



1. Product Name

Solar Control Window Films

- LLumar®
- Vista®

2. Manufacturer

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3. Product Description

CPFilms Inc., a subsidiary of Solutia Inc., is the world's largest manufacturer of solar control and safety window film for both building and automotive applications, selling more square footage of window film and window film components worldwide than all other manufacturer members of the International Window Film Association (IWFA) combined. CPFilms Inc. also produces a wide array of precision coated films for use in a variety of industries.

CPFilms Inc. is affiliated with the following professional organizations:

- National Fenestration Rating Council
- Association of Industrial Metallizers, Coaters and Laminators (AIMCAL)
- Building Owners and Managers Association (BOMA) International
- International Window Film Association (IWFA)
- Protecting People First Foundation

BASIC USE

LLumar®
 LLumar solar control window films provide significant solar insulation when applied to glass surfaces. These films reject up to 79% of incoming solar energy and, when laminated with UVShield®, cut harmful ultraviolet transmission by 99.9%, helping to protect people, fabrics and finishes. Depending on the film selected, LLumar can cut from 11% - 100% of incoming light, block up to 100% of glare and cut up to 82% of solar heat gain through the glass. LLumar films also improve comfort by deflecting glare and correcting temperature

imbalances between sunny and shady areas. Many LLumar films are also used in decorative and privacy applications.

Vista®
 Because of their appearance and optical clarity, Vista architectural and designer solar control window films are widely recommended by the design community for use in residential, commercial and archival applications. These high performance window films cut glare, reduce excessive heat gain and will provide the highest level of UVA and UVB ultraviolet rejection available when laminated with UVShield.

COMPOSITION & MATERIALS

LLumar and Vista polyester film laminates are manufactured using a state-of-the-art sputtering process that applies metal alloys to a base film. Layers are assembled and finished with a strong scratch resistant coating.

TYPES

- LLumar
- Reflective Series
 - Dual Reflective Series
 - Low E Series
 - Deluxe Series
 - N series (Lumalloy)
 - Nonreflective Series
 - Exterior Series
 - Decorative Films
 - Safety and Security Films

Vista

- Neutrals - Dayview, Crystal Elegance and Soft Horizons are virtually invisible from both sides of the window and give the appearance of expensive treated glass at a fraction of the cost
- Dual reflectives - Ultima, Luminance, Mirage, Celeste and Nuance high solar rejection window films reject 47 - 79% of the solar energy that reaches the glass. These films also provide excellent inside to outside visibility, both day and night.
- Harmony - Low reflective specialty films that that have 9% or less interior and exterior light reflectivity
- Low E - Ambiance and Radiance energy-saving films offer an economic alternative to costly low-E glass, delivering emissivity ratings of 0.33 (Ambiance) and 0.36 (Radiance)
- Spectrally selective - SpectraSelect®, VS42, VS60, VS61, VS70 and VS75 reject heat and detrimental UV rays while simultaneously transmitting beneficial light. The combination of infrared (heat) reduction and the virtual elimi-



Unique, decorative films

nation (99.9%) of ultraviolet light makes the film ideal for retail stores, commercial buildings and residences where fading and overheating are severe problems

- Safety and Security Films - Vista also offers Safety and Security films providing solar protection with added defense

COLOR & FINISH

LLumar films are available in reflective and nonreflective finishes and can be clear, colored, or patterned to blend with various design schemes. Vista is available with neutral, dual reflective and spectrally selective finishes.

BENEFITS

There is a LLumar or Vista window film available to meet virtually any application requirement, including glare reduction, energy efficiency, privacy enhancement, beautification and safety. See Tables 1 and 2 to compare the performance characteristics of different LLumar and Vista films.

General benefits of LLumar and Vista window films include:

- Wide application range
- Durability, scratch resistance and easy maintenance
- Heat rejection of up to 79% for improved energy efficiency
- Increased comfort and productivity resulting from fewer interior hot/cold spots
- Flexibility to fit flat glass windows of virtually any size and shape
- Improved glass shatter resistance, resulting



Improve performance and appearance

- in increased occupant safety
- Vista window film blocks 99.9% of UV rays
- UV protection reduces fading of interior furnishings and helps protect occupants from photoaging and cancers of the skin

4. Technical Data

APPROVALS

- International Organization for Standardization (ISO) - ISO 9001 certified
- Service and Product Provider within the U.S. Environmental Protection Agency/U.S. Department of Energy EnergyStar® Program
- U.S. General Services Administration (GSA) Supplier
- EnergyStar® Partner
- American Society of Interior Designers (ASID) Industry Partner
- Skin Cancer Foundation

PHYSICAL PROPERTIES

LLumar and Vista window films are tested in the CPFilms facility using 1/8" (3 mm) single pane clear glass. Performance data is measured in accordance with NFRC standards and values are averaged from routinely accumulated quality control data. Third party accreditation also received in accordance with the National Fenestration Rating Council. See Tables 1 and 2.

5. Installation

PREPARATORY WORK

Deliver products in manufacturer's original,

unopened, undamaged containers with identification labels intact. Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer. Verify that site conditions are acceptable for installation. Do not proceed with installation until unacceptable conditions are corrected.

METHODS

LLumar and Vista window films are professionally installed as retrofit products directly to the interior side of the glass, and most residential installations can be completed within one day. Installers are accredited by CPFilms Inc.

BUILDING CODES

Installation must comply with the requirements of all applicable local, state and federal code jurisdictions.

6. Availability & Cost

AVAILABILITY

Products are available from a network of authorized dealers and installers throughout the U.S. and Canada. Contact CPFilms Inc. for information on local availability or use the online dealer locator tools at www.cpfilms.com.

COST

Consult CPFilms Inc. for pricing information.

7. Warranty

LLumar

LLumar films installed by authorized dealers in accordance with factory procedures carry a manufacturer's warranty for film and labor. Complete warranty terms and conditions are available from a LLumar dealer. For details, consult CPFilms Inc.

Vista

When installed by an authorized dealer in accordance with factory procedures and guidelines, Vista products are backed by a lifetime warranty against cracking, peeling, adhesive failure or demetalizing for residential applications and a 10 year warranty for commercial/archival applications. All warranties are honored by CPFilms Inc., even if the installing dealer is no longer available.

8. Maintenance

No maintenance is required other than routine cleaning using a nonabrasive cleanser.

9. Technical Services

CPFilms production capabilities include color



Safety and security

dyeing, sputtering, metalizing, solution coating, laminating and slitting. By combining base capabilities, CPFilms is able to produce custom products to exacting specifications.

Technical assistance is available by contacting CPFilms Inc. Technical assistance options include:

- HVAC evaluations and energy analysis for commercial applications
- Test panel and film samples provided for commercial and archival applications
- Video and CD-ROM presentations for residential and commercial applications
- Toll-free technical hotline for design and engineering questions
- Detailed information, product literature, test results, project lists, assistance in preparing project specifications and arrangements for application supervision

10. Filing Systems

- Reed First Source®
- Additional product information is available from the manufacturer upon request.

TABLE 1 PHYSICAL PROPERTIES - PERFORMANCE DATA, LLUMAR

	% Solar Transmittance	% Solar Reflectance	% Solar Absorptance	% Visible Light Transmittance	Winter Median U-Value	% Ultraviolet Rejected	Shading Coefficient	Emissivity	% Solar Heat Reduction	% Glare Reduction	% Total Solar Energy Rejected	Light-to-Solar Heat Gain Ratio
Glass only	83	8	9	90	1.03	29	1.00	0.84	0.00	0.00	14	
LLUMAR, Reflective Series												
R-15B SR CDF (Bronze)	10	35	55	10	0.94	99	0.28	0.70	72	89	76	.42
R-15G SR CEF (Gray)	9	33	58	7	0.94	99	0.29	0.70	71	92	75	.28
R-15BL SR PS (Blue)	10	38	52	11	0.94	99	0.29	0.70	71	88	75	.44
R-15GO SR PS (Gold)	11	50	39	14	0.94	99	0.25	0.70	75	84	79	.67
R-30B SR CDF (Bronze)	24	22	54	22	0.96	99	0.43	0.74	57	76	63	.59
R-30G SR CDF (Gray)	24	22	54	23	0.97	99	0.44	0.75	56	74	62	.61
PCR-15BL SR CDF (Blue)	15	25	60	13	1.00	99	0.37	0.76	63	86	068	.41
PCR-35GN SR CDF (Green)	28	25	47	33	0.92	99	0.46	0.63	54	63	60	.83
R-20 SR CDF (Silver)	12	54	34	16	0.94	99	0.25	0.71	75	82	79	.76
R-35 SR CDF (Silver)	21	43	36	28	0.96	99	0.40	0.73	60	69	69	.90
R-50 SR CDF (Silver)	36	29	35	48	0.97	99	0.54	0.75	46	47	54	1.04
LLUMAR, Dual Reflective												
DR-15 SR CDF (Gray/Silver)	16	37	47	15	0.92	99	0.30	0.63	70	83	74	.58
DR-25 SR CDF (Gray/Silver)	25	26	49	22	0.92	99	0.41	0.61	59	76	65	.63
DR-35 SR CDF (Gray/Silver)	35	19	46	36	0.93	99	0.52	0.61	48	60	56	.82
DR-45 SR CDF (Gray/Silver)	47	10	43	47	1.00	99	0.69	0.78	31	48	41	.80
LLUMAR, E Series												
E-1220 SR CDF (Silver)	8	58	34	12	0.77	99	0.18	0.36	82	87	85	.80
LLUMAR, Deluxe Series												
DL-05 G SR CDF (Grey)	14	25	61	6	0.92	99	0.35	0.62	65	93	70	.20
DL-158 SR CDF (Bronze)	27	13	60	14	0.98	99	0.45	0.77	55	84	61	.36
DL-15G SR CDF (Gray)	26	15	59	16	0.99	99	0.45	0.78	55	82	58	.38
DL-30GN SR PS (Green)	29	20	51	30	0.98	99	0.53	0.76	47	67	54	.65
LLUMAR, N Series (Llumarloy)												
N-1020 SR CDF (Neutral)	21	26	53	24	1.03	99	0.44	0.84	56	73	63	.65
N-1040 SR CDF (Neutral)	36	16	48	40	1.00	99	0.59	0.81	41	56	50	.80
N-1050 SR CDF (Neutral)	44	13	43	49	1.03	99	0.67	0.84	33	46	42	.84
N-1065 SR CDF (Neutral)	65	9	26	67	1.03	99	0.82	0.84	18	26	29	.94
N-1020B SR CDF (Bronze)	12	49	39	20	0.93	99	0.27	0.69	73	78	77	.87
N-1035B SR CDF (Bronze)	25	37	38	37	0.94	99	0.41	0.71	59	59	64	1.03
N-1050B SR CDF (Bronze)	44	21	35	55	0.96	99	0.63	0.73	37	39	46	1.02
LLUMAR, Nonreflective Series												
NRM-PS2 (Frosty)	69	20	11	75	1.02	98	0.84	0.84	16	17	27	1.03
NRMB-PS2 (Bronze)	50	13	37	36	1.03	98	0.69	0.84	31	60	39	.59
NRMGN-PS2	67	17	16	70	1.02	98	0.82	0.80	18	22	29	.99
NRMM-PS3 (Black)	0	11	89	0	1.03	100	0.34	0.84	66	100	71	0.00
NRMW-PS3 (White)	18	66	16	14	1.03	99	0.25	0.84	75	84	77	.61
RMS-PS2 (Silver)	13	57	30	16	1.03	99	0.24	0.72	76	82	79	.76
UV CL-SR PS (Clear)	81	9	10	89	1.03	99.9	0.97	0.83	3	1	16	1.06

TABLE 1 PHYSICAL PROPERTIES - PERFORMANCE DATA, LLUMAR
continued

	% Solar Transmittance	% Solar Reflectance	% Solar Absorptance	% Visible Light Transmittance	Winter Median U-Value	% Ultraviolet Rejected	Shading Coefficient	Emissivity	% Solar Heat Reduction	% Glare Reduction	% Total Solar Energy Rejected	Light-to-Solar Heat Gain Ratio
Glass only	83	8	9	90	1.03	29	1.00	0.84	0.00	0.00	14	
LLUMAR, Patterned Series												
NRM FS SR HPR (stripes)	72	17	11	73	1.03	99	0.90	0.84	10	19	21	0.92
NRM FB SR HPR (bands)	63	19	18	63	1.03	99	0.80	0.84	20	30	30	0.90
NRM FTL SR HPR (thin lines)	70	19	11	73	1.03	99	0.84	0.84	16	19	27	1.00
NRM FSD SR HPR (small dots)	78	12	10	82	1.03	99	0.94	0.84	6	9	19	1.01
NRM FMD SR HPR (mini dots)	76	12	12	81	1.03	99	0.91	0.84	9	10	21	1.03
NRM MSQ SRHPR (matte sq)	61	20	19	61	1.03	99	0.75	0.84	25	32	34	0.92
NRM FSQ SRHPR (squares)	68	16	16	69	1.03	99	0.87	0.84	13	23	2	0.90
FROSTED SPARKLE	70	16	14	73	1.03	83	0.85	0.84	15	19	26	0.99
NRMFRPSRHPR	63	23	14	67	1.01	99	0.77	0.84	23	26	33	1.00
LLUMAR, Graphic Arts Series												
BLUE SR HPR	61	8	31	28	1.03	98	0.80	0.84	15	68	30	0.40
GREEN SR HPR	46	7	47	32	1.03	98	0.68	0.84	28	64	41	0.54
RED SR HPR	59	8	33	26	1.03	98	0.79	0.84	16	70	31	0.38
YELLOW SR HPR	73	9	18	85	1.03	98	0.90	0.84	4	3	22	1.09
LLUMAR, Safety Series												
SCL SR PS4	81	9	10	89	1.03	95	0.97	0.84	3	1	16	1.06
SCL SR PS6	79	9	12	88	1.03	99	0.94	0.84	6	2	18	1.07
SCL SR PS7	81	9	10	88	1.03	95	0.96	0.84	4	2	16	1.05
SCL SR PS8	78	9	13	88	1.03	99	0.94	0.84	6	2	18	1.07
SCL SR PS11	78	9	13	85	1.03	99	0.93	0.84	7	6	19	1.05
SCL SR PS15	76	10	14	83	1.03	99	0.92	0.84	8	8	20	1.04
R-30B SR PS4	24	22	54	22	0.96	99	0.43	0.74	57	79	63	0.59
R-20 SR PS4 & 8	12	54	34	16	0.94	99	0.25	0.71	75	82	79	0.76
N-1020 SR PS4 & 8	21	26	53	24	1.03	99	0.44	0.84	56	73	63	0.65
N-1040 SR PS4 & 8	36	16	48	40	1.00	99	0.59	0.81	41	56	50	0.80
N-1050 SR PS4 & 8	44	13	43	49	1.03	99	0.67	0.84	33	46	42	0.84
NUV65 SR PS4	63	9	28	70	1.02	99.9	0.71	0.84	18	22	29	
LLUMAR, Graffiti Series												
GCL SR PS4	81	9	10	89	1.02	95	0.97	0.84	3	1	16	
GCL SR PS6	79	8	13	89	1.02	99	0.95	0.84	5	1	17	
LLUMAR, Exterior Series												
RK-20 PS (Silver)	10	67	23	15	1.04	99	0.20	0.71	80	83	83	

TABLE 2 PHYSICAL PROPERTIES - PERFORMANCE DATA, VISTA

	% Solar Transmittance	% Solar Reflectance	% Solar Absorptance	% Visible Light Transmittance	Winter Median U-Value	% Ultraviolet Rejected	Shading Coefficient	Emissivity	% Solar Heat Reduction	% Glare Reduction	% Total Solar Energy Rejected	Light-to-Solar Heat Gain Ratio
Glass only	83	8	9	90	1.03	29	1.00	0.84	0.00	0.00	14	
VISTA, Neutrals												
V33 SR CDF - Soft Horizons	30	20	50	33	1.02	99.9	0.53	0.84	47	63	54	.72
V45 SR CDF - Dayview	39	15	46	43	1.04	99.9	0.62	0.84	38	52	47	.81
V58 SR CDF - Crystal Elegance	54	12	34	59	1.03	99.9	0.75	0.84	25	34	35	.91
VISTA, Dual Reflectives												
V14 SR CDF - Ultima	8	48	44	11	1.00	99.9	0.25	0.80	75	88	79	.52
V18 SR CDF - Celeste	15	38	47	20	0.96	99.9	0.34	0.68	66	78	71	.69
V28 SR CDF - Luminance	22	32	46	28	1.00	99.9	0.41	0.81	59	69	64	.78
V28 SR PS8 - Luminance Safety	22	31	47	27	1.03	99.9	0.42	0.81	58	70	64	.75
V38 SR CDF - Mirage	31	24	45	40	1.02	99.9	0.52	0.78	48	56	55	.89
V38 SR PS8 - Mirage Safety	30	25	45	38	0.99	99.9	0.51	0.84	49	58	56	.86
V48 SR CDF - Nuance	39	14	47	46	1.03	99.9	0.62	0.73	38	49	47	.87
V33 BR SR CDF - Sunrise Bronze	23	43	34	36	0.98	99.9	0.38	0.78	62	60	68	1.13
VISTA, Harmony												
V31 SR CDF - Harmony Terre	20	19	61	36	0.91	99.9	0.43	0.60	57	60	64	1.00
V40 SR CDF - Harmony Ciel	35	19	46	44	0.94	99.9	0.55	0.70	45	51	53	.94
V41 SR CDF - Harmony Terre	30	20	50	47	0.94	99.9	0.50	0.70	50	48	57	1.09
V50 SR CDF - Harmony Ciel	39	19	42	51	0.97	99.9	0.59	0.70	41	43	49	1.00
V51 SR CDF - Harmony Terre	34	23	43	54	.91	99.9	0.53	.61	47	40	54	1.17
VISTA, Low E												
VE35 SR CDF - Ambiance	20	46	34	31	0.76	99.9	0.32	0.33	68	66	73	1.15
VE50 SR CDF - Radiance	35	32	33	49	0.80	99.9	0.49	0.36	51	46	58	1.17
VISTA, Spectrally Selective												
VS42 SR CDF - Nova Stellaris	22	32	46	43	0.99	99.9	0.42	0.75	58	52	64	1.19
VS60 SR CDF - SpectraSelect	33	25	42	62	0.92	99.9	0.52	0.67	48	31	55	1.38
VS61 SR CDF - SpectraSelect	43	29	28	61	0.92	99.9	0.58	0.67	42	0.32	50	1.22
VS70 SR CF - SpectraSelect	39	26	35	70	0.90	99.9	0.56	0.66	44	22	52	1.46
VS75 SR CDF - SpectraSelect	48	8	44	74	0.99	99.9	0.70	0.79	30	0.18	40	1.23