

SUNLITE Solar Control

THERMAL AND OPTICAL PROPERTIES of SOLAR CONTROL SHEETS SUNLITE - Solar Light and Radiation Transmission Properties

Product	% LT	%LR	%ST	%SR	%SA	%SR _t	%ST _t	SC
	ASTM D-1003	ASTM E424-71	ASTM E424-71	ASTM E424-71	ASTM E424-71	ASTM E424-71	ASTM E424-71	ASTM E424-71
Clear ^a	73 ^b	23	71	23	6	27	73	0.84
Bronze ^a	40 ^b	15	48	16	36	45	55	0.63
Opal ^a	45 ^b	21	49	20	31	43	57	0.66
Solar Metallic	25	29	24	29	47	63	37	0.43
Solar Ice	20	52	32	44	34	62	38	0.44

^a 16 mm sheet

^b Values differ slightly from standard SUNLITE products depicted on page 5.

Definitions

Visible Light Radiation

The portion of the light spectrum whose wavelength ranges from 400 nm to 700 nm.

% Light Transmission (%LT)

Percentage of incident visible light that passes through an object .

% Light Reflection (%LR)

Percentage of incident visible light that strikes an object and returns in the form of visible light.

% Light Absorption (%LA)

Percentage of incident visible light that strikes an object and is absorbed by it.

$$\%LT + \%LR + \%LA = 100\%$$

Solar Radiation

The solar spectrum ranging from 300 nm to 2400 nm. Included are UV, visible and NIR radiation.

% Direct Solar Transmission (%ST)

Percentage of incident solar radiation that passes directly through an object.

% Solar Reflection (%SR)

Percentage of incident solar radiation that strikes an object and is reflected.

% Solar Absorption (%SA)

Percentage of incident solar radiation that strikes an object and is absorbed by it.

$$\%ST + \%SR + \%SA = 100\%$$

Total Solar Transmission (%ST_t)

The percentage of incident solar radiation transmitted by an object which includes the direct solar transmission plus the part of the solar absorption reradiated inward.

Total Solar Reflection (%SR_t)

The percent of incident solar radiation rejected by an object, which includes the solar reflectance plus the part of the solar absorption, reradiated outward.

$$\%ST_t + \%SR_t = 100\%$$

Shading Coefficient (SC)

The ratio of the total solar radiation transmitted by a given material to that transmitted by normal glass, whose light transmission is 87%. It can be approximately calculated by:

$$SC = 1.15 \times (\%ST + 0.27 \times \%SA) / 100$$

$$\%ST + 0.27 \times \%SA = \%ST_t$$

$$SC = 1.15 \times ST_t / 100$$

First note that all SUNLITE sheets transmit practically 0% UV radiation and offer 100% protection to anyone sitting or playing under the sheets. Data is available indicating that tinted sheets absorb more solar energy over the entire spectrum. This energy is partially converted into heat which can be radiated inward, heating the area below the sheets. The Solar Control sheet avoids this by reflecting a much larger percentage of energy over the entire spectrum. Tinted sheets reflect much less energy. SUNLITE Solar Control sheets transmit a uniform 20% to 25% of light energy over a wide portion of the energy spectrum. The result is that the much lower shading coefficients obtained for the Solar Control product result in a temperature reduction of up to 5 °C on a hot summer day.