



**THE POPE.
THE QUEEN.
AND YOU THOUGHT
YOUR CLIENTS
WERE DEMANDING.**



1. International Center of Photography, New York, NY, UV Protection
2. John F. Kennedy Center for the Performing Arts, Washington DC, Energy Savings and Security



Hosting a highly light-sensitive exhibit, the International Center of Photography needed to reduce visible light to less than 8 foot-candles per square inch, and UV rays by 99%. Using LLumar films and transparent blinds, the Center not only protected the artwork, it gave the building a more unified appearance.

From the Vatican to Buckingham Palace, LLumar Window Film meets the exacting specifications of some of the world's most demanding clients.

It takes a world leader to protect one. As the world's leading brand of architectural window film, LLumar enhances the comfort, safety and appearance of some of the world's most beloved buildings. From Hearst Castle to the Chrysler World

Headquarters, LLumar exceeds expectations of even the toughest customers.

As the leader in solar control, LLumar lets you design with natural light, not around it.

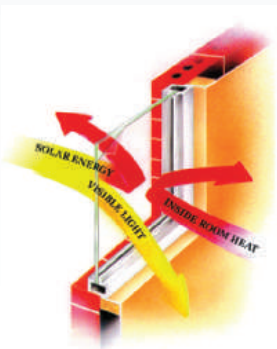
Sunlight can wreak havoc on your design and your client's energy costs. Blocking 99% of damaging ultraviolet rays, LLumar solar control films offer up to 83% solar energy heat rejection and glare reduction to protect interiors and occupants.

Made from tough polyester laminates and bonded coatings, LLumar films can boost window performance while enhancing the aesthetic of any glazing system:

- Professionally installed at a fraction of the cost of re-glazing
- Available in tinted, semi-reflective, fully reflective and spectrally selective films in a variety of colors and performance features
- Eliminates the need for shades or blinds for glare- and distortion-free natural light

Best of all, LLumar can help earn money as well as help save it. The U.S. Department of Energy estimates that one-third of a typical building's cooling load is from solar heat gain through windows, and that three-fourths of existing windows are not energy efficient. Enhancing window performance can significantly improve a building's energy usage. By helping you meet LEED and Green building objectives, LLumar can help your clients earn valuable tax credits and Energy Star ratings in addition to reducing heating and cooling costs by 5 to 15%.

LEED Category	Sub-Category	Points
Energy and Atmosphere	1: Optimize Energy Performance	1-2
Indoor Environmental Quality	7.1 Thermal Comfort	1
Indoor Environmental Quality	8.1-8.2 Daylight and Views	1-2
Sustainable Site	7: Light Pollution Reduction	1





LLumar decorative films offer subtle and stylish solutions for all your privacy glazing needs.

A convenient, affordable alternative to etched glass, LLumar decorative films can reduce glare and increase privacy on any flat glass application. Offering endless design possibilities for architects and interior

designers, LLumar is available in a range of patterns, colors and finishes, including:

- Squares, dots, stripes, and custom logos
- Red, yellow, green, blue, bronze, white, black, matte, frost
- Matte, translucent, and opaque finishes

The scratch-resistant coating ensures long-lasting beauty and easy maintenance. And it's easy to remove and replace whenever you desire a fresh look.

3. Forum Palace Sports and Recreational Center, Vilnius, Lithuania, Privacy Enhancement
4. CAFAM, Bogota, Colombia, Heat and Glare Reduction
5. Red Bull Racing Office, Milton Keynes, UK, Glare Reduction
6. Edison Plaza, Detroit, MI, Heat Rejection



With tenants sweating on one side of the building and freezing on the other, the manager of Detroit's Edison Plaza had LLumar installed on all exterior windows. With a 70% reduction in heat gain, she expects annual energy savings of 5% plus a \$24,000 energy rebate.



LLumar Architectural Window Film Performance Data

	% Total Solar Transmittance	% Total Solar Reflectance	% Total Solar Absorptance	% Visible Light Transmittance	% Visible Reflectance (exterior)	Winter Median U-value	Shading Coefficient	% UV Rejected	Emissivity	Solar Heat Gain Coefficient (SHGC)	% Total Solar Energy Rejected	Light-to-Solar Heat Gain Ratio (LSG)	% Summer Solar Heat Gain Reduction	% Glare Reduction
Window without film applied	83	8	9	90	8	1.03	1.00	29	0.84	0.86	14	1.05	0	0

Solar Control Films

Reflective Series Reflective films feature reflectance on both interiors and exteriors for superior reduction in summer cooling costs and heat retention in winter. Providing a high level of glare and heat control, they are scratch-resistant, shield 99% of UV rays, and are available in earthtones, skytones, silver, and gold to meet your aesthetic goals.

R-15B SR CDF (Bronze)	10	35	55	10	19	0.94	0.28	99	0.70	0.24	76	0.42	72	89
R-15G SR CDF (Gray)	9	33	58	7	13	0.94	0.29	99	0.70	0.25	75	0.28	71	92
R-15BL SR PS (Blue)	10	38	52	11	25	0.94	0.29	99	0.70	0.25	75	0.44	71	88
R-15GO SR PS (Gold)	11	50	39	14	52	0.94	0.25	99	0.70	0.21	79	0.67	75	84
R-30B SR CDF (Bronze)	24	22	54	22	12	0.96	0.43	99	0.74	0.37	63	0.59	57	76
R-30G SR CDF (Gray)	24	22	54	23	13	0.97	0.44	99	0.75	0.38	62	0.61	56	74
PCR-15BL SR CDF (Blue)	15	25	60	13	22	1.00	0.37	99	0.76	0.32	68	0.41	63	86
PCR-35GN SR CDF (Green)	28	25	47	33	22	0.92	0.46	99	0.63	0.40	60	0.83	54	63
R-20 SR CDF (Silver)	12	54	34	16	62	0.94	0.25	99	0.71	0.21	79	0.76	75	82
R-35 SR CDF (Silver)	21	43	36	28	46	0.96	0.40	99	0.73	0.31	69	0.90	60	69
R-50 SR CDF (Silver)	36	29	35	48	28	0.97	0.54	99	0.75	0.46	54	1.04	46	47

Dual-Reflective Series Dual-Reflective films are highly reflective on the exterior; lower on the interior, which helps provide clear day and night views. Traditionally specified on commercial buildings, Dual-Reflective films are also popular for sunbelt residential applications. They are scratch-resistant, shield 99% of UV rays, and provide excellent heat rejection.

DR-15 SR CDF	16	37	47	15	37	0.92	0.30	99	0.63	0.26	74	0.58	70	83
DR-25 SR CDF	25	26	49	22	27	0.92	0.41	99	0.61	0.35	65	0.63	59	76
DR-35 SR CDF	35	19	46	36	19	0.93	0.52	99	0.61	0.44	56	0.82	48	60
DR-45 SR CDF	47	10	43	47	9	1.00	0.69	99	0.78	0.59	41	0.80	31	48

Low-E Series Low-E film provides superior energy conservation by reducing winter heat loss through windows. It is scratch-resistant, shields 99% of UV rays, reduces glare, and has the highest heat rejection performance of all LLumar films. It is suitable for commercial and residential applications where summer and winter energy control are major concerns.

E-1220 SR CDF (Silver)	8	58	34	12	66	0.77	0.18	99	0.36	0.15	85	0.80	82	87
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Deluxe Series Deluxe films are specified for commercial buildings where high levels of heat rejection and glare reduction are needed. Deluxe films are ideal for privacy applications and exterior aesthetics. They are scratch-resistant, reduce 99% of UV rays, and come in gray, green and bronze.

DL-05G SR CDF (Gray)	14	25	61	6	13	0.92	0.35	99	0.62	0.30	70	0.20	65	93
DL-15B SR CDF (Bronze)	27	13	60	14	8	0.98	0.45	99	0.77	0.39	61	0.36	55	84
DL-15G SR CDF (Gray)	26	15	59	16	9	0.99	0.45	99	0.78	0.42	58	0.38	55	82
DL-30GR SR PS (Green)	29	20	51	30	17	0.98	0.53	99	0.76	0.46	54	0.65	47	67

Neutral Series Neutral films reduce glare, provide moderate heat rejection and are specified where a soft, neutral appearance is desired. These films are made with sputtered technology, creating a film that allows for very uniform visible light transmission. Neutral films are scratch-resistant and shield 99% of UV rays.

N-1020 SR CDF (Neutral)	21	26	53	24	29	1.03	0.44	99	0.84	0.37	63	0.65	56	73
N-1040 SR CDF (Neutral)	36	16	48	40	18	1.00	0.59	99	0.81	0.50	50	0.80	41	56
N-1050 SR CDF (Neutral)	44	13	43	49	14	1.03	0.67	99	0.84	0.58	42	0.84	33	46
N-1065 SR CDF (Neutral)	65	9	26	67	10	1.03	0.82	99	0.84	0.71	29	0.94	18	26
N-1020B SR CDF (Bronze)	12	49	39	20	37	0.93	0.27	99	0.69	0.23	77	0.87	73	78
N-1035B SR CDF (Bronze)	25	37	38	37	25	0.94	0.41	99	0.71	0.36	64	1.03	59	59
N-1050B SR CDF (Bronze)	44	21	35	55	15	0.96	0.63	99	0.73	0.54	46	1.02	37	39

Exterior Series Exterior Series products are applied to the exterior facing glazing and are highly reflective to provide excellent heat rejection performance without affecting interior reflectance.

RK-20 PS (Silver)	10	67	23	15	67	1.04	0.20	99	0.71	0.17	83	0.88	80	83
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UV Clear Series UV Clear film is the ideal solution for protecting valuables from sun damage. It provides the highest protection against harmful UV rays without altering glass aesthetics.

UV-CL-SR PS (Clear)	81	9	10	89	9	1.03	0.97	99.9	0.83	0.84	16	1.06	3	1
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% Total Solar Transmittance % Total Solar Reflectance % Total Solar Absorbance % Visible Light Transmittance % Visible Reflectance (exterior) Winter Median U-value Shading Coefficient % UV Rejected Emissivity Solar Heat Gain Coefficient (SHGC) % Total Solar Energy Rejected Light-to-Solar Heat Gain Ratio (LSG) % Summer Solar Heat Gain Reduction % Glare Reduction

Decorative Films

	% Total Solar Transmittance	% Total Solar Reflectance	% Total Solar Absorbance	% Visible Light Transmittance	% Visible Reflectance (exterior)	Winter Median U-value	Shading Coefficient	% UV Rejected	Emissivity	Solar Heat Gain Coefficient (SHGC)	% Total Solar Energy Rejected	Light-to-Solar Heat Gain Ratio (LSG)	% Summer Solar Heat Gain Reduction	% Glare Reduction
Privacy Series Privacy Series films come in a wide range of colors and are specified in commercial applications where low reflectivity is desired. These films are ideal for commercial interior glazing applications to achieve privacy or interior design goals. They are scratch-resistant for long-term durability.														
NRM-PS2 (Frost)	69	20	11	75	25	1.02	0.84	98	0.84	0.73	27	1.03	16	17
FROSTED SPARKLE	70	16	14	73	19	1.03	0.85	83	0.84	0.74	26	0.99	15	19
NRMB-PS2 (Bronze)	50	13	37	36	11	1.03	0.69	98	0.84	0.61	39	0.59	31	60
NRMM-PS3 (Black)	0	11	89	0	13	1.03	0.34	100	0.84	0.29	71	0.00	66	100
NRMW-PS3 (White)	18	66	16	14	87	1.03	0.25	99	0.84	0.23	77	0.61	75	84
RMS-PS2 (Silver)	13	57	30	16	60	1.03	0.24	99	0.72	0.21	79	0.76	76	82
NRMGN-PS2 (Green Frost)	67	17	16	70	21	1.02	0.82	98.0	0.80	0.71	29	0.99	18	22
Pattern Series Pattern Series products are scratch-resistant and offer a wide range of aesthetic solutions through varying levels of translucent and opaque whites with a simulated acid-etch appearance. This series also includes a broad range of classic patterns.														
NRM FS SR HPR (stripes)	72	17	11	73	20	1.03	0.90	99	0.84	0.79	21	0.92	10	19
NRM FB SR HPR (bands)	63	19	18	63	23	1.03	0.80	99	0.84	0.70	30	0.90	20	30
NRM FTL SR HPR (thin lines)	70	19	11	73	20	1.03	0.84	99	0.84	0.73	27	1.00	16	19
NRM FSD SR HPR (small dots)	78	12	10	82	13	1.03	0.94	99	0.84	0.81	19	1.01	6	9
NRM FMD SR HPR (mini dots)	76	12	12	81	15	1.03	0.91	99	0.84	0.79	21	1.03	9	10
NRM MSQ SR HPR (matte squares)	61	20	19	61	25	1.03	0.75	99	0.84	0.66	34	0.92	25	32
NRM FSQ SR HPR (squares)	68	16	16	69	20	1.03	0.87	99	0.84	0.77	23	0.90	13	23
NRM FRP SR HPR (rice paper)	63	23	14	67	25	1.01	0.77	99	0.84	0.67	33	1.00	23	26
Graphics Arts Series Graphic Arts Series products are recommended for interior applications and are scratch-resistant films in a basic color palette inspiring a wide range of custom design solutions.														
BLUE SR HPR	61	8	31	28	8	1.03	0.80	98	0.84	0.70	30	0.40	15	68
GREEN SR HPR	46	7	47	32	8	1.03	0.68	98	0.84	0.59	41	0.54	28	64
RED SR HPR	59	8	33	26	8	1.03	0.79	98	0.84	0.69	31	0.38	16	70
YELLOW SR HPR	73	9	18	85	8	1.03	0.90	98	0.84	0.78	22	1.09	4	3

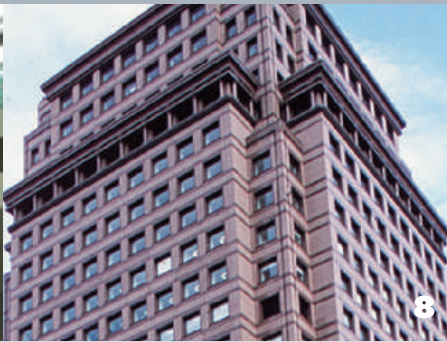
Safety and Security Films

	% Total Solar Transmittance	% Total Solar Reflectance	% Total Solar Absorbance	% Visible Light Transmittance	% Visible Reflectance (exterior)	Winter Median U-value	Shading Coefficient	% UV Rejected	Emissivity	Solar Heat Gain Coefficient (SHGC)	% Total Solar Energy Rejected	Light-to-Solar Heat Gain Ratio (LSG)	% Summer Solar Heat Gain Reduction	% Glare Reduction
Safety and Security Series Safety and Security products are durable films available in a variety of clear, neutral, and reflective offerings with a range of solar control options. Clear films can be applied over tinted glass to improve aesthetics, solar performance and glare. These thicker films meet the most stringent standards for burglary resistance, blast mitigation, windborne debris, and basic safety glazing.														
SCL SR PS4	81	9	10	89	10	1.03	0.97	95	0.84	0.84	16	1.06	3	1
SCL SR PS6	79	9	12	88	10	1.03	0.94	99	0.84	0.82	18	1.07	6	2
SCL SR PS7	81	9	10	88	10	1.03	0.96	95	0.84	0.84	16	1.05	4	2
SCL SR PS8	78	9	13	88	11	1.03	0.94	99	0.84	0.82	18	1.07	6	2
SCL SR PS11	78	9	13	85	11	1.03	0.93	99	0.84	0.81	19	1.05	7	6
SCL SR PS15	76	10	14	83	11	1.03	0.92	99	0.84	0.80	20	1.04	8	8
R-30B SR PS4	24	22	54	22	12	0.96	0.43	99	0.74	0.37	63	0.59	57	79
R-20 SR PS4 & 8	12	54	34	16	62	0.94	0.25	99	0.71	0.21	79	0.76	75	82
N-1020 SR PS4 & 8	21	26	53	24	29	1.03	0.44	99	0.84	0.37	63	0.65	56	73
N-1040 SR PS4 & 8	36	16	48	40	18	1.00	0.59	99	0.84	0.50	50	0.80	41	56
N-1050 SR PS4 & 8	44	13	43	49	14	1.03	0.67	99	0.84	0.58	42	0.84	33	46
NUV65 SR PS4	63	9	28	70	11	1.02	0.71	99.9	0.84	0.71	29	0.99	18	22
Graffiti Series Graffiti Series films are optically clear, enhanced with ultraviolet inhibiting agents that reject up to 99% of UV rays, and are made to resist common graffiti, chemicals, paints, and tools, and are made with special adhesives for ease of removal and replacement.														
GCL SR PS4	81	9	10	89	10	1.02	0.97	95	0.84	0.84	16	1.06	3	1
GCL SR PS6	79	8	13	89	10	1.02	0.95	99	0.84	0.83	17	1.07	5	1

7. Incheon International Airport, Incheon, South Korea, Safety
8. Cathay Financial, Taipei, Taiwan, Safety



7



8



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LLumar safety and security film protects great treasures — and great reputations.

9. The World of Coca-Cola, Atlanta, GA, Safety
10. MASP Museum, São Paulo, Brazil, Safety and UV Protection
11. McDonald's, Moscow, Russia, Safety-Security
12. Peru Rail Train, Peru, Safety-Security
13. National Bank of Kuwait, Lebanon, Safety-Security

In today's world, crime, vandalism, terrorism, natural disasters, and everyday accidents are real concerns. Made with thick, heavy-duty polyester bonded by strong adhesives, LLumar safety and security films provide an optically clear yet powerful barrier that helps hold glass in place should impact occur. Danger from windborne debris, seismic tremors, and accidental impact can be greatly reduced. LLumar is also ideal for use in high-traffic areas with windows or other surfaces vulnerable to "smash-and-grab" theft or vandalism.

- ANSI Z97.1 and CPSC 16 CFR 1201 Cat I and II
- General Services Administration (GSA) Level 3b United Facilities Criteria (UFC)
- ASTM Large Missile Level C and Small Missile requirements
- Underwriters Laboratory UL972 Forced Entry requirements
- Factory Mutual FM Approvals 4350 Small Missile

Protect people and places no matter what the application.

From corporate and retail to hospitality and educational applications, LLumar's high-performance films can help you control or even eliminate the danger and damage caused by broken glass in new construction and retrofit projects. Protect windows, mirrors and other substrates with our anti-graffiti film — a clear, undetectable protective barrier that can be easily replaced by a professional LLumar dealer. Strong, clear LLumar safety and security films offer a broad range of solar and aesthetic solutions to meet your design goals.



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At the National Bank of Kuwait, administrators worried about the danger broken glass could pose for occupants. They had the first three floors retrofitted with LLumar safety and security film. Pleased with the film's performance, they chose LLumar for their second Lebanese branch in Jounieh.

Tested tough, LLumar meets the most stringent standards.

Suitable for a broad range of applications, LLumar offers safety films meeting numerous certifications and test standards, including:

Undergoing extensive renovations, São Paulo's MASP museum installed clear LLumar safety film. By matching the original design, museum president and current architect Julio Neves commented, "LLumar... will not interfere with the way visitors perceive the works of art," adding, "It's so important to know that, should the glass break, LLumar will stop it from shattering."



Safety and Security Film Physical Properties

	SCL SR PS4	SCL SR PS6	SCL SR PS7	SCL SR PS8	SCL SR PS11	SCL SR PS15	N-1020 SR PS8	N-1040 SR PS8	N-1050 SR PS8
FILM THICKNESS inches	0.004	0.006	0.007	0.008	0.011	0.015	0.008	0.008	0.008
APPEARANCE	Clear	Clear	Clear	Clear	Clear	Clear	Dark Neutral	Medium Neutral	Light Neutral
FILM STRUCTURE	Single	Multi	Single	Multi	Multi	Multi	Multi	Multi	Multi
TENSILE STRENGTH (as constructed) psi	34,555	28,900	31,050	31,071	26,971	26,323	32,473	32,473	32,473
TENSILE STRENGTH (average as reported by polyester supplier) psi	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000
BREAK STRENGTH (peak load) lb	135	181	230	266	324	472	269	269	269
BREAK STRENGTH (average load) lb	133	173	211	254	309	395	260	260	260
ELONGATION AT BREAK	> 100%	> 100%	> 100%	> 100%	> 100%	> 100%	> 100%	> 100%	> 100%
PEEL STRENGTH gr/in (lb/in)	>2720 (>6)	>2720 (>6)	>2720 (>6)	>2720 (>6)	>2720 (>6)	>2720 (>6)	>2720 (>6)	>2720 (>6)	>2720 (>6)
PUNCTURE STRENGTH lb	79	111	145	156	187	223	164	164	164

Safety and Security Film Specification Data

Film-to-glass Specification		Safety and Security Film Specification Data														
		Safety	Windborne Debris/Hurricane					Blast Mitigation				Security				
1/8" Annealed	LLumar 4 mil	•	•													
3/16" Tempered	LLumar 6 mil	•	•	•	①	①	①	①	①							
1/8" Annealed	LLumar 7 mil	•	•	•												
1/4" Annealed	LLumar 7 mil	•	•	•								•				
3/16" Tempered	LLumar 8 mil	•	•	•	①	①	①	①	①							
1/4" Annealed	LLumar 8 mil	•	•	•	①	①	①	①	①	④		①②③	①		②	
1/4" Tempered	LLumar 8 mil	•	•	•						①		③	①②			
Dual Pane* (1/4" Annealed)	LLumar 8 mil	•	•	•	①	①	①	①	①			①③				
Dual Pane* (1/4" Tempered)	LLumar 8 mil	•	•	•	①	①	①	①	①			①③				
1/4" Tempered	LLumar 11 mil	•	•	•	①	①	①	①	①							
1/4" Annealed	LLumar 15 mil**	•	•	•											•	
Dual Pane* (1/4" Annealed)	LLumar 15 mil**	•	•	•									①	①	①	•

* On IGU: Only pane with film is protected.

** LLumar 15 Mil Product Code SCL SR MPS15

† CPSC and ANSI Testing on IGU: Only interior pane of unit is protected with film.

• Included

① With Wet Glaze Attachment System

② With Gullwing or LLumar Elite Attachment System

③ With FrameLok Attachment System

④ With Fortified Window System (7/16" Plywood)

The Declaration of Independence set the standard in self-government. The world's leading window film, Llumar, meets the most stringent glazing standards for safety, security, and solar performance. No wonder designers chose Llumar to protect this historic exhibit.



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- 14. Declaration of Independence, Washington DC, UV and Safety
- 15. London Transport Museum, London, UK, Safety
- 16. Empire Tower, Bangkok, Thailand, Safety-Security

We're exacting. Because you are, too.

For more than 50 years, architects and designers have trusted CPFilms, the manufacturer of Llumar architectural films, to preserve and protect some of the world's greatest artworks, antiquities, and institutions, including the National Gallery of Art, the Declaration of Independence, the United Nations, and the Vatican.

It's a trust we take seriously — producing high-performance films is our core focus. Providing superior solar control, blast and breakage protection, and a variety of decorative options, Llumar lets you design with glass and natural light, while helping to protect interiors, occupants, and owners from heat, glare, accidents, disasters, and excessive energy costs.

To ensure the highest level of quality control, we perform all production at our state-of-the-art facility in Martinsville, Virginia. This uncompromising dedication has earned CPFilms the ISO 9001 certification.

To learn more or find an authorized Llumar dealer in your area, call (800) 255-8627, or visit www.llumar.com



INDUSTRY PARTNER



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