The purpose of this document is to provide direction and specifications for the roller shade standards to be utilized throughout the Stanford University campus. The intent is to streamline and simplify the selection process and criteria, while maintaining campus-wide consistency and reducing the lifecycle costs for buildings by minimizing the need for constant shade replacement. In addition to providing guidance on selecting the appropriate shadecloth, this document includes a comprehensive list of all standardized options. Selections should not deviate from these, and all selections must be approved by the University Architect/Campus Design and Planning Office (UA/CPD) prior to installation. Contact UA/CPD for examples of appropriate campus installations.

The enclosed document includes the following sections:

- Selecting The Appropriate Shadecloth
- Stanford University Campus Shadecloth Selection Standards
- Shadecloth Sample Program
Selecting The Appropriate Shadecloth

There are many aspects to consider when selecting the appropriate sunscreen shadecloth for a building. Following is an overview of these elements.

Note: For some projects, and in some localities, a minimum shading coefficient or solar factor may be required by mechanical engineers.

Sustainability: EcoVeil® is the first environmentally certified product of its kind. These non-PVC shadecloths are woven of an extruded proprietary fiber whose TPO (thermoplastic olefin) jacket covers a polyolefin core yarn. EcoVeil® shadecloths are reclaimable and fully recyclable (endlessly), flame retardant, washable, UV-resistant, antifungal, and possess a low measurable emission of VOCs (volatile-organic compounds). The EcoVeil® shadecloth family carries a GREENGUARD® certification. EcoVeil® is designed to meet the Cradle-to-Cradle® criteria. This innovative approach to sustainability models manufacturing processes on the biological metabolism found in natural ecosystems. Each ingredient is evaluated for its known or suspected human and environmental health hazards throughout its life cycle, by analyzing peer-reviewed research studies of the pure chemical’s attributes against material evaluation criteria. The result is a truly eco-effective sunscreen material. As an integral element of MechoSystems’ manual Mecho®/5 shade system, the product as a system (shadecloth + hardware) became the first complete window treatment to be recognized as Cradle-to-Cradle Certified Silver. For more information, visit http://mbdc.com/ and http://www.c2ccertified.org/.

Shading Coefficient: The shading coefficient (SC) represents the relative percentage of solar heat through a combination of glass and a specific shadecloth. Light colors have lower shading coefficients while dark colors are higher. A lower shading coefficient equals lower heat gain. [i.e. SC .60 = 60% relative solar heat gain; SC .45 = 45% relative solar heat gain.]

Solar Optical Properties. The solar optical properties of shadecloth fabrics are used to calculate the shading coefficient with any glass and shade combination. The solar optical properties are:

- **TS** = Total Solar Transmittance (%)
- **As** = Total Solar Absorption (%)
- **RS** = Total Solar Reflectance (%)
- **TV** = Visible Light Transmittance Daylight
- **OF** = Openness Factor Density

Visible Light. Visible light transmittance (Tv) data is published as a guide to determine interior brightness and glare for specific glass and fabric combinations.

- Glare and brightness can be debilitating on CRTs and other types of work stations.
- Visible light transmittance must be a primary consideration when selecting sunscreen shadecloth.

Openness Factor. The density, or openness factor, is a key element to be considered once a shadecloth has met shading coefficient requirements.

- The openness factor (OF) of a fabric is the density of its weave. To assure personal comfort near the window wall it is necessary to control the direct solar radiant energy (sunshine) that penetrates the glass / shade combination. This is accomplished with proper selection of fabric density in conjunction with visible light transmittance of the glass.
- People tend to be more comfortable with tightly woven fabrics in darker colors and higher shading coefficients, than with more open, less dense shadecloths in lighter colors.
Our minimum recommended fabric density in conjunction with visible light transmittance glass is as follows:

<table>
<thead>
<tr>
<th>Visible Light Transmission $Tv$</th>
</tr>
</thead>
<tbody>
<tr>
<td>if $Tv$ is $90% &gt; 60%$, recommended openness is $3%$</td>
</tr>
<tr>
<td>if $Tv$ is $50% &gt; 35%$, recommended openness is $5%$</td>
</tr>
<tr>
<td>if $Tv$ is $30% &gt; 22%$, recommended openness is $8%$</td>
</tr>
<tr>
<td>if $Tv$ is $20%$ or less, recommended openness is $15%$</td>
</tr>
<tr>
<td>Privacy (translucent) recommended openness is $0-1%$</td>
</tr>
</tbody>
</table>

**Color.** Color is another key factor in selecting a sunscreen shadecloth. Color will directly effect heat gain (shading coefficient), brightness and glare.

- Light colors are more reflective with lower heat gain and shading coefficients, but with a higher percentage of daylight and solar transmittance.
- Light colors, however, are brighter when sunlit which causes high surface brightness (bare light bulb syndrome) and may transmit excessive, debilitating light onto computer screens and work stations.
- Light colors are difficult to see through due to surface brightness and higher reflectance and transmittance characteristics. They also tend to reflect more of the interior light back into the space. *(See Solar Optical Properties Charts.)*
- Darker colors provide a better view through the shadecloth to the outside. Dark colors absorb light and heat, and are less energy efficient than lighter colors. They transmit less light and have a lower surface brightness which lowers reflectivity and provides excellent glare-free environments for CRTs and work stations.
- Medium value colors minimize excessive contrast in a room which reduces eye strain.

**Mock-ups.** To fully appreciate the impact of direct sun on computers and work surfaces, we recommend full-size mock-ups. With high daylight transmitting glazing, we recommend medium to dense fabrics in medium to dark colors.
Stanford University Campus Shadecloth Selection Standards

Synopsis

- **NOTE:** Exterior face should always be dark; darker side of the shadecloth to face the exterior, when applicable.

**Section 1:** 1\% O\(F\) (Openness factor) Shadecloth

A 1\% O\(F\) shadecloth may be required in instances where a semblance of privacy during the nighttime hours is preferred. It may also be required on exposures which will experience direct solar penetration, in instances where the furniture plan has the occupant facing the glass. The dense weave will help to reduce the potential bright spot on the window while the sun is shining in, increasing the comfort level of the occupant(s).

- Appropriate exposures: North, South, East, West
- Please select from the following approved fabrics:
  - **EcoVeil 0950 Series**
    - 0954 Black/Brown................................................................. 1.1
    - 0970 Shadow Grey.............................................................. 1.1
  - **ThermoVeil 0900 Series**
    - 0903 Grey.......................................................... 1.1
    - 0904 Black/Brown......................................................... 1.1

**Section 2:** 2\% O\(F\) (openness factor) Shadecloth

A 2\% O\(F\) shadecloth may be required on exposures which will experience direct solar penetration, in instances where the furniture plan has the occupant facing the glass. The dense weave will help to reduce the potential bright spot on the window while the sun is shining in, increasing the comfort level of the occupant(s). Compared to the 1\% O\(F\) shadecloth, a 2\% O\(F\) shadecloth will afford a better view through the fabric to the exterior.

- Appropriate exposures: North, South, East, West
- Please select from the following approved fabrics:
  - **EuroTwill 6200 Series**
    - 6210 Nickel................................................................. 2.1
    - 6211 Graphite............................................................. 2.1
    - 6216 Slate................................................................. 2.1
    - 6220 White/Black....................................................... 2.1

**Section 3:** 3\% O\(F\) (Openness factor) Shadecloth

A 3\% O\(F\) shadecloth may be chosen on exposures which will experience direct solar penetration, in instances where the furniture plan has the occupant facing away from the glass. It may also be selected for exposures which will receive significant shading from adjacent buildings or other exterior barriers such as trees. A 3\% O\(F\) shadecloth may also be utilized when the glazing selected has a moderate to relatively low visible light transmittance.

- Appropriate exposures: North, South, East, West
- Please select from the following approved fabrics:
  - **EcoVeil 1550 Series**
    - 1554 Black/Brown.......................................................... 3.1
    - 1570 Shadow Grey........................................................ 3.1
Section 4: Acoustical 0-1% OF (openness factor) Shadecloth
An acoustical shadecloth should be chosen for rooms which will require the shadecloth to offer a significant noise reduction coefficient. These also offer privacy and significant room-darkening. When a double system combining a solar cloth with an acoustical is utilized, the solar fabric should be situated closest to the glass, to provide a uniform appearance from the exterior.

- Please select from the following approved fabrics:
  - AcoustiVeil 0890 Series
    - 0894 Black
EcoVeil® Screen

0950 Series (1% open)

This series is woven in a 1 x 1 basket–weave pattern and is an eco–effective solar Sunscreen. As a Cradle to Cradle Certified™ product, it can be reclaimed, recycled, and remain in a perpetual loop of continuous use. The 0950 Series has a 1% density for privacy.

Content: 100% thermoplastic olefin (TPO)
Openness factor: approx. 1%
Stocked: 100 in. (254cm) wide
NFPA 701-2004: pass

ThermoVeil® Vertical Privacy Weave

0900 Series (0–1% open)

This series is composed of a tightly woven translucent material in a linear weave. The 0900 Series allows light to enter the interior from the outside during the daytime, while maintaining privacy at night.

Content: 75% PVC (coating), 25% polyester (yarn)
Openness factor: 0–1%
Stocked: 72 in. (183cm) and 96 in. (244) wide
NFPA 701-2004: pass
EuroTwill® Reversible Weave

6200 Series (2% open)

This series has a distinctive, tightly woven twill design. It is composed of sheer, fine polyester yarns with a PVC coating. The series’ reversible twill weave provides a subtle, yet complementary element to a space.

To order the shadecloth’s reverse side so that it faces the room, please add an “R” to its code, for example “6210R.”

Content: 85% PVC (coating), 15% polyester (yarn)
Openness factor: approx. 2%
Stocked: 63 in. (160cm) and 96 in. (244cm) wide
NFPA 701-2004: pass
EcoVeil® Screen

1550 Series (3% open)

This series has a basket–weave design and is a truly eco–effective solar Sunscreen. As a Cradle to Cradle Certified™ product, it can be reclaimed, recycled, and remain in a perpetual loop of continuous use.

Content: 100% thermoplastic olefin (TPO)
Openness factor: approx. 5%
Stocked: 100 in. (254cm) wide
NFPA 701-2004: pass

1554 Black/Brown

1570 Shadow Grey

1563 Grey
**ThermoVeil® Dense Basket Weave**

**1500 Series (3% open)**

This series is composed of a technically advanced material woven in a 2 x 2 basket–weave pattern. Its weave provides a uniform scrim effect at the window wall with an appropriate density for sun control. The 1500 Series’ colors match those of the 1300 Series (5% open).

Content: 75% PVC (coating), 25% polyester (yarn)
Openness factor: approx. 3%
Stocked: 63 in. (160cm), 96 in. (244cm), and 126 in. (320cm) wide
NFPA 701-2004: pass

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1504 Black/Brown

1513 Grey

1520 Shadow Grey
EuroTwill® Reversible Weave

6000 Series (3% open)

This series features finely woven shadecloths with a reversible face. Its extensive color range will complement any interior.

To order the shadecloth’s reverse side so that it faces the room, please add an “R” to its code, for example “6011R.”

Content: 85% PVC (coating), 15% polyester (yarn)

Openness factor: approx. 5%

Stocked: 63 in. (160cm) and 96 in. (244cm) wide

NFPA 701-2004: pass

6011 Graphite

6016 Slate

6012 Charcoal

6013 Bronze
EuroTwill® Reversible Broken Weave

6450 Series (3% open)
This series features a sophisticated interwoven pattern of yarns in a broken twill–weave design. It is composed of sheer, fine polyester yarns with a PVC coating.

To order the shadecloth’s reverse side so that it faces the room, please add an “R” to its code, for example “6461R.”

Content: 75% PVC (coating), 25% polyester (yarn)
Openness factor: approx. 3%
Stocked: 98 in. (249cm) wide
NFPA 701-2004: pass
AcoustiVeil™ Dimout

0890 Series (0–1% open)

This series is composed of an eco-friendly material that unites form and function as a tightly woven, sound-absorbing, light-blocking, near-blackout textile. Its woven flame-retardant polyester will enhance any interior. With a Noise Reduction Coefficient (NRC) of 0.575, the shadecloth appreciably filters noise and reduces sound reverberation. When sound is absorbed, echoes are reduced.

Content: 100% polyester
Openness factor: 0-1%
Stocked: 86 in. (218cm) wide
NFPA 701-2004: pass
NRC rating: 0.575
Shadecloth Sample Program

Standard fabric samples are available in the following sizes:
- quarter-memo samples, 4 1/4 x 5 1/2 in. (11 x 14cm)
- memo samples, 8 1/2 x 11 in. (22 x 28cm)
- large samples, 24 x 24 in. (61 x 61cm)

Samples can be ordered via email. To order samples, please send an email to samples@mechoshade.com.
- include the project name
- include the mailing address and phone number
- include the four digit number of the selected fabric(s)
- copy jefferyg@mechoshade.com and julie.trautman@mechoshade.com

In order to verify functionality, Stanford University recommends full-size mock-ups for new projects. To request a full-size mock-up shade to be installed on site, please email julie.trautman@mechoshade.com (copy jefferyg@mechoshade.com).

Locating a Local MechoSystems Representative

Local sales representative information is available by visiting the following website: http://mechosystems.com. A local sales representative can assist with shadecloth samples, mock-up shades, construction details, and specifications.

If a site visit is required, the following local individuals will assist:

Julie Trautman   Tel (650) 728-2100   julie.trautman@mechoshade.com
Jeffery Glick    Tel (415) 595-1740   jefferyg@mechoshade.com