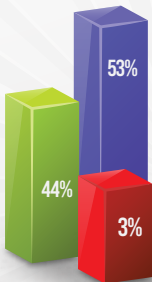




**COSMO SUNSHIELD**

SAVE • PROTECT • ENHANCE

## FUNDAMENTALS OF SOLAR SPECTRUM



### UV Rays- 3%

- Invisible to eyes
- Harmful rays causes sunburn & skin cancer, discoloration of materials

### Visible Light- 44%

- Range of light that people can perceive with eyes

### Infra Red Ray- 53%

- Invisible to eyes
- Source of Heat

Both living and non-living things are severely harmed by solar radiation in the ranges of 100-380 nm by harmful UV and 780-2500 nm by IR rays and it is very difficult to manage to block harmful UV and IR rays, but to allow maximum visible light transmission at the same time. Our developed technologies with various pigments, dyes, chemicals and films are able to block UV and IR rays while allowing visible light to get through. Hence visibility as per customer preference is provided by Cosmo Sunshield films, with rejections of UV up to more than 99% and IR light up to 90%.

## DEFINITIONS OF SOLAR PARAMETERS

### VLT (Visible Light Transmission)

VLT is the light that enters the structure through the glass. Visible light wavelength ranges from 380 to 700 nm in the sun spectrum.

### UVR (Ultra Violet Rejected)

UV radiation is a type of electromagnetic radiation emitted by the sun and is invisible to the human eye. Wavelength for UV in the solar spectrum is in the range 100-380nm.

Relevance to the consumer: This is a very important factor in the purchase of window films. Excessive UV is the most dangerous part of the solar spectrum for human health. It is one of the causes of cataract and skin cancer, and adversely affects people with Lupus, Xeroderma Pigmentosum, Porphyria, and other such diseases. UV is generally the biggest factor in damage to drapes, carpets, furniture, though shorter wavelengths of visible light (extending into the violet and blue bands) may play an important role as well. UV blocking is also important for the longevity and effectiveness of film.

### IRR (Infra Red Rejected)

The amount of Infra Red (IR) energy that is blocked by the film, either by reflecting or absorbing. Wavelength for IR in the solar spectrum is in the range 780-2500nm.

### TSER (Total Solar Energy Rejected)

The total solar energy rejected refers to the amount of solar energy that is prevented from entering a space or building by a specific material or device designed to reduce solar heat gain.



### GR (Glare Reduction)

Glare Reduction refers to the process or ability of reducing or minimizing the intensity and discomfort caused by excessive brightness or glare of light.

### SC (Shading Coefficient)

Shading Coefficient is the ratio of amount of solar heat that is transmitted through a filmed window to the amount of solar heat that would be transmitted through a single-pane clear glass with the same dimensions.

### SHGC (Solar Heat Gain Coefficient)

Solar Heat Gain Coefficient represents the fraction of solar radiation that enters a building through the glazing and contributes to the overall heat gain. A lower SHGC value indicates that the window or glazing system is more effective in reducing solar heat gain, as it allows less solar radiation to pass through.

# SAFEGUARD



## CLEAR SAFETY FILM

CS 001-4

1Ply 4Mil

### Mechanical Properties

Nominal Tensile Strength	24802 PSI
Adhesive Type	Acrylic Base PSA
Peel Strength (Per Inch)	>2600 gms/inch
Elongation At Break (MD)	120%
Scratch Resistance	Pencil hardness>3H

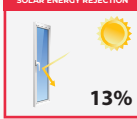
### Solar Properties

Visible Light Transmission	90%
Ultra Violet Rejected	>99%
Infra Red Heat Rejected	12%
Total Solar Energy Rejected	13%
Glare Reduction	0%
Shading Coefficient	0.98
SHGC (G-Value)	0.87

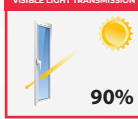
#### MECHANICAL PROPERTIES



#### SOLAR ENERGY REJECTION



#### VISIBLE LIGHT TRANSMISSION



# SAFEGUARD



## CLEAR SAFETY FILM

CS 001-7

1Ply 7Mil

### Mechanical Properties

Nominal Tensile Strength	82530 PSI
Adhesive Type	Acrylic Base PSA
Peel Strength (Per Inch)	>2800 gms/inch
Elongation At Break (MD)	190%
Scratch Resistance	Pencil hardness>3H

### Solar Properties

Visible Light Transmission	88%
Ultra Violet Rejected	>99%
Infra Red Heat Rejected	13%
Total Solar Energy Rejected	11%
Glare Reduction	0%
Shading Coefficient	0.88
SHGC (G-Value)	0.79

#### MECHANICAL PROPERTIES



#### SOLAR ENERGY REJECTION



#### VISIBLE LIGHT TRANSMISSION



# SAFEGUARD



## SAFETY FILM

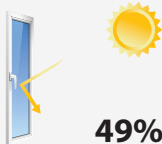
CS 001-4-7090

1Ply 4Mil

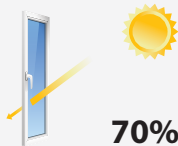
## Solar Properties

Visible Light Transmission	<b>70%</b>
Ultra Violet Rejected	<b>&gt;99%</b>
Infra Red Heat Rejected	<b>93%</b>
Total Solar Energy Rejected	<b>49%</b>
Glare Reduction	<b>25%</b>
Shading Coefficient	<b>0.57</b>
SHGC (G-Value)	<b>0.51</b>

### SOLAR ENERGY REJECTION



### VISIBLE LIGHT TRANSMISSION



## SMOKE

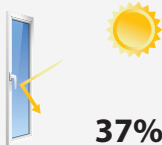
CS-101-SM 05

1Ply 1Mil

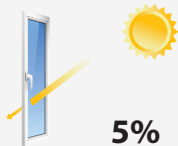
## Solar Properties

Visible Light Transmission	5%
Ultra Violet Rejected	>99%
Infra Red Heat Rejected	14%
Total Solar Energy Rejected	37%
Glare Reduction	94%
Shading Coefficient	0.71
SHGC (G-Value)	0.63

### SOLAR ENERGY REJECTION



### VISIBLE LIGHT TRANSMISSION



# SUNBRELLA



## SMOKE

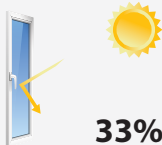
CS-101-SM 20

1Ply 1Mil

## Solar Properties

Visible Light Transmission	20%
Ultra Violet Rejected	>99%
Infra Red Heat Rejected	13%
Total Solar Energy Rejected	33%
Glare Reduction	78%
Shading Coefficient	0.75
SHGC (G-Value)	0.67

### SOLAR ENERGY REJECTION



### VISIBLE LIGHT TRANSMISSION





## SMOKE

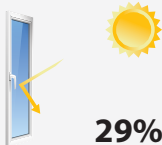
CS-101-SM 35

1Ply 1Mil

## Solar Properties

Visible Light Transmission	35%
Ultra Violet Rejected	>99%
Infra Red Heat Rejected	14%
Total Solar Energy Rejected	29%
Glare Reduction	61%
Shading Coefficient	0.80
SHGC (G-Value)	0.72

### SOLAR ENERGY REJECTION



### VISIBLE LIGHT TRANSMISSION



# SUNBRELLA



## SMOKE

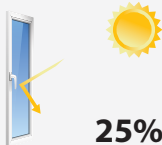
CS-101-SM 50

1Ply 1Mil

## Solar Properties

Visible Light Transmission	50%
Ultra Violet Rejected	>99%
Infra Red Heat Rejected	14%
Total Solar Energy Rejected	25%
Glare Reduction	55%
Shading Coefficient	0.85
SHGC (G-Value)	0.75

### SOLAR ENERGY REJECTION



25%

### VISIBLE LIGHT TRANSMISSION



50%

# SUNBRELLA



## CHARCOAL

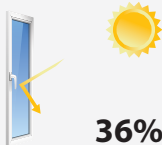
CS-111-CH 05

1Ply 1Mil

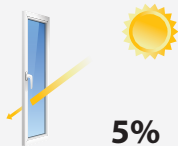
## Solar Properties

Visible Light Transmission	5%
Ultra Violet Rejected	>99%
Infra Red Heat Rejected	14%
Total Solar Energy Rejected	36%
Glare Reduction	97%
Shading Coefficient	0.72
SHGC (G-Value)	0.64

### SOLAR ENERGY REJECTION



### VISIBLE LIGHT TRANSMISSION



# SUNBRELLA



## CHARCOAL

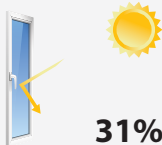
CS-111-CH 20

1Ply 1Mil

## Solar Properties

Visible Light Transmission	20%
Ultra Violet Rejected	>99%
Infra Red Heat Rejected	12%
Total Solar Energy Rejected	31%
Glare Reduction	80%
Shading Coefficient	0.78
SHGC (G-Value)	0.69

### SOLAR ENERGY REJECTION



**31%**

### VISIBLE LIGHT TRANSMISSION



**20%**

# SUNBRELLA



## CHARCOAL

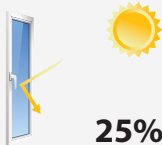
CS-111-CH 35

1Ply 1Mil

## Solar Properties

Visible Light Transmission	35%
Ultra Violet Rejected	>99%
Infra Red Heat Rejected	12%
Total Solar Energy Rejected	25%
Glare Reduction	60%
Shading Coefficient	0.84
SHGC (G-Value)	0.75

### SOLAR ENERGY REJECTION



### VISIBLE LIGHT TRANSMISSION



# SUNBRELLA



## CHARCOAL

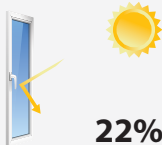
CS-111-CH 50

1Ply 1Mil

## Solar Properties

Visible Light Transmission	50%
Ultra Violet Rejected	>99%
Infra Red Heat Rejected	20%
Total Solar Energy Rejected	22%
Glare Reduction	39%
Shading Coefficient	0.88
SHGC (G-Value)	0.78

### SOLAR ENERGY REJECTION



### VISIBLE LIGHT TRANSMISSION



# SUNBRELLA



## GRAPHITE

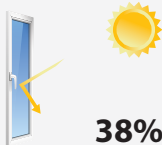
CS-121-GP 05

1Ply 1Mil

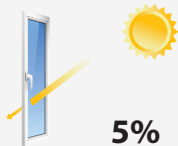
## Solar Properties

Visible Light Transmission	5%
Ultra Violet Rejected	>99%
Infra Red Heat Rejected	15%
Total Solar Energy Rejected	38%
Glare Reduction	97%
Shading Coefficient	0.70
SHGC (G-Value)	0.62

### SOLAR ENERGY REJECTION



### VISIBLE LIGHT TRANSMISSION



# SUNBRELLA



## GRAPHITE

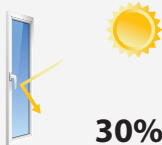
CS-121-GP 20

1Ply 1Mil

## Solar Properties

Visible Light Transmission	20%
Ultra Violet Rejected	>99%
Infra Red Heat Rejected	12%
Total Solar Energy Rejected	30%
Glare Reduction	77%
Shading Coefficient	0.79
SHGC (G-Value)	0.70

### SOLAR ENERGY REJECTION



30%

### VISIBLE LIGHT TRANSMISSION



20%



# SUNBRELLA



## GRAPHITE

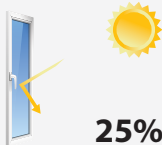
CS-121-GP 35

1Ply 1Mil

## Solar Properties

Visible Light Transmission	35%
Ultra Violet Rejected	>99%
Infra Red Heat Rejected	13%
Total Solar Energy Rejected	25%
Glare Reduction	57%
Shading Coefficient	0.84
SHGC (G-Value)	0.75

### SOLAR ENERGY REJECTION



25%

### VISIBLE LIGHT TRANSMISSION



35%

# SUNBRELLA



## GRAPHITE

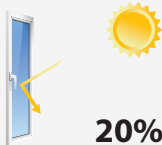
CS-121-GP 50

1Ply 1Mil

## Solar Properties

Visible Light Transmission	50%
Ultra Violet Rejected	>99%
Infra Red Heat Rejected	12%
Total Solar Energy Rejected	20%
Glare Reduction	37%
Shading Coefficient	0.91
SHGC (G-Value)	0.81

### SOLAR ENERGY REJECTION



### VISIBLE LIGHT TRANSMISSION



# SUNBRELLA



**GREY**

CS-131-GR 05

1Ply 1Mil

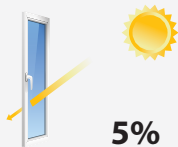
## Solar Properties

Visible Light Transmission	5%
Ultra Violet Rejected	>99%
Infra Red Heat Rejected	14%
Total Solar Energy Rejected	37%
Glare Reduction	97%
Shading Coefficient	0.71
SHGC (G-Value)	0.63

### SOLAR ENERGY REJECTION



### VISIBLE LIGHT TRANSMISSION



# SUNBRELLA



**GREY**

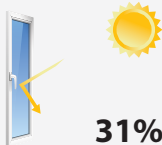
CS-131-GR 20

1Ply 1Mil

## Solar Properties

Visible Light Transmission	<b>20%</b>
Ultra Violet Rejected	<b>&gt;99%</b>
Infra Red Heat Rejected	<b>13%</b>
Total Solar Energy Rejected	<b>31%</b>
Glare Reduction	<b>79%</b>
Shading Coefficient	<b>0.78</b>
SHGC (G-Value)	<b>0.69</b>

### SOLAR ENERGY REJECTION



### VISIBLE LIGHT TRANSMISSION



# SUNBRELLA



**GREY**

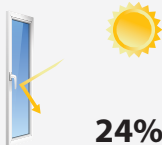
CS-131-GR 35

1Ply 1Mil

## Solar Properties

Visible Light Transmission	<b>35%</b>
Ultra Violet Rejected	<b>&gt;99%</b>
Infra Red Heat Rejected	<b>12%</b>
Total Solar Energy Rejected	<b>24%</b>
Glare Reduction	<b>55%</b>
Shading Coefficient	<b>0.85</b>
SHGC (G-Value)	<b>0.76</b>

### SOLAR ENERGY REJECTION



### VISIBLE LIGHT TRANSMISSION



# SUNBRELLA



**GREY**

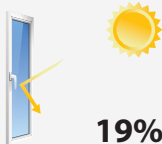
CS-131-GR 50

1Ply 1Mil

## Solar Properties

Visible Light Transmission	<b>50%</b>
Ultra Violet Rejected	<b>&gt;99%</b>
Infra Red Heat Rejected	<b>12%</b>
Total Solar Energy Rejected	<b>19%</b>
Glare Reduction	<b>37%</b>
Shading Coefficient	<b>0.91</b>
SHGC (G-Value)	<b>0.81</b>

### SOLAR ENERGY REJECTION



### VISIBLE LIGHT TRANSMISSION



# SUNBRELLA



**BLACK**

CS-141-BK 05

1Ply 1Mil

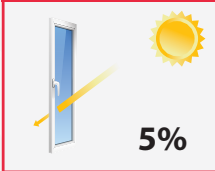
## Solar Properties

Visible Light Transmission	5%
Ultra Violet Rejected	>99%
Infra Red Heat Rejected	20%
Total Solar Energy Rejected	38%
Glare Reduction	97%
Shading Coefficient	0.69
SHGC (G-Value)	0.62

### SOLAR ENERGY REJECTION



### VISIBLE LIGHT TRANSMISSION



# SUNBRELLA



**BLACK**

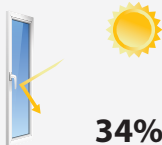
CS-141-BK 15

1Ply 1Mil

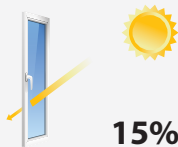
## Solar Properties

Visible Light Transmission	15%
Ultra Violet Rejected	>99%
Infra Red Heat Rejected	18%
Total Solar Energy Rejected	34%
Glare Reduction	85%
Shading Coefficient	0.74
SHGC (G-Value)	0.66

### SOLAR ENERGY REJECTION



### VISIBLE LIGHT TRANSMISSION





# SUNBRELLA



**BLACK**

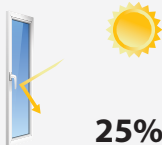
CS-141-BK 35

1Ply 1Mil

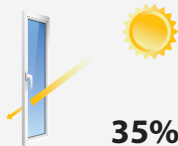
## Solar Properties

Visible Light Transmission	<b>35%</b>
Ultra Violet Rejected	<b>&gt;99%</b>
Infra Red Heat Rejected	<b>18%</b>
Total Solar Energy Rejected	<b>25%</b>
Glare Reduction	<b>56%</b>
Shading Coefficient	<b>0.84</b>
SHGC (G-Value)	<b>0.74</b>

### SOLAR ENERGY REJECTION



### VISIBLE LIGHT TRANSMISSION



# SUNBRELLA



**BLACK**

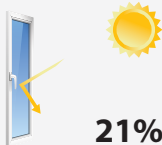
CS-141-BK 50

1Ply 1Mil

## Solar Properties

Visible Light Transmission	<b>50%</b>
Ultra Violet Rejected	<b>&gt;99%</b>
Infra Red Heat Rejected	<b>17%</b>
Total Solar Energy Rejected	<b>21%</b>
Glare Reduction	<b>38%</b>
Shading Coefficient	<b>0.88</b>
SHGC (G-Value)	<b>0.79</b>

### SOLAR ENERGY REJECTION



### VISIBLE LIGHT TRANSMISSION



# SUNBRELLA

**COSMO SUNSHIELD**  
SHIELD. PROTECT. ENHANCE.

**ORCHID BLUE**

CS-171-OCB 20

1Ply 1Mil

## Solar Properties

Visible Light Transmission	<b>20%</b>
Ultra Violet Rejected	<b>&gt;99%</b>
Infra Red Heat Rejected	<b>18%</b>
Total Solar Energy Rejected	<b>31%</b>
Glare Reduction	<b>78%</b>
Shading Coefficient	<b>0.84</b>
SHGC (G-Value)	<b>0.74</b>

### SOLAR ENERGY REJECTION



### VISIBLE LIGHT TRANSMISSION



[www.cosmosunshield.com](http://www.cosmosunshield.com)

## BRONZE

CS-210-RBz 1585

2Ply 2Mil

## Solar Properties

Visible Light Trans mission	15%
Ultraviolet Rejected	>99%
Infra Red Heat Rejected	87%
Total Solar Energy Rejected	78%
Glare Reduction	87%
Shading Coefficient	0.25
SHGC (G-Value)	0.22

### SOLAR ENERGY REJECTION



### VISIBLE LIGHT TRANSMISSION



## GOLD

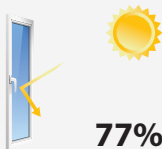
CS-220-RGd 1580

2Ply 2Mil

## Solar Properties

Visible Light Transmission	15%
Ultra Violet Rejected	>99%
Infra Red Heat Rejected	87%
Total Solar Energy Rejected	77%
Glare Reduction	80%
Shading Coefficient	0.27
SHGC (G-Value)	0.24

### SOLAR ENERGY REJECTION



### VISIBLE LIGHT TRANSMISSION



## BRONZE - GOLD

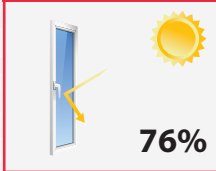
CS-240-RBzGd 1080

2Ply 2Mil

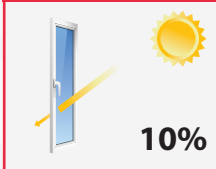
## Solar Properties

Visible Light Transmission	10%
Ultra Violet Rejected	>99%
Infra Red Heat Rejected	88%
Total Solar Energy Rejected	76%
Glare Reduction	90%
Shading Coefficient	0.27
SHGC (G-Value)	0.24

### SOLAR ENERGY REJECTION



### VISIBLE LIGHT TRANSMISSION



**GOLD - GOLD**

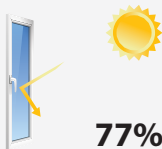
CS-250-RGdGd 1080

2Ply 2Mil

## Solar Properties

Visible Light Transmission	<b>10%</b>
Ultra Violet Rejected	<b>&gt;99%</b>
Infra Red Heat Rejected	<b>88%</b>
Total Solar Energy Rejected	<b>77%</b>
Glare Reduction	<b>83%</b>
Shading Coefficient	<b>0.26</b>
SHGC (G-Value)	<b>0.23</b>

### SOLAR ENERGY REJECTION



### VISIBLE LIGHT TRANSMISSION





**COSMO SUNSHIELD**

SAVE • PROTECT • ENHANCE

[www.cosmosunshield.com](http://www.cosmosunshield.com)

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[sunshield@cosmofilms.com](mailto:sunshield@cosmofilms.com)