

OPTO-ENERGETIC PERFORMANCES FOR SOLAR CONTROL AND LOW-E COATINGS

STOPRAY — SOFT-COATED GLASS COMBINING SOLAR CONTROL AND LOW EMISSIVITY

	Coating Position	Colour	EN 410 (2011) LT (%)	SF (%)	LR ext (%)	LR int (%)	EA (%)	SC	EN 673 U_g value W/(m².K) [1]	Temperable/ Bendable	Cut size	Edge deletion	Shelf life
Double glazing 6-16-4 (with 90% Argon)													
Stopray Ultraselect 70/33 on Clearvision [2]	#2	Neutral	70	33	10	11	25	0,38	1.0	No	Yes	Yes	3 months
Stopray Ultraselect 60/27	#2	Neutral	60	27	11	15	39	0,31	1.0	No	Yes	Yes	3 months
Stopray Ultraselect 60/28	#2	Neutral	60	28	13	14	38	0,32	1.0	No	No	Yes	3 months
Stopray Ultraselect 51/23	#2	Neutral	51	23	16	15	37	0,26	1.0	No	Yes	Yes	3 months
Stopray Vision 70/35 (T) [3]	#2	Neutral	70	35	14	15	26	0,40	1.0	T vers.	Yes	Yes	3 months
Stopray Vision 62/33 (T) [3]	#2	Neutral	61	33	15	13	33	0,38	1.0	T Vers.	Yes	Yes	3 months
Stopray Neutral 60/33 (T) [3]	#2	Very neutral	60	33	13	11	34	0,38	1.0	T Vers.	No	Yes	3 months
Stopray Vision 52/27 (T) [3]	#2	Neutral	51	27	16	13	38	0,31	1.0	T Vers.	Yes	Yes	3 months
Stopray Neutral 50/27 (T) [3]	#2	Very neutral	50	27	13	11	42	0,31	1.0	T Vers.	No	Yes	3 months
Stopray Vision 40/21 (T) [3]	#2	Neutral	40	21	19	15	39	0,24	1.0	T Vers.	Yes	Yes	3 months
Stopray Grey 34/21T [3]	#2	Grey	34	21	6	13	68	0,24	1.0	Yes	No	Yes	3 months
Stopray Silver 44/27S [4]	#2	Silver	44	27	48	46	22	0,31	1.0	Yes	No	Yes	3 months
Stopray Silver 47/29	#2	Silver	47	29	40	30	26	0,33	1.0	No	Yes	Yes	3 months
Stopray Silver 25/17	#2	Silver	25	17	61	33	24	0,20	1.0	No	Yes	Yes	3 months
Stopray Smart 51/33	#2	Neutral	51	34	26	18	31	0,39	1.1	Yes	No	No [5]	9 months
Stopray Smart 30/20	#2	Neutral bluish	30	21	29	15	47	0,24	1.1	Yes	No	No [5]	9 months
Triple glazing 6-16-4-16-4 (coating in #2 - Clearvision - iplus 1.1 in #5 - with 90% Argon)													
Stopray Ultraselect 70/33 on Clearvision	#2	Neutral	63	31	12	15	28	0,36	0.5	No	Yes	Yes	3 months
Stopray Ultraselect 60/27	#2	Neutral	55	25	13	18	40	0,29	0,5	No	Yes	Yes	3 months
Stopray Ultraselect 60/28	#2	Neutral	55	26	14	18	39	0,30	0.5	No	No	Yes	3 months
Stopray Ultraselect 51/23	#2	Neutral	47	22	18	18	39	0,25	0.5	No	Yes	Yes	3 months
Stopray Vision 70/35 (T) [3]	#2	Neutral	65	33	17	18	28	0,38	0.5	T Vers.	Yes	Yes	3 months
Stopray Vision 62/33 (T) [3]	#2	Neutral	56	31	17	17	35	0,36	0.5	T Vers.	Yes	Yes	3 months
Stopray Neutral 60/33 (T) [3]	#2	Very neutral	55	31	15	15	36	0,36	0.5	T Vers.	No	Yes	3 months
Stopray Vision 52/27 (T) [3]	#2	Neutral	47	25	18	16	40	0,29	0.5	T Vers.	Yes	Yes	3 months
Stopray Neutral 50/27 (T) [3]	#2	Very neutral	46	25	14	14	44	0,29	0.5	T Vers.	No	Yes	3 months
Stopray Vision 40/21 (T) [3]	#2	Neutral	37	19	20	18	41	0,22	0.5	T Vers.	Yes	Yes	3 months
Stopray Silver 44/27S [4]	#2	Silver	41	25	49	45	23	0,29	0.5	Yes	No	Yes	3 months
Stopray Silver 47/29	#2	Silver	43	27	41	31	28	0,31	0.5	No	Yes	Yes	3 months
Stopray Silver 25/17	#2	Silver	23	16	61	34	25	0,18	0.5	No	Yes	Yes	3 months

ENERGY — SOFT-COATED GLASS COMBINING SOLAR CONTROL AND LOW EMISSIVITY

	Coating Position	Colour	EN 410 (2011) LT (%)	SF (%)	LR ext (%)	LR int (%)	EA (%)	SC	EN 673 U_g value W/(m².K) [1]	Temperable/ Bendable	Cut size	Edge deletion	Shelf life
Double glazing 6-16-4 (with 90% Argon)													
Energy 72/38 (T) [3]	#2	Neutral	72	38	13	14	27	0,44	1.0	T Vers.	Yes	Yes	3 months
Energy 70/37	#2	Neutral	70	37	12	15	29	0,43	1.0	No	Yes	Yes	3 months
Energy 65/42S [4]	#2	Neutral	65	42	26	24	21	0,48	1.0	Yes	No	Yes	3 months
Energy 65/41	#2	Neutral	65	41	25	24	21	0,47	1.0	No	No	Yes	3 months
Energy 72/38-AF [6]	#1 #2	Neutral	66	35	16	16	36	0,40	1.0	No	Yes	Yes	3 months
Triple glazing 6-16-4-16-4 (coating in #2 - Clearvision - iplus 1.1 in #5 - with 90% Argon)													
Energy 72/38 (T) [3]	#2	Neutral	66	35	16	18	29	0,41	0.5	T Vers.	Yes	Yes	3 months
Energy 70/37	#2	Neutral	64	35	15	18	32	0,40	0.5	No	Yes	Yes	3 months
Energy 65/42S [4]	#2	Neutral	60	38	28	26	25	0,44	0,5	Yes	No	Yes	3 months
Energy 65/41	#2	Neutral	60	38	27	26	24	0,44	0.5	No	No	Yes	3 months

IPASOL BRIGHT — REFLECTIVE COATED GLASS WITH SILVER AESTHETICS PROVIDING SOLAR CONTROL

	Coating Position	Colour	EN 410 (2011) LT (%)	SF (%)	LR ext (%)	LR int (%)	EA (%)	SC	EN 673 U_g value W/(m².K) [1]	Temperable/ Bendable	Cut size	Edge deletion	Shelf life
Single glazing 66.2 (coating in #2 against the PVB)													
ipasol Bright Neutral	#2	Shiny silver	73	68	23	23	19	0,78	5.4	Yes	Yes	No	Unlimited
ipasol Bright White	#2	Shiny silver	76	73	24	24	10	0,84	5.4	Yes	Yes	No	Unlimited

SUNERGY — NEUTRAL HARD-COATED GLASS OFFERING SOLAR PROTECTION AND GOOD THERMAL INSULATION

	Coating Position	Colour	EN 410 (2011) LT (%)	SF (%)	LR ext (%)	LR int (%)	EA (%)	SC	EN 673 U_g value W/(m².K) [1]	Temperable/ Bendable	Cut size	Edge deletion	Shelf life
Double glazing 6-16-4 (iplus 1.0 in #3 - with 90% Argon)													
Sunergy Clear	#2	Neutral	59	41	13	18	48	0,47	1.0	Yes	No	No	Unlimited
Sunergy Grey	#2	Grey	28	23	6	17	74	0,26	1.0	Yes	No	No	Unlimited

STOPSOL — REFLECTIVE COATED GLASS PROVIDING SOLAR CONTROL

	Coating Position	Colour	EN 410 (2011) LT (%)	SF (%)	LR ext (%)	LR int (%)	EA (%)	SC	EN 673 U_g value W/(m².K) [1]	Temperable/ Bendable	Cut size	Edge deletion	Shelf life
Double glazing 6-16-4 (iplus 1.0 in #3 - with 90% Argon)													
Stopsol Classic Clear	#2	Neutral	34	30	28	34	39	0,34	1.0	Yes	No	No	Unlimited
Stopsol Classic Grey	#2	Grey	16	17	10	34	74	0,20	1.0	Yes	No	No	Unlimited
Stopsol Classic Green	#2	Green	27	19	20	34	73	0,22	1.0	Yes	No	No	Unlimited
Stopsol Classic Bronze	#2	Bronze	19	19	12	34	69	0,22	1.0	Yes	No	No	Unlimited
Stopsol Supersilver Clear	#2	Neutral	54	42	37	36	20	0,48	1.0	Yes	No	No	Unlimited
Stopsol Supersilver Grey	#2	Grey	26	24	12	35	66	0,28	1.0	Yes	No	No	Unlimited
Stopsol Supersilver Green	#2	Green	44	27	27	36	61	0,31	1.0	Yes	No	No	Unlimited
Stopsol Supersilver Dark Blue	#2	Dark blue	35	24	18	35	66	0,28	1.0	Yes	No	No	Unlimited
Stopsol SilverLight PrivaBlue	#2	Intense blue	24	16	9	28	81	0,18	1.0	Yes	No	No	Unlimited

IPLUS / PLANIBEL LOW-E — THERMAL INSULATION, NEUTRAL AESTHETICS AND HIGH LIGHT TRANSMISSION

	Coating Position	Colour	EN 410 (2011) LT (%)	SF (%)	LR ext (%)	LR int (%)	EA (%)	SC	EN 673 U_g value W/(m².K) [1]	Temperable/ Bendable	Cut size	Edge deletion	Shelf life
Double glazing 4-16-4 (with 90% Argon)													
iplus 1.1	#3	Neutral	82	64	12	12	15	0,74	1.1	No	No	Yes	3 months
iplus 1.1T [3]	#3	Neutral	82	66	12	12	14	0,76	1.1	Yes	No	Yes	3 months
iplus 1.0	#3	Neutral	77	57	15	16	16	0,66	1.0	No	No	Yes	3 months
iplus 1.0NT [3]	#3	Neutral	77	57	15	16	14	0,66	1.0	Yes	No	Yes	3 months
iplus 1.0T [3]	#3	Neutral	81	62	13	14	13	0,71	1.0	Yes	No	Yes	3 months
iplus 1.1 -AF [6]	#1 #2	Neutral	75	55	15	14	24	0,63	1.1	No	No	Yes	3 months
Planibel A [7]	#3	Neutral	73	75	17	15	22	0,86	1.4	Yes	No	No	Unlimited
Planibel G & Planibel G fasT [7]	#3	Neutral	75	76	17	16	19	0,87	1.5	Yes	No	No	Unlimited
Triple glazing 4-16-4-16-4 (Low-e in #2 - Clearvision - Low-e in #5 - with 90% Argon)													
iplus 1.1	#2 #5	Neutral	75	53	15	15	21	0,61	0.6	No	No	Yes	3 months
iplus 1.1T [3]	#2 #5	Neutral	77	55	16	16	18	0,63	0.6	Yes	No	Yes	3 months
iplus 1.0	#2 #5	Neutral	66	43	22	22	22	0,49	0.5	No	No	Yes	3 months
iplus 1.0NT [3]	#2 #5	Neutral	66	44	21	21	20	0,51	0.5	Yes	No	Yes	3 months
iplus 1.0T [3]	#2 #5	Neutral	74	51	18	18	17	0,59	0.5	Yes	No	Yes	3 months
iplus 1.1-AF [6]	#1 #2 #5	Neutral	69	49	18	17	29	0,56	0.6	No	No	Yes	3 months
iplus LS	#2 #5	Neutral	75	61	17	17	19	0,70	0.7	No	No	Yes	3 months

[1] Identical values for a 15 or 16 mm spacer.
[2] Inner pane Planibel Clearvision.
[3] This coating must be heat-treated to reach its final performances and aesthetics. It can not be used annealed.
[4] Single stock product: it can be used for both annealed and heat-treated glass applications, while offering similar aesthetics and performances.
[5] Please follow the processing instructions in the "Stopray Smart Processing Guide" and in the "Stopray Smart Sealant Compatibility Guide".
[6] AF: Anti-fog coating.
[7] Pyrolytic coatings are not available on Low-Carbon Planibel Clearlite

Stopray, Energy, ipasol Bright and iplus coatings on Planibel Clearlite are also available on Low-Carbon Planibel Clearlite.

ACOUSTIC, SAFETY AND SECURITY PERFORMANCES

THERMOBEL

	Transmission loss function of sound frequencies[1]						Acoustics Indexes[1]				Norms	Total Thickness	Weight
	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	Rw (C;Ctr)	Rw	Rw+C	Rw+Ctr	Impact / Break-in		
	dB						dB				EN 12600 EN 356	mm	kg/m²
Double glazing													
4 - 16 - 4	20.5	16.8	25.7	36.4	41.4	36.5	30 (-1;-4)	30	29	26	NPD	24	20
6 - 15 - 6	21.5	21.4	31.0	38.7	30.8	39.2	32 (-1;-3)	32	31	29	NPD	27	30
6 - 15 - 4	22.0	23.5	31.8	43.1	41.9	43.4	36 (-1;-5)	36	35	31	NPD	25	25
10 - 15 - 6	22.0	28.7	36.4	40.7	39.1	49.6	38 (-1;-4)	38	37	34	NPD	31	40
Triple glazing													
4 - 12 - 4 - 12 - 4	18.7	19.0	28.4	41.6	46.7	39.8	33 (-2;-6)	33	31	27	NPD	36	30
6 - 15 - 4 - 15 - 4	15.0	25.2	33.0	43.5	42.2	44.7	36 (-2;-7)	36	34	29	NPD	44	35
8 - 12 - 4 - 12 - 6	22.2	28.8	36.7	44.0	40.1	52.5	39 (-2;-5)	39	37	34	NPD	42	45
10 - 12 - 4 - 12 - 6	24.0	27.5	36.0	41.8	42.9	55.5	40 (-2;-6)	40	38	34	NPD	44	50

THERMOBEL STRATOBEL

	Transmission loss function of sound frequencies[1]						Acoustics Indexes[1]				Norms	Total Thickness	Weight
	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	Rw (C;Ctr)	Rw	Rw+C	Rw+Ctr	Impact / Break-in		
	dB						dB				EN 12600 EN 356	mm	kg/m²
Double glazing with laminated glass													
4 - 16 - 44.2	22.0	23.2	33.6	43.3	48.6	50.6	37 (-2;-6)	37	35	31	1B1 / P2A	29	31
6 - 15 - 55.2	23.5	28.6	36.5	43.2	39.6	47.4	39 (-1;-4)	39	38	35	1B1 / P2A	32	41
44.2 - 14 - 44.6	26.6	27.0	38.8	43.0	43.1	60.8	40 (-1;-5)	40	39	35	1B1 / P5A	33	43
8 - 15 - 55.2	26.1	32.3	39.5	41.0	40.2	53.6	41 (-2;-4)	41	39	37	1B1 / P2A	34	46
66.2 - 15 - 44.2	26.5	33.6	39.7	41.3	44.6	60.8	42 (-2;-5)	42	40	37	1B1 / P2A	37	52
88.2 - 16 - 55.2	30.5	35.5	41.3	40.1	46.9	62.0	43 (-1;-4)	43	42	39	1B1 / P2A	44	67
Triple glazing with laminated glass													
4 - 12 - 4 - 12 - 33.2	17.7	24.3	33.0	43.7	47.6	47	36 (-1;-6)	36	35	30	1B1 / P2A	39	36
6 - 16 - 4 - 16 - 44.2	18.9	28.8	38.2	45.1	41.6	54.2	39 (-2;-7)	39	37	32	1B1 / P2A	51	46
8 - 16 - 6 - 16 - 44.2	24.9	28.3	37.8	42.3	42.1	56.6	40 (-2;-5)	40	38	35	1B1 / P2A	55	56
44.2 - 12 - 6 - 12 - 44.2	19.6	31.3	39.0	44.9	43.6	56.8	41 (-2;-8)	41	39	33	1B1 / P2A	48	57
8 - 16 - 6 - 16 - 55.2	23.9	31.1	41.0	49.1	50.5	60.9	43 (-2;-4)	43	41	39	1B1 / P2A	57	61
66.2 - 16 - 6 - 16 - 44.2	27.8	34.3	43.0	42.6	45.7	61.4	44 (-1;-5)	44	43	39	1B1 / P2A	60	67

THERMOBEL STRATOPHONE

	Transmission loss function of sound frequencies[1]						Acoustics Indexes[1]				Norms	Total Thickness	Weight
	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	Rw (C;Ctr)	Rw	Rw+C	Rw+Ctr	Impact / Break-in		
	dB						dB				EN 12600 EN 356	mm	kg/m²
Double glazing with acoustic laminated glass													
4 - 15 - 44.2 st	25.0	26.0	33.4	44.1	46.0	49.1	39 (-2;-5)	39	37	34	1B1 / P2A	28	31
6 - 15 - 66.2 st	27.2	30.7	39.3	44.7	44.8	54.6	42 (-1;-5)	42	41	37	1B1 / P2A	34	46
8 - 15 - 66.2 st	28.2	33.3	40.9	42.8	43.8	56.2	43 (-2;-5)	43	41	38	1B1 / P2A	36	51
44.2 st - 15 - 44.2 st	27.3	31.5	42.2	53.0	56.3	59.7	45 (-2;-7)	45	43	38	1B1 / P2A	33	42
10 - 16 - 44.2 st	26.2	33.2	42.7	46.7	50.9	57.9	45 (-2;-6)	45	43	39	1B1 / P2A	35	46
10 - 16 - 55.2 st	28.8	34.1	45.8	46.2	49.3	61.1	46 (-2;-6)	46	44	40	1B1 / P2A	37	51
55.2 st - 15 - 55.2 st	27.9	34.2	45.1	51.7	52.3	59.4	47 (-2;-7)	47	45	40	1B1 / P2A	37	52
66.2 st - 16 - 66.2 st	30.4	39.3	46.7	53.9	54.0	65.1	50 (-2;-7)	50	48	43	1B1 / P2A	42	62
88.2 st - 15 - 66.2 st	35.6	42.8	46.7	52	52.0	65.1	51 (-1;-4)	51	50	47	1B1 / P2A	45	72
88.2 st - 16 - 66.2 st	35.9	43.6	47.8	51.6	55.1	68.5	52 (-1;-5)	52	51	47	1B1 / P2A	46	72
Triple glazing with acoustic laminated glass													
4 - 12 - 4 - 12 - 44.2 st	21.2	25.7	35.4	46.4	49.5	49.5	39 (-2;-7)	39	37	32	1B1 / P2A	41	41
6 - 12 - 4 - 12 - 44.2 st	19.4	30.2	38.6	47.2	45.9	52.2	41 (-2;-8)	41	39	33	1B1 / P2A	43	46
44.2 - 12 - 4 - 12 - 44.2 st	23.9	31.1	41.0	49.1	50.5	60.9	43 (-2;-7)	43	41	36	1B1 / P2A	46	52
8 - 14 - 6 - 14 - 44.2 st	25.7	30.6	42.2	48.7	49.1	56.4	44 (-2;-7)	44	42	37	1B1 / P2A	51	56
44.2 st - 12 - 4 - 12 - 44.2 st	26.9	33.5	42.8	54.8	59.5	62.1	46 (-2;-7)	46	44	39	1B1 / P2A	46	52
10 - 12 - 6 - 12 - 44.2 st	30.0	32.7	41.5	48.4	52.1	62.1	46 (-2;-6)	46	44	40	1B1 / P2A	49	61
44.2 st - 10 - 4 - 10 - 66.2 st	27.4	35.9	44.1	53.0	55.2	63.2	47 (-1;-7)	47	46	40	1B1 / P2A	46	62
10 - 16 - 6 - 16 - 55.2 st	34.3	33.8	46.8	48.8	50.6	63.3	48 (-2;-6)	48	46	42	1B1 / P2A	59	66
88.2 st - 12 - 6 - 12 - 66.2 st	33.2	42.8	49.3	52.5	52.8	61.5	51 (-1;-5)	51	50	46	1B1 / P2A	60	87
1010.2 st - 14 - 8 - 14 - 88.2 st	38.8	44.9	51.9	50.5	55.5	65.8	53 (-1;-4)	53	52	49	1B1 / P2A	74	112

[1] These sound reduction values correspond to glazings of 1,23m by 1,48m according to EN ISO 717-1 & EN ISO 10140 which are tested in laboratory conditions.
The accuracy of the given indexes is not better than +/- 1dB. In-situ performances may vary according to the effective glazing dimensions, frame system, noise sources, etc.

ACOUSTICS INDEX

Rw Is the weighted sound reduction index.
This value is used to globally rate the noise insulation of the glass and is measured in decibels (dB).

C Correction factor for high frequency noise sources such as fast road traffic, daily activities, ...

Ctr Correction factor for low frequency noise sources such as urban traffic, long-haul airplane, nightclubs, ...

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CUSTOMISATION

- → OverSized Glass (>7m)
- → Tailor-Made Sizes (TMS)
- → Coating on Demand

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Precise information on availability per size or per region.

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