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coating # 2	Color index	selectivity	total UV trans. (%)	Visible light			Solar energy						thermal energy	
				Trans. (%)	Reflection (%)		Trans. (%)	Ref. (%)	Abs. (%)	Solar Factor (%)	Shading Coefficient		U-value	
					Out (%)	In (%)					EN410	ISO9050	air	argon
				Ra65	SI	τ _{uv}	τ _v	ρ _v [']	ρ _v	τ _e	ρ _e	α _e	g	SC
clear substrate														
Astron	97	1.40	17	73	17	15	47	27	26	52	0.60	0.56	1.4	1.2
Elite	97	1.68	7	67	14	15	36	29	35	40	0.46	0.44	1.4	1.1
Crystal	95	1.45	13	61	18	13	37	27	36	42	0.48	0.46	1.4	1.2
Safir	95	1.74	6	61	15	18	31	31	38	35	0.40	0.38	1.4	1.1
Carat	93	1.86	4	52	14	15	24	27	49	28	0.32	0.31	1.3	1.1
Galaxy	87	1.82	4	40	16	19	18	30	52	22	0.25	0.24	1.4	1.1
Silver	95	1.59	7	43	47	42	24	49	27	27	0.31	0.29	1.3	1.0
Bright Silver	92	1.15	3	30	47	24	17	49	34	26	0.30	0.28	1.3	1.0
Super Silver	93	0.84	2	21	47	14	13	49	38	25	0.29	0.28	1.3	1.0
gold on clear substrate														
Gold	75	1.10	6	11	49	53	6	48	46	10	0.11	0.11	1.7	1.5
Amber	76	1.00	5	11	35	51	6	40	54	11	0.13	0.11	1.7	1.5
Topaz	82	1.24	10	21	25	43	12	33	55	17	0.20	0.18	1.8	1.6
Bright Gold	71	0.80	3	8	49	29	4	48	48	10	0.11	0.10	1.7	1.5
Bright Amber	73	0.80	3	8	35	28	4	40	56	10	0.11	0.11	1.7	1.5
Bright Topaz	78	0.94	5	15	25	24	8	33	59	16	0.18	0.17	1.8	1.5
Super Gold	73	0.50	3	5	49	16	2	48	49	10	0.11	0.10	1.7	1.5
Super Amber	74	0.60	2	6	35	16	3	40	57	10	0.11	0.11	1.7	1.5
Super Topaz	80	0.67	3	10	25	14	6	33	61	15	0.17	0.17	1.8	1.6
aqua substrate														
Astron	90	1.54	10	60	13	14	34	13	53	39	0.45	0.43	1.4	1.2
Elite	89	1.70	4	56	11	15	28	13	59	33	0.38	0.36	1.4	1.1
Crystal	87	1.59	7	51	14	13	27	13	60	32	0.37	0.36	1.4	1.2
Safir	87	1.76	4	51	12	18	24	14	62	29	0.33	0.31	1.4	1.1
Carat	86	1.79	2	43	11	15	19	13	68	24	0.28	0.26	1.3	1.1
Galaxy	80	1.74	2	33	13	19	14	14	72	19	0.22	0.21	1.4	1.1
Silver	89	1.59	4	35	34	42	18	25	57	22	0.25	0.24	1.3	1.0
Bright Silver	85	1.19	2	25	34	24	12	24	64	21	0.24	0.23	1.3	1.0
Super Silver	87	0.81	2	17	34	13	9	24	67	21	0.24	0.23	1.3	1.0
azuria substrate														
Astron	79	1.77	11	55	12	14	26	9	65	31	0.36	0.33	1.4	1.2
Elite	78	1.82	4	51	10	15	23	8	69	28	0.32	0.30	1.4	1.1
Crystal	77	1.81	8	47	12	12	21	8	71	26	0.30	0.29	1.4	1.2
Safir	76	1.88	4	47	11	18	20	8	72	25	0.29	0.28	1.4	1.1
Carat	76	1.90	3	40	10	15	16	8	76	21	0.24	0.23	1.3	1.1
Galaxy	70	1.72	2	31	12	19	12	8	80	18	0.21	0.20	1.4	1.1
Silver	78	1.78	4	32	30	42	14	17	69	18	0.21	0.21	1.3	1.0
Bright Silver	75	1.28	2	23	30	24	10	16	74	18	0.21	0.20	1.3	1.0
Super Silver	76	0.94	2	16	30	13	7	16	77	17	0.20	0.20	1.3	1.0
blue substrate														
Astron	81	1.39	9	46	10	13	27	10	63	33	0.38	0.36	1.4	1.2
Elite	80	1.54	4	43	8	14	23	10	67	28	0.32	0.30	1.4	1.1
Crystal	79	1.44	6	39	10	12	22	10	68	27	0.31	0.30	1.4	1.2
Safir	78	1.56	3	39	9	17	20	11	69	25	0.29	0.26	1.4	1.1
Carat	78	1.65	2	33	8	15	15	10	75	20	0.23	0.22	1.3	1.1
Galaxy	72	1.47	2	25	9	19	12	11	77	17	0.20	0.18	1.4	1.1
Silver	80	1.42	3	27	22	42	14	18	68	19	0.22	0.21	1.3	1.0
Bright Silver	77	1.06	2	19	22	23	10	18	72	18	0.21	0.20	1.3	1.0
Super Silver	79	0.72	1	13	22	13	8	18	74	18	0.21	0.20	1.3	1.0
deep blue substrate														
Astron	72	1.42	4	34	7	13	19	7	74	24	0.28	0.26	1.4	1.2
Elite	71	1.48	2	31	7	14	16	7	77	21	0.24	0.23	1.4	1.1
Crystal	70	1.33	3	28	7	12	15	7	78	21	0.24	0.23	1.4	1.2
Safir	69	1.53	2	29	7	17	14	7	79	19	0.22	0.21	1.4	1.1
Carat	69	1.50	1	24	7	14	11	7	82	16	0.18	0.18	1.3	1.1
Galaxy	64	1.36	1	19	7	19	9	7	84	14	0.16	0.15	1.4	1.1
Silver	72	1.33	2	20	14	42	10	11	79	15	0.17	0.16	1.3	1.0
Bright Silver	69	1.00	1	14	14	23	7	11	82	14	0.16	0.16	1.3	1.0
Super Silver	70	0.71	1	10	14	13	5	11	84	14	0.16	0.16	1.3	1.0

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coating # 2	Color index	selectivity	total UV trans. (%)	Visible light			Solar energy						thermal energy	
				Trans. (%)	Reflection (%)		Trans. (%)	Ref. (%)	Abs. (%)	Solar Factor (%)	Shading Coefficient		U-value	
					Out (%)	In (%)					EN410	ISO9050	air	argon
				Ra65	SI	τ _{uv}	τ _v	ρ _v [']	ρ _v	τ _e	ρ _e	α _e	g	SC
clear low-iron substrate														
Astron	98	1.36	24	75	17	15	53	33	14	55	0.63	0.60	1.4	1.2
Elite	99	1.67	8	70	14	16	40	36	24	42	0.48	0.45	1.4	1.1
Crystal	97	1.40	18	63	18	14	42	33	25	45	0.52	0.48	1.4	1.2
Safir	97	1.75	8	63	15	19	34	38	28	36	0.41	0.39	1.4	1.1
Carat	95	1.86	6	54	14	16	26	35	39	29	0.33	0.31	1.3	1.1
Galaxy	89	1.86	5	41	17	20	19	38	43	22	0.25	0.24	1.4	1.1
Silver	96	1.57	9	44	49	44	27	61	12	28	0.32	0.30	1.3	1.0
Bright Silver	93	1.15	4	31	49	24	18	61	21	27	0.31	0.29	1.3	1.0
Super Silver	93	0.81	3	21	48	14	14	61	25	26	0.30	0.29	1.3	1.0
green substrate														
Astron	89	1.76	6	60	13	14	29	10	61	34	0.39	0.37	1.4	1.2
Elite	88	1.83	3	55	11	15	25	9	66	30	0.34	0.32	1.4	1.1
Crystal	86	1.72	4	50	13	13	24	10	66	29	0.33	0.32	1.4	1.2
Safir	86	1.85	2	50	11	18	22	10	68	27	0.31	0.29	1.4	1.1
Carat	85	1.95	1	43	11	15	18	9	73	22	0.25	0.24	1.3	1.1
Galaxy	79	1.83	1	33	12	19	13	10	77	18	0.21	0.20	1.4	1.1
Silver	87	1.75	2	35	33	42	16	19	65	20	0.23	0.22	1.3	1.0
Bright Silver	84	1.32	1	25	33	24	11	19	70	19	0.22	0.21	1.3	1.0
Super Silver	85	0.89	1	17	33	13	8	19	73	19	0.22	0.21	1.3	1.0
silvergry substrate														
Astron	94	1.37	9	52	11	14	33	15	52	38	0.44	0.41	1.4	1.2
Elite	93	1.55	4	48	9	14	26	15	59	31	0.36	0.33	1.4	1.1
Crystal	91	1.42	6	44	11	12	26	15	59	31	0.36	0.34	1.4	1.2
Safir	91	1.63	3	44	10	18	22	16	62	27	0.31	0.29	1.4	1.1
Carat	90	1.68	2	37	9	15	17	15	68	22	0.25	0.24	1.3	1.1
Galaxy	84	1.56	2	28	10	19	13	16	71	18	0.21	0.20	1.4	1.1
Silver	92	1.43	3	30	26	42	17	25	58	21	0.24	0.23	1.3	1.0
Bright Silver	89	1.10	2	22	26	23	12	25	63	20	0.23	0.22	1.3	1.0
Super Silver	90	0.75	1	15	26	13	9	25	66	20	0.23	0.22	1.3	1.0
grey substrate														
Astron	94	1.13	7	36	7	13	26	13	61	32	0.37	0.34	1.4	1.2
Elite	95	1.32	3	33	7	14	20	14	66	25	0.29	0.26	1.4	1.1
Crystal	93	1.15	5	30	8	12	20	13	67	26	0.30	0.29	1.4	1.2
Safir	93	1.36	3	30	7	17	17	14	69	22	0.25	0.23	1.4	1.1
Carat	91	1.44	2	26	7	14	13	13	74	18	0.21	0.20	1.3	1.1
Galaxy	20	1.43	1	20	7	19	9	14	77	14	0.16	0.16	1.4	1.1
Silver	93	1.17	2	21	15	42	13	20	67	18	0.21	0.20	1.3	1.0
Bright Silver	90	0.88	1	15	15	23	9	20	71	17	0.20	0.18	1.3	1.0
Super Silver	90	0.59	1	10	15	13	7	20	73	17	0.20	0.18	1.3	1.0
bronze substrate														
Astron	92	1.21	6	41	8	13	28	15	57	34	0.39	0.37	1.4	1.2
Elite	93	1.46	2	38	7	14	21	16	63	26	0.30	0.29	1.4	1.1
Crystal	93	1.21	4	34	9	12	22	15	63	28	0.32	0.30	1.4	1.2
Safir	94	1.52	2	35	8	17	18	16	66	23	0.26	0.25	1.4	1.1
Carat	93	1.53	1	29	7	14	14	14	72	19	0.22	0.21	1.3	1.1
Galaxy	91	1.47	1	22	8	19	10	16	74	1				

6mm monolithic

coating # 2	Color index	selectivity	total UV trans. (%)	Visible light			Solar energy						thermal energy
				Trans. (%)	Reflection		Trans. (%)	Refl. (%)	Abs. (%)	Solar Factor (%)	Shading Coefficient		U-value air (W/m².K)
					Out (%)	In (%)					EN410	ISO9050	
RaD65	SI	τ _{uv}	τ _v	ρ _v	ρ _v	τ _e	ρ _e	α _e	g	SC	U _g		
clear substrate													
SS08	98	0.47	4	8	42	37	7	39	54	17	0.20	0.20	4.4
SS14	98	0.58	8	14	31	37	12	28	60	24	0.28	0.28	4.6
SS20	98	0.69	9	20	23	33	16	20	64	29	0.33	0.33	4.8
SS35	97	0.78	24	35	13	20	32	12	56	45	0.52	0.52	5.3
SB20	96	0.75	7	21	22	32	15	23	62	28	0.32	0.32	4.8
SB30	95	0.81	12	30	16	29	23	17	60	37	0.43	0.41	5.0
SB40	95	0.85	17	40	10	22	33	11	56	47	0.54	0.53	5.3
aqua substrate													
SS08	91	0.37	2	7	31	37	4	21	75	19	0.22	0.22	4.4
SS14	90	0.50	4	12	23	37	8	16	76	24	0.28	0.28	4.6
SS20	91	0.63	5	17	17	32	11	12	77	27	0.31	0.31	4.8
SS35	89	0.76	12	29	10	20	21	8	71	38	0.44	0.44	5.3
SB20	93	0.63	4	17	16	32	11	13	76	27	0.31	0.31	4.8
SB30	94	0.76	6	25	12	29	16	10	74	33	0.38	0.37	5.0
SB40	94	0.87	8	34	8	22	22	7	71	39	0.45	0.44	5.3
azuria substrate													
SS08	80	0.32	2	6	27	37	3	15	82	19	0.22	0.22	4.4
SS14	79	0.48	4	11	20	37	6	12	82	23	0.26	0.26	4.6
SS20	79	0.60	5	15	16	32	8	10	82	25	0.29	0.29	4.8
SS35	77	0.82	13	27	10	20	15	7	78	33	0.38	0.38	5.3
SB20	82	0.64	4	16	15	32	8	10	82	25	0.29	0.29	4.8
SB30	83	0.79	6	23	11	29	11	8	81	29	0.33	0.33	5.0
SB40	83	0.91	9	31	8	22	15	6	79	34	0.39	0.38	5.3
blue substrate													
SS08	82	0.26	2	5	20	37	4	16	80	19	0.22	0.22	4.4
SS14	81	0.39	3	9	16	37	6	12	82	23	0.26	0.26	4.6
SS20	82	0.50	4	13	12	32	9	10	81	26	0.30	0.30	4.8
SS35	79	0.66	10	23	8	20	17	7	76	35	0.40	0.40	5.3
SB20	85	0.50	3	13	12	32	9	10	81	26	0.30	0.30	4.8
SB30	86	0.61	5	19	9	28	13	8	79	31	0.36	0.34	5.0
SB40	86	0.72	7	26	7	22	18	7	75	36	0.41	0.40	5.3
deep blue substrate													
SS08	73	0.20	1	4	13	37	2	10	88	20	0.23	0.23	4.4
SS14	72	0.32	2	7	10	37	4	8	88	22	0.25	0.25	4.6
SS20	72	0.36	2	9	9	32	6	7	87	25	0.29	0.28	4.8
SS35	70	0.52	5	16	6	20	11	6	83	31	0.36	0.36	5.3
SB20	76	0.42	2	10	8	32	6	7	87	24	0.28	0.28	4.8
SB30	77	0.50	2	14	7	28	8	6	86	28	0.32	0.31	5.0
SB40	77	0.61	3	19	6	22	12	5	83	31	0.36	0.36	5.3

coating # 2	Color index	selectivity	total UV trans. (%)	Visible light			Solar energy						thermal energy
				Trans. (%)	Reflection		Trans. (%)	Refl. (%)	Abs. (%)	Solar Factor (%)	Shading Coefficient		U-value air (W/m².K)
					Out (%)	In (%)					EN410	ISO9050	
RaD65	SI	τ _{uv}	τ _v	ρ _v	ρ _v	τ _e	ρ _e	α _e	g	SC	U _g		
clear low-iron substrate													
SS08	98	0.50	5	8	44	37	7	48	45	16	0.18	0.20	4.4
SS14	99	0.63	10	15	32	37	13	34	53	24	0.28	0.28	4.6
SS20	98	0.72	12	21	24	33	17	25	58	29	0.33	0.34	4.8
SS35	98	0.77	32	36	14	20	35	14	51	47	0.54	0.54	5.3
SB20	95	0.75	10	21	22	32	17	28	55	28	0.32	0.32	4.8
SB30	94	0.82	15	31	16	29	25	20	55	38	0.44	0.43	5.0
SB40	94	0.85	24	41	10	22	36	14	50	48	0.55	0.55	5.3
green substrate													
SS08	90	0.32	1	6	30	37	4	17	79	19	0.22	0.22	4.4
SS14	89	0.52	2	12	23	37	7	13	80	23	0.26	0.26	4.6
SS20	89	0.65	3	17	17	32	9	11	80	26	0.30	0.30	4.8
SS35	88	0.83	7	29	10	20	18	7	75	35	0.40	0.40	5.3
SB20	91	0.65	2	17	16	32	9	11	80	26	0.30	0.30	4.8
SB30	92	0.81	3	25	12	29	13	9	78	31	0.36	0.34	5.0
SB40	93	0.92	5	33	8	22	18	7	75	36	0.41	0.41	5.3
grey substrate													
SS08	95	0.20	1	4	14	37	4	16	80	20	0.23	0.22	4.4
SS14	95	0.30	2	7	11	37	7	12	81	23	0.26	0.26	4.6
SS20	95	0.38	3	10	9	32	9	10	81	26	0.30	0.30	4.8
SS35	95	0.47	7	17	6	20	18	7	75	36	0.41	0.41	5.3
SB20	94	0.38	2	10	9	32	9	11	80	26	0.30	0.30	4.8
SB30	94	0.48	4	15	7	28	13	8	79	31	0.36	0.36	5.0
SB40	95	0.54	5	20	6	22	19	6	75	37	0.43	0.41	5.3
silvergry substrate													
SS08	95	0.32	2	6	24	37	5	21	74	19	0.22	0.22	4.4
SS14	94	0.42	3	10	18	37	8	16	76	24	0.28	0.28	4.6
SS20	94	0.52	4	14	14	32	11	12	77	27	0.31	0.31	4.8
SS35	93	0.66	10	25	9	20	22	8	70	38	0.44	0.44	5.3
SB20	95	0.56	3	15	13	32	11	13	76	27	0.31	0.31	4.8
SB30	96	0.67	5	22	10	29	16	10	74	33	0.36	0.37	5.0
SB40	96	0.74	7	29	7	22	23	7	70	39	0.45	0.45	5.3
bronze substrate													
SS08	90	0.21	1	4	16	37	4	18	78	19	0.22	0.22	4.4
SS14	92	0.33	2	8	13	37	7	14	79	24	0.28	0.26	4.6
SS20	91	0.41	3	11	10	32	10	10	80	27	0.31	0.31	4.8
SS35	94	0.54	6	20	7	20	20	7	73	37	0.43	0.43	5.3
SB20	88	0.46	2	12	10	32	9	12	79	26	0.30	0.30	4.8
SB30	86	0.53	3	17	8	28	14	9	77	32	0.37	0.36	5.0
SB40	87	0.61	5	23	6	22	21	7	72	38	0.44	0.44	5.3

coating # 2	Color index RaD65	selectivity SI	total UV trans. (%) τ_{uv}	Visible light				Solar energy						thermal energy	
				Trans. (%) τ_v	Reflection		Trans. (%) τ_e	Refl. (%) ρ_e	Abs. (%) α_e	Solar Factor (%) g	Shading Coefficient		U-value		
					Out (%) ρ'_v	In (%) ρ_v					EN410	ISO9050	air	argon	
													(W/m ² .K)		(W/m ² .K)
SC														Ug	
clear substrate															
SS08	97	0.64	3	7	42	38	6	39	55	11	0.13	0.13	2.1	2.0	
SS14	96	0.76	6	13	32	38	10	28	62	17	0.20	0.20	2.2	2.1	
SS20	97	0.86	7	18	23	34	13	21	66	21	0.24	0.24	2.3	2.2	
SS35	95	0.91	18	32	14	24	27	13	60	35	0.40	0.40	2.5	2.4	
SB20	96	0.95	6	19	22	34	13	23	64	20	0.23	0.23	2.3	2.2	
SB30	96	0.96	9	27	17	31	20	17	63	28	0.32	0.31	2.4	2.3	
SB40	96	1.00	13	37	11	26	28	12	60	37	0.40	0.41	2.5	2.4	
aqua substrate															
SS08	90	0.55	1	6	31	38	4	21	75	11	0.13	0.13	2.1	2.0	
SS14	89	0.73	3	11	23	38	7	16	77	15	0.17	0.17	2.2	2.1	
SS20	89	0.83	4	15	18	34	9	13	78	18	0.21	0.20	2.3	2.2	
SS35	87	1.00	10	27	11	24	18	9	73	27	0.31	0.31	2.5	2.4	
SB20	92	0.89	3	16	17	34	9	13	78	18	0.21	0.20	2.3	2.2	
SB30	93	1.00	5	23	13	31	14	10	76	23	0.26	0.25	2.4	2.3	
SB40	93	1.07	7	30	9	26	19	8	73	28	0.32	0.32	2.5	2.4	
azuria substrate															
SS08	70	0.60	2	6	27	38	3	15	82	10	0.11	0.11	2.1	2.0	
SS14	78	0.77	3	10	21	38	5	12	83	13	0.15	0.15	2.2	2.1	
SS20	78	0.88	4	14	16	34	7	10	83	16	0.18	0.17	2.3	2.2	
SS35	76	1.09	11	24	10	24	13	7	80	22	0.25	0.25	2.5	2.4	
SB20	81	0.93	3	14	15	34	7	10	83	15	0.17	0.17	2.3	2.2	
SB30	82	1.11	5	21	12	31	10	9	81	19	0.22	0.21	2.4	2.3	
SB40	82	1.22	8	28	8	26	14	7	79	23	0.26	0.25	2.5	2.4	
blue substrate															
SS08	81	0.45	1	5	20	38	3	16	81	11	0.13	0.13	2.1	2.0	
SS14	80	0.57	3	8	16	38	6	12	82	14	0.16	0.16	2.2	2.1	
SS20	80	0.75	4	12	12	34	8	10	82	16	0.18	0.18	2.3	2.2	
SS35	78	0.83	9	20	8	24	15	7	78	24	0.28	0.28	2.5	2.4	
SB20	83	0.75	3	12	12	34	7	10	83	16	0.18	0.18	2.3	2.2	
SB30	85	0.85	4	17	10	31	11	9	80	20	0.23	0.23	2.4	2.3	
SB40	85	0.92	6	23	7	25	16	7	77	25	0.29	0.28	2.5	2.4	
deep blue substrate															
SS08	72	0.30	1	3	13	38	2	10	88	10	0.11	0.11	2.1	2.0	
SS14	71	0.46	1	6	11	38	4	8	88	13	0.15	0.14	2.2	2.1	
SS20	71	0.64	2	9	9	34	5	7	88	14	0.16	0.16	2.3	2.2	
SS35	69	0.75	4	15	7	24	10	6	84	20	0.23	0.22	2.5	2.4	
SB20	74	0.64	1	9	8	34	5	7	88	14	0.16	0.16	2.3	2.2	
SB30	76	0.76	2	13	7	31	7	6	87	17	0.20	0.20	2.4	2.3	
SB40	75	0.85	3	17	6	25	10	6	84	20	0.23	0.23	2.5	2.4	

IGU 6I(16)6 clear

coating # 2	Color index RaD65	selectivity SI	total UV trans. (%) τ_{uv}	Visible light				Solar energy						thermal energy	
				Trans. (%) τ_v	Reflection		Trans. (%) τ_e	Refl. (%) ρ_e	Abs. (%) α_e	Solar Factor (%) g	Shading Coefficient		U-value		
					Out (%) ρ'_v	In (%) ρ_v					EN410	ISO9050	air	argon	
													(W/m ² .K)		(W/m ² .K)
SC														Ug	
clear low-iron substrate															
SS08	98	0.73	4	8	44	40	7	48	45	11	0.13	0.13	2.1	2.0	
SS14	99	0.82	9	14	33	40	12	34	54	17	0.20	0.20	2.2	2.1	
SS20	98	0.86	11	19	24	36	16	25	59	22	0.25	0.25	2.3	2.2	
SS35	97	0.87	27	33	15	25	32	15	53	38	0.44	0.44	2.5	2.4	
SB20	96	0.95	8	20	23	35	15	29	56	21	0.24	0.24	2.3	2.2	
SB30	94	0.97	13	29	17	32	23	20	57	30	0.34	0.33	2.4	2.3	
SB40	95	0.97	20	38	11	27	33	15	52	39	0.45	0.45	2.5	2.4	
green substrate															
SS08	89	0.55	1	6	30	38	3	17	80	11	0.13	0.13	2.1	2.0	
SS14	88	0.79	2	11	23	38	6	13	81	14	0.16	0.16	2.2	2.1	
SS20	88	0.88	2	15	17	34	8	11	81	17	0.20	0.18	2.3	2.2	
SS35	86	1.08	6	26	11	24	15	8	77	24	0.28	0.28	2.5	2.4	
SB20	90	1.00	2	16	16	34	8	11	81	16	0.18	0.18	2.3	2.2	
SB30	91	1.05	3	22	13	31	12	9	79	21	0.24	0.23	2.4	2.3	
SB40	91	1.20	4	30	9	26	16	7	77	25	0.29	0.29	2.5	2.4	
grey substrate															
SS08	95	0.36	1	4	14	38	3	16	81	11	0.13	0.13	2.1	2.0	
SS14	94	0.43	2	6	11	38	6	12	82	14	0.16	0.16	2.2	2.1	
SS20	94	0.56	3	9	9	34	8	10	82	16	0.18	0.18	2.3	2.2	
SS35	93	0.64	6	16	7	24	15	7	78	25	0.29	0.29	2.5	2.4	
SB20	94	0.56	2	9	9	34	7	11	82	16	0.18	0.18	2.3	2.2	
SB30	94	0.70	3	14	7	31	11	9	80	20	0.23	0.23	2.4	2.3	
SB40	95	0.69	4	18	6	25	16	7	77	26	0.30	0.29	2.5	2.4	
silvergry substrate															
SS08	94	0.45	1	5	24	38	4	21	75	11	0.13	0.13	2.1	2.0	
SS14	93	0.60	3	9	18	38	7	16	77	15	0.17	0.17	2.2	2.1	
SS20	93	0.72	4	13	14	34	9	12	79	18	0.21	0.21	2.3	2.2	
SS35	92	0.82	9	23	9	24	19	8	73	28	0.32	0.31	2.5	2.4	
SB20	94	0.82	3	14	13	34	9	13	78	17	0.20	0.20	2.3	2.2	
SB30	95	0.87	4	20	11	31	14	10	76	23	0.26	0.25	2.4	2.3	
SB40	95	0.90	6	26	8	26	19	8	73	29	0.33	0.32	2.5	2.4	
bronze substrate															
SS08	91	0.36	1	4	16	38	4	18	78	11	0.13	0.13	2.1	2.0	
SS14	93	0.50	2	7	13	38	6	14	80	14	0.16	0.16	2.2	2.1	
SS20	92	0.59	2	10	10	34	8	11	81	17	0.20	0.20	2.3	2.2	
SS35	95	0.69	5	18	7	24	17	7	76	26	0.30	0.30	2.5	2.4	
SB20	89	0.65	2	11	10	34	8	12	80	17	0.20	0.18	2.3	2.2	
SB30	88	0.76	3	16	8	31	12	9	79	21	0.24	0.24	2.4	2.3	
SB40	88	0.78	4	21	6	25	17	7	76	27	0.31	0.31	2.5	2.4	

IGU 6I(16)6 with e-Cool#3

coating # 2	Color index RaD65	selectivity SI	total UV trans. (%) τ_{uv}	Visible light				Solar energy					thermal energy	
				Trans. (%) τ_v	Reflection		Trans. (%) τ_e	Refl. (%) ρ_e	Abs. (%) α_e	Solar Factor (%) g	Shading Coefficient		U-value	
					Out (%) ρ'_v	In (%) ρ_v					EN410	ISO9050	air	argon
					SC						(W/m ² .K) Ug			
clear substrate														
SS08	96	0.78	1	7	42	37	4	39	57	9	0.10	0.09	1.4	1.1
SS14	96	0.92	3	12	32	37	8	29	63	13	0.15	0.14	1.4	1.1
SS20	96	1.06	3	17	23	33	10	21	69	16	0.18	0.18	1.4	1.1
SS35	96	1.07	8	29	14	25	19	15	66	27	0.31	0.30	1.4	1.1
SB20	95	1.06	2	17	22	33	10	24	66	16	0.18	0.17	1.4	1.1
SB30	94	1.14	4	25	17	31	15	18	67	22	0.25	0.24	1.4	1.1
SB40	94	1.14	6	33	11	26	21	14	65	29	0.33	0.31	1.4	1.1
aqua substrate														
SS08	90	0.75	1	6	31	37	3	21	76	8	0.09	0.09	1.4	1.1
SS14	89	0.91	1	10	23	37	5	16	79	11	0.13	0.13	1.4	1.1
SS20	90	1.08	2	14	18	33	7	13	80	13	0.15	0.15	1.4	1.1
SS35	88	1.14	4	24	11	25	14	9	77	21	0.24	0.23	1.4	1.1
SB20	91	1.08	1	14	17	33	7	13	80	13	0.15	0.15	1.4	1.1
SB30	92	1.24	2	21	13	30	11	11	78	17	0.20	0.20	1.4	1.1
SB40	93	1.27	3	28	9	26	15	8	77	22	0.25	0.24	1.4	1.1
azuria substrate														
SS08	80	0.63	1	5	27	37	2	15	83	8	0.09	0.08	1.4	1.1
SS14	78	0.90	2	9	21	37	4	12	84	10	0.11	0.11	1.4	1.1
SS20	79	1.08	2	13	16	33	6	10	84	12	0.14	0.13	1.4	1.1
SS35	77	1.29	5	22	10	25	11	8	81	17	0.20	0.18	1.4	1.1
SB20	81	1.08	2	13	15	33	6	10	84	12	0.14	0.13	1.4	1.1
SB30	82	1.36	3	19	12	30	8	9	83	14	0.16	0.16	1.4	1.1
SB40	82	1.39	4	25	9	26	11	7	82	18	0.21	0.20	1.4	1.1
blue substrate														
SS08	82	0.50	1	4	20	37	2	16	82	8	0.09	0.09	1.4	1.1
SS14	81	0.80	1	8	16	37	4	12	84	10	0.11	0.11	1.4	1.1
SS20	81	0.92	2	11	12	33	6	10	84	12	0.14	0.14	1.4	1.1
SS35	79	1.06	4	19	8	24	11	8	81	18	0.21	0.20	1.4	1.1
SB20	84	0.92	1	11	12	33	6	10	84	12	0.14	0.14	1.4	1.1
SB30	85	1.07	2	16	10	30	9	9	82	15	0.17	0.17	1.4	1.1
SB40	85	1.11	3	21	7	26	12	7	81	19	0.22	0.21	1.4	1.1
deep blue substrate														
SS08	73	0.43	0	3	13	37	2	10	88	7	0.08	0.08	1.4	1.1
SS14	72	0.67	1	6	11	37	3	8	89	9	0.10	0.10	1.4	1.1
SS20	72	0.80	1	8	9	33	4	7	89	10	0.11	0.11	1.4	1.1
SS35	70	1.00	2	14	7	24	8	6	86	14	0.16	0.16	1.4	1.1
SB20	75	0.80	1	8	8	33	4	7	89	10	0.11	0.11	1.4	1.1
SB30	76	1.00	1	12	7	30	6	7	87	12	0.14	0.14	1.4	1.1
SB40	76	1.00	1	15	6	26	8	6	86	15	0.17	0.16	1.4	1.1

coating # 2	Color index RaD65	selectivity SI	total UV trans. (%) τ_{uv}	Visible light				Solar energy					thermal energy	
				Trans. (%) τ_v	Reflection		Trans. (%) τ_e	Refl. (%) ρ_e	Abs. (%) α_e	Solar Factor (%) g	Shading Coefficient		U-value	
					Out (%) ρ'_v	In (%) ρ_v					EN410	ISO9050	air	argon
					SC						(W/m ² .K) Ug			
clear low-iron substrate														
SS08	96	0.88	1	7	44	37	5	48	47	8	0.09	0.09	1.4	1.1
SS14	97	0.92	3	12	33	37	8	34	58	13	0.15	0.15	1.4	1.1
SS20	96	1.00	4	17	24	33	11	26	63	17	0.20	0.18	1.4	1.1
SS35	97	1.07	9	30	15	25	20	18	62	28	0.32	0.31	1.4	1.1
SB20	94	1.06	3	18	23	33	11	29	60	17	0.20	0.18	1.4	1.1
SB30	94	1.13	4	26	17	31	16	22	62	23	0.26	0.25	1.4	1.1
SB40	94	1.13	6	34	11	26	22	17	61	30	0.34	0.33	1.4	1.1
green substrate														
SS08	89	0.63	0	5	30	37	3	17	80	8	0.09	0.09	1.4	1.1
SS14	88	1.00	1	10	23	37	5	13	82	10	0.11	0.11	1.4	1.1
SS20	88	1.17	1	14	17	33	7	11	82	12	0.14	0.14	1.4	1.1
SS35	87	1.26	3	24	11	25	12	8	80	19	0.22	0.21	1.4	1.1
SB20	90	1.08	1	14	16	33	7	11	82	13	0.15	0.14	1.4	1.1
SB30	90	1.31	1	21	13	30	10	9	81	16	0.18	0.17	1.4	1.1
SB40	91	1.35	2	27	9	26	13	7	80	20	0.23	0.22	1.4	1.1
grey substrate														
SS08	94	0.38	0	3	14	37	2	16	82	8	0.09	0.09	1.4	1.1
SS14	94	0.60	1	6	11	37	4	12	84	10	0.11	0.11	1.4	1.1
SS20	94	0.67	1	8	9	33	6	10	84	12	0.14	0.13	1.4	1.1
SS35	94	0.78	3	14	7	24	11	8	81	18	0.21	0.20	1.4	1.1
SB20	93	0.75	1	9	9	33	6	11	83	12	0.14	0.13	1.4	1.1
SB30	93	0.80	2	12	7	30	8	9	83	15	0.17	0.16	1.4	1.1
SB40	93	0.89	2	17	6	26	12	8	80	19	0.22	0.21	1.4	1.1
silvergry substrate														
SS08	94	0.63	1	5	24	37	3	21	76	8	0.09	0.09	1.4	1.1
SS14	93	0.82	1	9	18	37	5	16	79	11	0.13	0.13	1.4	1.1
SS20	93	0.92	2	12	14	33	7	12	81	13	0.15	0.15	1.4	1.1
SS35	92	1.05	4	21	9	25	13	9	78	20	0.23	0.22	1.4	1.1
SB20	93	0.92	1	12	13	33	7	13	80	13	0.15	0.15	1.4	1.1
SB30	94	1.06	2	18	11	30	11	11	78	17	0.20	0.18	1.4	1.1
SB40	94	1.09	3	24	8	26	15	9	76	22	0.25	0.24	1.4	1.1
bronze substrate														
SS08	90	0.50	0	4	16	37	3	18	79	8	0.09	0.09	1.4	1.1
SS14	91	0.70	1	7	13	37	5	14	81	10	0.11	0.11	1.4	1.1
SS20	91	0.83	1	10	10	33	6	11	83	12	0.14	0.14	1.4	1.1
SS35	93	0.84	2	16	8	24	11	9	80	19	0.22	0.21	1.4	1.1
SB20	87	0.83	1	10	10	33	6	12	82	12	0.14	0.14	1.4	1.1
SB30	86	0.88	1	14	8	30	9	10	81	16	0.18	0.17	1.4	1.1
SB40	87	0.95	2	19	6	26	13	8	79	20	0.23	0.22	1.4	1.1



IGU 6I(16)6

coating # 2	Color index RaD65	selectivity SI	total UV trans. (%) τ_{uv}	Visible light				Solar energy						thermal energy	
				Trans. (%) τ_v	Reflection		Trans. (%) τ_e	Refl. (%) ρ_e	Abs. (%) α_e	Solar Factor (%) g	Shading Coefficient		U-value		
					Out (%) ρ'_v	In (%) ρ_v					EN410	ISO9050	air	argon	
													(W/m ² .K)		(W/m ² .K)
														SC	Ug
clear substrate															
SS08	94	0.45	1	5	42	22	4	39	57	11	0.13	0.13	2.1	2.0	
SS14	93	0.56	3	9	31	22	7	28	65	16	0.18	0.18	2.2	2.1	
SS20	93	0.65	4	13	23	20	9	21	70	20	0.23	0.23	2.3	2.2	
SS35	91	0.70	9	23	14	14	18	13	69	33	0.38	0.38	2.5	2.4	
SB20	94	0.74	3	14	22	19	9	23	68	19	0.22	0.22	2.3	2.2	
SB30	95	0.77	4	20	16	18	14	17	69	26	0.30	0.30	2.4	2.3	
SB40	95	0.76	6	26	11	15	19	11	70	34	0.39	0.38	2.5	2.4	
aqua substrate															
SS08	86	0.36	1	4	31	22	3	21	76	11	0.13	0.13	2.1	2.0	
SS14	85	0.57	2	8	23	22	5	16	79	14	0.16	0.16	2.2	2.1	
SS20	86	0.65	2	11	18	20	7	13	80	17	0.20	0.20	2.3	2.2	
SS35	84	0.73	5	19	11	14	13	9	78	26	0.30	0.29	2.5	2.4	
SB20	88	0.65	2	11	17	19	6	13	81	17	0.20	0.18	2.3	2.2	
SB30	89	0.76	3	16	13	18	10	10	80	21	0.24	0.24	2.4	2.3	
SB40	89	0.81	4	22	9	15	13	8	79	27	0.31	0.30	2.5	2.4	
azuria substrate															
SS08	76	0.40	1	4	27	22	2	15	83	10	0.11	0.11	2.1	2.0	
SS14	74	0.54	2	7	21	22	4	12	84	13	0.15	0.15	2.2	2.1	
SS20	75	0.67	2	10	16	20	5	10	85	15	0.17	0.17	2.3	2.2	
SS35	73	0.86	6	18	10	14	9	7	84	21	0.24	0.24	2.5	2.4	
SB20	77	0.67	2	10	15	19	5	10	85	15	0.17	0.17	2.3	2.2	
SB30	79	0.83	3	15	12	18	7	9	84	18	0.21	0.21	2.4	2.3	
SB40	79	0.91	4	20	8	15	10	7	83	22	0.25	0.24	2.5	2.4	
blue substrate															
SS08	78	0.27	1	3	20	22	2	16	82	11	0.13	0.13	2.1	2.0	
SS14	77	0.43	2	6	16	22	4	12	84	14	0.16	0.15	2.2	2.1	
SS20	77	0.50	2	8	12	20	5	10	85	16	0.18	0.18	2.3	2.2	
SS35	75	0.65	5	15	8	14	11	7	82	23	0.26	0.26	2.5	2.4	
SB20	80	0.56	2	9	12	19	5	10	85	16	0.18	0.17	2.3	2.2	
SB30	81	0.63	2	12	10	18	8	9	83	19	0.22	0.22	2.4	2.3	
SB40	81	0.71	3	17	7	15	11	7	82	24	0.28	0.26	2.5	2.4	
deep blue substrate															
SS08	69	0.20	0	2	13	22	2	10	88	10	0.11	0.11	2.1	2.0	
SS14	68	0.33	1	4	11	22	3	8	89	12	0.14	0.14	2.2	2.1	
SS20	68	0.43	1	6	9	20	4	7	89	14	0.16	0.16	2.3	2.2	
SS35	66	0.58	2	11	7	14	7	6	87	19	0.22	0.22	2.5	2.4	
SB20	71	0.43	1	6	8	19	4	7	89	14	0.16	0.15	2.3	2.2	
SB30	72	0.56	1	9	7	18	5	6	89	16	0.18	0.18	2.4	2.3	
SB40	72	0.63	2	12	6	15	7	6	87	19	0.22	0.22	2.5	2.4	

coating # 2	Color index RaD65	selectivity SI	total UV trans. (%) τ_{uv}	Visible light				Solar energy						thermal energy	
				Trans. (%) τ_v	Reflection		Trans. (%) τ_e	Refl. (%) ρ_e	Abs. (%) α_e	Solar Factor (%) g	Shading Coefficient		U-value		
					Out (%) ρ'_v	In (%) ρ_v					EN410	ISO9050	air	argon	
													(W/m ² .K)		(W/m ² .K)
														SC	Ug
clear low-iron substrate															
SS08	95	0.50	1	5	44	22	4	48	48	10	0.11	0.13	2.1	2.0	
SS14	94	0.63	3	10	33	22	7	34	59	16	0.18	0.18	2.2	2.1	
SS20	94	0.65	4	13	24	20	10	25	65	20	0.23	0.23	2.3	2.2	
SS35	92	0.66	9	23	14	14	20	14	66	35	0.40	0.40	2.5	2.4	
SB20	95	0.70	3	14	22	19	10	29	61	20	0.23	0.22	2.3	2.2	
SB30	96	0.74	5	20	17	18	15	20	65	27	0.31	0.31	2.4	2.3	
SB40	96	0.75	7	27	11	15	21	14	65	36	0.41	0.40	2.5	2.4	
green substrate															
SS08	85	0.36	1	4	30	22	2	17	81	11	0.13	0.11	2.1	2.0	
SS14	84	0.57	1	8	23	22	4	13	83	14	0.16	0.15	2.2	2.1	
SS20	84	0.69	1	11	17	20	6	11	83	16	0.18	0.18	2.3	2.2	
SS35	83	0.83	3	19	11	14	11	8	81	23	0.26	0.26	2.5	2.4	
SB20	87	0.69	1	11	16	19	6	11	83	16	0.18	0.18	2.3	2.2	
SB30	88	0.80	2	16	13	18	8	9	83	20	0.23	0.22	2.4	2.3	
SB40	88	0.88	2	21	9	15	11	7	82	24	0.28	0.26	2.5	2.4	
grey substrate															
SS08	92	0.27	1	3	14	22	2	16	82	11	0.13	0.13	2.1	2.0	
SS14	90	0.36	1	5	11	22	4	12	84	14	0.16	0.16	2.2	2.1	
SS20	91	0.44	1	7	9	20	5	10	85	16	0.18	0.18	2.3	2.2	
SS35	89	0.46	3	11	7	14	11	7	82	24	0.28	0.26	2.5	2.4	
SB20	92	0.44	1	7	9	19	5	11	84	16	0.18	0.17	2.3	2.2	
SB30	93	0.50	2	10	7	18	8	9	83	20	0.23	0.22	2.4	2.3	
SB40	93	0.54	3	13	6	15	11	7	82	24	0.28	0.28	2.5	2.4	
silvergry substrate															
SS08	90	0.36	1	4	24	22	3	21	76	11	0.13	0.13	2.1	2.0	
SS14	89	0.50	2	7	18	22	5	16	79	14	0.16	0.16	2.2	2.1	
SS20	89	0.53	2	9	14	20	6	12	82	17	0.20	0.20	2.3	2.2	
SS35	88	0.62	5	16	9	14	13	8	79	26	0.30	0.30	2.5	2.4	
SB20	91	0.59	2	10	13	19	6	13	81	17	0.20	0.18	2.3	2.2	
SB30	93	0.67	2	14	11	18	10	10	80	21	0.24	0.24	2.4	2.3	
SB40	93	0.70	3	19	8	15	13	8	79	27	0.31	0.30	2.5	2.4	
bronze substrate															
SS08	92	0.27	0	3	16	22	2	18	80	11	0.13	0.13	2.1	2.0	
SS14	94	0.36	1	5	13	22	4	14	82	14	0.16	0.16	2.2	2.1	
SS20	93	0.44	1	7	10	20	6	11	83	16	0.18	0.18	2.3	2.2	
SS35	95	0.52	3	13	7	14	11	7	82	25	0.29	0.28	2.5	2.4	
SB20	90	0.50	1	8	10	19	6	12	82	16	0.18	0.18	2.3	2.2	
SB30	90	0.55	1	11	8	18	8	9	83	20	0.23	0.23	2.4	2.3	
SB40	90	0.60	2	15	6	15	12	7	81	25	0.29	0.29	2.5	2.4	



coating # 2	Color index RaD65	selectivity SI	total UV trans. (%) τ _{uv}	Visible light				Solar energy						thermal energy	
				Trans. (%) τ _v	Reflection		Trans. (%) τ _e	Refl. (%) ρ _e	Abs. (%) α _e	Solar Factor (%) g	Shading Coefficient		U-value		
					Out (%) ρ' _v	In (%) ρ _v					EN410	ISO9050	air	argon	
													(W/m ² .K) SC		(W/m ² .K) U _g
clear substrate															
SS08	94	0.63	1	5	42	21	3	39	58	8	0.09	0.09	1.4	1.1	
SS14	93	0.69	1	9	31	21	5	29	66	13	0.15	0.14	1.4	1.1	
SS20	93	0.80	2	12	23	19	7	21	72	15	0.18	0.17	1.4	1.1	
SS35	92	0.81	4	21	14	15	13	15	72	26	0.30	0.29	1.4	1.1	
SB20	93	0.75	1	12	22	19	7	24	69	16	0.18	0.17	1.4	1.1	
SB30	94	0.86	2	18	16	18	11	18	71	21	0.24	0.23	1.4	1.1	
SB40	94	0.86	3	24	11	16	14	14	72	28	0.32	0.30	1.4	1.1	
aqua substrate															
SS08	87	0.50	0	4	31	21	2	21	77	8	0.09	0.09	1.4	1.1	
SS14	86	0.64	1	7	23	21	4	16	80	11	0.13	0.13	1.4	1.1	
SS20	86	0.77	1	10	18	19	5	13	82	13	0.15	0.15	1.4	1.1	
SS35	85	0.85	3	17	11	15	10	9	81	20	0.23	0.22	1.4	1.1	
SB20	88	0.77	1	10	17	19	5	13	82	13	0.15	0.15	1.4	1.1	
SB30	90	0.88	1	15	13	18	8	11	81	17	0.20	0.18	1.4	1.1	
SB40	90	0.95	2	20	9	15	11	8	81	21	0.24	0.23	1.4	1.1	
azuria substrate															
SS08	76	0.50	0	4	27	21	2	15	83	8	0.09	0.08	1.4	1.1	
SS14	75	0.70	1	7	21	21	3	12	85	10	0.11	0.10	1.4	1.1	
SS20	76	0.82	1	9	16	19	4	10	86	11	0.13	0.13	1.4	1.1	
SS35	74	0.94	3	16	10	15	8	8	84	17	0.20	0.18	1.4	1.1	
SB20	78	0.82	1	9	15	19	4	10	86	11	0.13	0.13	1.4	1.1	
SB30	79	1.00	1	14	12	18	6	9	85	14	0.16	0.16	1.4	1.1	
SB40	79	1.06	2	18	8	15	8	7	85	17	0.20	0.20	1.4	1.1	
blue substrate															
SS08	79	0.38	0	3	20	21	2	16	82	8	0.09	0.09	1.4	1.1	
SS14	77	0.50	1	5	16	21	3	12	85	10	0.11	0.11	1.4	1.1	
SS20	78	0.67	1	8	12	19	4	10	86	12	0.14	0.13	1.4	1.1	
SS35	76	0.72	2	13	8	15	8	8	84	18	0.21	0.20	1.4	1.1	
SB20	80	0.67	1	8	12	19	4	10	86	12	0.14	0.13	1.4	1.1	
SB30	82	0.73	1	11	10	18	6	9	85	15	0.17	0.16	1.4	1.1	
SB40	82	0.83	2	15	7	15	9	7	84	18	0.21	0.21	1.4	1.1	
deep blue substrate															
SS08	70	0.29	0	2	13	21	1	10	89	7	0.08	0.08	1.4	1.1	
SS14	69	0.44	0	4	11	21	2	8	90	9	0.10	0.10	1.4	1.1	
SS20	69	0.60	1	6	9	19	3	7	90	10	0.11	0.11	1.4	1.1	
SS35	67	0.71	1	10	7	15	6	6	88	14	0.16	0.15	1.4	1.1	
SB20	72	0.60	0	6	8	19	3	7	90	10	0.11	0.11	1.4	1.1	
SB30	73	0.67	1	8	7	18	4	7	89	12	0.14	0.14	1.4	1.1	
SB40	73	0.79	1	11	6	15	6	6	88	14	0.16	0.16	1.4	1.1	

coating # 2	Color index RaD65	selectivity SI	total UV trans. (%) τ _{uv}	Visible light				Solar energy						thermal energy	
				Trans. (%) τ _v	Reflection		Trans. (%) τ _e	Refl. (%) ρ _e	Abs. (%) α _e	Solar Factor (%) g	Shading Coefficient		U-value		
					Out (%) ρ' _v	In (%) ρ _v					EN410	ISO9050	air	argon	
													(W/m ² .K) SC		(W/m ² .K) U _g
clear low-iron substrate															
SS08	94	0.63	1	5	44	21	3	48	49	8	0.09	0.09	1.4	1.1	
SS14	94	0.69	1	9	33	21	6	34	60	13	0.15	0.14	1.4	1.1	
SS20	94	0.75	2	12	24	19	8	26	66	16	0.18	0.18	1.4	1.1	
SS35	93	0.78	4	21	14	15	14	18	68	27	0.31	0.30	1.4	1.1	
SB20	94	0.81	1	13	23	19	8	29	63	16	0.18	0.17	1.4	1.1	
SB30	94	0.82	2	18	17	18	11	22	67	22	0.25	0.24	1.4	1.1	
SB40	95	0.83	3	24	11	16	15	17	68	29	0.33	0.32	1.4	1.1	
green substrate															
SS08	86	0.50	0	4	30	21	2	17	81	8	0.09	0.09	1.4	1.1	
SS14	85	0.70	1	7	23	21	3	13	84	10	0.11	0.11	1.4	1.1	
SS20	85	0.83	1	10	17	19	5	11	84	12	0.14	0.14	1.4	1.1	
SS35	84	0.94	2	17	11	15	9	8	83	18	0.21	0.20	1.4	1.1	
SB20	87	0.83	1	10	16	19	5	11	84	12	0.14	0.14	1.4	1.1	
SB30	88	0.94	1	15	13	18	7	9	84	16	0.18	0.17	1.4	1.1	
SB40	88	1.05	1	20	9	15	9	7	84	19	0.22	0.21	1.4	1.1	
grey substrate															
SS08	91	0.25	0	2	14	21	2	16	82	8	0.09	0.09	1.4	1.1	
SS14	91	0.40	1	4	11	21	3	12	85	10	0.11	0.11	1.4	1.1	
SS20	91	0.50	1	6	9	19	4	10	86	12	0.14	0.13	1.4	1.1	
SS35	90	0.59	2	10	7	15	7	8	85	17	0.20	0.18	1.4	1.1	
SB20	91	0.50	1	6	9	19	4	11	85	12	0.14	0.13	1.4	1.1	
SB30	92	0.60	1	9	7	18	6	9	85	15	0.17	0.16	1.4	1.1	
SB40	92	0.67	1	12	6	15	8	8	84	18	0.21	0.20	1.4	1.1	
silvergry substrate															
SS08	91	0.38	0	3	24	21	2	21	77	8	0.09	0.09	1.4	1.1	
SS14	89	0.55	1	6	18	21	4	16	80	11	0.13	0.11	1.4	1.1	
SS20	90	0.69	1	9	14	19	5	12	83	13	0.15	0.14	1.4	1.1	
SS35	88	0.75	2	15	9	15	9	9	82	20	0.23	0.22	1.4	1.1	
SB20	91	0.69	1	9	13	19	5	13	82	13	0.15	0.14	1.4	1.1	
SB30	92	0.76	1	13	11	18	7	11	82	17	0.20	0.18	1.4	1.1	
SB40	92	0.81	2	17	8	15	10	9	81	21	0.24	0.23	1.4	1.1	
bronze substrate															
SS08	91	0.38	0	3	16	21	2	18	80	8	0.09	0.09	1.4	1.1	
SS14	92	0.50	1	5	13	21	3	14	83	10	0.11	0.11	1.4	1.1	
SS20	92	0.58	1	7	10	19	4	11	85	12	0.14	0.14	1.4	1.1	
SS35	94	0.67	1	12	7	15	8	9	83	18	0.21	0.20	1.4	1.1	
SB20	89	0.58	1	7	10	19	4	12	84	12	0.14	0.14	1.4	1.1	
SB30	88	0.67	1	10	8	18	6	10	84	15	0.17	0.17	1.4	1.1	
SB40	89	0.74	1	14	6	15	9	8	83	19	0.22	0.21	1.4	1.1	

coating # 3	Color index	selectivity	total UV trans. (%)	Visible light			Solar energy						thermal energy	
				Trans. (%)	Reflection		Trans. (%)	Refl. (%)	Abs. (%)	Solar Factor (%)	Shading Coefficient		U-value	
					Out (%)	In (%)					EN410	ISO9050	air	argon
					ρ'_v	ρ_v					τ_e	ρ_e	α_e	g
IGU 6(16)6														
clear	97	1.28	17	73	15	17	47	27	26	57	0.66	0.62	1.4	1.1
aqua	90	1.43	10	60	12	16	34	13	53	42	0.48	0.46	1.4	1.1
azuria	79	1.67	11	55	11	16	26	8	66	33	0.38	0.37	1.4	1.1
blue	81	1.28	9	46	9	15	27	10	63	36	0.41	0.38	1.4	1.1
deep blue	72	1.31	4	34	7	15	19	7	74	26	0.30	0.29	1.4	1.1
low-iron*	98	1.23	24	75	15	17	53	33	14	61	0.70	0.67	1.4	1.1
green	89	1.62	6	60	12	16	29	10	61	37	0.43	0.40	1.4	1.1
grey	94	1.06	7	36	7	15	26	13	61	34	0.39	0.37	1.4	1.1
silvergrey	94	1.24	9	52	10	15	33	15	52	42	0.48	0.45	1.4	1.1
bronze	92	1.11	6	41	8	15	28	14	58	37	0.43	0.40	1.4	1.1
IGU 8(16)6														
clear	97	1.29	17	72	15	17	45	25	30	56	0.64	0.61	1.4	1.1
aqua	87	1.47	8	56	11	16	30	11	59	38	0.44	0.41	1.4	1.1
azuria	73	1.67	10	50	10	15	22	8	70	30	0.34	0.32	1.4	1.1
blue	75	1.30	7	39	8	15	23	8	69	30	0.34	0.33	1.4	1.1
deep blue	64	1.24	3	26	6	14	14	6	80	21	0.24	0.23	1.4	1.1
low-iron*	98	1.23	24	75	15	17	53	32	15	61	0.70	0.67	1.4	1.1
green	85	1.67	5	55	11	16	25	8	67	33	0.38	0.36	1.4	1.1
grey	93	0.97	5	28	6	15	21	10	69	29	0.33	0.31	1.4	1.1
silvergrey	92	1.24	7	46	9	15	28	12	60	37	0.43	0.39	1.4	1.1
bronze	89	1.10	4	34	7	15	23	11	66	31	0.36	0.34	1.4	1.1

applicable to all the following performance tables :

- (1) the values given in the tables have a tolerance of +/- 3 points. (except U-value \pm 0.1)
 - (2) values for coatings positioned on surface #2 , exceptions indicated.
 - (3) light , solar & thermal values measured according to EN410 & EN673, exceptions indicated.
 - (4) for external colour impressions associated with various coatings , refer to CoolRay Brochure.
 - (5) simulations for other substrates , spacer thicknesses or combinations available on request.
- * values for both substrates in clear low-iron.

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Light Transmission:

Luminous flux (light) transmitted through the glass as a ratio (%) of the incident luminous flux represented by the illuminant D65 with spectral density between 380nm and 780nm.

Light Reflection (outside / inside) :

Luminous flux (light) reflected outside / inside by the glass as a ratio (%) of the incident luminous flux represented by the illuminant D65. Some building zones are restricted to low light reflection and local regulations need to be checked. The LRI must be correlated with the light transmittance to understand the mirror effect after sunset.

UV transmission:

Proportion on ultra-violet radiation permitted through the glass , for spectral density region between 280nm and 380nm. The lower the factor , the better protection against harmful rays and UV-fading . No residential glass product will completely block out all the UV light , but Low-E coatings provide very good reduction of UV transmission and slow the process of fading.

Illuminant D65:

the illuminant D65 has a spectral energy distribution that closely matches that of a black-body at 6500K. CIE standard illuminant D65 closely resembles the relative spectral energy distribution of north-sky daylight and is accordingly important in all colorimetric calculations requiring representative daylight.

Color Rendering Index (Ra):

The CRI defines the spectral transmissive quality of glass or other transparent materials. CRI measures the degree of correspondence between the chromatic appearance of objects lit by daylight and the chromatic appearance of the same object lit by daylight through the glass. The highest CRI attainable is 100 and values over 95 are considered ideal for residential purposes or for any particular area where natural light and high colour rendering are important.

Direct Energy Transmission (DET) / reflection (DER) / absorption (EA) :

proportion of solar energy transmitted / reflected or absorbed directly through / by or in the glass with spectral density between 300nm and 2150nm.

Solar Factor (SF) or total energy transmission (TET):

is the ratio (%) between the total solar energy entering through the glass and the incident solar energy. The total solar energy is the sum of the DET and the part of the re-radiated absorbed energy .The conditions for calculations and applicable parameters , sun position and surface heat coefficients are based on EN410 .

This factor is often confused or compared with the Solar Heat Gain Coefficient (SHGC) , but since the parameters for measurement are different , the results are only relatively comparable.

Shading Coefficient (SC) :

is obtained by dividing the SF or SHGC / 0.87 (solar factor for a 3mm clear float glass)

U-value (Ug) :

value of thermal insulation of a glass, expressed in W/m2K and determined by the quantity of heat (Watt) , transmitted per hour through 1m2 of wall , with a difference of 1K between the inside and the outside given specific internal and external environmental conditions.

The ASHRAE recognizes 2 different U-values (summer & winter) resulting from different measuring and calculation parameters then EN standards and even-though there is a conversion factor existing (1W/m2K = 5.678 Btu/hr.ft2.F) , published values should not be compared as such.

Relative Heat Gain (RHG) :

Is a factor that allows to compare 2 pieces of glass under the exact same conditions and calculation parameters in order to evaluate the % of improvement for MEP situations.

The alculatation method is based on the following approximation :

$$RHG (W/m2) = 630 \times SC + 7.8 \times U \text{ or } RHG (Btu/hr.ft2) = 200 \times SC + 14 \times U_{sum}$$

This factor has to be used very carefully considering the major influence of the building's orientation : facades oriented completely to the North or glass areas in shadow or night situations have obviously very little or no SC.

Selectivity Index (SI) or light to solar ratio (LSG):

Provides a gauge of the relative efficiency of different glass-types , in transmitting daylight while blocking solar energy transmissions (SF or SHGC). The higher the value , the more light is transmitted without addition of excessive amounts of heat.

Burj Khalifa-Podium
Office Entrance
Dubai, UAE





Guarantees

The guarantees provided on CoolRay, e-Cool and CoolPane coatings in single or IGU are valid only if all the necessary conditions are observed as well as the handling and installation of the unit. The limited guarantees are available on request.

Acceptance Criteria for coated glass

CoolRay, CoolPane and e-Cool coatings have been tested and evaluated according to EN1096 and are subject to the inspection criteria as stipulated in the EN1096, which are valid for factory review or in situ glazing.

If the defect in the glass substrate is more visible because of the coating, then it is considered a coating defect.

Distance of viewing: minimum 3m for vision and spandrel panels.

Conditions of Examinations

- Illumination:
 - artificial sky: flat surface emitting diffuse light with uniform brightness
 - daylight: uniform overcast sky with no direct sunlight.
- Angle of viewing :
 - Angle between the normal to the surface of the coated glass and the light beam
 - Proceeding to the eyes of the observer after reflection or transmission shall not exceed 30 deg.

Duration of inspection : each examination shall not take more than 20 sec.

Edge area (cut sizes): edge area is considered 5% from WxH

Main area: sight lines of the overall dimension (WxH) less edge area.

Under the conditions of the examinations indicated above, the following applies:

uniformity/stain : allowed as long as they are not visually disturbing.

Application

pinholes & spots: only when noted during the examination:

- 3mm: not allowed in main or edge area
- 2mm & 3mm: maximum 1/m² for main or edge area
- 2mm: maximum 3 per 0300x0300 mm
- 1mm: maximum 5 per 0400x0400 mm

clusters (accumulation or combination of all defects):

- not allowed in main area, allowed in edge area if outside the vision area.

scratches:

- length 75 mm: not allowed in main area, allowed if separated > 50 mm
- length 75 mm: allowed as long as local density is not visually disturbing.

Manufacturing limitations certifications & compliances

coated glass

CoolRay Astron , Crystal , Silver , Gold , Amber , Topaz and e-Cool

- maximum 2400mm x 3600mm
- minimum 0450mm x 1000mm
- tested EN1096 , class D

CoolRay Elite , Safir , Carat and Galaxy

- maximum 2000mm x 3600mm
- minimum 0450mm x 1000mm
- tested EN 1096 , class D

CoolPane SS08 , SS14 , SS20 , SB20 , SB30 and SB40

- maximum 2400mm x 3600mm
- minimum 0450mm x 1000mm
- tested EN 1096 , class B

edge works

In order to avoid internal edge reflection in structural applications, AAG recommends flat ground edges for all heat treated CoolRay & CoolPane. This must however be specifically indicated on the order, drawings and cutting lists. In absence of this information, all heat treated glass will be considered and processed with standard arised edges.

lamination

Laminated CoolRay and e-Cool are generally made using pre-laminated glass as a substrate, with total thickness restricted to maximum 12 mm. CoolPane can be post-laminated with the coating facing the PVB, if required or with the coating on surface #4 of the laminate.

silk-screening

CoolRay, e-Cool or CoolPane coatings can be deposited on silk-screened surfaces for decorative or glare control purposes. Please enquire for limitation or special applications.

edge deletion

CoolRay and e-Cool coatings need to be edge-deleted at the surfaces where the secondary and primary IGU sealants are in contact with the glass. The IGU sealants will therefore be visible in non-capped or structural applications as a picture frame. CoolPane coatings do not require edge deletion.



Emirates Sail Tower
Sharjah, UAE
CoolRay crystal on blue

AAG processes

AAG-therm (insulated glass units): tested EN 1279

- maximum 5000mm x 2500mm
- minimum 0500mm x 0250mm
- thickness
- certifications IGCC , IGMA
- spacer tubes mill finished , dark anodized or painted or stainless steel
- sealants poly-urethane or silicone dual seal with PIB
- interspace air , argon or krypton

AAG-safe (fully tempered glass): tested EN 12150, EN 12600

- maximum 3300mm x 7200mm
- minimum 0300mm x 0300mm
- thickness 4, 5, 6,8,10,12,15,19mm
- certifications SGCC (ANSI Z97.1 & CPSC 16CFR 1202.4)

AAG-dur (heat-strengthened glass): tested EN 1863

- maximum 3300mm x 7200mm
- minimum 0300mm x 0300mm
- thickness 6,8,10mm

AAG-soak (heat soak tested glass): tested EN 14179

- maximum 2500mm x 5000mm
- thickness 4,5,6,8,10,12,15,19mm

AAG-lam (laminated glass): tested EN 12543, EN 12600

- maximum 2500mm x 6000mm
- minimum 0500mm x 0500mm
- thickness max. 60mm
- certifications SGCC (ANSI Z97.1 & CPSC 16CFR 1202.4)

AAG-cur (cylindrical bent & tempered glass)

- maximum 6mm 2000mm (girth) x 3200mm
- 8,10mm 2400mm (girth) x 3200mm
- 12mm 2400mm (girth) x 3300mm
- 15mm 1700mm (girth) x 1000mm
- minimum 1000mm x 1000mm
- min.radius 1500mm



Almas Podium
Dubai, UAE
e-Cool on green

AAG-screen

- maximum 2500mm x 3500mm
- minimum 0500mm x 0500mm
- thickness 4,5,6,8,10,12,15mm

AAG-opac

- maximum 2500mm x 3500mm
- minimum 0500mm x 0500mm
- thickness 4,5,6,8,10,12,15,19m

AAG-etch

- maximum 3500mm x 2500mm
- minimum 0500mm x 0500mm
- thickness 4,5,6,8,10,12mm

Note : Refer to AAG's technical department for other thicknesses , dimensions , combinations or materials.