



SUNTUF®



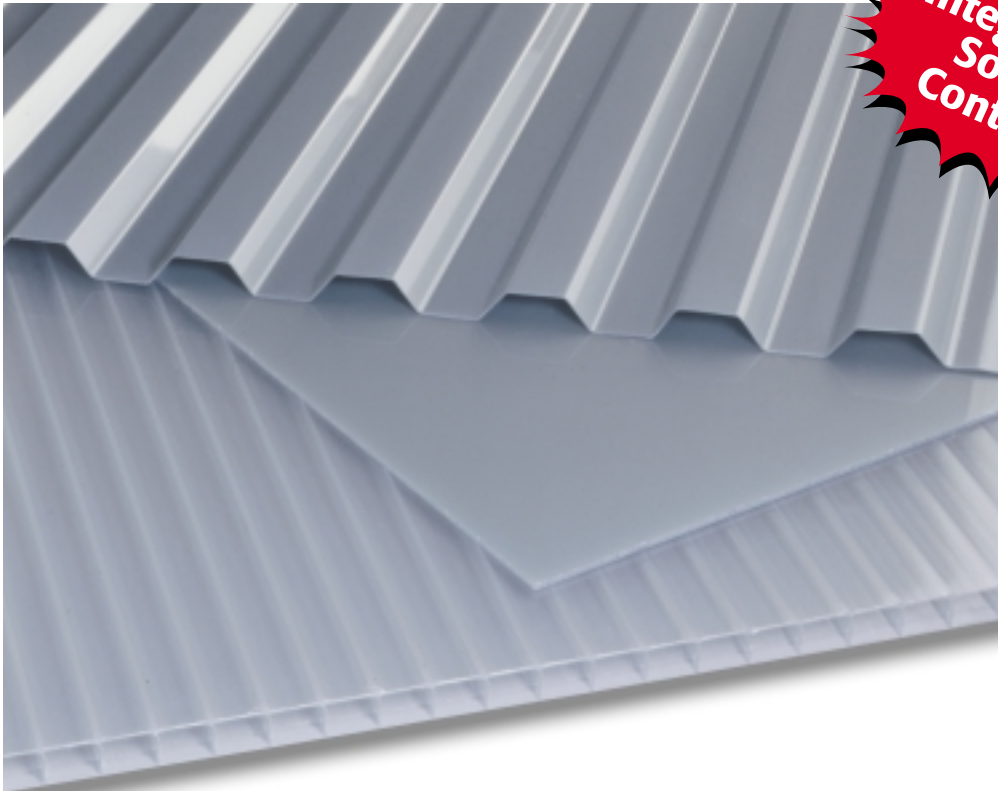
PALSUN®



SUNLITE®

SOLAR CONTROL

Polycarbonate Sheets



Introduction

Due to a technological breakthrough, PALRAM can offer PALSUN Flat, SUNTUF Corrugated or SUNLITE Multi-wall Polycarbonate Sheets with integrated solar control. **There is no chance of a laminated layer peeling away.** Now PALRAM Solar Control polycarbonate sheets are designed to offer the qualities of reflective glass plus the known benefits of polycarbonate as a glazing material. Two colors, Solar Metallic and Solar Ice, are now available with others to follow.

PALRAM Solar Control sheets have a considerable advantage over regular colored sheets. Standard colored sheets absorb most of the light energy, which is not transmitted through the sheets. This leads to the heating of the sheet itself and to heat accumulation within the covered area. PALRAM Solar Control sheets transmit light and reflect solar radiation resulting in "cool lighting" without heat within the covered area. This prevents the penetration of heat during the summer reducing air conditioning operational costs. Conversely in the winter, the far infrared absorption of polycarbonate prevents heat loss from within the structure, thereby reducing heating costs.

This reduction of heat buildup coupled with a 100% blocking of harmful UV radiation (left-hand figure on page 5) makes PALSUN, SUNTUF or SUNLITE Solar Control the ideal covering for areas primarily made used during the summer months. SUNTUF or SUNLITE Plus with their unique anti-condensation treatment is now the ideal covering for swimming pools. Bathers are protected from the harmful rays of the sun without needing to apply sunscreen, which may wash off. There is no uncomfortable heat buildup.



PALSUN Solar Metallic

Table of typical properties

Service Temperature Range	-40 °C to +120 °C (-175 °F to +250 °F)
H.D.T. (1.82 MPa)	135 °C (275 °F)
Coefficient of Linear Thermal Expansion	0.068 mm/m °C
Thermal Conductivity	0.21 W/m K
Specific Heat Capacity	1.3kJ/kg K
Specific gravity	1.2
Tensile Strength	62 MPa
Tensile Modulus	2,300 MPa
Elongation at break	>95%
Flexural Strength at yield	93 MPa
Flexural Modulus	2,200 MPa
Impact Resistance - Falling Dart ISO 6603/1	PALSUN (3 mm) - 158 J SUNTUF (0.8 mm) - 50 J SUNLITE - 38 J



PALSUN Solar Metallic

Features at a Glance

- No Heat Buildup - Cool Lighting
- 20% to 50% Light Transmission
- Low Shading Coefficient (SC)
- Attractive Appearance
- Light Is Reflected without Glare
- Saves Energy - Reduces Heating and Air-Conditioning Costs
- Blocks 100% of Harmful UV Rays - No Sunburn
- Service Temperature Range for All Climates
- Extremely High Impact Resistance - Virtually Unbreakable
- Weather Resistant - Retention of Properties for Years
- Light Weight
- Easy to Install

Applications

- Regular and Protective Glazing
- Skylights
- Light Domes (PALSUN)
- Swimming Pools
- Glazing (PALSUN and SUNLITE)
- D.I.Y. (SUNTUF and SUNLITE)
- Pergolas (SUNTUF and SUNLITE)
- Conservatories
- Covered Walkways

PALSUN Flat Solar Control Sheets

Standard Dimensions of PALSUN Flat Solar Control Sheets

It is suggested that you refer to the complete PALSUN catalogue for information that will assist you in selecting the proper sheet dimensions.

Thicknesses*: 2 to 12 mm

Width x Length*: 1250x2050, 1220x2440 or 2050x3050 mm










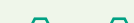
*Sheets with dimensions in inches are available.

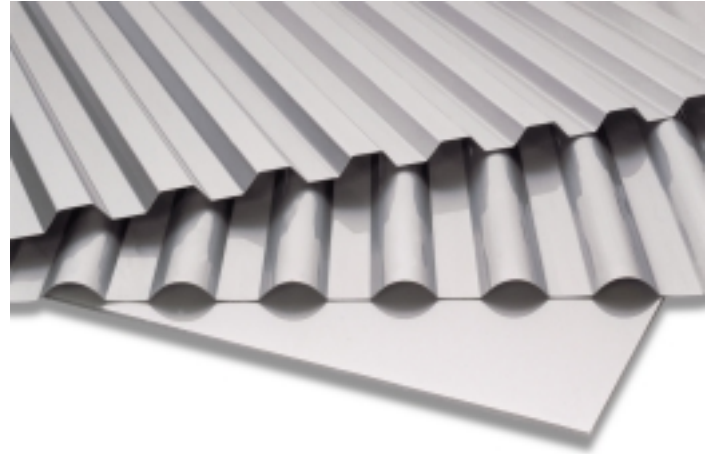
Other dimensions are available for a guaranteed minimum quantity.

SUNTUF Corrugated Solar Control Products:

- SUNTUF Solar Control - co-extruded UV protection on the exterior side
- SUNTUF UV2 Solar Control - co-extruded UV protection on both sides
- SUNTUF Plus Solar Control - co-extruded UV protection on the exterior side, anti-condensation treatment on the interior side

SUNTUF Corrugated Profiles - Available Dimensions (Standard Solar Control Products Appear in **Bold***)



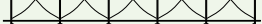
Profile*	Units	Thickness mm	Width mm	Length m
Iron 76		0.8	660, 860, 900, 1260	1.5 - 11.6
Greca 76		0.8	660, 1064, 1260, 1870	1.5 - 11.6
Greca 70		0.8	1095	1.5 - 11.6
Omega 76		0.8	1260, 1870	1.5 - 11.6
Asbest 177		1.0 - 2.0	920, 1100	1.5 - 6.0
American 4.2"		1.0 - 1.5	1070	1.5 - 11.6
Trimdek 190		0.8 - 1.5	820, 1200	1.5 - 11.6
Spandek 87.5		0.8 - 1.5	754	1.5 - 11.6
Astoria		1.0 - 2.0	1033	1.5 - 11.6
Industrial 0100		1.0 - 1.5	1063	1.5 - 11.6



*Non-Standard Solar Control Profiles are available for a guaranteed minimum order. Profiles with dimensions in inches are also available. Custom Designed Profiles are available for a guaranteed minimum order.

SUNLITE Multi-Wall Solar Control Products

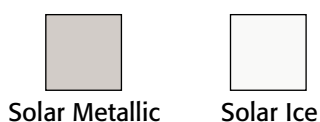
- SUNLITE Solar Control - co-extruded UV protection on the exterior side
- SUNTLITE UV2 Solar Control - co-extruded UV protection on both sides
- SUNTLITE Plus Solar Control - co-extruded UV protection on the exterior side, anti-condensation treatment on the interior side

Structures	Thickness mm	*Standard Sheet Width in mm			
		980	1050	1250	2100
Twinwall 	4	x	x		x
	6	x	x		x
	8	x	x		x
	10	x	x	x	x
Triple wall 	16	x	x	x	x
	Structured 	25	x	x	x
32		x	x	x	x

*Length: 2000 - 12000 mm

*Non-standard products (lengths and widths) are available subject to a minimum order quantity.

Available Colors for PALSUN, SUNTUF and SUNLITE Solar Control:



THERMAL AND OPTICAL PROPERTIES of SOLAR CONTROL SHEETS

PALSUN, SUNTUF, 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
PALSUN/SUNTUF Clear	90*	10	86	10	4	14	86	1.00
PALSUN/SUNTUF Solar Metallic 20%	20	30	21	30	49	66	34	0.38
PALSUN/SUNTUF Solar Metallic 35%	35	28	32	28	40	57	43	0.49
PALSUN/SUNTUF Solar Metallic 50%	50	24	48	24	28	44	56	0.64
PALSUN/SUNTUF Solar Ice 20%	20	59	29	52	19	66	34	0.39
SUNLITE Clear - 16 mm	73	23	71	23	6	27	73	0.84
SUNLITE Solar Metallic 25% - 16 mm	25	29	24	29	47	63	37	0.42
SUNLITE Solar Ice 20% - 16 mm	20	46	32	44	24	62	38	0.44

*Characteristic value for sheets up to 3 mm thick. The %LT of sheets above 3 mm will be characterized by a value that decreases by approximately 0.4%/mm.

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 percent 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:

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

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

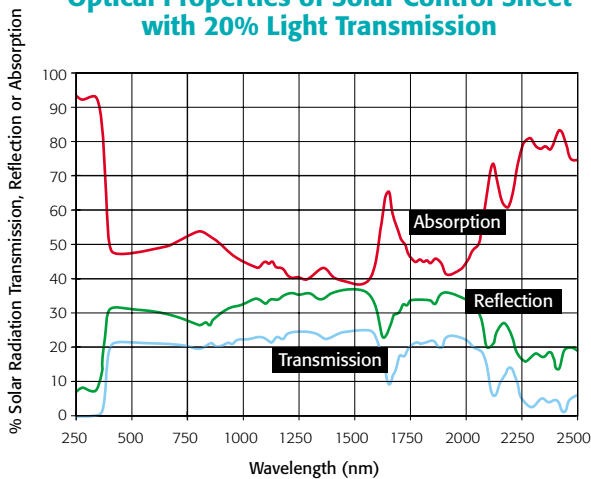
$$SC = 1.15 \times ST_t / 100$$



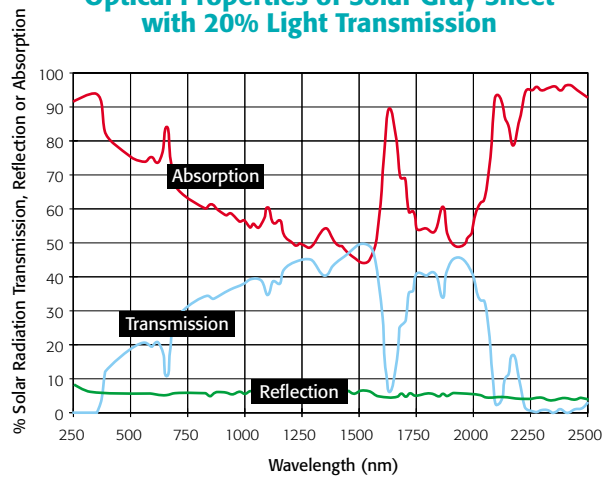
SUNLITE Solar Ice

The figures below compare a 20% Light Transmission Solar Gray sheet with a 20% Light Transmission for PALSUN or SUNTUF Solar Control Sheet. **First note that both sheets transmit practically 0% UV radiation and offer 100% protection to anyone sitting or playing under the sheets.** Comparing the absorption spectrum, it becomes apparent that the Solar Gray sheet absorbs 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. Compare this with the small percentage of reflection by Solar Gray. Also note, that the Solar Control transmits a uniform 20% of light energy over a wide portion of the energy spectrum. Similar comparisons can be made for sheets transmitting 35% and 50% of incident light.

Optical Properties of Solar Control Sheet with 20% Light Transmission



Optical Properties of Solar Gray Sheet with 20% Light Transmission



SUNTUF Solar Metallic



SUNTUF Solar Ice



SUNLITE Solar Metallic

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