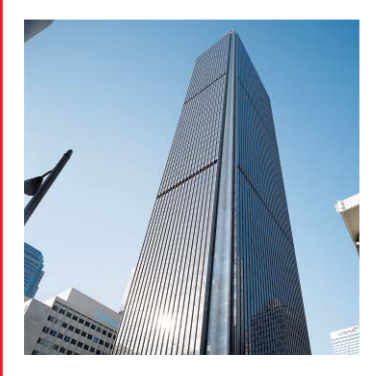


# 3M Sun Control

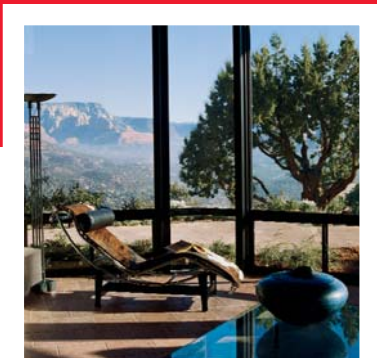
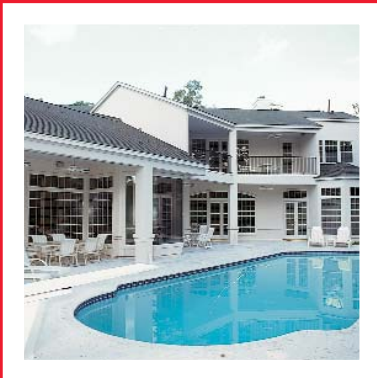
## Window Film Specification Guide



As a leader in both adhesive and film technologies, 3M brings together these disciplines to create the finest products available for residential, commercial and government buildings.

Our films reduce up to 99% of the sun's ultraviolet rays and reject up to 79% of the solar heat that may otherwise come through a window.

3M Sun Control Films save energy, as well as helping to protect furnishings, carpets, woodwork and artwork from destructive ultraviolet rays that cause fading.



# How to use this guide

## Key Property Quick Reference

The three values indicated below are the key to getting an overall feel for any window film. These values have been highlighted in the specification data tables for convenient quick reference. Note that in the data tables there is a Visible Light Reflected value for both the interior surface of the glass and the exterior surface of the glass.

<b>Visible Light Reflected:</b>			
0%			100%
Non-reflective		Mirror Like	
<b>Visible Light Transmitted:</b>			
0%			100%
Dark		High Natural Light	
<b>Total Solar Energy Rejected:</b>			
0%			100%
Low performance		High performance	

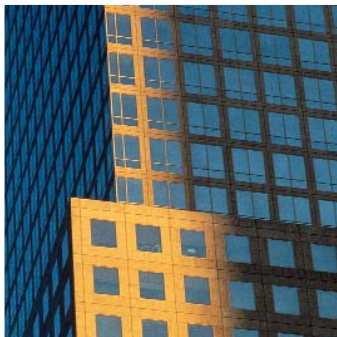
## Glass Properties

The Glass Properties table presents properties for the four basic glass configurations with no film attached. This table can be useful as a point of reference when comparing properties from the window film tables. In the window film tables you will find properties for the films attached to each of these types of glass configurations.

Your local 3M Licensed Installer can offer you support and provide samples to assist you in your film selection. Before finalising a film specification for a project please contact your local 3M Licensed Installer to ensure that the preferred product is suitable for your particular application.

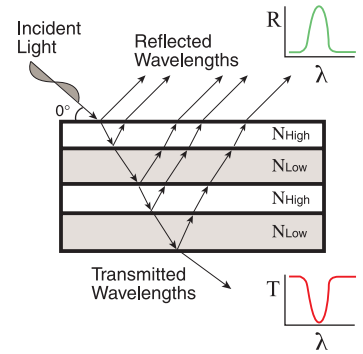
## Glass Properties

Glass Type	Shading Coefficient	Visible Light			Total Solar Energy Rejected	Emissivity	U Value $W/m^2K$	Heat Gain Reduction	Heat Loss reduction	Glare Reduction	UV Blocked
		Reflected (interior)	Reflected (exterior)	Transmitted							
CLEAR	0.94	8%	8%	88%	18%	0.84	6.02	NA	NA	NA	38%
TINTED	0.69	5%	5%	50%	40%	0.84	6.02	NA	NA	NA	81%
DOUBLE CLEAR	0.81	14%	14%	78%	30%	0.84	2.90	NA	NA	NA	NA
DOUBLE TINTED	0.55	13%	8%	45%	52%	0.84	2.84	NA	NA	NA	NA



# Prestige Series Films

Prestige Series are a spectrally selective, non-metallised, solar control range of films designed to give exceptionally low reflectivity and an optimized balance of performance and natural light. Prestige Series uses a whole new technology in the reflection of radiant energy, the multi-layer optical film. This film consists of over 200 layers that bend and reflect light, progressively reflecting off the unwanted wavelengths (Infrared) while allowing natural light to pass through (see illustration to the right). This unique design gives increased performance when the sun is at an angle to your glass in the hottest parts of the day. Therefore, Total Solar Energy Rejected figures are reported at a 60° angle in the data table.



One of the standout features of the Prestige Series window films is that they are not metallised. No metal means no corrosion and no mobile phone signal interference. It also gives the Prestige Series superior clarity. Prestige Series films block 97% of Infrared heat and 99.9% of Ultraviolet radiation, providing increased comfort and safety.

	Shading Coefficient	Visible Light			Total Solar Energy Rejected @60°/Perpendicular	Emissivity	U Value $W/m^2K$	Heat Gain Reduction	Heat Loss reduction	Glare Reduction	UV Blocked	Luminous Efficacy	IR rejected	
		Reflected (interior)	Reflected (exterior)	Transmitted										
CLEAR	Prestige 40	0.47	6%	7%	39%	66% / 59%	0.78	5.62	50%	3%	56%	99.9%	0.83	97%
	Prestige 50	0.51	8%	9%	50%	63% / 56%	0.78	5.62	46%	3%	43%	99.9%	0.98	97%
	Prestige 60	0.55	8%	8%	61%	61% / 52%	0.78	5.62	41%	3%	31%	99.9%	1.11	97%
	Prestige 70	0.58	9%	9%	68%	59% / 50%	0.78	5.62	38%	3%	23%	99.9%	1.17	97%
TINTED	Prestige 40	0.43	6%	6%	23%	67% / 63%	0.78	5.62	41%	3%	57%	99.9%	0.53	97%
	Prestige 50	0.46	7%	6%	30%	66% / 60%	0.78	5.62	37%	3%	44%	99.9%	0.65	97%
	Prestige 60	0.48	7%	6%	36%	63% / 58%	0.78	5.62	34%	3%	32%	99.9%	0.75	97%
	Prestige 70	0.5	8%	6%	41%	63% / 57%	0.78	5.62	32%	3%	23%	99.9%	0.82	97%
DOUBLE CLEAR	Prestige 40	0.59	8%	14%	35%	54% / 49%	0.78	2.67	27%	0%	56%	99.9%	0.59	97%
	Prestige 50	0.61	10%	16%	44%	53% / 47%	0.78	2.67	25%	0%	44%	99.9%	0.72	97%
	Prestige 60	0.63	11%	15%	54%	54% / 45%	0.78	2.67	22%	0%	32%	99.9%	0.86	97%
	Prestige 70	0.64	13%	16%	61%	50% / 44%	0.78	2.61	21%	2%	23%	99.9%	0.95	97%
DOUBLE TINTED	Prestige 40	0.45	7%	8%	21%	64% / 61%	0.78	2.67	24%	0%	56%	99.9%	0.47	97%
	Prestige 50	0.46	9%	9%	27%	64% / 60%	0.78	2.67	22%	0%	43%	99.9%	0.59	97%
	Prestige 60	0.47	10%	8%	32%	64% / 59%	0.78	2.67	20%	0%	32%	99.9%	0.68	97%
	Prestige 70	0.48	12%	9%	37%	62% / 58%	0.78	2.61	19%	2%	22%	99.9%	0.77	97%

# Night Vision Films

Night Vision Films offer a strong combination of attractive tones, low or high reflectivity, variable light transmissions and high performance sun control features. The warm, natural hues invite warmth and beauty to any room. The Night Vision series utilise unique patented 3M carbon pigment technology that enhances the colour stability in the films.

	Shading Coefficient	Visible Light			Total Solar Energy Rejected	Emissivity	U Value $W/m^2K$	Heat Gain Reduction	Heat Loss reduction	Glare Reduction	UV Blocked	
		Reflected (interior)	Reflected (exterior)	Transmitted								
CLEAR	Night Vision 15	0.29	19%	43%	15%	75%	0.7	5.91	69%	2%	83%	99%
	Night Vision 25	0.39	13%	29%	24%	66%	0.72	5.96	59%	1%	72%	99%
	Night Vision 35	0.49	12%	18%	35%	35%	0.74	6.02	49%	0%	60%	99%
	Night Vision 45	0.63	8%	10%	45%	45%	0.78	6.02	34%	0%	49%	99%
TINTED	Night Vision 15	0.33	19%	16%	9%	71%	0.7	5.91	52%	2%	82%	99%
	Night Vision 25	0.38	13%	12%	14%	67%	0.72	5.96	48%	1%	72%	99%
	Night Vision 35	0.44	11%	8%	21%	62%	0.74	6.02	40%	0%	58%	99%
	Night Vision 45	0.52	7%	6%	27%	55%	0.74	6.02	29%	0%	45%	99%
DOUBLE CLEAR	Night Vision 15	0.43	20%	44%	14%	63%	0.7	2.67	48%	6%	82%	99%
	Night Vision 25	0.5	13%	32%	22%	57%	0.72	2.67	38%	6%	71%	99%
	Night Vision 35	0.58	13%	23%	31%	50%	0.74	2.67	28%	6%	60%	99%
	Night Vision 45	0.67	9%	16%	40%	42%	0.78	2.73	17%	6%	48%	99%
DOUBLE TINTED	Night Vision 15	0.33	20%	20%	9%	71%	0.7	2.67	40%	6%	80%	99%
	Night Vision 25	0.37	13%	15%	13%	67%	0.72	2.67	32%	6%	71%	99%
	Night Vision 35	0.42	13%	11%	19%	63%	0.74	2.67	24%	6%	59%	99%
	Night Vision 45	0.48	9%	9%	24%	58%	0.78	2.73	13%	6%	47%	99%

# Classic

The Classic Films deliver a wide range of solar heat reduction properties, glare control features, variable light transmissions and reflectivity levels with UV protection for use in commercial and residential applications. The Classic range includes Silver, Black, Amber and Low Emissivity to provide a wide selection of films that vary in colour, shades and price.

## Classic Films

	Shading Coefficient	Visible Light			Total Solar Energy Rejected	Emissivity	U Value $W/m^2K$	Heat Gain Reduction	Heat Loss reduction	Glare Reduction	UV Blocked	
		Reflected (interior)	Reflected (exterior)	Transmitted								
CLEAR	Colour Stable 5	0.48	5%	5%	7%	58%	0.84	NA	49%	NA	91%	99%
	Colour Stable 20	0.55	5%	5%	16%	52%	0.84	NA	41%	NA	83%	99%
	Colour Stable 35	0.7	6%	6%	38%	39%	0.84	NA	25%	NA	56%	98%
	Colour Stable 50	0.77	7%	7%	51%	33%	0.84	NA	18%	NA	42%	98%
	Black Chrome 10	0.34	18%	25%	11%	70%	0.81	5.74	64%	1%	88%	99%
	Black Chrome 20	0.37	25%	21%	17%	68%	0.81	5.40	61%	7%	81%	99%
	Black Chrome 35	0.5	14%	13%	30%	57%	0.81	5.57	47%	4%	66%	99%
	Black Chrome 40	0.6	8%	10%	41%	48%	0.81	5.40	36%	7%	54%	99%
	FX HP 5	0.54	5%	5%	3%	53%	0.84	5.91	43%	2%	97%	99%
	FX HP 20	0.59	9%	5%	23%	49%	0.84	5.79	37%	4%	74%	99%
	FX HP 30	0.63	8%	6%	31%	45%	0.84	5.91	33%	2%	65%	99%
	FX HP 35	0.67	8%	7%	41%	42%	0.84	5.91	29%	2%	54%	99%
	FX HP 50	0.69	8%	8%	49%	40%	0.84	5.91	27%	2%	45%	99%
	LE35AMARL	0.29	59%	56%	31%	75%	0.34	4.20	69%	30%	65%	99%
	P-18ARL	0.26	60%	58%	19%	77%	0.65	5.40	72%	10%	78%	99%
	RE50NIARL	0.49	NA	23%	48%	57%	0.6	5.40	48%	11%	45%	99%
	RE35AMARL	0.3	65%	55%	30%	74%	0.68	5.40	68%	10%	66%	99%
	RE35SIARL	0.4	NA	42%	33%	65%	0.68	5.51	57%	8%	63%	98%
	Affinity 15	0.24	25%	58%	9%	79%	0.79	5.68	74%	2%	90%	99%
	Affinity 30	0.45	19%	29%	33%	61%	0.67	5.34	52%	8%	63%	99%
TINTED	Colour Stable 5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Colour Stable 20	0.5	4%	4%	10%	57%	0.84	6.02	34%	0%	80%	99%
	Colour Stable 35	0.59	5%	5%	22%	49%	0.84	6.02	22%	0%	56%	99%
	Colour Stable 50	0.63	5%	5%	30%	45%	0.84	6.02	17%	0%	41%	99%
	Black Chrome 10	0.36	18%	12%	7%	69%	0.81	5.74	51%	1%	87%	99%
	Black Chrome 20	0.41	25%	15%	12%	64%	0.81	5.43	46%	6%	81%	99%
	Black Chrome 35	0.45	14%	8%	18%	61%	0.81	5.57	38%	4%	66%	99%
	Black Chrome 40	0.51	8%	6%	25%	55%	0.81	5.40	30%	7%	50%	99%
	FX HP 5	0.48	5%	5%	2%	58%	0.84	5.91	34%	0%	96%	99%
	FX HP 20	0.51	9%	5%	14%	56%	0.84	5.79	30%	0%	74%	99%
	FX HP 30	0.54	8%	5%	19%	53%	0.84	5.91	26%	0%	64%	99%
	FX HP 35	0.56	8%	5%	25%	51%	0.84	5.91	23%	0%	53%	99%
	FX HP 50	0.58	7%	6%	29%	50%	0.84	5.91	21%	0%	45%	99%
	LE35AMARL	0.3	58%	18%	19%	74%	0.34	4.20	57%	30%	62%	99%
	P-18ARL	0.3	60%	20%	10%	74%	0.65	5.40	57%	10%	80%	99%
	RE50NIARL	0.42	NA	10%	27%	63%	0.6	5.40	39%	11%	45%	99%
	RE35AMARL	0.33	65%	22%	18%	71%	0.68	5.40	52%	10%	64%	99%
	RE35SIARL	0.38	NA	16%	18%	67%	0.68	5.51	45%	0%	64%	98%
	Affinity 15	0.31	25%	24%	5%	73%	0.79	5.68	58%	2%	91%	99%
	Affinity 30	0.42	19%	14%	20%	63%	0.67	5.34	42%	8%	62%	99%

**Warranty and Maintenance.** When installed by a 3M Licensed Installer, 3M Window Films are backed with a comprehensive warranty of up to 15 years for Commercial and a limited lifetime warranty for Residential applications. 3M Window Films can be cleaned using the same non-abrasive cleaning methods as are used on normal glass.

## Classic Films continued

	Shading Coefficient	Visible Light			Total Solar Energy Rejected	Emissivity	U Value $W/m^2K$	Heat Gain Reduction	Heat Loss reduction	Glare Reduction	UV Blocked	
		Reflected (interior)	Reflected (exterior)	Transmitted								
DOUBLE CLEAR	Colour Stable 5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	Colour Stable 20	0.65	13%	13%	14%	45%	0.84	2.84	19%	0%	82%	99%
	Colour Stable 35	0.71	13%	13%	34%	38%	0.84	2.84	11%	0%	57%	99%
	Colour Stable 50	0.73	14%	14%	46%	37%	0.84	2.84	9%	0%	42%	99%
	Black Chrome 10	0.5	19%	28%	10%	57%	0.81	2.67	39%	1%	87%	99%
	Black Chrome 20	0.47	25%	21%	13%	59%	0.81	2.56	36%	4%	81%	99%
	Black Chrome 35	0.6	15%	19%	27%	48%	0.81	2.61	26%	2%	66%	99%
	Black Chrome 40	0.65	10%	16%	37%	43%	0.81	2.56	19%	4%	53%	99%
	FX HP 5	0.64	5%	12%	3%	44%	0.84	2.73	21%	0%	96%	99%
	FX HP 20	0.66	9%	13%	20%	43%	0.84	2.67	19%	0%	75%	99%
	FX HP 30	0.68	9%	13%	28%	41%	0.84	2.73	16%	0%	65%	99%
	FX HP 35	0.7	10%	14%	37%	39%	0.84	2.73	14%	0%	53%	99%
	FX HP 50	0.7	10%	15%	43%	39%	0.84	2.73	14%	0%	46%	99%
	LE35AMARL	0.35	60%	54%	29%	70%	0.34	2.27	57%	20%	63%	99%
	P-18ARL	0.34	61%	55%	17%	70%	0.65	2.67	58%	6%	78%	99%
	RE50NIARL	0.54	NA	27%	43%	53%	0.6	2.67	33%	6%	46%	99%
	RE35AMARL	0.37	66%	53%	28%	68%	0.68	2.67	54%	6%	64%	99%
	RE35SIARL	0.45	NA	45%	30%	61%	0.68	2.67	44%	6%	62%	98%
	Affinity 15	0.37	26%	57%	8%	68%	0.79	2.67	54%	0%	90%	99%
	Affinity 30	0.53	20%	32%	30%	54%	0.67	2.56	35%	4%	62%	99%
DOUBLE TINTED	Colour Stable 5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	Colour Stable 20	0.51	6%	6%	8%	56%	NA	NA	0%	82%	99%	0.84
	Colour Stable 35	0.54	7%	7%	19%	53%	NA	NA	0%	57%	99%	0.84
	Colour Stable 50	0.56	7%	7%	26%	51%	NA	NA	0%	42%	99%	NA
	Black Chrome 10	0.39	18%	13%	6%	66%	0.81	2.67	34%	1%	87%	99%
	Black Chrome 20	0.39	25%	11%	9%	66%	0.81	3.52	38%	5%	81%	99%
	Black Chrome 35	0.45	15%	10%	16%	61%	0.81	2.61	24%	2%	66%	99%
	Black Chrome 40	0.49	9%	9%	22%	58%	0.81	2.56	18%	4%	51%	99%
	FX HP 5	0.48	5%	7%	2%	58%	0.88	2.73	19%	0%	96%	99%
	FX HP 20	0.49	9%	8%	12%	57%	0.84	2.67	17%	0%	75%	99%
	FX HP 30	0.51	9%	8%	17%	56%	0.88	2.73	14%	0%	64%	99%
	FX HP 35	0.52	9%	8%	22%	55%	0.88	2.73	12%	0%	54%	99%
	FX HP 50	0.52	8%	8%	26%	55%	0.88	2.73	12%	0%	45%	99%
	LE35AMARL	0.28	60%	22%	17%	76%	0.34	2.27	49%	20%	62%	99%
	P-18ARL	0.28	60%	20%	9%	76%	0.65	2.67	49%	6%	80%	99%
	RE50NIARL	0.4	NA	9%	24%	65%	0.6	2.67	29%	6%	44%	99%
	RE35AMARL	0.30	66%	22%	17%	74%	0.68	2.67	45%	6%	62%	99%
	RE35SIARL	0.34	NA	18%	18%	70%	0.68	2.67	38%	6%	60%	98%
	Affinity 15	0.31	25%	23%	5%	73%	0.79	2.67	47%	0%	89%	99%
	Affinity 30	0.41	20%	15%	18%	64%	0.67	2.56	31%	4%	62%	99%



**Window Energy Rating Scheme (WERS)** The Window Energy Rating Scheme enables windows to be rated for their energy saving impact on a building. Interest in energy efficiency and energy ratings is increasing as consumers and major tenants seek methods to become greener and reduce their energy costs. Visit [www.wers.net](http://www.wers.net) for more information.

# Neutral Films

	Shading Coefficient	Visible Light			Total Solar Energy Rejected	Emissivity	U Value $W/m^2K$	Heat Gain Reduction	Heat Loss reduction	Glare Reduction	UV Blocked	
		Reflected (interior)	Reflected (exterior)	Transmitted								
CLEAR	RE20NEARL	0.39	17	17%	16%	66%	0.84	6.02	59%	0%	82%	99%
	RE35NEAR	0.51	16	20%	37%	56%	0.84	6.02	45%	0%	58%	99%
	RE50NEARL	0.66	11	15%	51%	43%	0.84	6.02	30%	0%	42%	98%
	RE70NEARL	0.76	7	9%	66%	34%	0.84	6.02	19%	0%	25%	98%
TINTED	RE20NEARL	0.37	17	8%	9%	68%	0.84	6.02	46%	0%	82%	99%
	RE35NEAR	0.45	15	9%	22%	61%	0.84	6.02	35%	0%	56%	99%
	RE50NEARL	0.84	9	6%	25%	58%	0.84	6.02	30%	0%	50%	99%
	RE70NEARL	0.61	5	6%	41%	47%	0.84	6.02	12%	0%	18%	99%
DOUBLE CLEAR	RE20NEARL	0.56	18	21%	14%	51%	0.84	2.84	31%	0%	82%	99%
	RE35NEARL	0.58	17	24%	33%	50%	0.84	2.84	28%	0%	58%	99%
	RE50NEARL	0.65	13	20%	45%	43%	0.84	2.84	20%	0%	42%	99%
	RE70NEARL	0.73	10	15%	59%	37%	0.84	2.84	10%	0%	24%	98%
DOUBLE TINTED	RE20NEARL	0.41	18	11%	9%	64%	0.84	2.84	25%	0%	80%	99%
	RE35NEAR	0.43	16	10%	19%	63%	0.84	2.84	22%	0%	58%	99%
	RE50NEARL	0.48	12	9%	28%	58%	0.84	2.84	13%	0%	38%	99%
	RE70NEARL	0.52	9	8%	36%	55%	0.84	2.84	5%	0%	20%	99%

# External Films

	Shading Coefficient	Visible Light			Total Solar Energy Rejected	Emissivity	U Value $W/m^2K$	Heat Gain Reduction	Heat Loss reduction	Glare Reduction	UV Blocked	
		Reflected (interior)	Reflected (exterior)	Transmitted								
CLEAR	RE15SIARXL	0.2	56%	63%	16%	83%	0.84	6.02	79%	0%	83%	99%
	RE20BRARXL	0.26	NA	32%	23%	77%	0.67	5.79	72%	0%	74%	99%
	RE35NEARXL	0.42	NA	35%	35%	63%	0.82	5.79	55%	0%	60%	99%
	RE35SIARXL	0.42	NA	34%	36%	63%	0.71	5.79	55%	0%	59%	99%
TINTED	RE15SIARXL	0.19	23%	61%	10%	86%	0.84	5.79	77%	0%	84%	99%
	RE20BRARXL	0.22	NA	32%	14%	81%	0.67	5.79	70%	0%	74%	99%
	RE35NEARXL	0.47	NA	10%	26%	59%	0.82	5.79	36%	0%	51%	99%
	RE35SIARXL	0.34	NA	34%	21%	70%	0.71	5.79	53%	0%	61%	99%
DOUBLE CLEAR	RE15SIARXL	0.15	55%	63%	15%	87%	0.84	2.84	81%	0%	81%	99%
	RE20BRARXL	0.19	NA	33%	21%	83%	0.67	2.67	77%	0%	73%	99%
	RE35NEARXL	0.33	NA	36%	32%	71%	0.82	2.67	59%	0%	59%	99%
	RE35SIARXL	0.33	NA	35%	33%	71%	0.71	2.67	59%	0%	58%	99%
DOUBLE TINTED	RE15SIARXL	0.1	27%	62%	7%	91%	0.84	2.84	82%	0%	84%	99%
	RE20BRARXL	0.15	NA	32%	12%	87%	0.67	2.67	75%	0%	75%	99%
	RE35NEARXL	0.33	NA	11%	23%	71%	0.82	2.67	44%	0%	51%	99%
	RE35SIARXL	0.25	NA	34%	19%	78%	0.71	2.67	58%	0%	60%	99%

### Explanation of properties

**Shading Coefficient:** A ratio that describes the film/glazing performance over the entire solar spectrum. The lower the value the greater the films shading effect.

**Visible light reflected:** Percentage of visible light reflected from the film/glazing surface.

**Visible light transmitted:** Percentage of visible light allowed to pass through the film/glazing

**Emissivity:** Is a measure of a film/glazing ability to absorb and radiate energy

**U-value:** Describes the amount of heat energy that is conducted through the film/glazing.

**Heat Gain Reduction:** The percentage reduction of solar energy that is allowed through the filmed glazing when compared to the same unfilmed glazing system.

**Heat Loss Reduction:** The percentage of heat energy that is prevented from conducting out through a filmed glazing system when compared to the same unfilmed glazing system.

**Glare Reduction:** The percentage reduction in glare of the filmed glazing when compared to the same unfilmed glazing. Related to visible light transmission.

**UV Blocked:** Percentage of the total UV (Ultra violet) radiation blocked by film/glazing.

**Total Solar Energy Rejected:** The percentage of the total solar energy that the film/glazing blocks.

#### References:

ASTM E-308 Standard Recommended Practice for Spectrophotometry and Description of Color in CIE 1931 System.  
ASTM E-903 Standard Methods of Test for Solar Absorbance, Reflectance and Transmittance of Materials Using Integrating Spheres.  
The 1985 American Society for Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) Handbook of Fundamentals.  
Window 4.0, A Computer Tool for Analyzing Window Thermal Performance, Lawrence Berkeley Laboratory.

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