# TECHNICAL BOOKLET

PERSPECTIVE SOLAR PROTECTION FABRICS

LOUVOLITE

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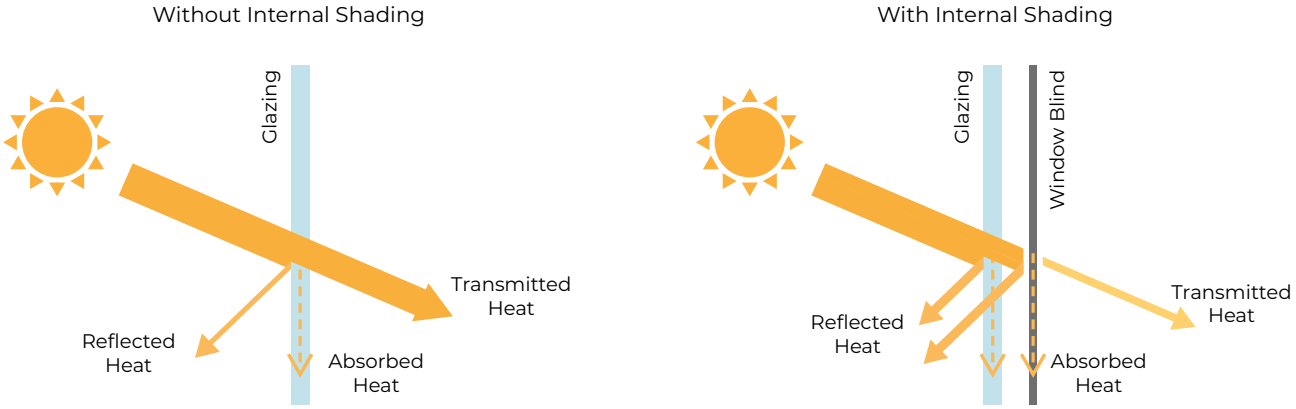
## SOLAR GAIN | SOLAR PROTECTION

The increased use of glazing in modern building construction allows in more natural light in, but also results in increased internal temperatures caused by solar gain. Solar gain is the amount of solar energy (heat) being transmitted into the room, typically a combination of direct transmission via a glazing and blind and the amount of solar energy being absorbed by the glazing and blind. This absorbed energy results in heat being radiated into the room.

Specifying blinds with solar protection fabrics can reduce solar gain, control glare, reduce costly artificial cooling/heating and improve the wellbeing of employees.




## PERSPECTIVE PERFORMANCE

The range of Perspective fabrics available feature a variety of performance levels to cater for all shading requirements to satisfy any building need.

Blinds using Perspective fabrics can be used in conjunction with Building Management Systems or individual operators. Perspective fabrics are robust and their construction results in a typically long lifespan.

Perspective fabrics enable greater levels of light adjustment and glare control, they can enhance the view out reducing the issues of sick building syndrome whilst maintaining a degree of privacy. They can help control internal temperatures reducing energy costs and help improve the environment for employees.

## PERSPECTIVE COLOUR PERFORMANCE

**Light:** The lighter the colour the greater level of light reflectance, which helps to reduce the amount of solar gain and in turn helps reduce internal temperature increases. If used in rooms with high sunlight levels, a standard lighter colour fabric will be less effective in reducing glare.

**Dark:** The darker the colour the higher the level of glare control and the greater the ability to view out of a deployed blind. Darker fabrics typically absorb more heat than lighter fabrics and are less effective at reducing internal temperatures.

Although, Perspective 3% White Back in Grey and Black use a specific weaving style to combine a darker face internally with a white back externally for higher light reflectance, combining the best performance elements of dark and light.

Perspective Aluview features an aluminium coating on the reverse. This combines excellent solar gain reflection performance with outstanding thermal loss reduction if it's a dark colour face, and improved glare control.

| Standard Fabric | Glare Control | Transparency | Thermal Protection | Enhanced Fabric | Glare Control | Transparency | Thermal Protection |
|---|---|---|---|---|---|---|---|
| Dark | Strong | Strong | Weak | Darker 3% White Back | Strong | Strong | Strong |
| Light | Weak | Weak | Strong | Perspective PureView | Strong | Strong | Strong |
| | | | | Perspective Aluview | Strong | Strong | Strong |

## OPENNESS FACTOR

This is the percentage of fabric which does not feature yarn (ie. percentage of holes)

- 0% Blackout: Most effective for room darkening, 0% fabric blocks out natural light, UV and up to 75% of solar radiation.
- 1%: Limited natural light with better solar energy performance but view out is limited.
- 3%: Provides a good combination of natural light, solar energy performance and view out.
- 5%: Allows the most natural light with good solar energy performance and the most transparency for a view out.

## PERSPECTIVE PUREVIEW

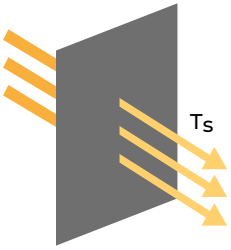
A white 3% screen that provides the same clear view out performance as a dark coloured screen. Perspective PureView successfully reduces glare, provides a better view out and retains a level of privacy from the outside, all without compromising the natural light entering the room.

## PERSPECTIVE ALUVIEW

Perspective Aluview's metallised backing acts as a thermal barrier at the window. It enhances the thermal energy and low-e performance of the fabric, reducing the demand for artificial heating and cooling. This reflective 3% screen provides optimum natural light with visual comfort, better glare control and outward visibility.

## SOLAR/THERMAL PROPERTIES

This shows the percentage of solar energy transmitted, absorbed and reflected by the fabric.
The sum of all 3 values will equal 100%.

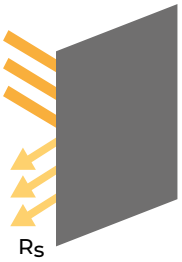



**Ts** SOLAR TRANSMITTANCE

Proportion of solar energy transmitted through the fabric.
A low percentage means the fabric performs well at reducing solar energy.

**Rs** SOLAR REFLECTANCE

Proportion of solar radiation reflected by the fabric.
A high percentage means the fabric performs well at reflecting solar energy.

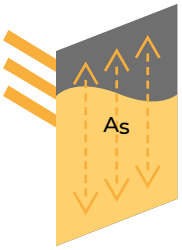



**As** SOLAR ABSORPTANCE

Proportion of solar radiation absorbed by the fabric.
A low percentage means the fabric absorbs little solar energy.

**gtot** TOTAL SOLAR FACTOR

This is the percentage of energy transmittance of the glazing and blind combined.
A low value means good thermal performance.



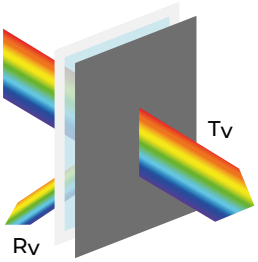

SOLAR HEAT GAIN

The amount of heat increase resulting from solar energy entering a room. It is the total of three parts: the amount of energy transmitted directly into the room, the energy which is absorbed by the blind and the proportion of energy which is absorbed by the window.

**SC** SHADING CO-EFFICIENT EN 14501

The solar heat gain with the blind at the window divided by the solar heat gain with no blind at the window. The lower the shading co-efficient, the higher the efficiency of the fabric.

## OPTICAL PROPERTIES

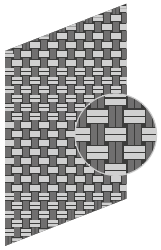



**Tv** VISIBLE TRANSMISSION

The percentage of visible light transmitted through the fabric.
The lower the value a fabric has, the greater its impact at controlling glare.

**Rv** VISIBLE LIGHT REFLECTANCE

Proportion of light reflected by the fabric.
High Rv means more light is bouncing back towards the direction of light source.



OPENNESS FACTOR

The percentage of open holes in a screen fabric (weave density). A high openness factor allows more Ts and better view through. This would also indicate the percentage of UV that passes through the fabric (inversely proportionate to UV blockage).

## OPTICAL PROPERTIES

### VIEW THROUGH

View through/out is the ability to see what is on the other side of a screen fabric. It is dependent on multiple variables including openness factor, colour, weave style and dominant light source. Dark colours have increased view through in comparison with light colours. This is due, in part, to a darker fabrics ability to reduce glare more substantially by controlling the amount of diffused light and having lower visible transmission values. Higher openness percentages and even weave patterns assists in creating the best quality view that can be offered. When referring to openness percentage, the greater the openness the more capability to view through.

Perspective PureView, although a white screen, has incredible view through due to it's ability to absorb visible light and reduce glare.

### PRIVACY

Fabric with an openness factor less than or equal to 1% can provide privacy by permitting limited or subtle views to the interior and exterior. Fabrics that are more open can also provide a level of privacy based on the position of the dominant light source and the observer to the window system. It is important to note, a fabric that offers great daytime privacy, could also appear sheer at night due to the shade being lit from within the interior. White fabrics offer great daytime privacy on sunny days.

### GLARE | TYPES OF GLARE

The two main types of glare are direct and indirect (reflected). Direct glare is caused by bright areas, such as light sources, ceilings and windows that are directly in the field of view. Indirect glare is caused by light that is reflected off surfaces in the field of view and then into the eye.

### GLARE | CAUSES OF GLARE

The background lighting, or amount of light that the occupant's eye is accustomed to within a given environment, dictates the needed contrast ratio to eliminate glare. Glare is experienced when an overwhelming amount of light enters the eye, causing a decrease in viewing capability. It is best to avoid light levels that have a greater contrast ratio of 10:1. The magnitude of the sensation of glare depends upon such factors as the size, position and luminance of a source, the number of sources and the luminance to which the eyes are adapted. Human factors such as age, gender, eye colour or if you wear glasses or contact lenses can have an effect on how sensitive a person is to light levels.

### GLARE | CONTROLLING GLARE

Darker Perspective fabrics are best at reducing the intensity of natural light entering the building via glazing.

Perspective PureView, Perspective Aluview and Perspective 3% White Back - in Grey and Black, all feature the benefit of excellent glare control in addition to excellent solar gain reflection properties.

Applying the right fabric in an area casting glare will reduce the contrast ratio by blocking, deflecting or reducing the diffusion of direct sunlight. This reduces the intensity of natural light entering the building while lowering Tv and the likelihood of glare.

## CERTIFICATION

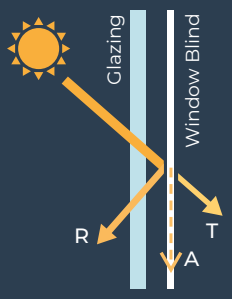
- Fire Retardant: BS 5867 Part 2 Type B, German B1, EN 13773:2003 Class 1, NFPA 701-2015 Method 1.
- Oeko-Tex Standard 100.
- Greenguard and Greenguard Gold: certified for low emmissions of volatile organic compounds (VOC's) into indoor air.
- Lead Free: ASTM E1645/RoHS compliant (Restriction of Hazardous Substances).
- Anti-Bacterial: ASTM G21 Fungal Resistance and ASTM E2180 Bacterial Resistance.
- Breaking Strength & Elongation ISO13934.
- UV Testing: Light Colour Fastness ISO 105-B02, AATCC 16, resistance to colour fading and Ultraviolet Protection Factor.


## CARE INSTRUCTIONS


Gently wipe clean the fabric face with a soft, damp cloth. Allow to dry in down position. Do not scrub. Do not use solvents or any abrasive substances that might damage the coating of the fabric. Notably Perspective Aluview, the aluminium coating is fragile and must be handled with care to avoid damage. All types of chemicals will cause permanent damage to any fabrics. Therefore, if cleaning windows etc., the blind must be raised to avoid any direct or indirect spray or splatter of chemicals on the fabric.

| Solar Optical & Colour Fastness Properties | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Solar | | | Visual | | | UV Block | CF | SC - EN 14501 | | | | | Gtot | | | | |
| | $R_S$ | $A_S$ | $T_S$ | $R_V$ | $A_V$ | $T_V$ | | | A | B | C | D | E | A | B | C | D | E |
| 5% Beige | 59 | 21 | 20 | 69 | 15 | 16 | 91 | 8 | 0.45 | 0.47 | 0.44 | 0.30 | 0.42 | 0.39 | 0.41 | 0.38 | 0.26 | 0.37 |
| 5% Black | 3 | 89 | 8 | 3 | 88 | 9 | 92 | 8 | 0.81 | 0.79 | 0.64 | 0.35 | 0.61 | 0.71 | 0.68 | 0.56 | 0.31 | 0.53 |
| 5% Grey | 45 | 40 | 15 | 49 | 35 | 16 | 91 | 8 | 0.54 | 0.54 | 0.49 | 0.31 | 0.47 | 0.47 | 0.47 | 0.42 | 0.27 | 0.41 |
| 5% White | 68 | 8 | 24 | 78 | 1 | 21 | 91 | 8 | 0.40 | 0.41 | 0.40 | 0.29 | 0.39 | 0.35 | 0.36 | 0.35 | 0.25 | 0.34 |
| 3% Beige | 64 | 19 | 17 | 72 | 16 | 12 | 93 | 8 | 0.42 | 0.43 | 0.42 | 0.29 | 0.41 | 0.36 | 0.38 | 0.36 | 0.25 | 0.35 |
| 3% Black | 3 | 92 | 5 | 3 | 92 | 5 | 95 | 8 | 0.81 | 0.78 | 0.64 | 0.35 | 0.61 | 0.70 | 0.68 | 0.56 | 0.31 | 0.53 |
| 3% Grey | 44 | 42 | 14 | 49 | 39 | 12 | 92 | 8 | 0.54 | 0.55 | 0.49 | 0.31 | 0.47 | 0.47 | 0.48 | 0.43 | 0.27 | 0.41 |
| 3% White | 72 | 8 | 20 | 81 | 4 | 15 | 92 | 8 | 0.37 | 0.39 | 0.39 | 0.28 | 0.38 | 0.32 | 0.34 | 0.34 | 0.25 | 0.33 |
| White Back Beige | 62 | 22 | 16 | 70 | 19 | 11 | 95 | 8 | 0.43 | 0.45 | 0.42 | 0.29 | 0.41 | 0.37 | 0.39 | 0.37 | 0.25 | 0.36 |
| White Back Black | 3 | 93 | 4 | 3 | 93 | 4 | 95 | 8 | 0.80 | 0.78 | 0.64 | 0.35 | 0.61 | 0.70 | 0.68 | 0.56 | 0.31 | 0.53 |
| White Back Grey | 46 | 45 | 9 | 53 | 41 | 6 | 95 | 8 | 0.52 | 0.53 | 0.48 | 0.31 | 0.46 | 0.46 | 0.46 | 0.42 | 0.27 | 0.40 |
| White Back White | 70 | 11 | 19 | 80 | 5 | 15 | 95 | 8 | 0.38 | 0.40 | 0.40 | 0.28 | 0.39 | 0.33 | 0.35 | 0.34 | 0.25 | 0.34 |
| PureView White | 70 | 22 | 8 | 83 | 9 | 8 | 93 | 8 | 0.36 | 0.39 | 0.39 | 0.28 | 0.39 | 0.31 | 0.34 | 0.34 | 0.25 | 0.34 |
| Aluview Beige | 70 | 22 | 8 | 66 | 26 | 8 | 96 | 8 | 0.36 | 0.39 | 0.39 | 0.28 | 0.39 | 0.31 | 0.34 | 0.34 | 0.25 | 0.34 |
| Aluview Black | 44 | 53 | 3 | 43 | 53 | 3 | 96 | 8 | 0.53 | 0.54 | 0.49 | 0.31 | 0.47 | 0.46 | 0.47 | 0.42 | 0.27 | 0.41 |
| Aluview Grey | 69 | 23 | 8 | 65 | 26 | 9 | 96 | 8 | 0.37 | 0.40 | 0.40 | 0.28 | 0.39 | 0.32 | 0.35 | 0.34 | 0.25 | 0.34 |
| Aluview White | 73 | 16 | 11 | 73 | 17 | 10 | 95 | 8 | 0.35 | 0.38 | 0.38 | 0.28 | 0.39 | 0.30 | 0.33 | 0.33 | 0.24 | 0.33 |
| 1% Beige | 62 | 22 | 16 | 70 | 19 | 11 | 96 | 8 | 0.43 | 0.45 | 0.42 | 0.29 | 0.41 | 0.37 | 0.39 | 0.37 | 0.25 | 0.36 |
| 1% Black | 3 | 93 | 4 | 3 | 93 | 4 | 96 | 8 | 0.80 | 0.78 | 0.64 | 0.35 | 0.61 | 0.70 | 0.68 | 0.56 | 0.31 | 0.53 |
| 1% Grey | 46 | 45 | 9 | 53 | 41 | 6 | 96 | 8 | 0.52 | 0.53 | 0.48 | 0.31 | 0.46 | 0.46 | 0.46 | 0.42 | 0.27 | 0.40 |
| 1% White | 73 | 8 | 19 | 81 | 5 | 14 | 99 | 8 | 0.36 | 0.38 | 0.38 | 0.28 | 0.38 | 0.31 | 0.33 | 0.33 | 0.24 | 0.33 |
| Blackout Beige | 71 | 29 | 0 | 81 | 19 | 0 | 100 | 8 | 0.34 | 0.38 | 0.39 | 0.28 | 0.38 | 0.30 | 0.33 | 0.34 | 0.24 | 0.33 |
| Blackout Black | 75 | 25 | 0 | 85 | 15 | 0 | 100 | 8 | 0.31 | 0.36 | 0.37 | 0.28 | 0.37 | 0.27 | 0.31 | 0.32 | 0.24 | 0.32 |
| Blackout Grey | 71 | 29 | 0 | 81 | 19 | 0 | 100 | 8 | 0.34 | 0.38 | 0.39 | 0.28 | 0.38 | 0.30 | 0.33 | 0.34 | 0.24 | 0.33 |
| Blackout White | 71 | 29 | 0 | 81 | 19 | 0 | 100 | 8 | 0.34 | 0.38 | 0.39 | 0.28 | 0.38 | 0.30 | 0.33 | 0.34 | 0.24 | 0.33 |

| **Visual Comfort** - EN 14501 | | | | | | **Summer Heat Protection** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Glare Control | View In (Privacy) | View Out | Daylight Utilisation | Darkening Performance | Glazing System EN 410 | | | | |
| | | | | | | A | B | C | D | E |
| 5% Beige | 0 | 1 | 2 | 2 | 0 | 1 | 1 | 1 | 2 | 1 |
| 5% Black | 0 | 1 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 0 |
| 5% Grey | 0 | 1 | 2 | 2 | 0 | 1 | 1 | 1 | 2 | 1 |
| 5% White | 0 | 1 | 2 | 2 | 0 | 2 | 1 | 1 | 2 | 2 |
| 3% Beige | 1 | 2 | 1 | 2 | 0 | 1 | 1 | 1 | 2 | 1 |
| 3% Black | 3 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 0 |
| 3% Grey | 1 | 2 | 1 | 2 | 0 | 1 | 1 | 1 | 2 | 1 |
| 3% White | 1 | 2 | 1 | 2 | 0 | 2 | 2 | 2 | 2 | 2 |
| White Back Beige | 0 | 2 | 1 | 2 | 0 | 1 | 1 | 1 | 2 | 1 |
| White Back Black | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 1 |
| White Back Grey | 1 | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 2 | 1 |
| White Back White | 0 | 2 | 1 | 2 | 0 | 1 | 1 | 1 | 2 | 2 |
| PureView White | 0 | 1 | 3 | 1 | 0 | 2 | 2 | 2 | 2 | 2 |
| Aluview Beige | 3 | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 2 | 2 |
| Aluview Black | 3 | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 2 | 1 |
| Aluview Grey | 3 | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 2 | 2 |
| Aluview White | 2 | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 2 | 2 |
| 1% Beige | 1 | 2 | 1 | 1 | 0 | 1 | 1 | 1 | 2 | 1 |
| 1% Black | 1 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 0 |
| 1% Grey | 3 | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 2 | 1 |
| 1% White | 1 | 2 | 1 | 2 | 0 | 2 | 2 | 2 | 2 | 2 |
| Blackout Beige | 4 | 4 | 0 | 0 | 3 | 2 | 2 | 2 | 2 | 2 |
| Blackout Black | 4 | 4 | 0 | 0 | 3 | 2 | 2 | 2 | 2 | 2 |
| Blackout Grey | 4 | 4 | 0 | 0 | 3 | 2 | 2 | 2 | 2 | 2 |
| Blackout White | 4 | 4 | 0 | 0 | 3 | 2 | 2 | 2 | 2 | 2 |




**Solar Gain:** The amount of heat increase resulting from solar energy entering a room. It is the total of three separate parts - the amount of energy transmitted directly into the room, the energy which is absorbed by the blind and the proportion of energy which is absorbed by the window.

**R:** % of reflected heat and light.
**A:** % of absorbed heat and light.
**T:** % of transmitted heat and light.

**UV Block:** the % of UV light blocked by the fabric.

**Colour Fastness (CF):** Scale of 8, BS EN ISO 105-B02-2014.

**Shading Co-efficient (SC):** The solar heat gain with the blind at the window divided by the solar heat gain with no blind at the window. The lower the shading co-efficient, the higher the efficiency of the fabric.

**Gtot:** Amount of heat entering through the glazing and shading combined.

**Glazing system (EN 410)**
**A:** Clear Single Glazing.
**B:** Clear Double Glazing.
**C:** Clear Double Glazing Low Emissivity.
**D:** Solar Control Double Glazing Low Emissivity.
**E:** Triple Glazing.

**Glare Control:**
0: very limited
1: low
2: good
3: very good
4: very high

**View in/Privacy:**
0: very limited
1: low
2: good
3: very good
4: very high

**View Out:**
0: none
1: very limited
2: limited
3: good
4: very good

**Daylight Utilisation:**
0: very limited
1: limited
2: moderate
3: high
4: very high

**Darkening Performance (DP):** Scale of 0-4.
0: lowest opacity
4: highest. A rating of 4 indicates the product is completely opaque with no pinholes or light transfer.

**Summer Heat Protection:**
0: very limited
1: limited
2: moderate
3: high
4: very high

For the most up-to-date information view the online pdf at www.louvolitecommercial.com

**Please note:** Blackout fabric does not create total darkness. As a blind there will be lightstrike around the blind edges.

# PERSPECTIVE SCREENS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