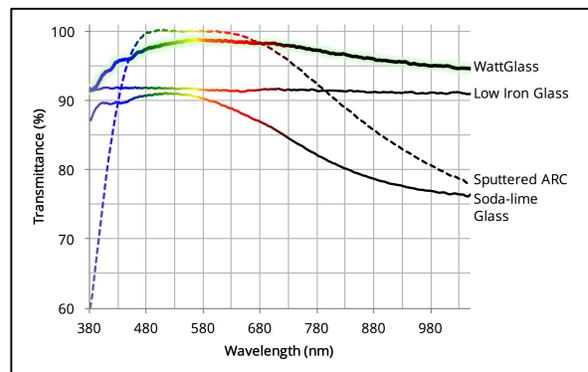


WattGlass

Antireflective and Anti-Soiling
Coating for Lighting Glass

Introduction

Antireflective coatings (ARC) with improved optical performance and durability have much appeal in the industry's effort to increase luminaire efficiency, optical performance, and light distribution. Current ARC technologies rely on stacked layers of sputtered metal oxide films to reduce reflection. The cost-prohibitive equipment requires the coating to be deposited at the float plant or by a third-party coatings company. WattGlass has developed an ARC that surpasses the performance of these conventional coatings, is non-hazardous and 100% water-based, and is easily implemented in a glass fabrication environment.



Transmittance spectra of WattGlass coating on 3.2mm low iron glass compared to competing solutions.

Performance

WattGlass coatings allow up to 7% more light through glass. This performance is enabled by the low index of refraction of the WattGlass coating. Further improvements to our coating technology have resulted in two distinct coating formulations. WattGlass HT is a stable solution with long shelf-life that is formulated for use with tempered or heat strengthened glass. WattGlass LT has identical performance, but contains an additional chemistry that allows it to cure at room temperature.

The WattGlass coating provides excellent light transmission across the entire visible spectra. The broadband response results in a neutral reflection color, as opposed to the harsh purple reflections commonly seen on sputtered AR coatings. As a result, the WattGlass coating works well with a variety of light sources. Notably, the WattGlass coating

Table 1: Reflected color parameters

	Reflected Color	
	SMO	WattGlass
L	5.4	7.6
a*	36.5	8.2
b*	-44.5	-7.2
Color Swatch		

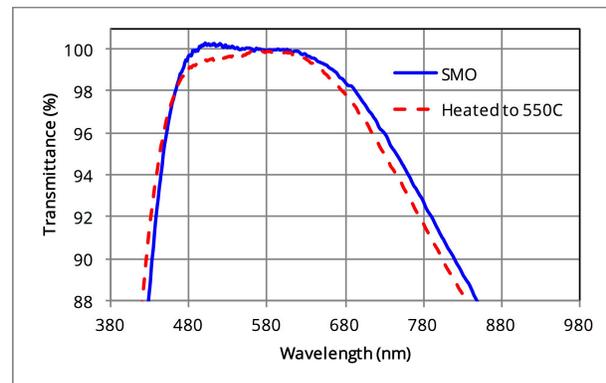
provides enhanced transmittance for blue wavelengths, which are critical for performance of white LEDs.

Table 2: Key Lighting Parameters comparing WattGlass ARC to Sputtered Metal Oxide (SMO) ARC.

Light Source	Nominal CCT (K)	Weighted Transmittance (%)		Δ CCT (K) (2 deg. Observer)		Whiteness Index (2 deg. Observer)		b* (arb. units) Transmitted Light	
		SMO	WattGlass	SMO	WattGlass	SMO	WattGlass	SMO	WattGlass
Archipelago	2100K	98.3	98.4	0.41	8.07	96.2	98.2	1.94	0.20
Cree A	2700K	98.3	98.6	-4.42	8.32	92.8	97.9	3.13	0.37
Cree B	4000K	98.1	98.6	-34.34	8.99	90.0	97.6	2.65	0.36
T12 Fluorescent	2900K	97.8	98.6	-16.53	8.67	87.0	97.4	4.68	0.53

Tempered Glass

WattGlass coatings are compatible with thermal tempering with no impact on the optical performance. Competing sputtered metal oxide coatings begin to degrade at temperatures as low as 500 °C. The WattGlass HT coating utilizes the tempering process to thermally cure the coating. In other applications, the WattGlass LT coating allows for the deposition and curing of an ARC on tempered or annealed glass without thermal processing.



Degradation of SMO transmittance spectra after heating to 550 °C.

The Technology

WattGlass coatings are unique water based routes to deposit nanoscale silica films on glass and other substrates. We've pioneered a chemistry that enables uniform deposition, outstanding performance, and enhanced mechanical strength. These coatings are compatible with all industry standard deposition processes, and are a drop-in replacement for sol-gel coatings of the past.

Learn More

Innovative research drives us to be the leading force for antireflective coatings that efficiently deliver cost-effective solutions to our customers. Contact us to learn more.



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