

Safety Film Selector Guide

Armorcoat® Window Films for Safety and Security Solutions





As a responsible manufacturer, Solar Gard® leads the way in professionally educating and equipping an elite group of experienced Armorcoat Certified Partners. This network of dealers undergoes ongoing training on glazing production developments, film properties and certifications, proper installation techniques, and updates on the global safety landscape. Selecting a local Solar Gard Armorcoat Certified Partner should always be the first step in assessing a property for potential security film application.

Armorcoat® 2 Mil Clear

Performance Results	1/8" (3mm)	1/4" (6mm)	1/8" + 1/8" (3mm+3mm)
Solar energy			
% Transmittance	77	71	65
% Absorptance	12	19	20
% Reflectance	11	10	15
Visible light			
% Transmittance	85	84	77
% Reflectance exterior	13	12	19
% Reflectance interior	12	12	19
Emissivity	.85	.85	.85
Winter U-Factor (W/m ² °C)	5.91	5.85	2.73
Shading coefficient	.93	.89	.83
Solar heat gain coefficient	.81	.77	.72
Light to solar heat gain factor (VLT/SHGC)	1.06	1.09	1.07
% Ultraviolet light blocked @ 300 a 380 nm	>99	>99	>99
% Total solar energy rejected	19	23	28
% Summer solar heat gain reduction	7	6	4
% Glare reduction	5	6	5

For information on the calculation method of listed results, as well as a glossary of terms, please refer to the final pages of this booklet.

Armorcoat® 4 Mil Clear

Performance Results	1/8" (3mm)	1/4" (6mm)	1/8" + 1/8" (3mm+3mm)
Solar energy			
% Transmittance	79	73	66
% Absorptance	13	19	20
% Reflectance	8	8	13
Visible light			
% Transmittance	89	87	81
% Reflectance exterior	9	9	16
% Reflectance interior	9	9	16
Emissivity	.90	.90	.90
Winter U-Factor (W/m ² °C)	6.08	6.36	2.78
Shading coefficient	.96	.91	.86
Solar heat gain coefficient	.83	.78	.74
Light to solar heat gain factor (VLT/SHGC)	1.07	1.12	1.08
% Ultraviolet light blocked @ 300 a 380 nm	>99	>99	>99
% Total solar energy rejected	17	21	26
% Summer solar heat gain reduction	4	5	1
% Glare reduction	1	2	1

For information on the calculation method of listed results, as well as a glossary of terms, please refer to the final pages of this booklet.

Armorcoat® 7 Mil Clear

Performance Results	1/8" (3mm)	1/4" (6mm)	1/8" + 1/8" (3mm+3mm)
Solar energy			
% Transmittance	79	73	66
% Absorptance	13	19	21
% Reflectance	8	8	13
Visible light			
% Transmittance	89	87	80
% Reflectance exterior	9	9	16
% Reflectance interior	9	9	16
Emissivity	.90	.90	.90
Winter U-Factor (W/m ² °C)	6.08	6.19	2.78
Shading coefficient	.95	.90	.85
Solar heat gain coefficient	.83	.78	.74
Light to solar heat gain factor (VLT/SHGC)	1.07	1.12	1.08
% Ultraviolet light blocked @ 300 a 380 nm	>99	>99	>99
% Total solar energy rejected	17	22	26
% Summer solar heat gain reduction	5	5	1
% Glare reduction	1	2	1

For information on the calculation method of listed results, as well as a glossary of terms, please refer to the final pages of this booklet.

Armorcoat® 8 Mil Clear

Performance Results	1/8" (3mm)	1/4" (6mm)	1/8" + 1/8" (3mm+3mm)
Solar energy			
% Transmittance	75	69	63
% Absorptance	14	21	22
% Reflectance	11	10	16
Visible light			
% Transmittance	84	83	77
% Reflectance exterior	13	13	19
% Reflectance interior	12	12	19
Emissivity	.88	.88	.88
Winter U-Factor (W/m ² °C)	5.96	6.30	2.73
Shading coefficient	.91	.87	.87
Solar heat gain coefficient	.79	.74	.71
Light to solar heat gain factor (VLT/SHGC)	1.07	1.12	1.07
% Ultraviolet light blocked @ 300 a 380 nm	>99	>99	>99
% Total solar energy rejected	21	24	29
% Summer solar heat gain reduction	9	10	5
% Glare reduction	6	7	6

For information on the calculation method of listed results, as well as a glossary of terms, please refer to the final pages of this booklet.

Armorcoat® 10 Mil Clear

Performance Results	1/8" (3mm)	1/4" (6mm)	1/8" + 1/8" (3mm+3mm)
Solar energy			
% Transmittance	77	71	65
% Absorptance	14	21	21
% Reflectance	9	8	14
Visible light			
% Transmittance	87	86	79
% Reflectance exterior	10	10	17
% Reflectance interior	11	11	17
Emissivity	.88	.88	.88
Winter U-Factor (W/m ² °C)	5.96	6.30	2.73
Shading coefficient	.94	.89	.84
Solar heat gain coefficient	.81	.76	.73
Light to solar heat gain factor (VLT/SHGC)	1.08	1.13	1.08
% Ultraviolet light blocked @ 300 a 380 nm	>99	>99	>99
% Total solar energy rejected	19	23	27
% Summer solar heat gain reduction	6	7	3
% Glare reduction	3	3	3

For information on the calculation method of listed results, as well as a glossary of terms, please refer to the final pages of this booklet.

Armorcoat® 11 Mil Clear

Performance Results	1/8" (3mm)	1/4" (6mm)	1/8" + 1/8" (3mm+3mm)
Solar energy			
% Transmittance	78	72	66
% Absorptance	13	20	21
% Reflectance	9	8	14
Visible light			
% Transmittance	88	86	80
% Reflectance exterior	10	10	16
% Reflectance interior	10	10	16
Emissivity	.89	.89	.89
Winter U-Factor (W/m ² °C)	6.02	6.30	2.73
Shading coefficient	.95	.90	.85
Solar heat gain coefficient	.82	.77	.74
Light to solar heat gain factor (VLT/SHGC)	1.07	1.12	1.08
% Ultraviolet light blocked @ 300 a 380 nm	>99	>99	>99
% Total solar energy rejected	18	22	26
% Summer solar heat gain reduction	5	6	2
% Glare reduction	2	3	2

For information on the calculation method of listed results, as well as a glossary of terms, please refer to the final pages of this booklet.

Armorcoat® 14 Mil Clear

Performance Results	1/8" (3mm)	1/4" (6mm)	1/8" + 1/8" (3mm+3mm)
Solar energy			
% Transmittance	77	71	65
% Absorptance	14	21	21
% Reflectance	9	8	14
Visible light			
% Transmittance	87	85	79
% Reflectance exterior	11	10	17
% Reflectance interior	11	11	17
Emissivity	.89	.89	.89
Winter U-Factor (W/m ² °C)	6.02	6.30	2.73
Shading coefficient	.93	.88	.84
Solar heat gain coefficient	.81	.76	.73
Light to solar heat gain factor (VLT/SHGC)	1.08	1.12	1.08
% Ultraviolet light blocked @ 300 a 380 nm	>99	>99	>99
% Total solar energy rejected	19	26	27
% Summer solar heat gain reduction	7	7	3
% Glare reduction	3	4	3

For information on the calculation method of listed results, as well as a glossary of terms, please refer to the final pages of this booklet.

Armorcoat® 4 Mil Stainless Steel 50

Performance Results	1/8" (3mm)	1/4" (6mm)	1/8" + 1/8" (3mm+3mm)
Solar energy			
% Transmittance	43	39	36
% Absorptance	46	50	48
% Reflectance	12	11	16
Visible light			
% Transmittance	47	46	43
% Reflectance exterior	13	13	20
% Reflectance interior	11	11	13
Emissivity	.90	.90	.90
Winter U-Factor (W/m ² °C)	6.08	6.36	2.78
Shading coefficient	.65	.62	.71
Solar heat gain coefficient	.56	.53	.61
Light to solar heat gain factor (VLT/SHGC)	.83	.87	.69
% Ultraviolet light blocked @ 300 a 380 nm	>99	>99	>99
% Total solar energy rejected	44	46	39
% Summer solar heat gain reduction	35	35	18
% Glare reduction	48	48	48

For information on the calculation method of listed results, as well as a glossary of terms, please refer to the final pages of this booklet.

Armorcoat® 4 Mil Stainless Steel 35

Performance Results	1/8" (3mm)	1/4" (6mm)	1/8" + 1/8" (3mm+3mm)
Solar energy			
% Transmittance	39	36	32
% Absorptance	48	52	50
% Reflectance	14	12	17
Visible light			
% Transmittance	42	42	39
% Reflectance exterior	16	14	21
% Reflectance interior	13	14	15
Emissivity	.87	.87	.87
Winter U-Factor (W/m ² °C)	5.96	5.85	2.73
Shading coefficient	.61	.60	.69
Solar heat gain coefficient	.53	.51	.59
Light to solar heat gain factor (VLT/SHGC)	.80	.82	.65
% Ultraviolet light blocked @ 300 a 380 nm	>99	>99	>99
% Total solar energy rejected	47	48	41
% Summer solar heat gain reduction	39	38	21
% Glare reduction	53	53	53

For information on the calculation method of listed results, as well as a glossary of terms, please refer to the final pages of this booklet.

Armorcoat® 4 Mil Stainless Steel 20

Performance Results	1/8" (3mm)	1/4" (6mm)	1/8" + 1/8" (3mm+3mm)
Solar energy			
% Transmittance	21	19	17
% Absorptance	56	61	49
% Reflectance	23	20	24
Visible light			
% Transmittance	22	22	20
% Reflectance exterior	27	26	31
% Reflectance interior	25	25	25
Emissivity	.85	.85	.85
Winter U-Factor (W/m ² °C)	6.30	6.19	2.73
Shading coefficient	.43	.42	.57
Solar heat gain coefficient	.37	.37	.49
Light to solar heat gain factor (VLT/SHGC)	.59	.61	.41
% Ultraviolet light blocked @ 300 a 380 nm	>99	>99	>99
% Total solar energy rejected	63	63	51
% Summer solar heat gain reduction	57	56	35
% Glare reduction	76	75	75

For information on the calculation method of listed results, as well as a glossary of terms, please refer to the final pages of this booklet.

Armorcoat® 8 Mil Stainless Steel 50

Performance Results	1/8" (3mm)	1/4" (6mm)	1/8" + 1/8" (3mm+3mm)
Solar energy			
% Transmittance	40	37	33
% Absorptance	49	53	51
% Reflectance	11	10	16
Visible light			
% Transmittance	44	43	40
% Reflectance exterior	14	13	20
% Reflectance interior	11	11	13
Emissivity	.88	.88	.88
Winter U-Factor (W/m ² °C)	6.02	6.30	2.73
Shading coefficient	.62	.60	.71
Solar heat gain coefficient	.54	.51	.61
Light to solar heat gain factor (VLT/SHGC)	.81	.84	.66
% Ultraviolet light blocked @ 300 a 380 nm	>99	>99	>99
% Total solar energy rejected	46	48	39
% Summer solar heat gain reduction	37	38	19
% Glare reduction	51	52	51

For information on the calculation method of listed results, as well as a glossary of terms, please refer to the final pages of this booklet.

Armorcoat® 8 Mil Stainless Steel 35

Performance Results	1/8" (3mm)	1/4" (6mm)	1/8" + 1/8" (3mm+3mm)
Solar energy			
% Transmittance	34	32	29
% Absorptance	52	56	54
% Reflectance	14	12	17
Visible light			
% Transmittance	38	38	35
% Reflectance exterior	16	16	22
% Reflectance interior	13	13	14
Emissivity	.88	.88	.88
Winter U-Factor (W/m ² °C)	5.96	6.30	2.73
Shading coefficient	.57	.55	.67
Solar heat gain coefficient	.50	.48	.58
Light to solar heat gain factor (VLT/SHGC)	.76	.79	.60
% Ultraviolet light blocked @ 300 a 380 nm	>99	>99	>99
% Total solar energy rejected	50	52	42
% Summer solar heat gain reduction	42	41	23
% Glare reduction	58	57	57

For information on the calculation method of listed results, as well as a glossary of terms, please refer to the final pages of this booklet.

Armorcoat® 8 Mil Stainless Steel 20

Performance Results	1/8" (3mm)	1/4" (6mm)	1/8" + 1/8" (3mm+3mm)
Solar energy			
% Transmittance	20	18	17
% Absorptance	58	62	60
% Reflectance	22	20	24
Visible light			
% Transmittance	21	21	20
% Reflectance exterior	26	26	30
% Reflectance interior	24	24	24
Emissivity	.86	.86	.86
Winter U-Factor (W/m ² °C)	5.96	6.25	2.73
Shading coefficient	.43	.41	.57
Solar heat gain coefficient	.37	.36	.49
Light to solar heat gain factor (VLT/SHGC)	.57	.58	.40
% Ultraviolet light blocked @ 300 a 380 nm	>99	>99	>99
% Total solar energy rejected	63	64	51
% Summer solar heat gain reduction	57	56	34
% Glare reduction	76	76	76

For information on the calculation method of listed results, as well as a glossary of terms, please refer to the final pages of this booklet.

Armorcoat® 4 Mil Silver 20

Performance Results	1/8" (3mm)	1/4" (6mm)	1/8" + 1/8" (3mm+3mm)
Solar energy			
% Transmittance	11	10	9
% Absorptance	37	45	45
% Reflectance	52	45	46
Visible light			
% Transmittance	15	15	14
% Reflectance exterior	59	56	58
% Reflectance interior	60	60	60
Emissivity	.71	.71	.71
Winter U-Factor (W/m ² °C)	5.51	5.85	2.61
Shading coefficient	.24	.25	.36
Solar heat gain coefficient	.21	.22	.30
Light to solar heat gain factor (VLT/SHGC)	.73	.68	.47
% Ultraviolet light blocked @ 300 a 380 nm	>99	>99	>99
% Total solar energy rejected	79	78	70
% Summer solar heat gain reduction	76	73	59
% Glare reduction	83	83	83



For information on the calculation method of listed results, as well as a glossary of terms, please refer to the final pages of this booklet.

Armorcoat® 8 Mil Silver 35

Performance Results	1/8" (3mm)	1/4" (6mm)	1/8" + 1/8" (3mm+3mm)
Solar energy			
% Transmittance	26	24	22
% Absorptance	40	47	46
% Reflectance	34	29	32
Visible light			
% Transmittance	35	34	33
% Reflectance exterior	35	34	38
% Reflectance interior	33	33	34
Emissivity	.71	.71	.71
Winter U-Factor (W/m ² °C)	5.51	5.39	2.61
Shading coefficient	.43	.42	.52
Solar heat gain coefficient	.37	.37	.45
Light to solar heat gain factor (VLT/SHGC)	.96	.95	.74
% Ultraviolet light blocked @ 300 a 380 nm	>99	>99	>99
% Total solar energy rejected	63	63	55
% Summer solar heat gain reduction	57	55	41
% Glare reduction	61	61	60



For information on the calculation method of listed results, as well as a glossary of terms, please refer to the final pages of this booklet.

Armorcoat® 8 Mil Silver 20

Performance Results	1/8" (3mm)	1/4" (6mm)	1/8" + 1/8" (3mm+3mm)
Solar energy			
% Transmittance	10	9	9
% Absorptance	39	47	46
% Reflectance	51	44	45
Visible light			
% Transmittance	14	14	14
% Reflectance exterior	58	56	58
% Reflectance interior	59	59	60
Emissivity	.70	.70	.70
Winter U-Factor (W/m ² °C)	5.45	5.79	2.61
Shading coefficient	.24	.25	.36
Solar heat gain coefficient	.21	.22	.31
Light to solar heat gain factor (VLT/SHGC)	.70	.64	.45
% Ultraviolet light blocked @ 300 a 380 nm	>99	>99	>99
% Total solar energy rejected	79	78	70
% Summer solar heat gain reduction	76	73	59
% Glare reduction	84	84	83



For information on the calculation method of listed results, as well as a glossary of terms, please refer to the final pages of this booklet.

Solar Energy Technical Definitions

Solar transmittance The percent of incident solar radiation that is transmitted through the window film/glass system. The lower the number, the less solar radiation transmitted.

Solar absorptance The percent of incident solar radiation that is absorbed by the window film/glass system. The lower the number, the less solar radiation absorbed.

Solar reflectance The percent of incident solar radiation that is reflected by the window film/glass system. The lower the number, the less solar radiation reflected.

Visible light transmittance The percent of total visible light that is transmitted through the window film/glass system. The lower the number, the less visible light transmitted.

Visible light reflectance The percent of total visible light that is reflected by the window film/glass system. The lower the number, the less visible light reflected.

Emissivity The measure of a surface's ability to absorb or reflect far-infrared radiation. The lower the emissivity rating, the better the insulating qualities of the window film/glass system.

U-Factor (W/m²°C) The amount of heat energy which transfers through an area of 1m² with a temperature difference of 1°C. The lower the U-factor, the better insulating qualities of the window film/glass system.

Shading coefficient The ratio of solar heat passing through window film to the solar heat gain that occurs under the same conditions if the window were made of clear, unshaded double strength window glass. The lower the number, the better solar shading qualities of the window film/glass system.

Solar heat gain coefficient The ratio of the total solar heat passing through a given window product relative to the solar heat incident on the projected window surface at normal solar incidence (i.e. perpendicular to the glazing surface). The lower the coefficient number for a particular window film/glass system, the better it is able to reduce heat.

Solar selectivity index – luminous efficacy Ratio of visible light transmittance to the Shading Coefficient (VLT/SC). The higher this number is, the more efficient a film is at transmitting visible light without transmitting excessive heat. The more over 1.00, the greater a film's spectral selectivity.

Solar Energy Technical Definitions

Light to solar heat gain factor Ratio of visible light transmittance to Solar Heat Gain Coefficient (VLT/SHGC). The higher this number is, the more efficient a film is at transmitting visible light without transmitting excessive heat. The more over 1.25, the greater a film's spectral selectivity.

Ultraviolet light blocked The percent rejection of invisible, high energy wavelengths emitted by the sun which is the primary cause of fading and discoloration of furnishings and materials.

Total solar energy rejected The percent of total solar energy (heat) rejected by the window film/glass system. The higher the number, the more total solar energy (heat) is rejected.

Summer solar heat gain reduction The percent reduction in transmitted solar heat gain by the addition of window film compared to that of the same window without film.

Glare reduction The percent reduction of visible light by the addition of window film compared to that of the same window without film.

Performance Notes

1. Solar Gard® is a participating member of AIMCAL (the Association of Industrial Metallizers, Coaters and Laminators), IWFA, and EWFA. Performance results are calculated using NFRC methodology and LBNL Window 5.2 software, and are subject to variations within industry standards and only intended for estimating purposes.
2. These test data contain only results arrived at after employing specific test procedures and standards. The included data do not constitute a recommendation for, endorsement of, or certification of the product or material tested. These data are provided for informational purposes only and are not to be considered part of the basis representation or warranty, expressed or implied, including the implied warranties of merchantability or fitness for a particular purpose, that its products will conform to these test data. Solar Gard's limited warranty should be carefully reviewed prior to purchasing any Solar Gard product. Extrapolation of data from the sample or samples relation to the batch or lot from which data were obtained may not correlate and should be interpreted accordingly with caution. Solar Gard shall not be responsible for variations in quality, composition, appearance, performance, or other feature of similar subject matter produced by persons or under conditions over which Solar Gard has no control.
3. Performance results for summer solar heat gain reduction and glare reduction are calculated by comparing filmed glass to that of untreated glazing.





What matters most to you...
We're On It!



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today at www.solargard.com/safety

www.solargard.com

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SK0308 3/19
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