

Clear Double Silver Soft Coat Low-E Performance									
1/4" Substrate / 1/2" Spacer / 1/4" Clear, Mid-Iron, or Low-Iron to Match Exterior Substrate									
Second Surface Low-E			Visible Light			Solar Heat Gain Coefficient	Winter U-Value Center of Glass		Light to Solar Gain
Mfg.	Substrate	Product	Transmittance	Exterior Reflectance	Interior Reflectance		Air (100%)	Argon (90%)	
Cardinal	Clear	LoE ² -272	70%	10%	12%	0.40	0.29	0.25	1.73
Guardian	Clear	SuperNeutral® 68	68%	11%	12%	0.38	0.29	0.25	1.80
Vitro	Clear	Solarban® 60	70%	11%	12%	0.39	0.29	0.24	1.79
Vitro	Clear	Solarban® 65	70%	14%	15%	0.35	0.29	0.24	1.98
Viracon	Clear	VE 1-2M	70%	11%	12%	0.37	0.29	0.25	1.87
Guardian	CrystalClear™	SuperNeutral® 68	70%	11%	12%	0.39	0.29	0.24	1.80
Vitro	Acuity™	Solarban® 60	73%	11%	12%	0.41	0.29	0.24	1.78
Guardian	UltraClear®	SuperNeutral® 68	71%	11%	13%	0.39	0.29	0.25	1.80
Vitro	Starphire®	Solarban® 60	74%	11%	12%	0.41	0.29	0.24	1.80
Vitro	Starphire®	Solarban® 65	71%	15%	14%	0.36	0.29	0.24	1.83
Guardian	Clear	SNE 50	48%	19%	13%	0.25	0.29	0.24	1.90
Vitro	Clear	Solarban® 67	54%	19%	16%	0.39	0.29	0.24	1.85
Viracon	Clear	VNE1-53	49%	21%	19%	0.23	0.29	0.24	2.11
Viracon	Clear	VUE 1-50	49%	11%	12%	0.26	0.29	0.24	1.91
Guardian	Clear	SNR 50	48%	26%	17%	0.25	0.29	0.24	1.91
Vitro	Clear	Solarban® R77	47%	25%	16%	0.25	0.29	0.24	1.88
Viracon	Clear	VRE1-4725	48%	26%	21%	0.25	0.29	0.24	1.90
Guardian	Clear	SNR 43	43%	27%	14%	0.23	0.29	0.24	1.89
Vitro	Clear	Solarban® R100	42%	32%	14%	0.23	0.29	0.25	1.83
Viracon	Clear	VRE1-4322	43%	25%	20%	0.22	0.29	0.25	1.95
Guardian	Clear	SNR 35	33%	35%	19%	0.17	0.29	0.24	1.92
Viracon	Clear	VRE 1-38	36%	44%	21%	0.23	0.30	0.25	1.56
Viracon	Clear	VRE-3117	32%	29%	21%	0.17	0.29	0.24	1.87

Clear Triple Silver Soft Coat Low-E Performance									
1/4" Substrate / 1/2" Spacer / 1/4" Clear, Mid-Iron, or Low-Iron to Match Exterior Substrate									
Second Surface Low-E			Visible Light			Solar Heat Gain Coefficient	Winter U-Value Center of Glass		Light to Solar Gain
Mfg.	Substrate	Product	Transmittance	Exterior Reflectance	Interior Reflectance		Air (100%)	Argon (90%)	
Cardinal	Clear	LoE ² -366	63%	11%	12%	0.28	0.29	0.24	2.26
Guardian	Clear	SNX 62/27	62%	11%	12%	0.27	0.29	0.24	2.32
Guardian	Clear	SNX 60+	60%	14%	15%	0.25	0.29	0.24	2.41
Guardian	Clear	SNX 70+	66%	14%	15%	0.28	0.29	0.24	2.35
Vitro	Clear	Solarban® 70	64%	13%	14%	0.27	0.28	0.24	2.37
Viracon	Clear	VNE1-63	63%	10%	11%	0.29	0.29	0.24	2.18
Guardian	CrystalClear™	SNX 62/27	63%	11%	12%	0.27	0.29	0.24	2.37
Guardian	CrystalClear™	SNX 60+	61%	14%	15%	0.25	0.29	0.24	2.49
Guardian	CrystalClear™	SNX 70+	67%	14%	15%	0.28	0.29	0.24	2.41
Vitro	Acuity™	Solarban® 72	66%	13%	14%	0.28	0.28	0.24	2.36
Guardian	UltraClear®	SNX 62/27	64%	11%	13%	0.27	0.29	0.24	2.40
Guardian	UltraClear®	SNX 60+	62%	14%	15%	0.25	0.29	0.24	2.53
Guardian	UltraClear®	SNX 70+	68%	14%	16%	0.28	0.29	0.24	2.45
Vitro	Starphire®	Solarban® 72	68%	13%	14%	0.28	0.28	0.24	2.43
Guardian	Clear	SNX 51/23	51%	14%	13%	0.23	0.29	0.24	2.18
Vitro	Clear	Solarban® 90	51%	12%	19%	0.23	0.29	0.24	2.22
Viracon	Clear	VUE1-50	49%	11%	11%	0.26	0.29	0.24	1.91
Guardian	CrystalClear™	SNX 51/23	52%	14%	14%	0.23	0.29	0.24	2.22
Vitro	Acuity™	Solarban® 90	52%	13%	19%	0.23	0.29	0.24	2.26
Guardian	UltraClear®	SNX 51/23	53%	14%	14%	0.23	0.29	0.24	2.27
Vitro	Starphire®	Solarban® 90	54%	13%	20%	0.23	0.29	0.24	2.35

Tint Double Silver Soft Coat Low-E Performance

1/4" Tinted Substrate / 1/2" Spacer / 1/4" Clear (If no Low-E) or Clear Low-E as Specified

Tint		Low-E		Visible Light		Solar Heat Gain Coefficient	Winter U-Value Center of Glass		Light to Solar Gain
Mfg.	Exterior Substrate	Mfg.	Coating & Surface	Transmittance	Exterior Reflectance		Air (100%)	Argon (90%)	
Vitro	Solarbronze®	Guardian	SuperNeutral® 68 #3	40%	8%	0.31	0.29	0.25	1.29
Vitro	Solarbronze®	Vitro	Solarban® 60 #2	42%	7%	0.28	0.29	0.24	1.50
Vitro	Solarbronze®	Viracon	VE 4-2M #2	41%	7%	0.27	0.29	0.24	1.52
Guardian	Gray	Guardian	SuperNeutral® 68 #2	34%	6%	0.25	0.29	0.25	1.37
Guardian	Gray	Guardian	SuperNeutral® 68 #3	34%	7%	0.30	0.29	0.25	1.18
Vitro	Solargray®	Vitro	Solarban® 60 #2	35%	6%	0.25	0.29	0.24	1.40
Vitro	Solargray®	Viracon	VE 3-2M #2	35%	6%	0.24	0.29	0.24	1.46
Guardian	Green	Guardian	SuperNeutral® 68 #2	58%	9%	0.30	0.29	0.25	1.91
Guardian	Green	Guardian	SuperNeutral® 68 #3	58%	10%	0.35	0.29	0.25	1.64
Vitro	Solexia®	Vitro	Solarban® 60 #2	61%	9%	0.32	0.29	0.24	1.91
Guardian	Green	Viracon	VE 2-2M #2	60%	9%	0.31	0.29	0.24	1.94
Guardian	CrystalGray®	Guardian	SuperNeutral® 68 #2	48%	8%	0.30	0.29	0.25	1.65
Vitro	Optigrey®	Vitro	Solarban® 60 #2	50%	8%	0.30	0.29	0.24	1.67
Vitro	Optigrey®	Viracon	VE 30-2M #2	51%	8%	0.30	0.29	0.24	1.71
Guardian	CrystalGray®	Guardian	SuperNeutral® 68#2	48%	8%	0.30	0.29	0.24	1.60
Vitro	Optiblue®	Vitro	Solarban® z50 #2	51%	8%	0.32	0.29	0.24	1.57
Vitro	Optiblue®	Viracon	VE 18-2M #2	51%	8%	0.31	0.29	0.24	1.65

Tint Triple Silver Soft Coat Low-E Performance

1/4" Tinted Substrate / 1/2" Spacer / 1/4" Clear (If no Low-E) or Clear Low-E as Specified

Tint		Low-E		Visible Light		Solar Heat Gain Coefficient	Winter U-Value Center of Glass		Light to Solar Gain
Mfg.	Exterior Substrate	Mfg.	Coating & Surface	Transmittance	Exterior Reflectance		Air (100%)	Argon (90%)	
Vitro	Solarbronze®	Guardian	SNX 62/27 #3	37%	7%	0.26	0.29	0.24	1.39
Vitro	Solarbronze®	Guardian	SNX 60+ #3	36%	9%	0.24	0.29	0.24	1.46
Vitro	Solarbronze®	Guardian	SNX 70+ #3	39%	9%	0.25	0.29	0.24	1.57
Vitro	Solarbronze®	Vitro	Solarban® 70 #2	40%	8%	0.21	0.28	0.24	1.87
Vitro	Solarbronze®	Viracon	VNE 4-63 #2	37%	8%	0.21	0.29	0.24	1.76
Guardian	Gray	Guardian	SNX 62/27 #2	31%	6%	0.18	0.29	0.24	1.71
Guardian	Gray	Guardian	SNX 62/27 #3	31%	7%	0.24	0.29	0.24	1.27
Guardian	Gray	Guardian	SNX 60+ #2	30%	7%	0.17	0.29	0.24	1.77
Guardian	Gray	Guardian	SNX 60+ #3	30%	7%	0.23	0.29	0.24	1.34
Guardian	Gray	Guardian	SNX 70+ #3	33%	7%	0.23	0.29	0.24	1.45
Vitro	Solargray®	Vitro	Solarban® 70 #2	32%	7%	0.19	0.28	0.24	1.70
Vitro	Solargray®	Viracon	VNE 3-63 #2	30%	7%	0.19	0.29	0.24	1.58
Guardian	Green	Guardian	SNX 62/27 #2	52%	9%	0.25	0.29	0.24	2.14
Guardian	Green	Guardian	SNX 62/27 #3	52%	10%	0.32	0.29	0.24	1.66
Guardian	Green	Guardian	SNX 70+ #3	55%	12%	0.30	0.29	0.24	1.84
Vitro	Solexia®	Vitro	Solarban® 70 #2	58%	11%	0.27	0.28	0.24	2.16
Guardian	Green	Viracon	VNE 2-63 #2	53%	10%	0.26	0.29	0.24	2.04
Guardian	CrystalGray®	Guardian	SNX 62/27 #2	44%	8%	0.22	0.29	0.24	1.99
Guardian	CrystalGray®	Guardian	SNX 60+ #2	43%	9%	0.21	0.29	0.24	2.04
Guardian	CrystalGray®	Guardian	SNX 70+ #2	47%	9%	0.23	0.29	0.24	2.03
Vitro	Optigray®	Vitro	Solarban® 70 #2	46%	9%	0.23	0.28	0.24	2.00
Vitro	Optigray®	Viracon	VNE 30-63 #2	46%	8%	0.24	0.29	0.24	1.92
Guardian	Clear	Guardian	SNX 51/23 #2	51%	9%	0.23	0.29	0.24	2.18
Vitro	Optiblue®	Vitro	Solarban® z75 #2	46%	9%	0.23	0.28	0.24	2.00
Guardian	CrystalGray®	Guardian	SNX 51/23 #2	36%	9%	0.20	0.29	0.24	1.85
Vitro	Optigray®	Vitro	Solarban® 90 #2	36%	8%	0.20	0.29	0.24	1.80

Clear 2nd & 4th Surface Low-E Performance

1/4" Clear Low-E / 1/2" Spacer / 1/4" Clear Low-E

Second Surface Low-E		Fourth Surface Low-E		Visible Light		Solar Heat Gain Coefficient	Winter U-Value Center of Glass		Light to Solar Gain
Mfg.	Coating	Mfg.	Coating	Transmittance	Exterior Reflectance		Air (100%)	Argon (90%)	
Guardian	SuperNeutral® 68	Guardian	SunGuard® IS-20	66%	12%	0.36	0.24	0.20	1.82
Guardian	SuperNeutral® 68	AGC	Energy Select® 73	63%	12%	0.36	0.23	0.20	1.78
Vitro	Solarban® 60	Vitro	Sungate ThermL™	69%	10%	0.38	0.23	0.20	1.82
Cardinal	LoE ² -272	Cardinal	LoE-i89	69%	10%	0.39	0.23	0.21	1.75
Viracon	VE 1-2M	Viracon	RoomSide® Low-E	70%	11%	0.37	0.23	0.21	1.88
Guardian	SNX 62/27	Guardian	SunGuard® IS-20	60%	12%	0.26	0.23	0.20	2.34
Guardian	SNX 60+	Guardian	SunGuard® IS-20	58%	14%	0.24	0.23	0.20	2.43
Guardian	SNX 62/27	AGC	Energy Select® 73	57%	12%	0.25	0.23	0.20	2.29
Vitro	Solarban® 70	Vitro	Sungate ThermL™	63%	13%	0.27	0.23	0.19	2.33
Guardian	SNX 70+	Guardian	SunGuard® IS-20	64%	15%	0.27	0.23	0.20	2.39
Cardinal	LoE ² -366	Cardinal	LoE-i89	62%	10%	0.27	0.23	0.20	2.29
Viracon	VNE 1-63	Viracon	RoomSide® Low-E	62%	10%	0.28	0.23	0.20	2.23
Guardian	SNX 51/23	Guardian	SunGuard® IS-20	50%	14%	0.22	0.23	0.20	2.23
Guardian	SNX 51/23	AGC	Energy Select® 73	47%	14%	0.22	0.23	0.19	2.18
Vitro	Solarban® 90	Vitro	Sungate ThermL™	47%	14%	0.22	0.23	0.19	2.18

Clear Triple Pane Low-E Performance

1/4" Clear Low-E / 1/2" Spacer / 1/4" Clear Low-E / 1/2" Spacer / 1/4" Clear

Second Surface Low-E		Fourth Surface Low-E		Visible Light		Solar Heat Gain Coefficient	Winter U-Value Center of Glass		Light to Solar Gain
Mfg.	Coating	Mfg.	Coating	Transmittance	Exterior Reflectance		Air (100%)	Argon (90%)	
Guardian	SuperNeutral® 68	Guardian	SuperNeutral® 68	52%	13%	0.29	0.16	0.12	1.77
Vitro	Solarban® 60	Vitro	Solarban® 60	56%	13%	0.31	0.16	0.12	1.82
Guardian	SNX 62/27	Guardian	SNX 62/27	43%	13%	0.20	0.15	0.12	2.14
Guardian	SNX 60+	Guardian	SNX 60+	41%	16%	0.19	0.15	0.12	2.25
Vitro	Solarban® 70	Vitro	Solarban® 70	44%	13%	0.21	0.15	0.12	2.11

Hard Coat Low-E Performance

1/4" Substrate / 1/2" Spacer / 1/4" Clear

Second Surface Low-E			Visible Light			Solar Heat Gain Coefficient	Winter U-Value Center of Glass		Light to Solar Gain
Mfg.	Substrate	Product	Transmittance	Exterior Reflectance	Interior Reflectance		Air (100%)	Argon (90%)	
AGC	Clear	Energy Select® 73	75%	16%	17%	0.63	0.33	0.29	1.19
Pilkington	Optifloat™ Clear	Energy Advantage™	74%	16%	18%	0.62	0.33	0.29	1.20
Pilkington	Optifloat™ Clear	Solar E™	54%	11%	16%	0.45	0.33	0.29	1.19
Pilkington	Optifloat™ Clear	Eclipse Advantage™	61%	29%	32%	0.56	0.35	0.31	1.09
Pilkington	Optifloat™ Bronze	Eclipse Advantage™	35%	13%	31%	0.39	0.35	0.31	0.90
Pilkington	Optifloat™ Grey	Eclipse Advantage™	30%	11%	31%	0.35	0.35	0.31	0.87
Pilkington	Optifloat™ Grey	Solar E™ Plus	22%	6%	15%	0.26	0.33	0.29	0.84

* Center of glass performance data provided by respective manufacturer via public information. Values are subject to change at any time and without notice. Contact Manko for glass performance report.

* All performance values calculated with 100% air in the airspace, except for Center of Glass U-Value with Argon. Argon values calculated with 90% argon, 10% air