	25.9	14.7	920	27.7	9.8	1750	52.3	9.3
320	0.0	5.0	470	14.5	10.7	700	26.0	15.1	930	27.8	9.6	1800	53.1	8.9
325	0.0	5.0	480	14.5	10.7	710	25.9	15.1	940	28.0	9.5	1850	53.3	8.7
330	0.0	5.0	490	14.8	10.8	720	25.6	15.1	950	28.2	9.3	1900	53.9	8.4
335	0.3	4.9	500	15.3	11.1	730	25.2	14.9	960	28.4	9.2	1950	54.8	8.5
340	1.1	5.0	510	16.0	11.4	740	24.9	14.8	970	28.5	9.0	2000	55.5	8.3
345	2.7	5.2	520	16.8	11.8	750	24.7	14.6	980	28.5	8.8	2050	56.3	8.2
350	4.9	5.7	530	17.8	12.4	760	24.6	14.5	990	28.6	8.6	2100	57.3	8.2
355	7.4	6.5	540	19.4	13.3	770	24.7	14.4	1000	28.7	8.4	2150	58.0	8.2
360	9.8	7.6	550	21.1	14.4	780	25.0	14.2	1050	29.3	7.7	2200	57.9	8.5
365	11.6	8.6	560	22.5	15.1	790	25.3	14.0	1100	29.9	7.3	2250	59.0	8.6
370	12.7	9.2	570	23.1	15.0	800	25.8	13.7	1150	30.5	6.9	2300	60.6	8.8
375	12.6	9.1	580	23.0	14.4	810	26.0	13.3	1200	30.8	6.6	2350	61.6	8.8
380	12.8	9.2	590	22.9	13.8	820	26.4	13.0	1250	31.2	6.5	2400	61.7	8.7
385	14.0	10.0	600	23.6	13.9	830	26.8	12.7	1300	32.6	6.5	2450	61.3	8.9
390	15.2	10.9	610	24.2	13.9	840	27.0	12.3	1350	34.3	6.7	2500	60.9	8.7
395	15.9	11.5	620	24.5	13.8	850	27.0	11.8	1400	36.2	6.9			
400	16.2	11.7	630	24.3	13.5	860	27.5	11.7	1450	38.9	7.3			
410	15.8	11.5	640	24.0	13.1	870	27.3	11.3	1500	41.5	7.6			
420	15.3	11.2	650	23.9	13.0	880	27.4	10.9	1550	43.6	7.9			



## 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® Solarbronze® glass;

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