

Product Performance and Characteristics



Description	Part #	Performance Metrics					Summer Conditions				Winter Conditions		Gauge (Thickness)	Product Code	
		% Total Solar Reflectance	% Total Solar Absorbance	% Visible Light Transmittance	% Ultraviolet Rejected	% Glare Reduction	Solar Heat Gain Coefficient	Summer Median U-Factor	Shading Coefficient	% Total Solar Energy Rejected	Winter Median U-Factor				
Ultra 2															
Bronze/Silver EM	SF51218	78	19	3	99.8	97	0.1	1.0	0.1	92	1.0	3	RS-2 B EM		
Bronze/Silver TR	SF51118	79	18	2	99.8	98	0.1	1.0	0.1	92	1.0	3	RS-2 B TR		
Grey/Silver EM	SF51216	69	27	3	99.6	97	0.1	1.0	0.1	93	1.0	3	RS-2 G EM		
Grey/Silver TR	SF51116	81	17	2	99.8	98	0.1	1.0	0.1	93	1.0	3	RS-2 G TR		
Optima 10															
Blue/Silver EM	SF51230	55	31	13	99.3	85	0.2	1.1	0.3	78	1.1	3	RS-10 BL EM		
Blue/Silver TR	SF51130	55	31	13	99.2	85	0.2	1.1	0.3	78	1.1	3	RS-10 BL TR		
Blue/Silver/Blue EM	SF51247	44	47	7	99.9	93	0.2	1.0	0.2	80	1.0	4.5	RS-10 BL/BL EM		
Blue/Silver/Blue TR	SF51147	45	45	7	99.9	92	0.2	1.0	0.2	79	1.0	4.5	RS-10 BL/BL TR		
Bronze/Silver EM	SF51207	67	24	8	99.4	91	0.2	1.0	0.2	85	1.0	3	RS-10 B EM		
Bronze/Silver TR	SF51107	64	22	17	99.9	81	0.2	0.9	0.2	81	1.0	3	RS-10 B TR		
Bronze/Silver/Bronze EM	SF51202	18	59	12	99.4	86	0.4	1.0	0.4	62	1.1	4.5	RS-10 B/B EM		
Bronze/Silver/Bronze TR	SF51102	20	55	13	99.9	85	0.4	1.0	0.5	61	1.0	4.5	RS-10 B/B TR		
Bronze/Silver/Grey TR	SF51103	27	43	25	98.7	72	0.4	1.0	0.5	59	1.1	4.5	RS-10 B/G TR		
Green/Silver EM	SF51220	67	22	13	99.4	85	0.2	1.0	0.2	83	1.0	3	RS-10 GN EM		
Green/Silver TR	SF51120	59	28	16	99.3	82	0.2	1.1	0.2	79	1.1	3	RS-10 GN TR		
Green/Silver/Green EM	SF51248	57	39	10	99.9	89	0.2	1.0	0.2	81	1.0	4.5	RS-10 GN/GN EM		
Green/Silver/Green TR	SF51148	48	41	11	99.9	87	0.2	1.1	0.2	79	1.0	4.5	RS-10 GN/GN TR		
Grey/Silver EM	SF51208	56	31	8	99.0	91	0.2	1.0	0.2	82	1.0	3	RS-10 G EM		
Grey/Silver TR	SF51108	62	29	7	99.3	92	0.2	1.1	0.2	84	1.1	3	RS-10 G TR		
Grey/Silver/Grey EM	SF51204	17	59	9	99.8	90	0.4	1.0	0.4	61	1.1	4.5	RS-10 G/G EM		
Grey/Silver/Grey TR	SF51104	20	59	7	99.9	92	0.4	1.0	0.4	64	1.0	4.5	RS-10 G/G TR		
Grey/Silver/Gold TR	SF51105	58	34	5	99.9	94	0.2	0.9	0.2	84	1.0	4.5	RS-10 G/GO TR		
Optima															
Light Grey TR	SF51113	17	44	40	99.3	55	0.5	1.1	0.6	50	1.0	3	RSN-1035 LTG TR		
Ultra LX															
Steel Blue/Silver/St.Blue TR	SF74158	15	60	4	99.9	96	0.4	1.0	0.5	60	1.1	4.5	RS-3.5 BG/BG SR TR		
Black-Out															
Black EM*	SF51245	7	92	0	99.9	100	0.3	1.1	0.3	75	1.1	3	NRS-0 BK EM		
White/Silver/White EM	SF51259	81	19	0.1	100	100	0.1	1.0	0.1	95	1.1	4.5	RS-0 WH/WH EM		



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DEFINITION OF SHADE PERFORMANCE TERMS:

TOTAL SOLAR SPECTRUM WAVELENGTH OF 300-2100 NANOMETERS (NM) (CONTAINS ALL OF BELOW)

- **SOLAR ULTRAVIOLET SPECTRUM WAVELENGTHS OF 300-380 NM** (CAUSES FADING/SUNBURN)
- **SOLAR VISIBLE SPECTRUM WAVELENGTHS OF 380-780 NM** (WHAT IS SEEN BY EYESIGHT)
- **SOLAR INFRARED SPECTRUM WAVELENGTHS OF 780-2100 NM** (CAUSES TEMPERATURE RISE) Solar energy is transmitted/passed through, absorbed/collected by and/or reflected/rejected outwards as it relates to windows and window treatments.
 - Total Solar Transmission (TST) Percentage of total solar energy (ultraviolet, visible and infrared) that is allowed to pass through a window and associated window treatments.
 - Total Solar Reflection (TSR) Percentage of total solar energy (ultraviolet, visible and infrared) that is reflected outwards by the window and associated window treatments.
 - Total Solar Absorptance (TSA) Percentage of total solar energy (ultraviolet, visible and infrared) that is absorbed or built up in the window and associated window treatments compared to the total available energy in the full solar spectrum. This is the amount of total solar energy that is neither reflected out nor transmitted in.
- Shading Coefficient (SC) A factor that defines the performance of a window and associated window treatments to control total solar energy by a measurement system based on clear, 3 millimeter thick glass. The lower the value the better the control.
- Visible Light Transmission (VLT) Percentage of visible solar energy that is allowed to pass through a window and associated window treatments.
- Ultraviolet Light Rejected (UVLR) Percentage of ultraviolet solar energy that is rejected.
- Glare Reduction (GR) Percentage of visible solar energy that is not allowed (rejected) to pass through a window and associated window treatments. The near opposite of Visible Light Transmission.
- Total Solar Energy Rejected (TSER) Percentage of the solar energy in the total solar spectrum that is reflected or absorbed by the window and associated window treatments.
- U Factor: A factor that defines the window and associated window treatment's insulation performance. The lower the value the better the insulation properties.

TEST METHODS:

- The Total Solar Transmittance and Total Solar Reflectance have been determined from spectrophotometric data on the glazing system. The solar spectrum at air mass two is given by Moon1 and reflectance values corrected to absolute have been used.
- The Visible Light Transmittance and Visible Light Reflectance have been calculated from spectrophotometric data using the C.I.E. standard observer (C.I.E., 1924 and 1931) and D-65 daylight.
- The Winter U-Value has been calculated in accordance with the methods given by ASHRAE2. The conditions used were: indoor temperature of 68°F, outdoor of 18°F, indoor air movement by natural convection only, outdoor air velocity 15 M.P.H., and solar intensity of zero.
- The Ultraviolet Rejection has been calculated for the passage of solar ultraviolet radiation from 300 to 380 nm at air mass 2.
- The Shading Coefficient and Total Solar Energy Rejected were calculated for summer conditions in accordance with methods given by ASHRAE. The conditions used were: indoor temperature of 75°F, outdoor of 89°F, indoor air movement by natural convection, outdoor air velocity 7.5 m.p.h. and solar intensity of 248 Btu/Hr.-ft.2.
- All of the data was obtained from typical production materials and are subject to normal film manufacturing tolerances. All the values given are intended for design use only.
- Performance data was obtained from internal tests performed 1-03/6-04 representing film specifications only (does not include glass). Where applicable, film is tested with reflective surface facing outward.
- Performance numbers are for shade material alone. Actual performance may vary depending on specific window type.

Parry Moon, J. of the Franklin Institute 230, pp.583-618 (1940)

ASHRAE Handbook Chapter 23 Table of #1 of Fundamentals (1977)

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