WINDOW FILM PERFORMANCE DATA | Architectural: North America

LLumar

Solar Control Window Film

	% Total Solar Transmittance	% Total Solar Reflectance	% Total Solar Absorptance	% Visible Light Transmittance	% Visible Reflectance (exterior)	% Visible Reflectance (interior)	Winter U-value	Shading Coefficient	% Ultraviolet Ray Protection (wavelengths 300-380nm)	Emissivity	Solar Heat Gain Coefficient	% Total Solar Energy Rejected	Light-to-Solar Heat Gain Ratio (LSG)	% Summer Solar Heat Gain Reduction	% Winter Heat Loss Reduction	% Glare Reduction
Clear Glass	83	8	9	90	8	8	1.03	1.00	29	0.84	0.86	14	1.05	0	0	0
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 ultraviolet rays, and provide excellent heat rejection.															
RN07G SR CDF (One-Way Mirror)	7	57	36	6	61	14	0.88	0.19	99	0.54	0.16	84	0.38	81	15	93
R15B SR CDF (Bronze)	8	39	53	8	20	62	0.89	0.25	99	0.62	0.22	78	0.36	74	14	91
R15BL SR PS (Blue)	9	42	49	9	27	62	0.93	0.25	>99	0.63	0.22	78	0.41	74	11	90
R15G SR CDF (Gray)	7	36	57	6	13	62	0.92	0.26	99	0.62	0.23	77	0.26	73	12	93
R15GO SR PS (Gold)	10	53	37	13	52	63	0.92	0.23	>99	0.62	0.20	80	0.65	77	12	86
R20 SR CDF (Silver)	11	57	32	15	62	63	0.90	0.22	>99	0.58	0.20	80	0.75	77	13	83
R35 SR CDF (Silver)	21	45	34	28	47	46	0.91	0.35	>99	0.61	0.30	70	0.93	65	13	69
R50 SR CDF (Silver)	39	27	34	49	26	25	0.95	0.55	99	0.67	0.47	53	1.04	45	9	46
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 ultraviolet rays, and provide excellent heat rejection.															
DR15 SR CDF (Warm Gray)	18	38	44	17	37	13	0.92	0.34	99	0.62	0.30	70	0.57	65	12	81
DRN25 SR CDF (Warm Gray)	23	31	46	22	30	12	0.92	0.39	99	0.62	0.35	65	0.63	59	12	76
DRN35 SR CDF (Warm Gray)	33	22	45	35	21	13	0.95	0.52	99	0.67	0.46	54	0.76	47	9	61
Low-E	Low-E film provides superior energy conservation by reducing winter heat loss through windows. It is scratch-resistant, shields 99% of ultraviolet 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.															
E1220 SR CDF (Silver)	9	57	34	12	62	65	0.78	0.19	>99	0.38	0.17	83	0.71	80	25	87
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 ultraviolet rays, and come in gray and bronze.															
DL05G SR CDF (Gray)	14	26	60	7	11	11	0.95	0.35	>99	0.68	0.31	69	0.23	64	9	92
DL15B SR CDF (Bronze)	27	14	59	14	8	8	0.94	0.51	99	0.72	0.44	56	0.32	49	10	84
DL15G SR CDF (Gray)	27	14	59	16	9	8	0.93	0.51	99	0.71	0.44	56	0.36	49	11	82
DL30GN SR PS (Green)	32	18	50	33	14	14	0.99	0.53	>99	0.75	0.48	52	0.69	44	5	63
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 ultraviolet rays.															
N1020 SR CDF (Neutral)	21	27	52	23	30	27	1.03	0.42	>99	0.82	0.37	63	0.62	57	1	74
N1040 SR CDF (Neutral)	34	17	49	37	19	16	1.05	0.56	99	0.85	0.49	51	0.76	43	-1	59
N1050 SR CDF (Neutral)	46	12	42	50	14	11	1.07	0.68	99	0.89	0.59	41	0.85	31	-3	44
N1065 SR CDF (Neutral)	64	9	27	69	10	8	1.07	0.83	99	0.90	0.72	28	0.96	16	-3	23
N1020B SR CDF (Bronze)	13	49	38	21	37	35	0.90	0.27	>99	0.59	0.23	77	0.91	73	13	77
N1035B SR CDF (Bronze)	26	37	37	37	26	23	0.92	0.41	99	0.61	0.36	64	1.03	58	12	59
Exterior Series	Exterior films products are applied to the exterior face of the glazing and provide excellent heat rejection performance.															
NHE20 ER HPR (Neutral)	21	29	50	23	30	26	1.04	0.42	>99	0.86	0.36	64	0.64	58	0	74
NHE35 ER HPR (Neutral)	34	18	48	38	19	16	1.04	0.56	>99	0.86	0.49	51	0.78	43	0	58
RHE20 ER HPR (Silver)	12	63	25	16	62	59	1.04	0.22	>99	0.71	0.20	80	0.80	77	0	82
RHE35 ER HPR (Silver)	21	50	29	29	48	45	1.04	0.35	>99	0.72	0.30	70	0.97	65	0	68
RHE50 ER HPR (Silver)	38	30	32	49	26	24	1.04	0.55	>99	0.79	0.48	52	1.02	44	0	46
Specialty Series	AU-85UV SR HPR is the ideal solution for protecting valuables from sun damage. It provides the highest protection against harmful ultraviolet rays without altering glass aesthetics. AIR-80BL SR HPR is used where a combination of extremely low visible reflectance, high light transmission, and substantial reduction in solar infrared transmission is needed.															
AIR80 BL SR HPR (Clear)	43	7	50	79	9	9	0.93	0.67	>99	0.89	0.58	42	1.36	33	11	12
AU85 UV SR HPR (UVCL-Clear)	82	9	9	89	10	10	1.07	0.97	>99	0.90	0.84	16	1.06	2	-3	1

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WINDOW FILM PERFORMANCE DATA

VISTA® WINDOW FILM | LLumar®

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Clear Glass	83	8	9	90	8	8	1.03	1.00	29	0.84	0.86	14	1.05	0	0	0
EnerLogic® Series	EnerLogic® series film helps keep the heat out in the summer, like traditional reflective window film. But in winter, EnerLogic window film does what reflective film can't do: It helps lock the heat inside. EnerLogic Window Film is perfect for commercial buildings, schools, government buildings, health care facilities, retail spaces, and residences.															
EnerLogic VEP35 SR TVA	20	51	29	31	46	27	0.58	0.28	99	0.05	0.24	76	1.29	72	44	66
EnerLogic VEP70 SR TVA	49	24	27	71	10	4	0.61	0.61	99	0.09	0.53	47	1.34	38	41	21
Spectrally-Selective Series	Spectrally-Selective films offer excellent heat rejection and energy savings with a virtually invisible appearance. They're made with advanced technologies that single out regions of the solar spectrum resulting in a film that lets in more light than heat. These films are ideal for storefronts, commercial buildings, and homes that need minimal light control and maximum heat protection.															
SpectraSelect VS60 SR CDF	35	28	37	66	10	10	0.88	0.52	>99	0.55	0.45	55	1.47	48	15	27
SpectraSelect VS61 SR CDF	44	31	25	61	23	22	0.93	0.58	>99	0.64	0.50	50	1.22	42	11	32
SpectraSelect VS70 SR CDF	38	27	35	70	8	8	0.88	0.54	>99	0.55	0.47	53	1.49	45	15	22
Harmony Series	Harmony films utilize proprietary metals and ceramic layers designed to provide superior heat rejection and moderate glare control with extremely low interior and exterior reflectivity. Excellent for both homes and storefronts, these products were designed for areas with excessive heat and glare problems.															
Harmony Terre V31 SR CDF	19	22	59	35	6	8	0.89	0.40	>99	0.57	0.35	65	1.00	59	14	61
Harmony Ciel V40 SR CDF	34	19	47	41	8	8	0.91	0.53	>99	0.59	0.46	54	0.89	47	13	54
Harmony Terre V41 SR CDF	29	22	49	46	7	7	0.90	0.48	>99	0.59	0.42	58	1.10	51	13	49
Harmony Terre V51 SR CDF	32	24	44	54	8	7	0.90	0.50	>99	0.58	0.43	57	1.26	50	13	40
Dual-Reflective Series	Dual-Reflective films offer superior energy savings through lower interior reflectivity and higher exterior reflectivity allowing for excellent views to the outside both day and night. Dual-Reflective films are suggested for residential and commercial applications where heat and glare are the primary concerns.															
Ultima V14 SR CDF	7	51	42	10	55	24	1.02	0.23	>99	0.80	0.20	80	0.50	77	2	89
Celeste V18 SR CDF	15	39	46	20	40	21	1.02	0.33	>99	0.80	0.29	71	0.69	66	2	78
Luminance V28 SR CDF	23	33	44	30	33	21	1.01	0.41	>99	0.77	0.36	64	0.83	58	3	67
Mirage V38 SR CDF	30	26	44	39	26	17	1.01	0.49	>99	0.78	0.43	57	0.91	50	3	57
Nuance V48 SR CDF	39	15	46	46	16	11	1.04	0.60	>99	0.84	0.53	47	0.87	38	0	49
Sunrise Bronze V33BR SR CDF	25	43	32	39	25	18	0.95	0.39	>99	0.67	0.34	66	1.15	60	9	57
Neutral Series	Neutral series films reject heat and save energy with reduced interior and exterior reflectivity. They provide a very uniform light transmission without any strong color tone. These films are clear favorites for residential and commercial applications including showrooms and high-visibility display windows.															
Soft Horizons V33 SR CDF	31	19	50	34	21	18	1.05	0.53	>99	0.86	0.46	54	0.74	47	-1	62
Dayview V45 SR CDF	42	14	44	46	15	13	1.07	0.64	>99	0.89	0.55	45	0.84	36	-3	49
Crystal Elegance V58 SR CDF	55	10	35	60	11	9	1.07	0.76	>99	0.90	0.66	34	0.91	23	-3	33
Low-E Series	Low-E (low emissivity) films provide an insulating barrier to windows that improves year-round energy efficiency by helping retain heat in winter and helping keep the heat out in summer. Low Emissivity films are perfect for residential and commercial applications where energy conservation is of primary importance.															
Ambiance VE35 SR CDF	20	43	37	29	36	39	0.71	0.32	>99	0.29	0.28	72	1.04	67	32	68
Radiance VE50 SR CDF	37	30	33	51	22	24	0.81	0.51	>99	0.41	0.45	55	1.13	48	22	43
Ceramic Series	Ceramic films feature neutral color and low reflectivity for minimal change to exterior appearance. Ceramic films improve the view from inside, especially at night. In daylight the film rejects 99% UV rays for heat, glare and fade reduction. The corrosion-resistant, Ceramic films are ideal for coastal applications protecting against salt deposits and sea air.															
Ceramic 35 SR PS (Neutral)	26	12	62	36	10	10	1.05	0.53	99	0.88	0.45	55	0.80	48	-1	60
Ceramic 45 SR PS (Neutral)	39	9	52	49	9	9	1.06	0.64	99	0.90	0.55	45	0.89	36	-2	46
Ceramic 55 SR PS (Neutral)	46	11	43	57	9	11	1.05	0.69	99	0.88	0.59	41	0.97	31	-1	37
Ceramic 65 SR PS (Neutral)	56	9	35	66	9	9	1.06	0.78	99	0.89	0.67	33	0.99	22	-2	27
Atmosphere Exterior Series	Atmosphere series films are applied to the exterior face of the glazing and provide excellent heat rejection performance.															
Atmosphere VXA14 ER HPR	7	60	33	10	59	25	1.04	0.20	>99	0.74	0.17	83	0.59	80	0	89
Atmosphere RXA20 ER HPR	12	63	25	16	62	59	1.04	0.22	>99	0.71	0.20	80	0.80	77	0	82
Atmosphere RXA35 ER HPR	21	50	29	29	48	45	1.04	0.35	>99	0.72	0.30	70	0.97	65	0	68
Atmosphere RXA50 ER HPR	38	30	32	49	26	24	1.04	0.55	>99	0.79	0.48	52	1.02	44	0	46
Atmosphere NXA20 ER HPR	21	29	50	23	30	26	1.04	0.42	>99	0.86	0.36	64	0.64	58	0	74
Atmosphere NXA35 ER HPR	34	18	48	38	19	16	1.04	0.56	>99	0.86	0.49	51	0.78	43	0	58
Atmosphere TXA80 ER HPR	41	6	53	78	9	9	1.04	0.66	>99	0.89	0.57	43	1.37	34	0	13
Atmosphere SXA CL ER PS4	82	8	10	89	9	9	1.02	0.97	>99	0.90	0.85	15	1.05	1	2	1
Atmosphere SXA CL ER PS7	81	8	11	89	9	9	1.04	0.97	>99	0.90	0.84	16	1.06	2	0	1
Safety & Security Series	Safety & Security films are made with heavy-duty polyester bonded by the industry's strongest adhesives to provide a powerful barrier that helps hold glass in place should impact occur. Safety & Security films are ideal for residential and commercial applications where there is the potential for glass breakage.															
Luminance Safety V28 SR PS8	21	34	45	27	35	21	1.06	0.41	>99	0.88	0.35	65	0.77	59	-2	70
Mirage Safety V38 SR PS8	31	25	44	39	25	18	1.06	0.52	>99	0.88	0.45	55	0.87	48	-2	57

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