# Shadecloth Selection and Humanetics

#### The quality of light and human performance

- •Regulation of circadian rhythm and light/dark cycle
- Increased recovery rates in healthcare facilities
- Increased student performance in education
- •Better sleep
- Improved mood





# Heat & Glare The Goals Thermal Comfort Visual Comfort View to exterior



**Solar heat gain** can account for up to 50% of a building's energy cost according to the US Department of Energy.

By reflecting solar energy solar fabrics reduce solar heat gain, lower energy costs and improve comfort.

The use of natural day lighting reduces the need for artificial lighting for additional energy savings.





The Occupational Safety and Health Administration (OSHA) workplace guidelines, recognize the debilitating effects of glare causing eye strain, tension, lower productivity, and loss of visual function on electronic screens. Solar fabrics reduce glare from 70%-100% based on color and openness factor.



### **Solar Optical Properties**



#### T<sub>s</sub>= Transmittance

Portion of solar energy **transmitted** through shadecloth. (low % = higher energy reduction)

#### **R**<sub>s</sub> = **Reflectance**

Portion of solar energy reflected by the shadecloth. (low % = less reflection)

#### A<sub>s</sub>= Absorption

Portion of solar energy **absorbed** by the **shadecloth**. (low % = absorbs less energy)





#### Choosing the Right Solar Fabric



Fabrics may be chosen for their aesthetic appeal without consideration of the sun control need.

To help your customer choose the right Solar fabric, identify their priorities in reducing solar heat and glare and in maintaining outward views.



### **Shadecloth Selection**





# Space Usage

### Use of Space



- Space:
  - What is the function of the space?
  - Glare management customized for each environment.

#### • People:

- What types of people occupy the space?
- Are people transient or sedentary?
- Are they in a bed or at a desk?



## **Glass** Program

#### Solar Optical Properties Glazing





#### Solar Optical Properties Glazing and Shadecloth

Shading Coefficient (Heat Gain): 0.81

0.53%

Visible Light Transmittance: 0.73

Light Grey, OF= 3% Shadecloth blocks excessive Light-Heat coming into the room

Glass reduces total heat gain a percentage depending on the glass.



# Openess and Color

### Openness

**Openness factors** can be determined by measuring the percent of light transmission. The more open the fabric, the better the outward views, and the more light and heat that enter the room.

Selecting the right combination of color and openness can maximize performance and ensure your customer's satisfaction.







### Color





**Light colors**, such as white, reflect solar energy away from the interior but diffuse light creating glare and limited views.

**Dark colors** absorb solar heat and light allowing excellent outward views but trap heat inside the room.



# Shadecloth color selection will dramatically affect the function



### **Solar Optical Properties**

#### **T<sub>v</sub>=Total Visible Light Transmittance**

The amount of light in the visible portion of the spectrum that passes through the material (low = less light passes through)

Color	Solar Trans- mittance	Solar Reflectance	Solar Absorbtion	Visual Trans-mittance*	
Chalk, most highly reflective	12%	70%	18%	7%	
Pewter, to represent a color in the middle	3%	26% 71%		2%	
Ebony, an example of the least reflective colors	3%	3%	94%	3%	

#### 3% Open Fabric / Interior Application





Confidential and proprietary

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# Material Composition

# Yarn Composition openness factor and yarn specs



Direct solar beam transmission through the open areas of a shadecloth. Direct solar beam transmission is diffused as it transmits through the yarn material.



### Material Effect on Solar Transmittance

Material	Color	Ts	Rs	As	Tv	O-F
Polyester	Grey	41	44	15	29	3%
Vinyl coated poly	Grey	4	30	66	5	3%









#### **Specifications may include:**







#### environmental

Solar fabrics meet a broad range of environmental benefits, certifications and standards

- Energy saving
- Recyclable and Sustainable
- Bio-based
- PVC free
- Indoor air quality
- Anti-bacterial/anti-fungal
- Lead and heavy metal free



### **VOC Study**

#### Harvard School of Public Health



MAG Resources, LLC



PRODUCT CERTIFIED FOR LOW CHEMICAL EMISSIONS UL.COM/GG UL 2818

**GREENGUARD** is an indoor air quality certification program for low-emitting products and materials



GREENGUARD can identify over 75,000 chemicals and the rate those chemicals are released into the air.

GREENGUARD certification means a product is free of toxins and carcinogens



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