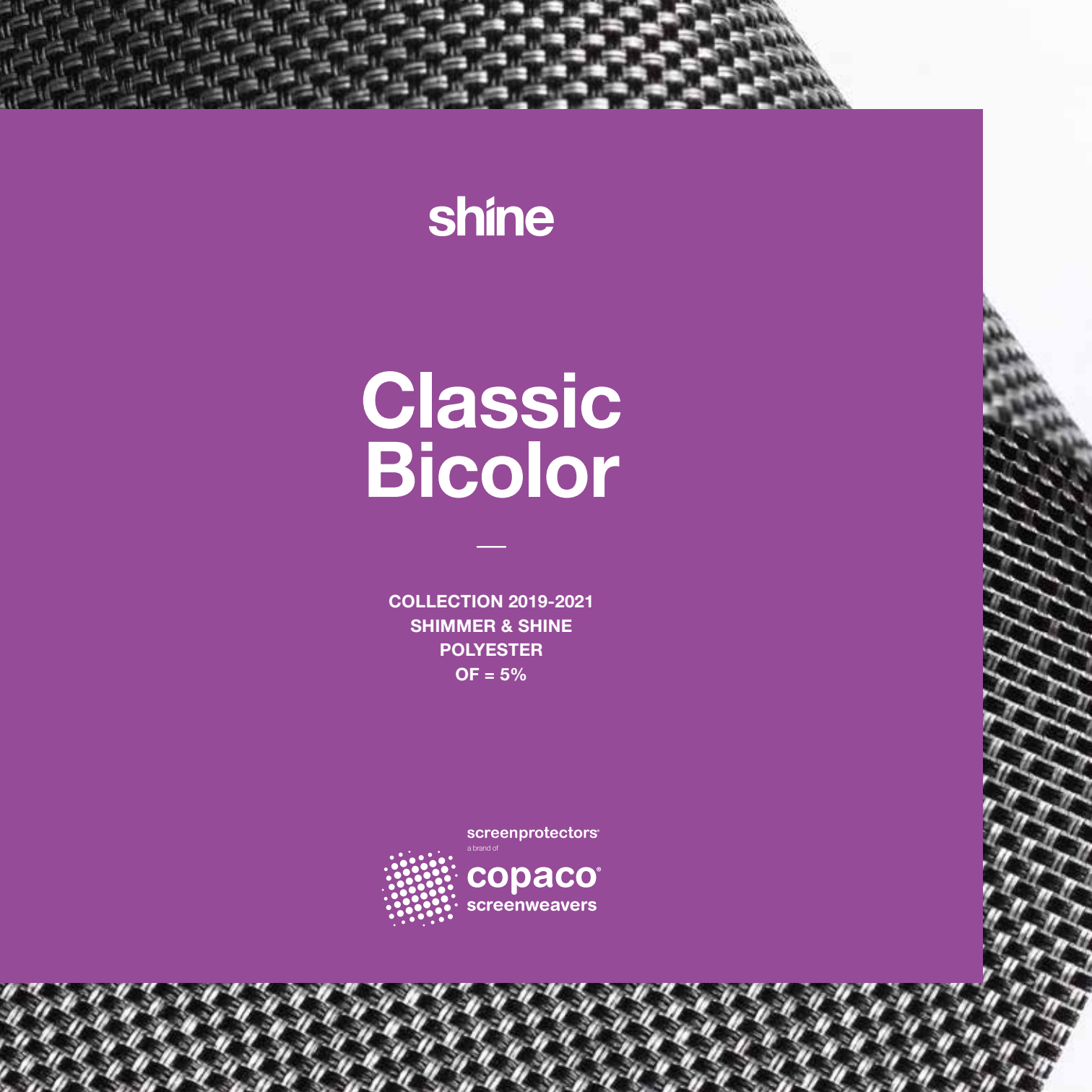


shine

Classic Bicolor

COLLECTION 2019-2021
SHIMMER & SHINE
POLYESTER
OF = 5%

screenprotectors®
a brand of
copaco®
screenweavers

Screens that will make any interior shimmer. Time to shine.

Shine Classic

Technical specifications

TECHNICAL SPECIFICATION		UNITY		STANDARD	RESULT
composition				Polyester 16% - PVC 84%	
openness factor		%		NBN EN 14500-B1	5%
weight		g/m²		NF EN 12127	530
thickness		mm		ISO 2286-3	0,77
density		yarn/cm	warp	ISO 7211/2	15
			weft		15
colour fastness to artificial light				ISO 105 B02	>7
tear strength	original	daN	warp	ISO 4674-1B	9,2
			weft		5,1
elongation up to break	original	%	warp	ISO 1421	21,33
			weft		32,94
breaking strength	original	daN	warp	ISO 1421	96,6
			weft		173,3
tear strength	after climatic chamber -30°C	daN	warp	ISO 4674-1B	8,8
			weft		5
elongation up to break	after climatic chamber -30°C	%	warp	ISO 1421	20,26
			weft		31,59
breaking strength	after climatic chamber -30°C	daN	warp	ISO 1421	97,4
			weft		173,1
tear strength	after climatic chamber +70°C	daN	warp	ISO 4674-1B	9,1
			weft		5,5
elongation up to break	after climatic chamber +70°C	%	warp	ISO 1421	23,27
			weft		33,94
breaking strength	after climatic chamber +70°C	daN	warp	ISO 1421	94,7
			weft		175,2
fire classification	Europe			UNE-EN 13501-1:2007	C-s3,d0
	France			NF P92-503	M2
	Spain			UNE EN 13773-2003	Clase 1
roll length	**30 m**				
confection welding	by heat, high frequency or ultrasonic welding by reinforce tape				
confection cut	cruch cut, ultrasonic, laser				

These properties are given as indicative and don't have any contractual value

POLYESTER **OF = 5%**

Shine Classic 099010 transparent | charcoal

Shine Classic

Colours & references

front back

Shine Classic 099099 transparent | transparent

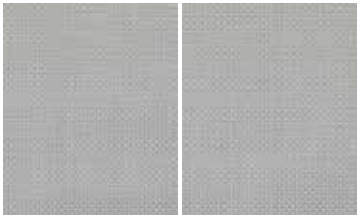
front back

Shine Classic 099002 transparent | white

front back

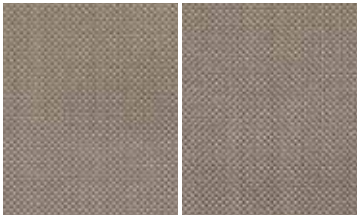
Shine Classic 099008 transparent | linen

front back



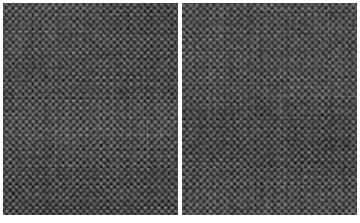
Shine Classic 099007 transparent | pearl grey

front back



Shine Classic 099011 transparent | bronze

front back



Shine Classic 099010 transparent | charcoal

Shine Classic	300 cm
099099 transparent | transparent	•
099002 transparent | white	•
099008 transparent | linen	•
099007 transparent | pearl grey	•
099011 transparent | bronze	•
099010 transparent | charcoal	•

POLYESTER **OF = 5%**

Solar energetic properties

Shine Classic European Standard EN 14501 Calculation G-value according to EN 13363-1, version 7.0					**SOLAR ENERGETIC PROPERTIES**							**VISUAL PROPERTIES**	
					FABRIC			**FABRIC + GLAZING** **INTERIOR** **G-factor = total solar energy transmittance**					
references	**colours**	front	back		**As = Solar Absorptance %**	**Rs = Solar Reflectance %**	**Ts = Solar Transmittance %**	**Glazing A - Gv = 0,85 - U = 5,8**	**Glazing B - Gv = 0,76 - U = 2,9**	**Glazing C - Gv = 0,59 - U = 1,2**	**Glazing D - Gv = 0,32 - U = 1,1**	**Tv = Visible Light Transmittance %**	**Tuv = UV Transmittance %**
099099	transparent | transparent			front	7,600	40,000	52,400	0,545	0,521	0,448	0,278	55,000	24,400
				back	7,600	40,000	52,400	0,545	0,521	0,448	0,278	55,000	24,400
099002	transparent | white			front	9,900	56,000	34,100	0,425	0,426	0,391	0,261	34,200	8,000
				back	10,000	55,900	34,100	0,425	0,426	0,391	0,261	34,200	8,000
099008	transparent | linen			front	19,200	50,100	30,700	0,448	0,450	0,409	0,265	29,400	8,500
				back	19,100	50,200	30,700	0,448	0,450	0,409	0,265	29,400	8,500
099007	transparent | pearl grey			front	42,900	35,300	21,800	0,506	0,511	0,451	0,276	18,900	8,800
				back	42,800	35,400	21,800	0,506	0,511	0,451	0,276	18,900	8,800
099011	transparent | bronze			front	59,300	23,000	17,700	0,561	0,565	0,488	0,286	15,900	8,600
				back	59,400	22,900	17,700	0,561	0,565	0,488	0,286	15,900	8,600
099010	transparent | charcoal			front	76,500	11,100	12,400	0,611	0,615	0,523	0,295	12,600	7,700
				back	76,700	10,900	12,400	0,611	0,615	0,523	0,295	12,600	7,700

Shine Bicolor

Technical specifications

TECHNICAL SPECIFICATION		UNITY		STANDARD	RESULT
composition				Polyester 15% - PVC 85%	
openness factor		%		NBN EN 14500-B1	5%
weight		g/m²		NF EN 12127	440
thickness		mm		ISO 2286-3	0,62
density		yarn/cm	warp	ISO 7211/2	19
			weft		19
colour fastness to artificial light				ISO 105 B02	>7
tear strength	original	daN	warp	ISO 4674-1B	2
			weft		4,1
elongation up to break	original	%	warp	ISO 1421	21,83
			weft		17,43
breaking strength	original	daN	warp	ISO 1421	80,2
			weft		64,5
tear strength	after climatic chamber -30°C	daN	warp	ISO 4674-1B	2
			weft		3,8
elongation up to break	after climatic chamber -30°C	%	warp	ISO 1421	20,9
			weft		13,43
breaking strength	after climatic chamber -30°C	daN	warp	ISO 1421	81,9
			weft		66,2
tear strength	after climatic chamber +70°C	daN	warp	ISO 4674-1B	2,1
			weft		3,8
elongation up to break	after climatic chamber +70°C	%	warp	ISO 1421	23,84
			weft		15,37
breaking strength	after climatic chamber +70°C	daN	warp	ISO 1421	79.4
			weft		64.8
fire classification	Europe			UNE-EN 13501-1:2007	C-s3,d0
	France			NF P92-503	M2
	Spain			UNE EN 13773-2003	Clase 1
roll length	**30 m**				
confection welding	by heat, high frequency or ultrasonic welding by reinforce tape				
confection cut	cruch cut, ultrasonic, laser				

These properties are given as indicative and don't have any contractual value

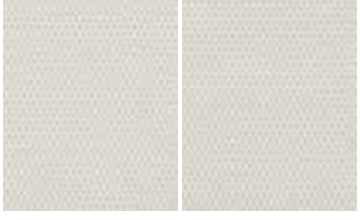
POLYESTER **OF = 5%**

Shine Bicolor 099011 transparent | bronze

Shine Bicolor

Colours & references

front back

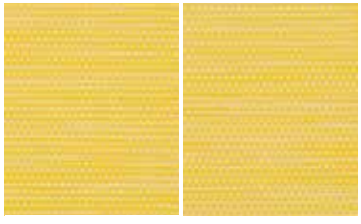


Shine Bicolor 099099 transparent | transparent

front back

Shine Bicolor 099002 transparent | white

front back

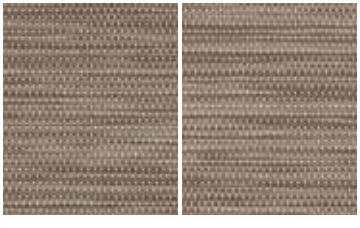


Shine Bicolor 099006 transparent | yellow

front back

Shine Bicolor 099007 transparent | pearl grey

front back



Shine Bicolor 099011 transparent | bronze

front back

Shine Bicolor 099001 transparent | grey

Shine Bicolor	250 cm
099099 transparent | transparent	•
099002 transparent | white	•
099006 transparent | yellow	•
099007 transparent | pearl grey	•
099011 transparent | bronze	•
099001 transparent | grey	•

POLYESTER **OF = 5%**

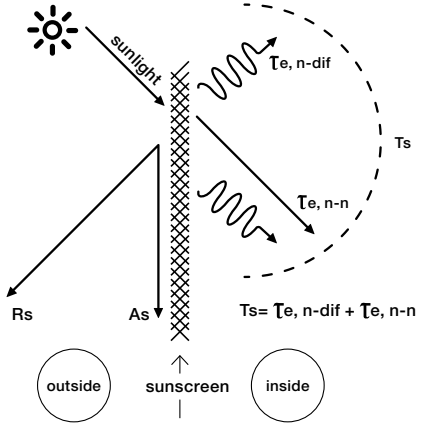
Solar energetic properties

Shine Bicolor European Standard EN 14501 Calculation G-value according to EN 13363-1, version 7.0					**SOLAR ENERGETIC PROPERTIES**							**VISUAL PROPERTIES**	
					FABRIC			**FABRIC + GLAZING** **INTERIOR** **G-factor = total solar energy transmittance**					
references	**colours**	front	back		**As = Solar Absorptance %**	**Rs = Solar Reflectance %**	**Ts = Solar Transmittance %**	**Glazing A - Gv = 0,85 - U = 5,8**	**Glazing B - Gv = 0,76 - U = 2,9**	**Glazing C - Gv = 0,59 - U = 1,2**	**Glazing D - Gv = 0,32 - U = 1,1**	**Tv = Visible Light Transmittance %**	**Tuv = UV Transmittance %**
099099	transparent | transparent			front	9,100	36,800	54,100	0,565	0,538	0,459	0,281	58,300	7,600
				back	8,900	37,000	54,100	0,565	0,538	0,459	0,281	58,300	7,600
099002	transparent | white			front	16,400	41,500	42,100	0,516	0,503	0,439	0,274	42,600	5,700
				back	16,500	41,400	42,100	0,516	0,503	0,439	0,274	42,600	5,700
099006	transparent | yellow			front	18,000	39,400	42,600	0,528	0,513	0,446	0,276	45,400	5,600
				back	18,100	39,300	42,600	0,528	0,513	0,446	0,276	45,400	5,600
099007	transparent | pearl grey			front	25,100	29,400	45,500	0,586	0,564	0,478	0,285	45,400	6,500
				back	25,100	29,400	45,500	0,586	0,564	0,478	0,285	45,400	6,500
099011	transparent | bronze			front	52,500	23,500	24,000	0,571	0,569	0,489	0,286	21,500	5,200
				back	52,300	23,700	24,000	0,571	0,569	0,489	0,286	21,500	5,200
099001	transparent | grey			front	46,300	22,400	31,300	0,592	0,582	0,495	0,289	31,300	6,800
				back	46,500	22,200	31,300	0,592	0,582	0,495	0,289	31,300	6,800

Working of a sunscreen

Sunscreen = protection against sunrays

Sunscreen means protection against the sunrays, so the function is the protection against light and heat, which is expressed in several properties.



Rs	Solar reflectance
As	Solar absorptance
Ts	Solar transmittance
τe,n-dif	Diffuse solar transmittance
τe,n-n	Normal solar transmittance

Classes indicate effect of a sunscreen

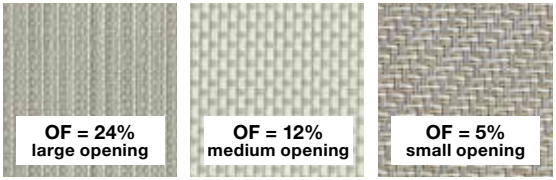
Based on certain properties, the screen can be split up in classes, from 0 to 4. Those classes are used, starting from the norm EN 14501, to indicate the effect of a certain sunscreen.

influence on thermal and visual comfort	
Class 0	very little effect
Class 1	little effect
Class 2	moderate effect
Class 3	good effect
Class 4	very good effect

Visual properties

Openness factor

The openness of a screen is indicated by the openness factor **= OF.** The openness coefficient is the relative area of the openings in the fabric seen under a given incidence. The openness factor is seen under a normal incidence.



The sunrays are subdivided in: **Visible light, UV-light** and **IR-light.**

Visible light (55% of the sun-energy) is that part for which our eyes are most sensitive. How larger the light intensity, how more detrimental for our eyes.

The factor Visible Light Transmittance = **Tv,** is the ratio of visible light that will be transmitted. How lower this factor can be kept, how better for the eyes.

UV-light (3% of the sun-energy) is the part of radiation which is detrimental for our health. This factor is indicated by the UV Transmittance = **Tuv.** This is the quantity UV-light transmitted by the sunscreen.

IR-light is invisible. This is however 42% of the sun-energy. These rays care for the reheating of solid substances and gases.

Influence of colours

The choice of the colour has direct influence on the criteria which justify the use of sunscreen protection:

- Protection against visible light, expressed by the factor **Tv.**
- Protection against sun-energy, expressed by the **G** value.
- Protection against secondary heat, expressed by the factor **Qi.**
- Protection against UV-light, expressed by the factor **Tuv.**

Visual properties: classes

Glare control

The capacity of the solar protection device to control the luminance level of openings and to reduce the luminance contrasts between different zones within the field.

$\tau_{v,n-n}$	$\tau_{v,n-dif}$			
	$\tau_{v,n-dif} < 0,02$	$0,02 \leq \tau_{v,n-dif} < 0,04$	$0,04 \leq \tau_{v,n-dif} < 0,08$	$\tau_{v,n-dif} \geq 0,08$
$\tau_{v,n-n} > 0,10$	0	0	0	0
$0,05 < \tau_{v,n-n} \leq 0,10$	1	1	0	0
$\tau_{v,n-n} \leq 0,05$	3	2	1	1
$\tau_{v,n-n} = 0,00$	4	3	2	2

Privacy at night

Night privacy is the capacity of an internal or external blind or a shutter in the fully extended position or fully extended and closed position to protect persons, at night in normal light conditions from external view. External views means the ability of an external observer located 5m from the fully extended and closed product, to distinguish a person or object standing 1m behind the protection device in the room.

$\tau_{v,n-n}$	$\tau_{v,n-dif}$		
	$0 < \tau_{v,n-dif} \leq 0,04$	$0,04 < \tau_{v,n-dif} \leq 0,15$	$\tau_{v,n-dif} > 0,15$
$\tau_{v,n-n} > 0,10$	0	0	0
$0,05 < \tau_{v,n-n} \leq 0,10$	1	1	1
$\tau_{v,n-n} \leq 0,05$	2	2	2
$\tau_{v,n-n} = 0,00$	4	3	2

Visual contact with the outside

Visual contact with the outside is the capacity of the solar protection device to allow an exterior view when it is fully extended. This function is affected by different light conditions during the day.

$\tau_{v,n-n}$	$\tau_{v,n-dif}$		
	$0 < \tau_{v,n-dif} \leq 0,04$	$0,04 < \tau_{v,n-dif} \leq 0,15$	$\tau_{v,n-dif} > 0,15$
$\tau_{v,n-n} > 0,10$	4	3	2
$0,05 < \tau_{v,n-n} \leq 0,10$	3	2	1
$\tau_{v,n-n} \leq 0,05$	2	1	0
$\tau_{v,n-n} = 0,00$	0	0	0

Daylight utilisation

Daylight utilisation is characterised by:
- the capacity of the solar protection device to reduce the time period during the artificial light is required.
- the capacity of the solar protection device to optimise the daylight which is available.

CLASS	0	1	2	3	4
$\tau_{v,dif-h}$	$\tau_{v,dif-h} < 0,02$	$0,02 \leq \tau_{v,dif-h} < 0,10$	$0,10 \leq \tau_{v,dif-h} < 0,25$	$0,25 \leq \tau_{v,dif-h} < 0,40$	$\tau_{v,dif-h} \geq 0,40$

Working of a sunscreen

Thermal comfort

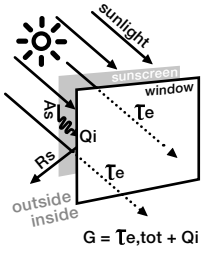
Fabric

Energy radiated by the sun, will be split up in 3 factors:

factor 1:	factor 2:	factor 3:
As = Solar absorptance is the ratio of the absorbed flux to the incident flux.	**Rs = Solar reflectance** is the fraction of the incident solar radiation that is directly reflected by the component.	**Ts = Solar transmittance** is the sum of the (normal) direct solar transmittance and the diffuse solar transmittance. This is the fraction of the total transmitted energy to the total incident solar radiation.
These 3 factors together are always 100%		

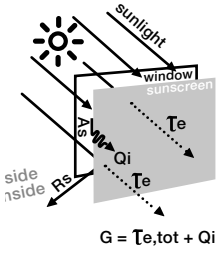
The G-factor

exterior sunscreen



G = Te,tot + Qi

interior sunscreen



G = Te,tot + Qi

Rs	Solar reflectance
As	Solar absorptance
Te	Direct solar transmittance
Qi	Secondary heat transfer factor
G	G-factor = total solar energy transmittance

Sunscreens are always used in combination with a glazing. These together will prevent a large quantity of energy, sent by the sun to the earth, which is indicated by the: Total Solar Energy Transmittance, or **G-factor.**

The **G** value is the ratio between the total solar energy transmitted into a room through a window and the incident solar energy on the window. The **Gtot** is the solar factor of the combination of glazing and solar protection device.
The **Gv** is the solar factor of the glazing alone.
The shading coefficient is defined as the ratio of the solar factor of the combined glazing and solar protection device **Gtot** to that of the glazing alone **Gv.**

The total solar energy transmitted through a window consists of two parts:
1) Radiation: measured by the solar transmittance: **Te,tot**
2) Heat: measured by the secondary heat transfer: **Qi**

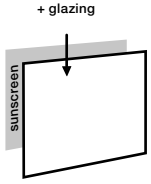
G = Te,tot + Qi

The factor **τe,tot,** is the quantity of energy, which will pass the combination solar protection device and window.
The factor **Qi** is the quantity of heat which is released by the absorption of energy in the sunscreen protection system = combination sunscreen + glazing.

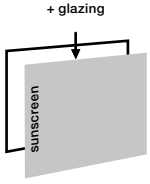
The **G-factor** is the most important factor to explain the efficiency of a combination sunscreen + glazing, as protection against the energy of the sun. The **G-factor** divided into his components explains the difference in efficiency between exterior and interior sunscreen.

G = τe,tot + Qi

exterior sunscreen



interior sunscreen



The direct solar transmittance **τe,tot** is the same for interior and exterior use of sunscreens.
The secondary heat factor **Qi** for interior sunscreen is bigger then for exterior sunscreen. For interior use, the heat, produced by the absorption of energy, will be transmitted to the room inside. By exterior use, the heat will be transmitted to the outside, without any inconvenience at the inside.

Also the colour of the sunscreen has an influence on the **G-factor.** Dark colours will absorb a lot of sun energy and will transmit this to heat. If the screen is used for exterior, heat will have no influence inside the room, contrary to a screen used for interior. This is why a darker screen is ideal for exterior use and a lighter screen for interior use.

Thermal comfort: classes

Total Solar energy Transmittance = G-factor

CLASS	0	1	2	3	4
Gtot	Gtot ≥ 0,50	0,35 ≤ Gtot < 0,50	0,15 ≤ Gtot < 0,35	0,10 ≤ Gtot < 0,15	Gtot < 0,10

Secondary Heat transfer = Qi

CLASS	0	1	2	3	4
Qi	Qi ≥ 0,30	0,20 ≤ Qi < 0,30	0,10 ≤ Qi < 0,20	0,03 ≤ Qi < 0,10	Qi < 0,03

Normal Solar transmittance = protection against direct transmission
The ability of a solar protection device to protect persons and surroundings from direct irradiation is measured by the direct/direct solar transmittance of the device in combination with the glazing. τe,n-n is used as measure for this property.

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