

Flat glass films	finish hardcoat	area of	thickness ca. [ μ ]	reference number	total solar energy			visible light		transmittance UV 300 - 380 nm (%)	total energy rejected	g - value	recommended combination with a glass type ( * )
					transmitted (%)	reflected (%)	absorbed (%)	transmitted (%)	reflected internal/external (%)				
<b>sun protection film - interior use</b>													
silver 20R sr **	sr	interior	50	30000	13	52	35	16	55	<1	78	0,21	1/2
silver 35R sr **	sr	interior	50	30100	22	44	34	29	44	<1	69	0,30	1/2
silver 50R sr **	sr	interior	50	30250	33	29	38	46	28	<1	55	0,44	1/2
brilliant 70NR sr	sr	interior	50	31105	49	27	24	70	15	<1	49	0,5	1/2
imperial 65S sr	sr	interior	50	31100	42	28	30	60	19	<1	50	0,49	1/2
one way mirror film 7R sr **	sr	interior	50	30360	12	54	34	8	12/52	<1	80	0,19	1/2
<b>sun protection film - exterior use</b>													
silver 20R **		exterior	50	30020	13	65	22	18	63	<1	81	0,18	1/2/3
silver 20R Primus Plus	sr	exterior	70	30150	12	65	23	16	64	<1	84	0,15	1/2/3
silver 35R Primus Plus	sr	exterior	70	30155	20	49	31	27	51	<1	70	0,29	1/2/3
silver 50R Primus Plus	sr	exterior	70	30180	31	33	36	47	28	<1	56	0,43	1/2/3
silver 20R sr Primus **	sr	exterior	70	OF30045	12	65	23	15	63	<1	83	0,16	1/2/3
silver 35R sr Primus **	sr	exterior	70	OF30145	24	48	28	31	45	<1	69	0,3	1/2/3
silver 50R sr Primus **	sr	exterior	70	OF30060	37	34	29	48	30	<1	55	0,44	1/2/3
bronze 20S sr Primus	sr	exterior	70	OF30070	10	62	28	17	47	<1	83	0,16	1/2/3
grey 20S sr Primus	sr	exterior	70	OF33740	15	42	43	18	15/33	<1	74	0,25	1/2/3*
grey 35S sr Primus	sr	exterior	70	OF33760	27	27	46	36	13/23	<1	61	0,38	1/2/3*
grey 50S sr Primus	sr	exterior	70	OF33790	36	25	39	50	14/19	<1	53	0,46	1/2/3*
optimal 45NR sr Primus	sr	exterior	70	30195	28	30	42	48	12/18	<0,01	62	0,38	1/2/3*
optimal 70NR sr Primus	sr	exterior	70	30185	38	30	32	68	17/18	<0,01	55	0,44	1/2/3
one way mirror film 7R sr Primus **	sr	exterior	70	33900	7	59	34	8	17/55	<1	84	0,15	1/2/3
silver for PC and PMMA **	sr	exterior	85	OF30065	12	65	23	15	63	<1	83	0,16	1/2/3
<b>UV protection film - interior use</b>													
UV 90 NR sr	sr	interior	50	34400	85	8	7	84	8	0,1	14	0,85	1/2/3
<b>Decorative and ornamental film - interior use</b>													
stripes white 10mm		interior	50	39700									1/2/3
squares white 35mm		interior	50	39710									1/2/3
ice age		interior	125	39330									1/2/3
<b>Privacy film - interior or exterior use</b>													
white matte classic		interior	50	34600	64	16	20	67	20	1	29	0,7	1/2/3
silver matte		interior	50	34500	13	49	38	16	60	1	78	0,21	1/2
white opaque		interior	80	34605	10	49	41	7	58	5	70	0,29	1/2
black opaque		interior	50	38010	0,2	11,8	88	0,01	13	0	72	0,27	1
silver white opaque Primus sr **	sr	exterior	150	34610	8	76	16	5,5	79	1	85	0,14	1/2/3
silver black opaque Primus sr **	sr	exterior	150	34620	0,1	81,9	18	0,009	89	0	95	0,04	1/2/3
<b>Surface protection film - interior or exterior use</b>													
anti-vandalism film clear for PC and PMMA	sr	exterior	115	30160	82	8	10	87	9	<1	21	0,78	1/2/3
anti-vandalism film clear for glass	sr	exterior	190	OF39940	80	12	8	89	11	<4	16	0,83	1/2/3
<b>Safety / Anti-shatter film - interior or exterior use</b>													
clear safe 115μ sr <sup>2</sup>	sr	interior	115	35100	81	9	10	89	8	<5	16	0,83	1/2/3
clear safe 190μ sr <sup>2</sup>	sr	interior	190	35200	81	9	10	88	8	<5	16	0,83	1/2/3
clear safe 230μ sr <sup>2</sup>	sr	interior	230	35400	81	9	10	88	8	<5	16	0,83	1/2/3
safe 115μ sr Primus <sup>2</sup>	sr	exterior	115	OF35150	81	9	10	89	8	<1	16	0,83	1/2/3
safe 175μ sr Primus <sup>2</sup>	sr	exterior	175	OF35250	81	9	10	88	8	<1	16	0,83	1/2/3
silver safe 115μ sr <sup>2</sup>	sr	interior	115	30010	13	52	35	16	55	<1	78	0,21	1/2
white matte safe 125μ sr <sup>2</sup>	sr	interior	150	A030773	67	18	15	69	12	<3	28	0,71	1/2/3
AS A1 sr <sup>3</sup>	sr	interior	300	12010	77	9	14	86	9	<2	18	0,81	1/2/3
AS A1 sr <sup>3</sup>	sr	interior	300	12015	77	9	14	86	9	<2	18	0,81	1/2/3

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<b>Specials</b>													
birsafe® bird protection film with rhombus gr	sr	exterior	115	35500	76	9	15	80	8	<1	20	0,79	1/2/3
birsafe® bird protection film with rhombus gr	sr	exterior	115	35550	76	9	15	80	8	<1	20	0,79	1/2/3
								frequency range(MHz-GHz)	shielding attenuation (dB)				
Shielding 16 RS sr	sr	interior	50	S60000	15	49	36	10-4	27	<1	78	0,21	1/2
Shielding 17 SB sr	sr	interior	70	S60010	9	61	30	10-4	32	<1	82	0,17	1/2
Shielding 70 SG sr	sr	interior	50	S60020	47	30	23	10-4	23	<1	48	0,51	1/2
Shielding 16 RS sr Primus Plus	sr	exterior	70	S60000EXT	14	63	23	10-4	26	<1	84	0,15	1/2/3
Shielding 25 RS sr Primus Plus	sr	exterior	70	S60030EXT	20	50	30	10-4	22	<1	70	0,29	1/2/3

<sup>2</sup>according to DIN EN 12600

<sup>3</sup>according to EN 356 P2A (former DIN 52290)

- \* non-binding recommendation for glass types:
- 1 float glass ; toughened glass (ESG)
  - 2 insulating glass
  - 3 laminated safety glass (VSG); heat- (Low-E) and sun protection glazing
  - 3\* VSG; heat- (Low-E) and sun protection glazing; only in combine with ESG as o

**\*\* important**

Please note that a extreme mirror effect might result from installation of high reflective exterior sun protection film on concaved surfaces.  
Due to highly concentrated light, objects placed next to the surfaces might melt or burn.

All data listed refer on a 3mm single glazing. The light transmission and light reflexion referred through a spectrometer under C.I.C and D-65 daylight.  
UV Transmittance was measured in the range of 300 - 380 nm. The rejection of the total solar energy tested according to HAVERKAMP standards.  
HAVERKAMP Primus series films are of limited suitability for roof windows. We recommend to use silver 20R or PRIMUS PLUS instead.  
All data is subject to normal manufacturing tolerances. Technical modifications reserved.