

ThermoVeil® and EuroVeil® Brand ShadeCloths

Woven from vinyl coated polyester yarns, ThermoVeil® and EuroVeil® shade cloths are available in a wide variety of weaves, patterns, colors and densities designed to match the daylight transmittance of the glazing and the glazing orientation. Used in recommended densities, ThermoVeil and EuroVeil provide a significant reduction in solar heat-gain and greater comfort from the radiant component of sunshine.

Some of the resulting benefits are:

- ❑ Maximizes the view to the exterior while providing appropriate solar protection.
- ❑ A reduction in solar gain.
- ❑ Glare control.
- ❑ Improved personal protection from glare and heat.
- ❑ Lower energy consumption used to cool the room by reducing A/C loads.



- ❑ Worker productivity is improved through control of brightness, glare and solar radiation on people, CRT screens and work surfaces.

ThermoVeil and EuroVeil have:

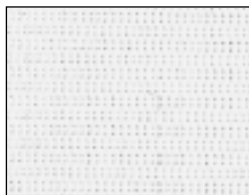
- ❑ Antimicrobial properties that do not support the growth of microorganisms. Approved by many hospitals.
- ❑ Are flame retardant (NFPA 701), less

toxic than burning wood (NYS Toxicity Test), wool or cotton.

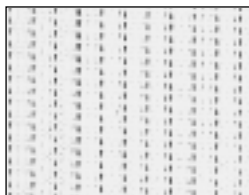
- ❑ Passed Indoor Air Quality Standards of: OSHA, EPA, WHO, State of Washington Greenguard (2003) and German Federal Environmental Agency (Blue Angel).

In 1978, MechoShade Systems sponsored Professor John Yellott of the Arizona State University in his extensive research of the solar factors that affect comfort in the interior environment. Professor Yellott identified "openness factor" (density of the woven fabric) and "color of the screen cloth" as the key elements that affect personal comfort and energy efficiency. This finding led to the development of ThermoVeil® brand shade cloths; enabling MechoShade to become the innovator in solar shading fabrics, hardware and control systems.

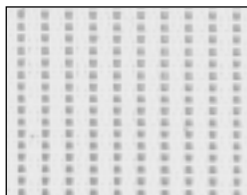
Reference the Solar Optical Properties Guides, starting on page 5.15, to aid you in your fabric selections.



ThermoVeil® Series 0900
Translucent Weave
Approx. OF: 0-1%
Stock Width: 72"



ThermoVeil® Series 1000
Dense Vertical Weave
Approx. OF: 2-3%
Stock Widths: 63" & 96"



ThermoVeil® Series 1800
Open Vertical Weave
Approx. OF: 15%
Stock Width: 63"



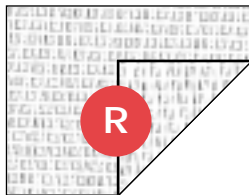
ThermoVeil® Series 1300
Dense Basket Weave
Approx. OF: 5%
Available in 63", 96" and 126" SuperWide™ Widths (Selected Colors)



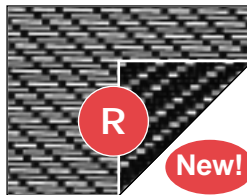
ThermoVeil® Series 2100
Open Basket Weave
Approx. OF: 10-12%
Stock Widths: 63" & 96"



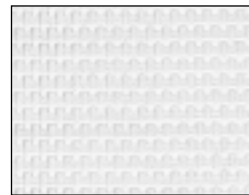
EuroVeil® Series 5300
Dense Basket Weave
Approx. OF: 5-6%
Stock Widths: 63" & 96"



ThermoVeil® Series 3000
Satin Texture and Diamond Group (Reversible)
Approx. OF: 1-2%
Stock Widths: 72" & 96"



EuroTwill™ Series 6000
Twill Weave (Reversible)
Approx. OF: 3%
Stock Widths: 63" & 96"



ThermoVeil® Series 0700
Blackout ShadeCloth
OF: 0%
Stock Width: 72"



Equinox™ Series 0100
Blackout ShadeCloth
OF: 0%
Stock Width: 100"

R = Reversible Fabric

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ThermoVeil® and EuroVeil® ShadeCloth Program

High visible-light transmittance characteristics and low shading coefficients are just two of the many problems that have arisen with the expanded varieties and uses of low "E" glass and the application of ultra-thin Low-E coatings.

The ThermoVeil®, EuroVeil®, EuroTwill™ fabric programs are MechoShade's solutions, developed through extensive testing, to the problems created by the use of different glazing combinations on various solar orientations.

Glazings must be considered as being very similar to clear glass when selecting a visually transparent shade system. The wide variety of weaves, patterns, colors and densities designed to match the daylight transmittance of the glazing and the glazing orientation allow for effective and attractive solutions to the problems encountered with the use of "E" glass and Low-E Coatings.

Before making a final selection, we strongly recommend that designers, owners, and other specifiers view a full-size mock-up at the job site with CRT equipment in operation.

ThermoVeil® 1000 & 1800 Series Vertical Weaves

Lineally woven shade cloths in two versatile density patterns:

- Dense (approx. openness factor +/- 2%-3%): 1000 Series
- Open (approx. openness factor +/- 15%): 1800 Series

1000 Series is stocked in 63" and 96" (160 and 244 cm) width rolls. 1800 Series is stocked in 63" (160cm) width rolls.



1000 Series

ThermoVeil® 1300 & 2100 Series Basket Weaves

2x2 Basketweave patterns providing a uniform scrim effect at the window wall. Available in a range of seven colors and two densities:

- Dense (approx. openness factor +/- 5%): 1300 Series
 - Open (approx. openness factor +/- 13%): 2100 Series
- 1300 Series is stocked in 63" and 96" (160 and 244 cm) width rolls.
- 2100 Series stocked in 72" (182cm) width rolls.



1300 Series

ThermoVeil® 1300 Series 126" SuperWide™ Width

2x2 Basketweave shade cloth patterns providing a uniform scrim effect at the window wall. Available in six colors.

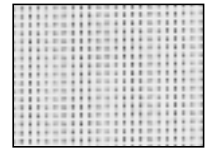


1300 Series SuperWide Width

- Dense (approx. openness factor +/- 5%) 1300 Series SuperWide™ Width is stocked in 126" (320cm) width rolls. Minimums apply. Other colors available on special order in 1000-1200 linear yard minimum.

EuroVeil® 5300 Series Basket Weave

Elegant basketweave utilizing our new thin yarn. The 5300 Series EuroVeil® offers a fine screening effect with its 5-6% openness and clean uniform control of light and heat. EuroVeil® is available in twelve colors. 5300 Series is stocked in 63" and 96" (160 and 244 cm) width rolls.



5300 Series

ThermoVeil® 3000 Series Twill Weaves (Reversible)

Color-reversible shade cloths satisfying the highest technical and aesthetic standards demanded by today's residential, commercial, hospitality, and healthcare window applications.

- Twill Weave (approx. openness factor +/- 1-2%): 3000 Series Satin Texture group in nine colors.
- Dobby Weave (approx. openness factor +/- 1-2%): 3200 Series Diamond Pastel group in two colors. 3300 Series Diamond Earthtone group in two colors.

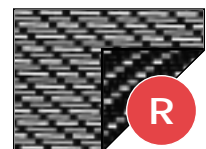
Stocked in 72" (182cm) and 96" (244cm) wide rolls.



3000 Series

EuroTwill™ 6000 Series Twill Weave (Reversible)

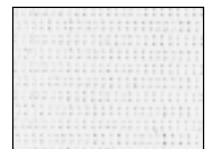
An elegant 1x4 twill weave utilizing our new thin yarn. The 6000 Series EuroTwill™ offers a fine screening effect, with its 3% openness, plus clean uniform control of light and heat. 6000 Series is available in thirteen colors. Stocked in 63" & 96" (160 & 244 cm) width rolls.



6000 Series

ThermoVeil® 0900 Series Translucent Weave

Very dense shade cloth group offering privacy and translucency with a +/- 0-1% openness factor. Stocked in 72" (182cm) width rolls.



0900 Series

** ThermoVeil and EuroVeil screen cloths are directional. Directional fabrics will appear to be different in side-by-side comparison of railroaded vs. non-railroaded screen cloths.*

Note: Job site mockups are strongly recommended. Please contact your MechoShade Dealer or Technical Service at MechoShade Systems, Inc. via the internet at www.mechoshade.com

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Selecting The Right ShadeCloth

There are many aspects to consider when selecting the appropriate sunscreen shade cloth 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.*

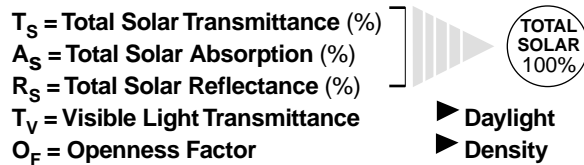
MechoShade® has published shading coefficient and visible light transmittance data with nine types of glass:

CLEAR • HA / BRONZE • BLUE GREEN
IN ► SINGLE, DOUBLE AND LOW E

Shading Coefficient: The shading coefficient (SC) represents the relative percentage of solar heat through a combination of glass and a specific shade cloth. 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 ThermoVeil® and EuroVeil® fabrics are used to calculate the shading coefficient with any glass and shade combination. The solar optical properties are:



Visible Light

Visible light transmittance (Tv) data is published by MechoShade 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 ThermoVeil or EuroVeil sunscreen shade cloth.

Openness Factor

The density, or openness factor, is a key element to be considered once a shade cloth 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.
- It is our experience that people are more comfortable with tightly woven fabrics in darker colors and higher shading coefficients, than with more open, less dense shade cloths in lighter colors with lower shading coefficients.

- MechoShade's recommended fabric density in conjunction with visible light transmittance glass is as follows:

VISIBLE LIGHT TRANSMISSION T_V
IF T_V IS 90% > 60%, RECOMMENDED OPENNESS IS 3%
IF T_V IS 50% > 35%, RECOMMENDED OPENNESS IS 5%
IF T_V IS 30% > 22%, RECOMMENDED OPENNESS IS 8%
IF T_V IS 20% OR LESS, RECOMMENDED OPENNESS IS 15%
PRIVACY (TRANSLUCENT) RECOMMENDED OPENNESS IS 0-1%

- It is important to control the elements of visible light, total solar transmittance and heat gain. For instance, open fabrics with high transmittance may cause people to be uncomfortable near the window wall due to excessive solar gain and brightness, even though the shade may have a low (better) shading coefficient.

Color

Color is another key factor in selecting a sunscreen shade cloth. 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 Chart*.)
- Darker colors provide a better view through the shade cloth 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.

MechoShade's ThermoVeil or EuroVeil shade cloths can create an ideal balance between low shading coefficient and surface brightness for an energy efficient shading system that provides a soft, quiet room darkening effect that reduces glare on CRT screens while maintaining views. Medium value colors minimize excessive contrast in a room which reduces eye strain.

To fully appreciate the impact of direct sun on computers and work surfaces, we recommend full-size mock-ups. With the new high daylight transmitting glazing, we recommend medium to dense fabrics in medium to dark colors.

MechoShade will be pleased to provide mock-up samples for this purpose.

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ShadeCloth Selection Guide

% Openness figures are approximations.

	0900 Series	1000 Series	1300 Series	1800 Series	2100 Series	3000 Series	5300 Series	6000 Series
Glazing Group A High-transmittance HA glass (clear, low "E," green & blue) 65-90% visible-light transmission	0-1%	2-3%	5%	15%	10-12%	1-2%	5-6%	3%
North orientation	✓+	✓+	✓+	✓	✓	✓+	✓+	✓+
South orientation	✓+	✓	NO	NO	NO	✓	NO	✓
East orientation	✓+	✓	NO	NO	NO	✓	NO	✓
West orientation	✓+	✓	NO	NO	NO	✓	NO	✓
Glazing Group B Mid-transmittance HA glass (solar grey, solar bronze) 35-60% visible-light transmission								
North orientation	✓+	✓+	✓+	✓	✓	✓+	✓+	✓+
South orientation	✓+	✓+	✓	NO	NO	✓+	✓	✓+
East orientation	✓+	✓+	✓	NO	NO	✓+	✓	✓+
West orientation	✓+	✓+	✓	NO	NO	✓+	✓	✓+
Glazing Group C Low-transmittance coated glass (green, aqua, & thin - coated tinted) 22-30% visible-light transmission								
North orientation	✓+	✓+	✓+	✓	✓	✓+	✓+	✓+
South orientation	✓+	✓+	✓+	NO	NO	✓+	✓+	✓+
East orientation	✓+	✓+	✓+	NO	NO	✓+	✓+	✓+
West orientation	✓+	✓+	✓+	NO	NO	✓+	✓+	✓+
Glazing Group D Very low-transmittance reflective coated glass 7-20% visible-light transmission								
North orientation	✓+	✓+	✓+	✓	✓	✓+	✓+	✓+
South orientation	✓+	✓+	✓+	✓	✓	✓+	✓+	✓+
East orientation	✓+	✓+	✓+	✓	✓	✓+	✓+	✓+
West orientation	✓+	✓+	✓+	✓	✓	✓+	✓+	✓+

K E Y

- ✓+ Used where extra density is needed for the most effective operation of CRT equipment, especially as visible light transmittance relates to screen visibility and to visual comfort. Medium colors reduce glare and reflection on CRT screens and lessen interior illumination.
- ✓ Minimum shade cloth criteria as it relates to matching the openness factor to visible-light transmission and solar orientation.

All fabric evaluations are affected by shade cloth color selection.

Note: Job site mockups are strongly recommended. Please contact your MechoShade Dealer or Technical Service at MechoShade Systems, Inc. via the internet at www.mechoshade.com

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Sunscreen Selection: Polyester or Fiberglass Core Screen Cloths?

The world of window shades has changed dramatically. Today there are concerns about shade cloths which never existed a generation ago. Questions about solar optical properties, thermal characteristics, daylight transmittance, heat gain and shading coefficients are now standard considerations when selecting a sunscreen shade cloth.

Due to the many advancements in solar optical technologies and testing, there is now more information about sunscreen shade cloths than ever before. However, none of this information has to do with the quality, durability and fit-for-use longevity of the product itself.

Following is a report of how polyester and fiberglass core screens compare in quality and performance for sunscreens. The conclusions are based on our own early use of fiberglass core screen cloth and our subsequent experience with polyester core screen cloth.

Some Basic Facts

Many screen cloths are constructed of a reinforcing core yarn with a vinyl coating.

While there are many ways of producing this yarn, the polyester core is usually extrusion coated and the fiberglass core yarn is usually dip-coated. Both end up as vinyl-coated yarns woven into a sunscreen shade cloth on a standard loom. The woven shade cloth is then cured under heat and pressure. The process seals the yarns and creates a non-raveling shade cloth.

Vinyl coatings have typically been similar except for variances in the quality of the plasticizer and additives used for UV resistance, anti-bacterial and anti-fungi characteristics such as those which are included in all ThermoVeil® shade cloths.

Through extensive research and development, we have developed, with our manufacturing partner, an enhanced PVC coating formulation which provides excellent resistance to fading, abrasion, mildew, rot and chemicals. This formulation has been tested by the Greenguard Institute and passes numerous air quality standards. (See page 5.08.) This coating, when combined with the polyester core yarn, results in one of the strongest and most durable sunscreen fabrics on the market today.

The major difference between fiberglass and polyester core screen cloths is in the strength and durability of its core yarn. *Independent lab tests have shown that ThermoVeil polyester screen cloth is stronger than similar fiberglass screen cloth. (See test results.)

ThermoVeil's strength and durability come from its core construction of polyester yarn plus a very high quality plasticizer in our PVC compound.

History

The first sunscreen shade cloth in the European market was a fiberglass based product. Advances in polymer technology in the early 1970's led to the use of polyester core yarns in a variety of industries. MechoShade originally used fiberglass in the 1960s and early 1970s but after testing, chose the stronger and more stable polyester core screen cloth for use in our

ThermoVeil sunscreen. We are proud to state that our ThermoVeil shade cloths have consistently outperformed fiberglass shade cloths.

Polyester core yarn is the backbone of our entire solar shading program. While fiberglass has traditional strengths in other products (i.e. fiberglass boats with resin coatings), it can not compare in quality and performance with polyester as a sunscreen shade cloth.

While there have been negative claims from time to time by fiberglass shade cloth manufacturers as to the strength of ThermoVeil (polyester) vs. fiberglass, none to our knowledge has ever been supported by testing documentation. It is our experience that polyester core retains its shape much better than fiberglass core screen cloths as indicated in the stretch and recovery tests below.

Advantages Of ThermoVeil® With Polyester Core Yarn

- Shade bands retain their original shape and form, especially with large shade bands.
- Exceptional stability and durability.
- Ten (10) year fit-for-use warranty.
- Thermoplastic matrix; polyester and vinyl, both thermoplastics, permit a sealed cut edge with a protective bead (not possible with fiberglass and vinyl screen cloths).
- Exterior shade screens; ThermoVeil can be RF welded to create a self-tape reinforcing edge.

Note: At the Irving Trust Company building in New York City, our first large scale ThermoVeil project in 1973, to our knowledge, not a single shade band had been replaced due to wear and tear of normal use or color change.

* Test Results: Fiberglass / Polyester

Grab Tensile Strength

Fiberglass	242 lbs	ThermoVeil	299 lbs.	24% stronger
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Tearing Strength

Fiberglass	19 lbs	ThermoVeil	45 lbs.	137% stronger
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Ball Burst

Fiberglass	305 lbs	ThermoVeil	594 lbs.	95% stronger
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Abrasion Resistance

Fiberglass	86 rubs	ThermoVeil	123 rubs	43% more resistant
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Stretch And Recovery

TIME	FIBERGLASS		THERMOVEIL®	
	WARP	WEFT	WARP	WEFT
60 SEC.	.83	1.67	.83	.42
1 HOUR	.41	1.25	**0	**0
24 HOUR	.41	1.25	**0	**0

**0 = Original Size. ThermoVeil recovered to its original shape. Weft stretch is much less with ThermoVeil (1.67 vs. .42) indicating a more stable construction.

Note: In our opinion, the ability of a fabric to recover is indicative of its stability, suitability, flatness and uniformity. See page 5.12 for full testing results.

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Test Reports: ThermoVeil® SunScreen and Fiberglass Core

ThermoVeil sunscreen is constructed of vinyl yarn with a polyester core, while other sunscreens are constructed of vinyl yarns with a fiberglass core.

The following reports were prepared by an independent testing laboratory and describe the tests performed and relative results. These tests provide a significant insight into the comparable performances of both ThermoVeil and fiberglass-core materials.

A review of these test results should address most questions about the long-term-performance characteristics of ThermoVeil sunscreen material.

One of the positive results of working with a vinyl and polyester—two thermoplastics—is that their compatibility permits sealing and fusing, particularly on shadeband edges and in the production of hems. Because vinyl and fiberglass are not compatible, fusing and sealing are likewise not possible.

Identification of Test Samples:

The three vinyl-coated materials identified:

1. European fiberglass-core sunscreen (called "Fiberglass core").
2. ThermoVeil polyester-core sunscreen (called "ThermoVeil").
3. ThermoVeil polyester-core, H.P. vinyl-coated sunscreen (called "Special ThermoVeil").

Report Number T-39701 Part I (April 1987)

Specifications of Order: Conduct fabric mass.

Test Procedure

Room Conditions: 65% relative humidity, 21°C.

Fabric Mass—CAN/CGSB 4.2 M Method 5A.

FABRIC MASS

Fiberglass core	484 g./sq.m.	14 oz./yd.
ThermoVeil	514 g./sq.m.	15 oz./sq.yd.
Special ThermoVeil	529 g./sq.m.	15 oz./sq.yd.

Report Number T-39701 Part II (April 1987)

Specifications of Order: Conduct fiber count.

Test Procedure

Room Conditions: 65% relative humidity and 21°C.

Fabric Count—CAN/CGSB 4.2 M Method 6.

FABRIC COUNT (WARP)

Fiberglass core	22.8 yarns/cm.	58 yarns/in.
ThermoVeil	10.6 yarns/cm.	27 yarns/in.
Special ThermoVeil	11.0 yarns/cm.	28 yarns/in.

FABRIC COUNT (WEFT)

Fiberglass core	15.8 yarns/cm.	40 yarns/in.
ThermoVeil	11.0 yarns/cm.	28 yarns/in.
Special ThermoVeil	11.0 yarns/cm.	28 yarns/in.

Report Number T-39701 Part III (April 1987)

Specifications of Order: Conduct grab tensile.

Test Procedure

Room Conditions: 65% relative humidity, 21°C.

Grab Tensile—CAN/CGSB 4.2 M Method 9.2.

GRAB TENSILE (WARP)

Fiberglass core	1078* newtons	242 lb.
ThermoVeil	1330*** newtons	299 lb.
Special ThermoVeil	1509 newtons	339 lb.

GRAB TENSILE (WEFT)

Fiberglass core	788** newtons	177 lb.
ThermoVeil	1460 newtons	328 lb.
Special ThermoVeil	1556****newtons	350 lb.

Note: *3 out of 5 jaw breaks, **4 out of 5, and ****2 out of 5.

MechoShade® Systems Comment: "Jaw Breaks" indicates that the fabric breaks at the point where the jaws of the machine grab the fabric. The fiberglass-core sunscreen had an occurrence of breakage in the warp three out of five tries and for the weft four out of five tries. The ThermoVeil sunscreen had only two out of five breaks for both warp and weft and was under substantial high-tension loads, e.g., 242 lb. vs. 299 lb. in the warp and 177 lb. vs. 328 lb. in the weft.

Report Number T-39701 Part IV (April 1987)

Specifications of Order: Conduct tearing strength.

Test Procedure

Room Conditions: 65% relative humidity, 21°C.

Tear Strength—CAN/CGSK 4.2 M Method 12.1

TEARING STRENGTH (WARP)

Fiberglass core	84 newtons	19 lb.
ThermoVeil	201 newtons	45 lb.
Special ThermoVeil	225 newtons	51 lb.

TEARING STRENGTH (WEFT)

Fiberglass core	45 newtons	10 lb.
ThermoVeil	202 newtons	45 lb.
Special ThermoVeil	211 newtons	47 lb.

MechoShade® Systems Comment: The fabric is first cut and then the amount of weight required to continue the cut or the tear is measured. ThermoVeil sunscreen was 137% stronger than the fiberglass-core sunscreen in the warp and 350% stronger in the weft (19 lb. vs. 45 lb. in the warp and 10 lb. vs. 45 lb. in the weft).

Continued 

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Test Reports: ThermoVeil® SunScreen and Fiberglass Core

Report Number T-39701 Part V (April 1987)

Specifications of Order: Conduct ball burst.

Test Procedure

Room Conditions: 65% relative humidity, 21°C.

Ball Burst—CAN/CGSB 4.2 M Method 11.2.

BALL BURST STRENGTH

Fiberglass core	1356 newtons	305 lb.
ThermoVeil®	2642 newtons	594 lb.
Special ThermoVeil	2922 newtons	657 lb.

MechoShade® Systems Comment: "Ball burst" indicates the amount of weight required for the test-ball to pass through the sunscreen material. The ThermoVeil sunscreen was 94% stronger than the fiberglass core (305 lb. for the fiberglass-core material vs. 594 lb. for ThermoVeil sunscreen).

Report Number T-39701 Part VI (April 1987)

Specifications of Order: Test for abrasion resistance.

Test Procedure

Room Conditions: 65% relative humidity, 21°C.

Abrasion Resistance—ASTM D 3884, using H-18 wheels and 500-gram load.

ABRASION RESISTANCE

(No. of cycles to wear coating off)

Fiberglass core	86
ThermoVeil	123
Special ThermoVeil	124

MechoShade® Systems Comment: The H-18 wheel with a 500-gram load used in the test procedure was a sand-paper wheel attached to a taber machine. The ThermoVeil sunscreen resisted abrasion 43% more effectively than the fiberglass-core sunscreen (86 cycles for the fiberglass-core material vs. 123 cycles for the ThermoVeil material).

Report Number T-39701 Part VII (April 1987)

Specifications of Order: Test for stretch and recovery.

Stretch and Recovery—Bench marks were placed on the specimens. The specimens were then stretched 120 N for 24 hours, released and the percent growth after 60 seconds, 1 hour, and 24 hours recorded.

	Stretch & Recovery, % growth after 60-sec. recovery		Stretch & Recovery, % growth after 1-hour recovery		Stretch & Recovery, % growth after 24-hour recovery	
	Warp	Weft	Warp	Weft	Warp	Weft
Fiberglass core	0.83	1.67	0.41	1.25	0.41	1.25
ThermoVeil	0.83	0.42	-0-	-0-	-0-	-0-
Special ThermoVeil	0.42	0.42	-0-	-0-	-0-	-0-

MechoShade® Systems Comment: A force of 120 newtons (269.66 lb.) was exerted on the specimens. The tester places bench marks on the sunscreen material and the surface beneath. The material is stretched and then released, recovery is measured after 60 seconds, 1 hour, and 24 hours. The "0" measurement for both ThermoVeil sunscreens after 1 hour and 24 hours indicates that the fabric went back to its original bench-mark point. The percentage measurement of the fiberglass-core material indicates that it did not return to its original size.

Report Number T-39701 Part VIII (April 1987)

Specifications of Order: Test for heat resistance.

Test Procedure:

Determining permanent effect of heat on plastics—ASTM D 794-82.

Effect of Heat resistance	At 70°C	At 80°C	At 90°C	At 100°C	At 110°C	At 120°C	At 130°C	At 140°C
Fiberglass sunscreen	No effect	No effect	No effect	No effect	No effect	No effect	No effect	Same in color; stiffer
ThermoVeil	No effect	No effect	No effect	No effect	No effect	No effect	No effect	Change in color
Special ThermoVeil	No effect	No effect	No effect	No effect	No effect	No effect	No effect	Change in color

MechoShade® Systems Comment: The ThermoVeil sunscreens had a color change at 140°C. (284°F.) but retained all other characteristics. The fiberglass-core material retained color but was stiffer.

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MS2200-61/04



Specifications for Solar ShadeCloths

Solar Shadecloths for MechoShade® and ElectroShade® systems.

3.0 Shadecloths, Films

3.1 Descriptions of Physical Properties of ThermoVeil® Shadecloths

Shadecloths shall be woven of .010" or .018" opaque, extruded, vinyl-coated polyester yarn consisting of approximately 79% reinforced vinyl and 21% polyester core yarn. The shadecloth shall be tensioned in the finishing range prior to heat setting to keep the warp ends straight, minimize or eliminate weave distortion, and keep the shadecloth flat. The fabric shall be finished with heat and pressure and be dimensionally stable. The width is the manufactured standard width; custom widths shall be available up 126" (320cm) wide.

	ThermoVeil®						EuroVeil®—EuroTwill®	
	0900 Series	1000 Series	1300 Series	1800 Series	2100 Series	3000 Series	5300 Series	6000 Series
Openness factor (ASRAHE 74-1988)	0-1%	2-3%	5%	15%	10-12%	1-2%	5-6%	3%
Construction, end/inch – D3775-96								
Warp	50.0 ± .5	42.0 ± .5	35.0 ± .5	32.0 ± .5	33.0 ± .5	45.0 ± .5	44.5 ± .5	48.0 ± .5
Fill	15.0 ± .5	17.0 ± .5	28.0 ± .5	17.0 ± .5	15.0 ± .5	15.0 ± .5	24.0 ± .5	28.0 ± .5
Weight, oz./sq.yd. (typical) – D3776-96	17.6	16.0	16.8	13.3	15.2	16.3	13.6	14.5
Composition (% Reinforced Viny Coating vs. Polyester Core Yarn)								
% Reinforced Vinyl	79%	79%	79%	79%	79%	79%	85%	85%
% Polyester	21%	21%	21%	21%	21%	21%	15%	15%
Tensile Strength lbs. (Strip), lbf – D5035-95								
Warp	356.7	343.5	221.4	256.3	162.3	204.7	92.0	137.2
Fill	119.7	122.0	146.5	138.3	87.0	119.7	57.8	108.5
U.V. Deterioration								
Fade	None*	None*	None*	None*	None*	None*	None*	None*
Tensile retention	96%	96%	96%	96%	96%	96%	99.9%	96%
Abrasion Resistance – D3884-92 (CS10/500 cycles/no added weight)	No exposure of core yarn							
Flammability Rating – CA Title 19 and NFPA 701-99	TM1 Small Scale, TM2 Large Scale		Passes (Faux Naturals: N/A)					
Weatherability, 1200 hours – G53-96	Trace discoloration							
Mildew Resistance – GM9309-P	No growth							
Anti-Microbial – G21-02	No growth							
Indoor Air Quality – ASTM D 5116-97 / ASTM D 6670-01	World Health Organization (WHO) German Federal Environmental Agency (Blue Angel Program) The State of Washington (SOW) U.S. Occupational Safety & Health Administration						0900 Series; 1000 Series;	
							Passes: 1300 Series; 1800 Series;	
							2100 Series; 3000 Series;	
							5300 Series; 6000 Series	

Note: The above results are representative of real data from a single test sample. Presently no specification is incorporated.

* At 500 hours exposure.

Continued 

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Specifications for Solar ShadeCloths

Solar Shadecloths for MechoShade® and ElectroShade® systems.

3.1.2 Performance

As a “shadecloth,” the material shall hang flat without buckling or distortion. The edge, when trimmed, shall hang straight without raveling. The unguided shadeband shall roll true and straight, without shifting sideways more than $\pm 1/8$ in. in either direction due to warp distortion or weave design.

3.1.3 Flame Retardance

Shadecloth shall be certified by an Independent Laboratory to pass the Large or Small Scale Vertical Burn Requirements of the National Fire Protection Association (NFPA 701-99) / FFA / California US Title 19 / The NY State Combustible Toxicity (LC50 22.5g) / Compliance with the D.O.E. / The Crown Suppliers Specification FR7 using ignition sources 0,5, and 7 as defined in BS.5852: Parts 1 and 2. - U.K.

3.1.4 Solar Optical Properties

ThermoVeil® shadecloth shall be offered as standard products. Each pattern and series shall be readily available in at least three varying degrees of density and openness to accommodate the various solar loads on each of the different exposures of a building. The shadecloth shall be woven of the same yarns, have similar weaves, and be color matched by dye lot. MechoShade Systems, Inc., shall provide independent test data on the solar optical properties of the fabrics and MirroFilms™ in combination with clear and heat-absorbing glass (1/4 in. single glazed and 1 in. insulated glass) and twin-glazed insulated glass. Attached are the required solar optical properties in conjunction with Clear, Blue/Green and Bronze glass.

3.1.5 Toxicity

New York State / University of Pittsburgh Toxicity Test (LC50 22.5)

Note: LC 50 of wood 19.7, wool 6.4 when burning.

The lower the LC 50 the more toxic the material when burning. The higher the LC50 the less toxic when burning.

3.2 Description of Physical Properties of MirroFilm™ Polyester Film, Reflective and/or Tinted (provided by MechoShade Systems, Inc.)

Constructed of a sandwich of two clear or tinted polyester with the inside face deposited with a molecular thickness of aluminum. MirroFilm™ shall be metalized and/or tinted as required. (*See sample for specific solar optical properties.*) MirroFilm can be used as an independent material or in conjunction with ThermoVeil shadecloth to achieve the desired degree of solar protection and visual transmission.

3.4 DualShade® SnapLoc® Mounting System (See also Sec. 2.5 Hardware Accessories)

DualShade® by MechoShade Systems, Inc., is the patented system for mounting ThermoVeil shadecloth and MirroFilms to the same roller by means of a snap-on fastener. The shadecloth and film shall be separated by a 1/2 in. end separator which shall create a second stagnant air space between the window and the room air.



Healthcare Fact Sheet for MechoShade® System

Hardware

Window-covering solutions for the next millennium.

Suitable for:

- Patient rooms
- Solariums and greenhouses
- Public spaces
- Laboratories
- Staff offices

Features:

- Elegance and practicality
- Attractive patterns and colors
- Privacy with a view
- Low-cost to no-cost maintenance
- Minimum replacement costs

Benefits:

- Staff assistance eliminated
- Anti-bacterial and anti-fungal
- Building-code requirements satisfied
- Easy cleaning and stain resistance
- Motor option availability

Feature	Advantage	Health Care Benefits
Modular Design	Low maintenance costs. Hardware has a Limited Lifetime warranty. Replacement of the shadeband represents a cost of less than half the initial cost.	Partial replacement instead of total replacement stretches the budget and facilitates low-cost design changes.
Chain-Driven Assembly	A simple chain mechanism controls the raising and lowering of the shade. The shade stays in any position without having to “lock in” as is the case with venetian blinds and old-fashioned spring-roller shades.	Ease of operation permits the elderly and infirmed to operate the shades and control the room environment themselves. MechoShades are simpler to handle compared to venetian blinds, vertical blinds, and draperies.
	The shade tube is demountable from the drive brackets.	The design offers easy access and low maintenance.
	The chain drive acts as a fail-safe mechanism.	Danger of equipment failure and physical strain is eliminated.
Motor Option	For bed-ridden patients, low voltage-motor control is available.	Permits handicapped and bed-ridden patients to control their environment without staff assistance.
SnapLoc® Spline	Shadebands can be easily snapped, into and out of the SnapLoc® roller tube without having to remove the tube or the drive mechanism.	Shadebands can be easily removed and reinstalled by in-house staff if replacement is necessary for the aesthetic or sanitary reasons.
LAM™ Option	The LAM™ (Lift-Assist Mechanism™) is a mechanical-override device which compensates for the shade weight.	The mechanism permits frail and infirmed patients and visitors to operate even the largest shades with ease and without the necessity of motorized operation.

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Healthcare Fact Sheet for MechoShade® System

ThermoVeil® Shadecloth

Feature	Advantage	Health Care Benefits
Expanded Color Program and Dobby Weaves	MechoShade System's expanded color program provides a color palette for all interiors. Dobby weave patterns combined with Blackout material provide a more decorative look.	Combines advantages of solar shadecloths with the aesthetics of residential designed features found in ThermoVeil®'s jacquard patterns in an expanded color range.
Polyester-Reinforced Vinyl Yarns	Cleanable. Low maintenance cost. Bacterial and fungus resistant.	Easily cleaned while in the window with any household cleaner or disinfectant by simply wiping off the shadecloth while it hangs in the window. Assured compliance to healthcare standards is made possible within operating budgets by using in-house staff. An independent laboratory has found ThermoVeil shadecloth to be an inhibitor of bacterial, fungal, and viral growth. total resistance is achieved within an 8-mm zone of inhibition. <i>(See test report elsewhere in this section of our binder.)</i>
	Flame resistant.	ThermoVeil shadecloth passes the NFPA-701 vertical-burn test, typically required by most building codes.
Open- and Medium-Density Weaves (8% - 15% openness factors)	Provides a view to the outside while simultaneously providing sun-and-glare control.	Occupants can enjoy the outside view while being comfortable with the shades partially drawn or complete privacy with the shade fully down.
Very Dense Privacy Weaves (0% - 1% openness factors)	Provides nighttime privacy without the need for an additional window treatment.	Only one window treatment is needed at the window wall. Lighter-colored ThermoVeil shadecloths diffuse sunlight while reducing reflected glare-both attractive features for the elderly. Shades disappear when desired.
The ThermoVeil® Blackout DualShade®	Blackout DualShade is both decorative and functional, providing matching shade cloth to the interiors.	Room darkening, plus additional insulation. Lowers "U" of the window.

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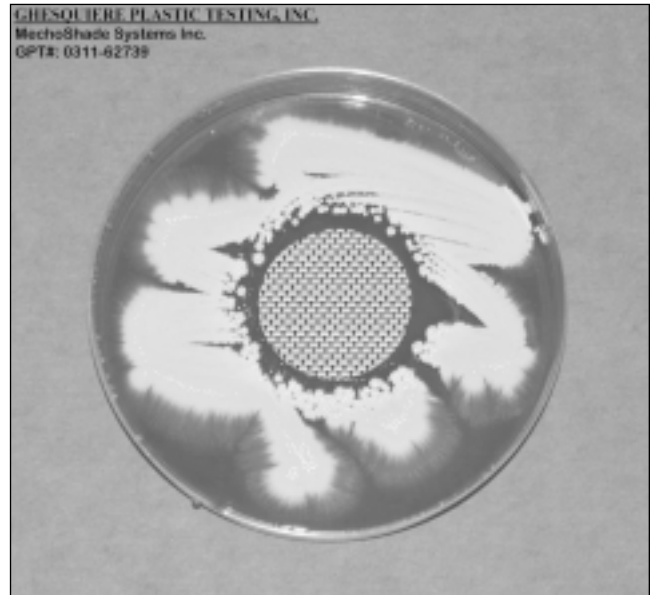
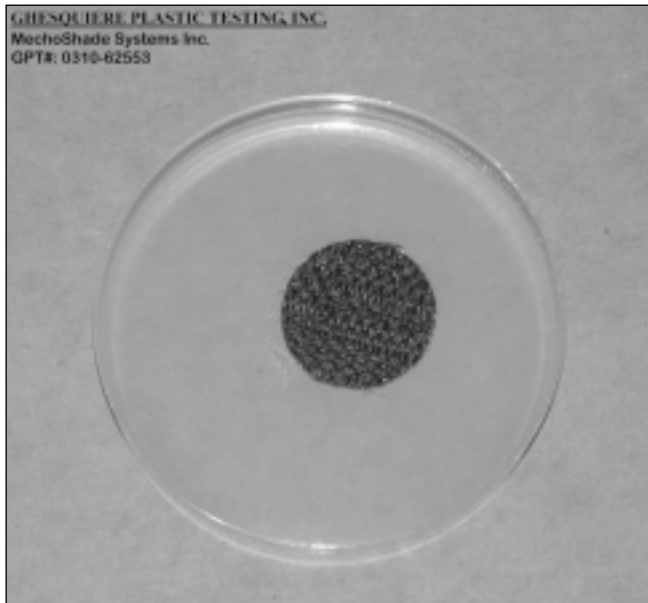
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5.11
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ThermoVeil® for Healthcare

A Report by Ghesquire Plastics Testing, Inc.
on ThermoVeil's Resistance to Micro-organisms



The Resistance of MechoShade ThermoVeil to Micro-organisms

A Ghesquire Plastics Testing Report for
MechoShade Systems, Inc.
42-03 35th Street
Long Island City, NY 11101

Reported Date: November 28th and December 5th, 2003.

Introduction

Three samples of vinyl coated fabric identified as MechoShade ThermoVeil for hospital drapery and shades application were submitted by a representative for MechoShade Systems for evaluation of resistance to bacterial and fungal microorganisms. Test specimens were prepared as necessary and conditioned for a minimum of 24 hours at standard laboratory conditions prior to testing.

Summary

The samples of MechoShade ThermoVeil demonstrated excellent resistance against bacterial and fungal organisms as tested in accordance with GM 9309-P (Pink Stain) and ASTM G-21-02. This sample also showed highly effective activity against *Staphylococcus aureus* in a bacterial zone of inhibition test.

Results

The following determinations were made based upon the tests described at the end of this section:

Mildew Resistance

Pink Stain Test – GM 9309-P

Requirement: No Staining

Results:

Specimen 1 No Staining.
Specimen 2 No Staining.
Specimen 3 No Staining.

Fungus Resistance.

Mixed Culture Method – ASTM G-21-02

This test was performed for 28 days at 28°C to 31°C in accordance with the procedures of ASTM G21-02:

Results:

Specimen 1 Rating 0. No fungal growth.
Specimen 2 Rating 0. No fungal growth.
Specimen 3 Rating 0. No fungal growth.

Note: Photographs of the tests are enclosed [shown above].

Continued 

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Solar Optical Properties for 0900,1000, 1300, 1600, 1800 & 2100 Series ThermoVeil® ShadeCloths

5.151

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*U Value	SINGLE FREE HANGING SHADE	DUAL FREE HANGING SHADE W/LOW-E MYLAR	TOTAL SOLAR / VISIBLE						BLUE/GREEN GLASS									
			T _S	R _S	A _S	T _V	T _U	O _F	SHADING COEFFICIENT			VISIBLE TRANSMITTANCE						
1/4"	0.74	0.54																
DOUBLE	0.40	0.33																
DOUBLE LOW-E (3)	0.30	0.26																
GLASS ONLY (**SOLAR PROPERTIES FOR GLASS ONLY VARY BY GLASS TYPE.)			N/A**	N/A**	N/A**	N/A**	N/A**	N/A**	0.73	0.60	0.55	0.76	0.69	0.62				
0900 SERIES / TRANSLUCENT WEAVE – OF: 0.00%																		
0901	WHITE / WHITE		0.10	0.72	0.18	0.04	0.01	0.00	0.29	0.24	0.23	0.03	0.03	0.03				
0903	GREY		0.00	0.30	0.70	0.00	0.04	0.00	0.45	0.37	0.33	0.00	0.00	0.00				
0904	BLACK/BROWN		0.02	0.05	0.93	0.03	0.02	0.00	0.56	0.45	0.38	0.02	0.02	0.02				
0907	BEIGE		0.03	0.50	0.47	0.01	0.01	0.00	0.37	0.31	0.28	0.01	0.01	0.01				
0908	SHADOW GREEN		0.00	0.06	0.94	0.00	0.00	0.00	0.55	0.45	0.38	0.00	0.00	0.00				
0910	LIGHT GREY		0.00	0.34	0.66	0.00	0.04	0.00	0.43	0.36	0.38	0.00	0.00	0.00				
0911	PORCELAIN		0.09	0.65	0.26	0.04	0.01	0.00	0.32	0.26	0.25	0.03	0.03	0.03				
1000 SERIES / DENSE VERTICAL WEAVE – APPROXIMATE OF: 0.02%																		
1001	WHITE		0.12	0.69	0.19	0.07	0.02	0.02	0.31	0.25	0.24	0.06	0.05	0.04				
1002	BEIGE		0.06	0.47	0.47	0.04	0.03	0.03	0.39	0.32	0.29	0.03	0.03	0.03				
1003	GREY		0.02	0.30	0.68	0.02	0.02	0.01	0.45	0.37	0.33	0.02	0.01	0.01				
1004	BLACK/BROWN		0.02	0.05	0.93	0.03	0.02	0.02	0.56	0.45	0.38	0.02	0.02	0.02				
1008	SHADOW GREEN		0.02	0.07	0.91	0.02	0.02	0.02	0.55	0.45	0.38	0.02	0.01	0.01				
1010	LIGHT GREY		0.01	0.35	0.64	0.01	0.01	0.01	0.43	0.35	0.32	0.01	0.01	0.01				
1011	PORCELAIN		0.45	0.41	0.38	0.03	0.02	0.03	0.39	0.32	0.29	0.02	0.02	0.02				
1800 SERIES / OPEN VERTICAL WEAVE – APPROXIMATE OF: 0.15%																		
1801	WHITE		0.22	0.63	0.15	0.18	0.13	0.11	0.35	0.28	0.27	0.14	0.13	0.11				
1802	BEIGE		0.14	0.44	0.42	0.12	0.10	0.09	0.41	0.24	0.31	0.09	0.08	0.08				
1803	GREY		0.13	0.26	0.61	0.15	0.13	0.12	0.48	0.40	0.35	0.12	0.10	0.09				
1804	BLACK/BROWN		0.15	0.04	0.81	0.17	0.15	0.14	0.58	0.47	0.40	0.13	0.12	0.10				
1810	LIGHT GREY		0.10	0.36	0.54	0.11	0.09	0.09	0.44	0.36	0.32	0.09	0.08	0.07				
1300 SERIES / DENSE BASKET WEAVE – APPROXIMATE OF: 0.05%																		
1301	WHITE		0.15	0.69	0.16	0.11	0.06	0.06	0.31	0.25	0.25	0.09	0.08	0.07				
1302	BEIGE		0.10	0.48	0.42	0.09	0.06	0.06	0.39	0.32	0.29	0.07	0.06	0.06				
1304	BLACK/BROWN		0.06	0.04	0.90	0.07	0.06	0.06	0.56	0.46	0.39	0.05	0.05	0.04				
1313	GREY		0.06	0.28	0.66	0.07	0.06	0.05	0.47	0.38	0.34	0.05	0.05	0.04				
1316	EGGSHELL		0.12	0.58	0.30	0.10	0.07	0.06	0.35	0.29	0.27	0.08	0.07	0.06				
1317	STRAW		0.14	0.49	0.37	0.10	0.07	0.06	0.39	0.32	0.29	0.08	0.07	0.06				
1319	SILVER BIRCH		0.11	0.49	0.40	0.10	0.06	0.06	0.39	0.32	0.29	0.08	0.07	0.06				
1320	SHADOW GREY		0.06	0.09	0.85	0.07	0.05	0.06	0.54	0.44	0.38	0.05	0.05	0.04				
2100 SERIES / OPEN BASKET WEAVE – APPROXIMATE OF: 0.11%																		
2101	WHITE		0.22	0.63	0.15	0.18	0.13	0.13	0.35	0.28	0.27	0.14	0.13	0.11				
2102	BEIGE		0.17	0.44	0.39	0.17	0.14	0.14	0.42	0.34	0.31	0.13	0.12	0.11				
2104	BLACK/BROWN		0.13	0.04	0.83	0.16	0.13	0.13	0.57	0.47	0.39	0.12	0.11	0.10				
2113	GREY		0.13	0.27	0.60	0.14	0.13	0.12	0.48	0.39	0.34	0.11	0.10	0.09				
2116	EGGSHELL		0.18	0.54	0.28	0.16	0.13	0.12	0.38	0.31	0.29	0.13	0.11	0.10				
2117	STRAW		0.14	0.58	0.28	0.13	0.09	0.07	0.35	0.29	0.27	0.10	0.09	0.08				
2119	SILVER BIRCH		0.18	0.43	0.39	0.18	0.13	0.13	0.42	0.34	0.31	0.14	0.12	0.11				
2120	SHADOW GREY		0.10	0.09	0.81	0.12	0.10	0.10	0.55	0.45	0.50	0.09	0.12	0.15				

** SPECIAL ORDER FABRIC

KEY: T_S = Solar Transmittance, R_S = Solar Reflectance, A_S = Solar Absorption, T_V = Visible Transmittance, T_{V45} = Visible Transmittance/ 45 degree sightline, T_{UV} = UV Transmittance, O_F = Openness Factor, Single Glass is LOF 1/4", Double Glass is 1/4" glass thickness with 1-2" airspace, Low E 3 is Coating on #3 Glass Surface. Shading Coefficients and "U" Values with additional glass types and exterior shades are available upon request. All test data is for estimating purposes only. Testing report by independent laboratory. • U-Values are the same for Clear, Bronze and Blue/Green glass for all fabric series. Test data for winter time evening. U-Value performance may vary by window size and temperature. Tested - 4' x 8' Garded Hot Plate. Values are the same for all glazing regardless of color.

*U Value	SINGLE FREE HANGING SHADE	DUAL FREE HANGING SHADE W/LOW-E MYLAR	CLEAR GLASS						BRONZE GLASS					
			SHADING COEFFICIENT			VISIBLE TRANSMITTANCE			SHADING COEFFICIENT			VISIBLE TRANSMITTANCE		
			SINGLE 1/4" CLEAR	DOUBLE 1/4" CLEAR 1/4" CLEAR	DOUBLE 1/4" CLEAR LOW-E (3)	SINGLE 1/4" CLEAR	DOUBLE 1/4" CLEAR 1/4" CLEAR	DOUBLE 1/4" CLEAR LOW-E (3)	SINGLE 1/4" BRONZE	DOUBLE 1/4" BRONZE 1/4" CLEAR	DOUBLE 1/4" BRONZE LOW-E (3)	SINGLE 1/4" BRONZE	DOUBLE 1/4" BRONZE 1/4" CLEAR	DOUBLE 1/4" BRONZE LOW-E (3)
Glass Only			0.98	0.85	0.81	0.89	0.80	0.73	0.73	0.59	0.55	0.54	0.49	0.44
900 Series / Translucent Weave														
0901	White / White		0.28	0.27	0.28	0.03	0.03	0.03	0.29	0.23	0.23	0.02	0.02	0.02
0903	Grey		0.55	0.49	0.44	0.00	0.00	0.00	0.45	0.37	0.32	0.00	0.00	0.00
0904	Black/Brown		0.73	0.62	0.54	0.02	0.02	0.02	0.55	0.45	0.38	0.02	0.01	0.01
0907	Beige		0.42	0.38	0.36	0.01	0.01	0.01	0.37	0.30	0.28	0.01	0.00	0.00
0908	Shadow Green		0.72	0.61	0.53	0.00	0.00	0.00	0.54	0.44	0.37	0.00	0.00	0.00
0910	Light Grey		0.52	0.47	0.42	0.00	0.00	0.00	0.43	0.35	0.31	0.00	0.00	0.00
0911	Porcelain		0.33	0.31	0.31	0.03	0.03	0.03	0.32	0.26	0.25	0.02	0.02	0.02
1000 Series / Dense Vertical Weave														
1001	White		0.31	0.29	0.29	0.06	0.04	0.05	0.31	0.25	0.24	0.04	0.03	0.03
1002	Beige		0.45	0.41	0.38	0.03	0.02	0.03	0.39	0.32	0.29	0.02	0.02	0.02
1003	Grey		0.56	0.49	0.44	0.02	0.01	0.01	0.45	0.37	0.32	0.01	0.01	0.01
1004	Black/Brown		0.73	0.62	0.54	0.02	0.02	0.02	0.55	0.45	0.38	0.02	0.01	0.01
1008	Shadow Green		0.72	0.61	0.53	0.02	0.01	0.01	0.54	0.44	0.37	0.01	0.01	0.00
1010	Grey/White		0.52	0.61	0.53	0.02	0.01	0.01	0.43	0.35	0.31	0.01	0.00	0.00
1011	Porcelain		0.34	0.32	0.32	0.06	0.05	0.05	0.33	0.26	0.25	0.04	0.03	0.03
1800 Series / Open Vertical Weave														
1801	White		0.37	0.34	0.33	0.15	0.11	0.14	0.34	0.28	0.27	0.10	0.09	0.08
1802	Beige		0.48	0.43	0.40	0.10	0.07	0.09	0.41	0.33	0.30	0.07	0.06	0.05
1803	Grey		0.60	0.53	0.47	0.12	0.09	0.11	0.48	0.39	0.34	0.08	0.07	0.07
1804	Black/Brown		0.76	0.64	0.56	0.13	0.10	0.12	0.57	0.46	0.39	0.09	0.08	0.07
1810	Grey		0.53	0.47	0.43	0.09	0.07	0.08	0.44	0.36	0.32	0.06	0.05	0.05
1300 Series / Dense Basket Weave														
1301	White		0.32	0.30	0.30	0.09	0.07	0.08	0.31	0.25	0.24	0.06	0.06	0.05
1302	Beige		0.45	0.41	0.38	0.07	0.06	0.07	0.39	0.32	0.29	0.05	0.04	0.04
1304	Black/Brown		0.74	0.63	0.55	0.05	0.04	0.05	0.56	0.45	0.38	0.04	0.03	0.03
1313	Grey		0.58	0.51	0.45	0.06	0.04	0.05	0.46	0.38	0.33	0.04	0.03	0.03
1316	Eggshell		0.38	0.35	0.34	0.08	0.06	0.07	0.35	0.28	0.27	0.06	0.05	0.04
1317	Straw		0.45	0.41	0.38	0.08	0.06	0.07	0.39	0.32	0.29	0.06	0.05	0.04
1319	White/Grey		0.44	0.40	0.38	0.08	0.06	0.07	0.38	0.31	0.29	0.06	0.05	0.04
1320	Shadow Grey		0.71	0.61	0.53	0.05	0.04	0.05	0.54	0.44	0.29	0.04	0.03	0.03
2100 Series / Open Basket Weave														
2101	White		0.37	0.34	0.33	0.15	0.11	0.14	0.34	0.28	0.27	0.10	0.09	0.08
2102	Beige		0.49	0.44	0.40	0.14	0.11	0.13	0.41	0.34	0.31	0.09	0.08	0.08
2104	Black/Brown		0.76	0.64	0.55	0.13	0.10	0.12	0.57	0.46	0.39	0.09	0.08	0.07
2113	Grey		0.45	0.41	0.47	0.14	0.11	0.10	0.39	0.32	0.34	0.10	0.09	0.06
2116	Eggshell		0.42	0.39	0.37	0.13	0.10	0.12	0.37	0.30	0.28	0.09	0.08	0.07
2117	Straw		0.39	0.34	0.34	0.12	0.10	0.09	0.35	0.29	0.27	0.07	0.06	0.06
2119	Silver Birch		0.50	0.44	0.41	0.14	0.11	0.13	0.42	0.34	0.31	0.10	0.09	0.08
2120	Shadow Grey		0.72	0.53	0.53	0.11	0.09	0.09	0.54	0.44	0.38	0.06	0.06	0.05

KEY: T_S = Solar Transmittance, R_S = Solar Reflectance, A_S = Solar Absorption, T_V = Visible Transmittance, T_{V45} = Visible Transmittance/ 45 degree sightline, T_{UV} = UV Transmittance, O_F = Openness Factor, Single Glass is LOF 1/4", Double Glass is 1/4" glass thickness with 1-2" airspace, Low E 3 is Coating on #3 Glass Surface. Shading Coefficients and "U" Values with additional glass types and exterior shades are available upon request. All test data is for estimating purposes only. Testing report by independent laboratory. * U-Values are the same for Clear, Bronze and Blue/Green glass for all fabric series. Test data for winter time evening. U-Value performance may vary by window size and temperature. Tested - 4' x 8' Garded Hot Plate. Values are the same for all glazing regardless of color.

Solar Optical Properties for 3000, 3200 & 3300 Series ThermoVeil® ShadeCloths

5.15.3

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*U Value	SINGLE FREE HANGING SHADE	DUAL FREE HANGING SHADE W/LOW-E MYLAR	TOTAL SOLAR / VISIBLE				BLUE/GREEN GLASS											
			T_S	R_S	A_S	T_V	T_U	O_F	SHADING COEFFICIENT			VISIBLE TRANSMITTANCE						
1/4"	0.74	0.54																
DOUBLE	0.40	0.33																
DOUBLE LOW-E (3)	0.30	0.26																
GLASS ONLY (**Solar properties for glass only vary by glass type.)			N/A**	N/A**	N/A**	N/A**	N/A**	N/A**		0.73	0.60	0.55	0.76	0.69	0.62			
3000 SERIES / SATIN TEXTURE WEAVE** (REVERSIBLE***) – APPROX. OF: 0.01%																		
3010	ALABASTER / SIDE 1		0.11	0.63	0.26	0.05	0.01	0.01		0.33	0.27	0.26	0.04	0.04	0.03			
3010R	ALABASTER / SIDE 2		0.11	0.59	0.30	0.05	0.01	0.01		0.35	0.28	0.27	0.04	0.03	0.03			
3011	PARCHMENT / SIDE 1		0.09	0.58	0.33	0.05	0.02	0.01		0.35	0.28	0.27	0.04	0.03	0.03			
3011R	PARCHMENT / SIDE 2		0.09	0.45	0.46	0.05	0.02	0.01		0.40	0.33	0.30	0.04	0.03	0.03			
3012	SANDALWOOD / SIDE 1		0.06	0.40	0.54	0.02	0.01	0.01		0.42	0.34	0.31	0.02	0.01	0.01			
3012R	SANDALWOOD / SIDE 2		0.06	0.44	0.50	0.02	0.01	0.01		0.40	0.33	0.30	0.02	0.01	0.01			
3013	SAND / SIDE 1		0.02	0.36	0.62	0.01	0.01	0.01		0.43	0.35	0.31	0.01	0.01	0.01			
3013R	SAND / SIDE 2		0.02	0.27	0.71	0.01	0.01	0.01		0.47	0.38	0.34	0.01	0.01	0.01			
3014	PEWTER / SIDE 1		0.02	0.38	0.60	0.01	0.01	0.01		0.42	0.35	0.31	0.01	0.01	0.01			
3014R	PEWTER / SIDE 2		0.02	0.31	0.67	0.01	0.01	0.01		0.45	0.37	0.33	0.01	0.01	0.01			
3015	SMOKE / SIDE 1		0.01	0.25	0.74	0.01	0.01	0.01		0.47	0.39	0.34	0.01	0.01	0.01			
3015R	SMOKE / SIDE 2		0.01	0.34	0.65	0.01	0.01	0.01		0.44	0.36	0.32	0.01	0.01	0.01			
3016	MUSHROOM / SIDE 1		0.01	0.20	0.79	0.01	0.01	0.01		0.49	0.40	0.35	0.01	0.01	0.01			
3016R	MUSHROOM / SIDE 2		0.01	0.17	0.82	0.01	0.01	0.01		0.51	0.41	0.36	0.01	0.01	0.01			
3017	CHARCOAL / SIDE 1		0.01	0.15	0.84	0.01	0.01	0.01		0.51	0.42	0.36	0.01	0.01	0.01			
3017R	CHARCOAL / SIDE 2		0.01	0.22	0.77	0.01	0.01	0.01		0.48	0.40	0.35	0.01	0.01	0.01			
3018	GRAPHITE / SIDE 1		0.01	0.11	0.88	0.01	0.01	0.01		0.53	0.43	0.37	0.01	0.01	0.01			
3018R	GRAPHITE / SIDE 2		0.01	0.10	0.89	0.01	0.01	0.01		0.53	0.44	0.37	0.01	0.01	0.01			
3200 SERIES / DIAMOND PASTEL GROUP** (REVERSIBLE***) – APPROX. OF: 0.01%																		
3211	BONE / SIDE 1		0.12	0.71	0.17	0.06	0.02	0.01		0.30	0.24	0.24	0.05	0.04	0.04			
3211R	BONE / SIDE 2		0.12	0.71	0.17	0.06	0.02	0.01		0.30	0.24	0.24	0.05	0.04	0.04			
3300 SERIES / DIAMOND EARTHTONES GROUP** (REVERSIBLE***) – APPROX. OF: 0.01%																		
3310	PEBBLE / SIDE 1		0.10	0.66	0.24	0.05	0.02	0.01		0.32	0.26	0.25	0.04	0.04	0.03			
3310R	PEBBLE / SIDE 2		0.10	0.60	0.30	0.05	0.02	0.01		0.34	0.28	0.26	0.04	0.03	0.03			
3312	STONE / SIDE 1		0.04	0.41	0.55	0.02	0.01	0.01		0.41	0.34	0.30	0.02	0.01	0.01			
3312R	STONE / SIDE 2		0.04	0.38	0.58	0.02	0.01	0.01		0.42	0.35	0.31	0.02	0.01	0.01			
3313	DRIFTWOOD / SIDE 1		0.04	0.40	0.56	0.02	0.01	0.01		0.41	0.34	0.31	0.02	0.01	0.01			
3313R	DRIFTWOOD / SIDE 2		0.04	0.38	0.58	0.02	0.01	0.01		0.42	0.35	0.31	0.02	0.01	0.01			

**SPECIAL ORDER FABRIC

***"R" IS REVERSE SIDE. FABRIC TESTING ORIENTATION FOR REVERSE SIDE IS (SIDE 1) FACING GLASS WITH FRONT SIDE (SIDE 2) FACING INTO ROOM.

KEY: T_S = Solar Transmittance, R_S = Solar Reflectance, A_S = Solar Absorption, T_V = Visible Transmittance, T_{V45} = Visible Transmittance/ 45 degree sightline, T_{UV} = UV Transmittance, O_F = Openness Factor, Single Glass is LOF 1/4", Double Glass is 1/4" glass thickness with 1-2" airspace, Low E 3 is Coating on #3 Glass Surface. Shading Coefficients and "U" Values with additional glass types and exterior shades are available upon request. All test data is for estimating purposes only. Testing report by independent laboratory. * U-Values are the same for Clear, Bronze and Blue/Green glass for all fabric series. Test data for winter time evening. U-Value performance may vary by window size and temperature. Tested - 4' x 8' Garded Hot Plate. Values are the same for all glazing regardless of color.

*U Value	SINGLE FREE HANGING SHADE	DUAL FREE HANGING SHADE W/LOW ^E MYLAR	CLEAR GLASS						BRONZE GLASS					
			SHADING COEFFICIENT			VISIBLE TRANSMITTANCE			SHADING COEFFICIENT			VISIBLE TRANSMITTANCE		
1/4"	0.54	0.74	SINGLE 1/4" CLEAR	DOUBLE 1/4" CLEAR 1/4" CLEAR	DOUBLE 1/4" CLEAR LOW-E (3)	SINGLE 1/4" CLEAR	DOUBLE 1/4" CLEAR 1/4" CLEAR	DOUBLE 1/4" CLEAR LOW-E (3)	SINGLE 1/4" BRONZE	DOUBLE 1/4" BRONZE 1/4" CLEAR	DOUBLE 1/4" BRONZE LOW-E (3)	SINGLE 1/4" BRONZE	DOUBLE 1/4" BRONZE 1/4" CLEAR	DOUBLE 1/4" BRONZE LOW-E (3)
DOUBLE	0.33	0.40												
DOUBLE LOW-E (3)	0.26	0.30												
GLASS ONLY (**Solar properties for glass only vary by glass type.)			0.98	0.85	0.81	0.89	0.80	0.73	0.73	0.59	0.55	0.54	0.49	0.44
3000 SERIES / SATIN TEXTURE WEAVE** (REVERSIBLE***) – APPROX. OF: 0.01%														
3010	ALABASTER / SIDE 1		0.35	0.33	0.32	0.04	0.03	0.04	0.33	0.27	0.26	0.03	0.02	0.02
3010R	ALABASTER / SIDE 2		0.37	0.35	0.33	0.04	0.03	0.04	0.35	0.28	0.27	0.03	0.02	0.02
3011	PARCHMENT / SIDE 1		0.38	0.35	0.34	0.04	0.03	0.04	0.35	0.28	0.27	0.03	0.02	0.02
3011R	PARCHMENT / SIDE 2		0.47	0.42	0.39	0.04	0.03	0.04	0.40	0.33	0.30	0.03	0.02	0.02
3012	SANDALWOOD / SIDE 1		0.49	0.44	0.41	0.02	0.01	0.01	0.41	0.34	0.31	0.01	0.01	0.01
3012R	SANDALWOOD / SIDE 2		0.47	0.42	0.39	0.02	0.01	0.01	0.40	0.33	0.30	0.01	0.01	0.01
3013	SAND / SIDE 1		0.51	0.46	0.42	0.01	0.01	0.01	0.42	0.35	0.31	0.01	0.00	0.00
3013R	SAND / SIDE 2		0.58	0.51	0.45	0.01	0.01	0.01	0.46	0.38	0.33	0.01	0.00	0.00
3014	PEWTER / SIDE 1		0.50	0.45	0.41	0.01	0.01	0.01	0.42	0.34	0.31	0.01	0.00	0.00
3014R	PEWTER / SIDE 2		0.55	0.48	0.44	0.01	0.01	0.01	0.45	0.36	0.32	0.01	0.00	0.00
3015	SMOKE / SIDE 1		0.59	0.51	0.46	0.01	0.01	0.01	0.47	0.38	0.33	0.01	0.00	0.00
3015R	SMOKE / SIDE 2		0.53	0.47	0.42	0.01	0.01	0.01	0.43	0.35	0.31	0.01	0.00	0.00
3016	MUSHROOM / SIDE 1		0.62	0.54	0.48	0.01	0.01	0.01	0.49	0.40	0.35	0.01	0.00	0.00
3016R	MUSHROOM / SIDE 2		0.64	0.56	0.49	0.01	0.01	0.01	0.50	0.41	0.35	0.01	0.00	0.00
3017	CHARCOAL / SIDE 1		0.66	0.57	0.50	0.01	0.01	0.01	0.51	0.42	0.36	0.01	0.00	0.00
3017R	CHARCOAL / SIDE 2		0.61	0.53	0.47	0.01	0.01	0.01	0.48	0.39	0.34	0.01	0.00	0.00
3018	GRAPHITE / SIDE 1		0.69	0.59	0.51	0.01	0.01	0.01	0.52	0.43	0.36	0.01	0.00	0.00
3018R	GRAPHITE / SIDE 2		0.69	0.59	0.52	0.01	0.01	0.01	0.53	0.43	0.37	0.01	0.00	0.00
3200 SERIES / DIAMOND PASTEL GROUP** (REVERSIBLE***) – APPROX. OF: 0.01%														
3211	BONE / SIDE 1		0.29	0.28	0.29	0.05	0.04	0.05	0.30	0.24	0.24	0.03	0.03	0.03
3211R	BONE / SIDE 2		0.29	0.28	0.29	0.05	0.04	0.05	0.30	0.24	0.24	0.03	0.03	0.03
3300 SERIES / DIAMOND EARTHTONES GROUP** (REVERSIBLE***) – APPROX. OF: 0.01%														
3310	PEBBLE / SIDE 1		0.32	0.31	0.30	0.04	0.03	0.04	0.32	0.26	0.25	0.03	0.02	0.02
3310R	PEBBLE / SIDE 2		0.37	0.34	0.33	0.04	0.03	0.04	0.34	0.28	0.26	0.03	0.02	0.02
3312	STONE / SIDE 1		0.48	0.43	0.40	0.02	0.01	0.01	0.41	0.33	0.30	0.01	0.01	0.01
3312R	STONE / SIDE 2		0.50	0.45	0.41	0.02	0.01	0.01	0.42	0.34	0.31	0.01	0.01	0.01
3313	DRIFTWOOD / SIDE 1		0.49	0.44	0.40	0.02	0.01	0.01	0.41	0.34	0.30	0.01	0.01	0.01
3313R	DRIFTWOOD / SIDE 2		0.50	0.45	0.41	0.02	0.01	0.01	0.42	0.34	0.31	0.01	0.01	0.01

**SPECIAL ORDER FABRIC

*** "R" IS REVERSE SIDE. FABRIC TESTING ORIENTATION FOR REVERSE SIDE IS (SIDE 1) FACING GLASS WITH FRONT SIDE (SIDE 2) FACING INTO ROOM.

KEY: T_S = Solar Transmittance, R_S = Solar Reflectance, A_S = Solar Absorption, T_V = Visible Transmittance, T_{V45} = Visible Transmittance/ 45 degree sightline, T_{UV} = UV Transmittance, O_F = Openness Factor, Single Glass is LOF 1/4", Double Glass is 1/4" glass thickness with 1-2" airspace, Low E 3 is Coating on #3 Glass Surface. Shading Coefficients and "U" Values with additional glass types and exterior shades are available upon request. All test data is for estimating purposes only. Testing report by independent laboratory. * U-Values are the same for Clear, Bronze and Blue/Green glass for all fabric series. Test data for winter time evening. U-Value performance may vary by window size and temperature. Tested - 4' x 8' Garded Hot Plate. Values are the same for all glazing regardless of color.

Solar Optical Properties for 5300 Series EuroVeil® ShadeCloths

*U Value	SINGLE FREE HANGING SHADE	DUAL FREE HANGING SHADE w/LOW-E MYLAR	TOTAL SOLAR / VISIBLE						BLUE/GREEN GLASS											
			T_S	R_S	A_S	T_V	T_{V45}	T_U	SHADING COEFFICIENT			VISIBLE TRANSMITTANCE								
1/4"	0.74	0.54																		
DOUBLE	0.40	0.33																		
DOUBLE LOW-E(3)	0.30	0.26																		
Glass Only			N/A**	N/A**	N/A**	N/A**	N/A**	N/A**	N/A**	N/A**	N/A**	N/A**	N/A**	N/A**	N/A**	N/A**	N/A**	N/A**		
5300 SERIES EUROVEIL-APPROX. OF: 5-6%																				
5301	WHITE		0.15	0.68	0.17	0.13	0.10	0.06	0.32	0.26	0.25	0.10	0.09	0.08	0.34	0.28	0.27	0.10	0.09	0.08
5302	CORNSILK		0.17	0.62	0.21	0.13	0.11	0.08	0.34	0.28	0.27	0.10	0.09	0.08	0.34	0.28	0.26	0.09	0.08	0.08
5303	WHEAT		0.15	0.62	0.23	0.12	0.10	0.07	0.34	0.28	0.26	0.09	0.08	0.08	0.34	0.28	0.28	0.07	0.06	0.06
5304	SAND		0.13	0.53	0.34	0.09	0.09	0.06	0.37	0.31	0.28	0.07	0.06	0.06	0.37	0.31	0.28	0.07	0.06	0.06
5306	SILVER BIRCH		0.12	0.57	0.31	0.10	0.07	0.05	0.36	0.29	0.27	0.08	0.07	0.06	0.36	0.29	0.27	0.08	0.07	0.06
5309	DOVE GREY		0.10	0.37	0.53	0.09	0.05	0.07	0.43	0.36	0.32	0.07	0.06	0.06	0.43	0.36	0.32	0.07	0.06	0.06
5310	NICKEL		0.09	0.32	0.59	0.08	0.05	0.06	0.45	0.37	0.33	0.05	0.05	0.04	0.45	0.37	0.33	0.05	0.05	0.04
5311	GRAPHITE		0.06	0.08	0.86	0.07	0.07	0.06	0.55	0.45	0.38	0.09	0.08	0.08	0.55	0.45	0.38	0.09	0.08	0.08
5312	CHARCOAL		0.07	0.05	0.88	0.08	0.03	0.06	0.56	0.46	0.39	0.06	0.05	0.00	0.56	0.46	0.39	0.06	0.05	0.00
5313	BRONZE		0.07	0.04	0.89	0.08	0.02	0.06	0.57	0.46	0.39	0.06	0.05	0.05	0.57	0.46	0.39	0.06	0.05	0.05
5316	GUN METAL (test data unavailable)																			

** Solar Optical Properties for glass only vary according to glass type.

KEY: T_S = Solar Transmittance, R_S = Solar Reflectance, A_S = Solar Absorption, T_V = Visible Transmittance, T_{V45} = Visible Transmittance/ 45 degree sightline, T_{UV} = UV Transmittance, O_F = Openness Factor, Single Glass is LOF 1/4", Double Glass is 1/4" glass thickness with 1-2" airspace, Low E 3 is Coating on #3 Glass Surface. Shading Coefficients and "U" Values with additional glass types and exterior shades are available upon request. All test data is for estimating purposes only. Testing report by independent laboratory. * U-Values are the same for Clear, Bronze and Blue/Green glass for all fabric series. Test data for winter time evening. U-Value performance may vary by window size and temperature. Tested - 4' x 8' Garded Hot Plate. Values are the same for all glazing regardless of color.

*U Value	SINGLE FREE HANGING SHADE	DUAL FREE HANGING SHADE W/LOW-E MYLAR	CLEAR GLASS						BRONZE GLASS					
			SHADING COEFFICIENT			VISIBLE TRANSMITTANCE			SHADING COEFFICIENT			VISIBLE TRANSMITTANCE		
1/4"	0.74	0.54	SINGLE 1/4" CLEAR	DOUBLE 1/4" CLEAR 1/4" CLEAR	DOUBLE 1/4" CLEAR LOW-E (3)	SINGLE 1/4" CLEAR	DOUBLE 1/4" CLEAR 1/4" CLEAR	DOUBLE 1/4" CLEAR LOW-E (3)	SINGLE 1/4" BRONZE	DOUBLE 1/4" BRONZE 1/4" CLEAR	DOUBLE 1/4" BRONZE LOW-E (3)	SINGLE 1/4" BRONZE	DOUBLE 1/4" BRONZE 1/4" CLEAR	DOUBLE 1/4" BRONZE LOW-E (3)
Glass Only	0.40	0.33	0.96	0.85	0.81	0.89	0.80	0.73	0.73	0.59	0.55	0.54	0.49	0.44
5300 SERIES EUROVEIL-APPROX. OF: 5-6%														
5301	WHITE		0.32	0.30	0.30	0.12	0.10	0.10	0.32	0.25	0.25	0.07	0.06	0.06
5302	CORNSILK		0.37	0.34	0.33	0.12	0.10	0.10	0.34	0.28	0.26	0.07	0.06	0.06
5303	WHEAT		0.36	0.34	0.33	0.11	0.10	0.09	0.34	0.27	0.26	0.06	0.06	0.05
5304	SAND		0.45	0.40	0.38	0.15	0.13	0.13	0.39	0.31	0.29	0.09	0.08	0.08
5306	SILVER BIRCH		0.39	0.36	0.34	0.09	0.08	0.07	0.35	0.29	0.27	0.05	0.05	0.04
5309	DOVE GREY		0.52	0.46	0.42	0.08	0.07	0.07	0.43	0.35	0.32	0.05	0.04	0.04
5310	NICKEL		0.56	0.49	0.44	0.07	0.06	0.06	0.45	0.37	0.33	0.04	0.04	0.04
5311	GRAPHITE		0.42	0.38	0.37	0.11	0.10	0.09	0.37	0.30	0.28	0.06	0.06	0.05
5312	CHARCOAL		0.74	0.63	0.54	0.07	0.06	0.06	0.56	0.45	0.38	0.04	0.04	0.04
5313	BRONZE		0.75	0.63	0.55	0.07	0.06	0.06	0.56	0.46	0.38	0.04	0.04	0.04
5316	GUN METAL (test data unavailable)													

KEY: T_S = Solar Transmittance, R_S = Solar Reflectance, A_S = Solar Absorption, T_V = Visible Transmittance, T_{V45} = Visible Transmittance/ 45 degree sightline, T_{UV} = UV Transmittance, O_F = Openness Factor, Single Glass is LOF 1/4", Double Glass is 1/4" glass thickness with 1-2" airspace, Low E 3 is Coating on #3 Glass Surface. Shading Coefficients and "U" Values with additional glass types and exterior shades are available upon request. All test data is for estimating purposes only. Testing report by independent laboratory. * U-Values are the same for Clear, Bronze and Blue/Green glass for all fabric series. Test data for winter time evening. U-Value performance may vary by window size and temperature. Tested - 4' x 8' Garded Hot Plate. Values are the same for all glazing regardless of color.

Solar Optical Properties for 6000 Series EuroTwill™ ShadeCloths

5.17.1
Page 1 of 2 / MS2200 - 6/1/04

*U Value	SINGLE FREE HANGING SHADE	DUAL FREE HANGING SHADE w/LOW-E MYLAR	TOTAL SOLAR / VISIBLE				BLUE/GREEN GLASS													
			T_S	R_S	A_S	T_V	T_U	O_F	SHADING COEFFICIENT			VISIBLE TRANSMITTANCE								
1/4"	0.74	0.54																		
DOUBLE	0.40	0.33																		
DOUBLE LOW-E (3)	0.30	0.26																		
Glass Only	N/A**	N/A**	N/A**	N/A**	N/A**	N/A**														
6000 SERIES EUROTWILL-APPROX. OF: 3%																				
6001	WHITE / SIDE 1	0.15	0.72	0.13	0.11	0.04	0.04	0.30	0.24	0.24	0.09	0.08	0.07							
6001R	WHITE / SIDE 2	0.15	0.72	0.13	0.11	0.04	0.04	0.30	0.24	0.24	0.09	0.08	0.07							
6002	CORNSILK / SIDE 1	0.14	0.69	0.17	0.10	0.04	0.04	0.31	0.25	0.25	0.08	0.07	0.06							
6002R	CORNSILK / SIDE 2	0.14	0.66	0.20	0.10	0.04	0.04	0.32	0.26	0.25	0.08	0.07	0.06							
6004	SAND / SIDE 1	0.11	0.59	0.30	0.08	0.04	0.04	0.35	0.28	0.27	0.06	0.06	0.05							
6004R	SAND / SIDE 2	0.11	0.56	0.33	0.08	0.04	0.04	0.36	0.29	0.28	0.06	0.06	0.05							
6006	SILVER BIRCH / SIDE 1	0.11	0.64	0.25	0.09	0.04	0.04	0.33	0.27	0.26	0.07	0.06	0.06							
6006R	SILVER BIRCH / SIDE 2	0.11	0.54	0.35	0.09	0.04	0.04	0.37	0.30	0.28	0.07	0.06	0.06							
6009	DOVE GREY / SIDE 1	0.07	0.43	0.50	0.06	0.04	0.04	0.41	0.33	0.30	0.05	0.04	0.04							
6009R	DOVE GREY / SIDE 2	0.07	0.35	0.58	0.06	0.04	0.04	0.44	0.36	0.32	0.05	0.04	0.04							
6010	NICKEL / SIDE 1	0.07	0.40	0.53	0.06	0.04	0.03	0.42	0.34	0.31	0.05	0.04	0.04							
6010R	NICKEL / SIDE 2	0.07	0.29	0.64	0.06	0.04	0.03	0.46	0.38	0.33	0.05	0.04	0.04							
6011	GRAPHITE / SIDE 1	0.04	0.11	0.85	0.05	0.04	0.03	0.53	0.44	0.37	0.04	0.03	0.03							
6011R	GRAPHITE / SIDE 2	0.04	0.06	0.90	0.05	0.04	0.03	0.55	0.45	0.38	0.04	0.03	0.03							
6012	CHARCOAL / SIDE 1	0.04	0.06	0.90	0.04	0.03	0.03	0.55	0.45	0.38	0.03	0.03	0.02							
6012R	CHARCOAL / SIDE 2	0.04	0.04	0.92	0.04	0.03	0.03	0.56	0.46	0.39	0.03	0.03	0.02							
6013	BRONZE / SIDE 1	0.04	0.04	0.92	0.04	0.04	0.03	0.56	0.46	0.39	0.03	0.03	0.02							
6013R	BRONZE / SIDE 2	0.04	0.03	0.93	0.04	0.04	0.03	0.57	0.46	0.39	0.03	0.03	0.02							
6016	SLATE / SIDE 1	0.05	0.36	0.59	0.06	0.04	0.03	0.43	0.36	0.32	0.05	0.04	0.04							
6016R	SLATE / SIDE 2	0.05	0.21	0.74	0.06	0.04	0.03	0.49	0.41	0.35	0.05	0.04	0.04							
6017	SANDALWOOD / SIDE 1	0.10	0.54	0.36	0.08	0.06	0.05	0.37	0.30	0.28	0.06	0.06	0.05							
6017R	SANDALWOOD / SIDE 2	0.10	0.41	0.49	0.08	0.06	0.05	0.42	0.34	0.31	0.06	0.06	0.05							
6018	STONE / SIDE 1	0.09	0.41	0.50	0.09	0.06	0.05	0.42	0.34	0.31	0.07	0.06	0.06							
6018R	STONE / SIDE 2	0.09	0.31	0.60	0.09	0.06	0.05	0.46	0.38	0.33	0.07	0.06	0.06							
6020	WHITE/BLACK / SIDE 1	0.07	0.55	0.38	0.06	0.04	0.03	0.36	0.29	0.27	0.05	0.04	0.04							
6020R	WHITE/BLACK / SIDE 2	0.07	0.32	0.61	0.06	0.04	0.03	0.45	0.37	0.33	0.05	0.04	0.04							

** Solar Optical Properties for glass only vary according to glass type.

KEY: T_S = Solar Transmittance, R_S = Solar Reflectance, A_S = Solar Absorption, T_V = Visible Transmittance, T_{V45} = Visible Transmittance/ 45 degree sight-line, T_{UV} = UV Transmittance, O_F = Openness Factor, Single Glass is LOF 1/4", Double Glass is 1/4" glass thickness with 1-2" airspace, Low E 3 is Coating on #3 Glass Surface. Shading Coefficients and "U" Values with additional glass types and exterior shades are available upon request. All test data is for estimating purposes only. Testing report by independent laboratory. * U-Values are the same for Clear, Bronze and Blue/Green glass for all fabric series. Test data for winter time evening. U-Value performance may vary by window size and temperature. Tested - 4' x 8' Guarded Hot Plate. Values are the same for all glazing regardless of color.

*U Value	SINGLE FREE HANGING SHADE	DUAL FREE HANGING SHADE W/LOW-E MYLAR	CLEAR GLASS						BRONZE GLASS								
			SHADING COEFFICIENT			VISIBLE TRANSMITTANCE			SHADING COEFFICIENT			VISIBLE TRANSMITTANCE					
			SINGLE 1/4" BL/GRN	DOUBLE 1/4" BL/GRN 1/4" CLEAR	DOUBLE 1/4" BL/GRN LOW-E (3)	SINGLE 1/4" BL/GRN	DOUBLE 1/4" BL/GRN 1/4" CLEAR	DOUBLE 1/4" BL/GRN LOW-E (3)	SINGLE 1/4" BL/GRN	DOUBLE 1/4" BL/GRN 1/4" CLEAR	DOUBLE 1/4" BL/GRN LOW-E (3)	SINGLE 1/4" BL/GRN	DOUBLE 1/4" BL/GRN 1/4" CLEAR	DOUBLE 1/4" BL/GRN LOW-E (3)			
1/4"	0.74	0.54	N/A**	N/A**	N/A**	N/A**	N/A**	N/A**	N/A**	N/A**	N/A**	0.73	0.60	0.55	0.76	0.69	0.62
DOUBLE	0.40	0.33	N/A**	N/A**	N/A**	N/A**	N/A**	N/A**	N/A**	N/A**	N/A**	0.30	0.24	0.24	0.06	0.05	0.05
DOUBLE LOW-E (3)	0.30	0.26	N/A**	N/A**	N/A**	N/A**	N/A**	N/A**	N/A**	N/A**	N/A**	0.30	0.24	0.24	0.06	0.05	0.05
6000 SERIES EUROTWILL-APPROX. OF: 3%																	
6001	WHITE / SIDE 1		0.29	0.28	0.28	0.10	0.09	0.08	0.30	0.24	0.24	0.06	0.05	0.05			
6001R	WHITE / SIDE 2		0.29	0.28	0.28	0.10	0.09	0.08	0.30	0.24	0.24	0.06	0.05	0.05			
6002	CORNSILK / SIDE 1		0.31	0.30	0.30	0.09	0.08	0.07	0.31	0.25	0.24	0.06	0.05	0.05			
6002R	CORNSILK / SIDE 2		0.33	0.31	0.31	0.09	0.08	0.07	0.32	0.26	0.25	0.06	0.05	0.04			
6004	SAND / SIDE 1		0.37	0.35	0.33	0.07	0.07	0.06	0.35	0.28	0.27	0.04	0.04	0.04			
6004R	SAND / SIDE 2		0.40	0.36	0.35	0.07	0.07	0.06	0.36	0.29	0.27	0.04	0.04	0.04			
6006	SILVER BIRCH / SIDE 1		0.34	0.32	0.31	0.08	0.07	0.07	0.33	0.26	0.25	0.05	0.04	0.04			
6006R	SILVER BIRCH / SIDE 2		0.41	0.37	0.36	0.08	0.07	0.07	0.37	0.30	0.28	0.05	0.04	0.04			
6009	DOVE GREY / SIDE 1		0.48	0.43	0.40	0.05	0.05	0.04	0.40	0.33	0.30	0.03	0.03	0.03			
6009R	DOVE GREY / SIDE 2		0.53	0.47	0.43	0.05	0.05	0.04	0.44	0.36	0.32	0.03	0.03	0.03			
6010	NICKEL / SIDE 1		0.50	0.44	0.41	0.05	0.05	0.04	0.42	0.34	0.31	0.03	0.03	0.03			
6010R	NICKEL / SIDE 2		0.57	0.50	0.45	0.05	0.05	0.04	0.46	0.38	0.33	0.03	0.03	0.03			
6011	GRAPHITE / SIDE 1		0.69	0.59	0.52	0.04	0.04	0.04	0.53	0.43	0.37	0.03	0.02	0.02			
6011R	GRAPHITE / SIDE 2		0.73	0.62	0.54	0.04	0.04	0.04	0.55	0.45	0.38	0.03	0.02	0.02			
6012	CHARCOAL / SIDE 1		0.73	0.62	0.54	0.04	0.03	0.03	0.55	0.45	0.38	0.02	0.02	0.02			
6012R	CHARCOAL / SIDE 2		0.74	0.63	0.54	0.04	0.03	0.03	0.56	0.45	0.38	0.02	0.02	0.02			
6013	BRONZE / SIDE 1		0.74	0.63	0.54	0.04	0.03	0.03	0.56	0.45	0.38	0.02	0.02	0.02			
6013R	BRONZE / SIDE 2		0.75	0.63	0.55	0.04	0.03	0.03	0.56	0.46	0.38	0.02	0.02	0.02			
6016	SLATE / SIDE 1		0.52	0.46	0.42	0.05	0.05	0.04	0.43	0.35	0.31	0.03	0.03	0.03			
6016R	SLATE / SIDE 2		0.62	0.54	0.48	0.05	0.05	0.04	0.49	0.40	0.35	0.03	0.03	0.03			
6017	SANDALWOOD / SIDE 1		0.41	0.37	0.35	0.07	0.06	0.06	0.36	0.30	0.28	0.04	0.04	0.04			
6017R	SANDALWOOD / SIDE 2		0.50	0.44	0.41	0.07	0.06	0.06	0.42	0.34	0.31	0.04	0.04	0.04			
6018	STONE / SIDE 1		0.49	0.44	0.41	0.08	0.07	0.07	0.41	0.34	0.31	0.05	0.04	0.04			
6018R	STONE / SIDE 2		0.56	0.50	0.45	0.08	0.07	0.07	0.45	0.37	0.33	0.05	0.04	0.04			
6020	WHITE/BLACK / SIDE 1		0.39	0.36	0.35	0.05	0.05	0.04	0.36	0.29	0.27	0.03	0.03	0.03			
6020R	WHITE/BLACK / SIDE 2		0.55	0.49	0.44	0.05	0.05	0.04	0.45	0.37	0.32	0.03	0.03	0.03			

** Solar Optical Properties for glass only vary according to glass type.

KEY: T_S = Solar Transmittance, R_S = Solar Reflectance, A_S = Solar Absorption, T_V = Visible Transmittance, T_{V45} = Visible Transmittance/ 45 degree sight-line, T_{UV} = UV Transmittance, O_F = Openness Factor, Single Glass is LOF 1/4", Double Glass is 1/4" glass thickness with 1-2" airspace, Low E 3 is Coating on #3 Glass Surface. Shading Coefficients and "U" Values with additional glass types and exterior shades are available upon request. All test data is for estimating purposes only. Testing report by independent laboratory. * U-Values are the same for Clear, Bronze and Blue/Green glass for all fabric series. Test data for winter time evening. U-Value performance may vary by window size and temperature. Tested - 4' x 8' Guarded Hot Plate. Values are the same for all glazing regardless of color.

GHSQUIERE PLASTIC TESTING, INC.

20450 HARPER AVENUE
HARPER WOODS, MI 48225
PHONE (313) 885-3535
FAX (313) 885-1771

Report Date: November 28, 2003
Test Date: October 20-November 28, 2003

Report #0310-62553
Performed for:
MechoShade Systems Inc.
42-03 35th Street
Long Island, NY 11101

Attention: Mr. Joel Berman

WORK REQUESTED:

Perform Fungus Resistance test on sample submitted.

DESCRIPTION OF SAMPLE:

Sample submitted was Fabric identified as 034-KEA.

(P. O. #T80010741).

WORK PERFORMED:

Test specimen was prepared as necessary and conditioned for a minimum of 24 hours at standard laboratory conditions prior to testing.

Fungus Resistance, Mixed Culture Method was performed for 28 days at 28°C to 31°C in accordance with the procedures of ASTM G21-02.

RESULTS:

The following determinations were made based upon the above test:

RESULTS: (cont.)

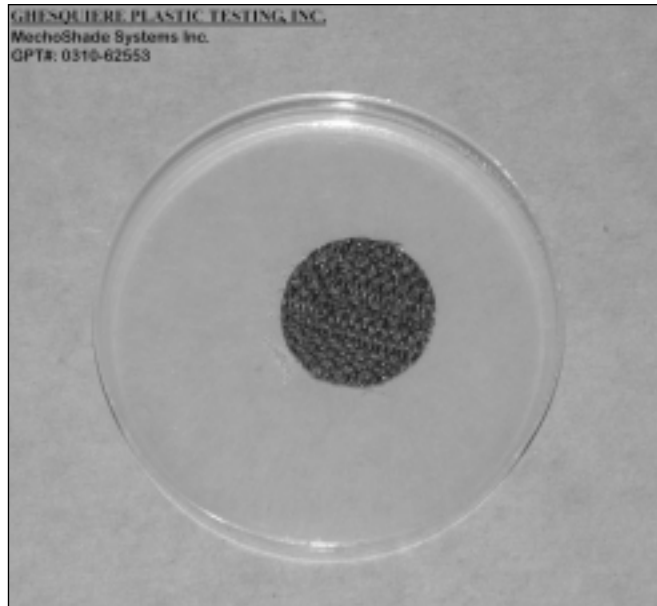
FUNGUS RESISTANCE

Specimen 1	Rating 0.	No fungal growth.
Specimen 2	Rating 0.	No fungal growth.
Specimen 3	Rating 0.	No fungal growth.

Ghesquiere Plastic Testing, Inc.

M. W. Ghesquiere
M. W. Ghesquiere
President

MWG/rw



Ghesquiere Plastic Testing, Inc.

20450 HARPER AVENUE
HARPER WOODS, MI 48226
PHONE (313) 885-3535
FAX (313) 885-1771

Report Date: December 5, 2003
Test Date: November 14-December 5, 2003

Report #0311-62739
Performed for:
MechoShade Systems Inc.
42-03 35th Street
Long Island City, NY 11101

Attention: Mr. John Maloney

WORK REQUESTED:

Perform Mildew Resistance - Pink Stain test on samples submitted.

DESCRIPTION OF SAMPLE:

Sample submitted was identified as T07-CZ Fabric.

(P. O. #T80010741).

WORK PERFORMED:

Test specimens were prepared as necessary and conditioned for a minimum of 24 hours at standard laboratory conditions prior to testing.

Mildew Resistance-Pink Stain testing was performed for 14 days at 28°C to 31°C in accordance with the procedures of GM 9303-P (9/88).

RESULTS:

The following determinations were made based upon the above test:

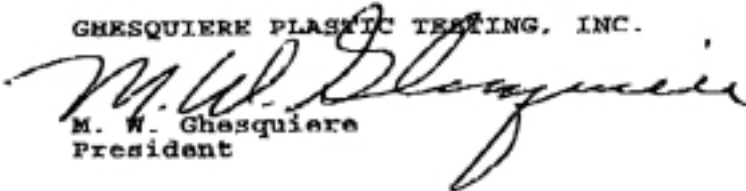
MILDEW RESISTANCE, PINK STAIN TEST

Requirement: No staining

Results

Specimen 1	No staining.
Specimen 2	No staining.
Specimen 3	No staining.

Ghesquiere Plastic Testing, Inc.


M. W. Ghesquiere
President

MWG/iw
attachment

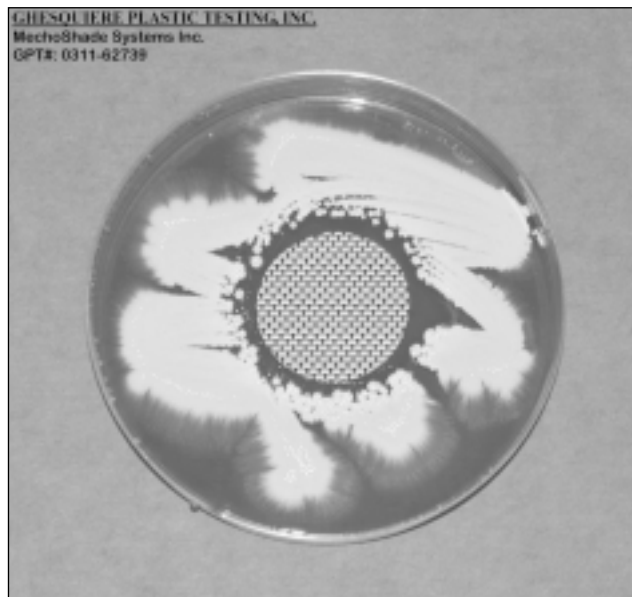
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GHEQUIERE PLASTIC TESTING, INC.

20450 HARPER AVENUE
HARPER WOODS, MI 48226
PHONE (313) 886-3636
FAX (313) 886-1771

Report Date: December 5, 2003
Test Date: November 14-December 5, 2003

Report #0311-62739
Performed for:
MechoShade Systems Inc.
42-03 35th Street
Long Island City, NY 11101



Received: 10/05/2001 Completed: 10/15/2001 Letter: W hcr P.O.#: T8006109 Test Report #: 2-37201-0-

Client's Identification Thermoveil

Tested For: **Joel Berman** Key Test: NFPA 701-99 TM#1 125
Mecho Shade Systems, Inc.
 42-03 35th Street Tel: 1-(718)-729-2020
 Long Island, NY 11101 Fax: 1-(718)-752-9507

TEST PERFORMED: NFPA 701 - Standard Methods of Fire Tests for Flame Resistant Textiles and Films (Not Exceeding 700 g/m²; 1999 Edition - Test Method #1 (** see note on page 2)

PRODUCT CONFIGURATION: Single Layer; Multi Layer

RESULTS REPORTED: Initially; After 3 dry cleanings; After 5 launderings @ 160°F

RESULTS: Specimen #	Afterflame* (seconds)	Flaming Drip (seconds)	Weight Loss (percent)
1	5.6	0.0	4.7
2	6.0	0.0	39.4
3	2.0	0.0	3.9
4	8.4	0.0	4.9
5	10.0	0.0	35.6
6	0.0	0.0	5.9
7	11.8	0.0	4.8
8	0.0	0.0	4.9
9	8.4	0.0	28.0
10	2.0	0.0	3.2
		Mean: 0.0	Mean: 13.7

STATISTICAL VALUES: SD = 14.5 3 SD = 43.5 Mean + 3 SD = 57.2

ABBREVIATIONS USED: SD = Standard deviation.

APPROXIMATE WEIGHT OF MATERIAL (as measured by Govmark): 603 g/m²

FAILURE CRITERIA:

Afterflame (seconds)	Flaming Drip (seconds) Mean	Weight Loss (percent) Mean	Individual Specimen
*	Exceeds 2.0	Exceeds 40%	Exceeds Mean + 3 SD

(* Afterflame is required to be recorded; however, it is not factored into the Failure Criteria.)

RETEST PROVISION: Where the percent weight loss of any individual specimen exceeds the mean value plus three standard deviations, the test shall be repeated once on another sample of 10 specimens.

CONCLUSION: Based on the above Results and Failure Criteria, the item tested:
 Passes; Fails; Testing of 10 additional specimens is required

(continued on page 2)

Invoice Copy

Received: 10/05/2001	Completed: 10/15/2001	Letter: W	her	P.O.#: T8006109	Test Report #:	2-37201-0-
Client's Identification	Thermoveil					
Tested For: Joel Berman Mecho Shade Systems, Inc. 42-03 35 th Street Long Island, NY 11101				Key Test: NFPA 701-99 TM#1		125
				Tel: 1-(718)-729-2020		
				Fax: 1-(718)-752-9507		
<p>CONVERSION FACTOR: g/m² + 28.35 x .835 = oz/yd²</p> <p>NOTE: 1. All specimens prepared in the length direction. 2. See addendum for individual specimen weights.</p> <p>REMARKS: None.</p> <p>CERTIFICATION: I certify that the above results were obtained after testing specimens in accordance with the procedures and equipment specified by NFPA 701 1999 Edition Test #1.</p> <p>----- AUTHORIZED SIGNATURE THE GOVMARK ORGANIZATION, INC. jd</p> <p>** Note (April 2000): The NFPA 701 - 1999 Edition supersedes the NFPA 701 - 1996 Edition.</p> <p>The step-by-step test implementation and test failure criteria are the same for both the 1996 Edition and the 1999 Edition.</p> <p>Therefore, it is assumed that this 1999 Edition test report will also satisfy any building code which cites the 1996 Edition.</p>						

Received: 10/05/2001 Completed: 10/14/2001 Letter: W1 her P.O.#: T8006109 Test Report #: 2-37201-1-DU

Client's Identification Thermoveil

Tested For: **Joel Berman** Key Test: NFPA 701-99 TM#2 Flat DURC 25
Mecho Shade Systems, Inc.
42-03 35th Street Tel: 1-(718)-729-2020 Ext: 210
Long Island City, NY 11101 Fax: 1-(718)-752-9507

Test Category: 701-99 TM2 Flat Specifier: Building Codes

TEST PERFORMED: NFPA 701 - Standard Methods of Fire Tests for Flame Resistant Textiles and Films 1999 Edition - Test Method #2 - Flat Sheet Specimens (** see note on page 2)

SPECIMEN CONFIGURATION: Single Layer; Multi Layer

RESULTS REPORTED: Initially After 72 hours water leaching
 After 3 dry cleanings After 100 hours accelerated weathering
 After 5 launderings @ 160°F

RESULTS:	Afterflame	Drip Burn	Char Length
Length Specimen #	(seconds)	(seconds)	(mm)
1	0.0	1.6	216
2	0.0	0.0	205
3	0.0	0.0	205
4	0.0	0.0	200
5	0.0	0.0	220
6	0.0	0.0	245
7	0.0	0.0	247
8	0.0	0.0	230
9	0.0	0.0	230
10	0.0	0.0	263

APPROXIMATE WEIGHT OF MATERIAL (as measured by Govmark): 603 g/m²

FAILURE CRITERIA: For each individual specimen --

Afterflame	Drip Burn	Char Length
Exceeds 2.0 seconds	Exceeds 2.0 seconds	Exceeds 435 mm (17.1")

RETEST PROVISION: Test 5 additional specimens if only 1 specimen fails.

CONCLUSION: Based on the above Results and Failure Criteria, the item tested:
 Passes; Fails; Requires testing of 5 additional specimens

CERTIFICATION: I certify that the above results were obtained after testing specimens in accordance with the procedures and equipment specified by NFPA 701 - 1999 Edition Test Method #2 Flat Sheet Specimens.

Heather E. Robertson
AUTHORIZED SIGNATURE 11/15/02
THE GOVMARK ORGANIZATION, INC.

jd

DU.11.14.02

MS. HEATHER E. ROBERTSON (continued on page 2)

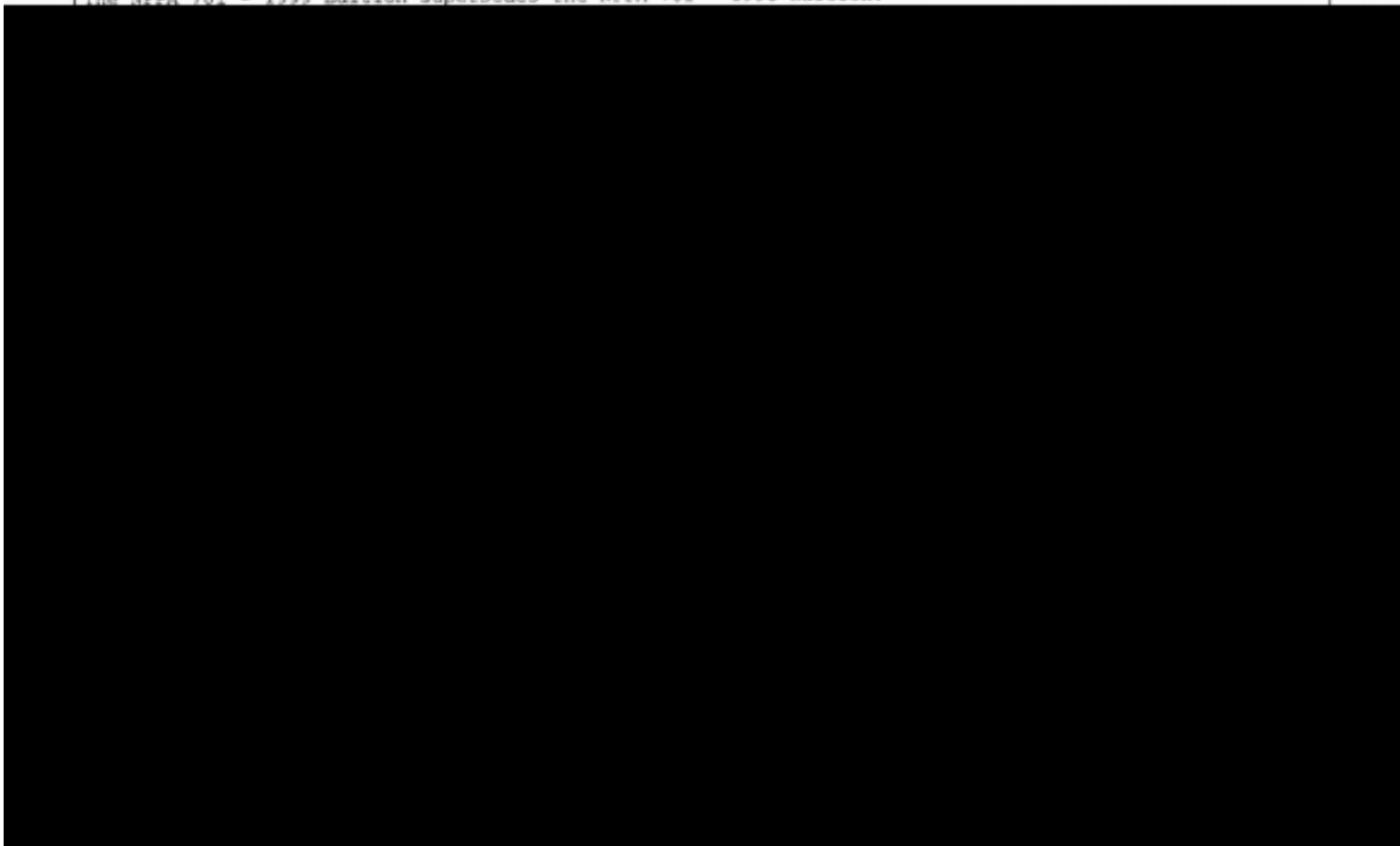


Received: 10/05/2001	Completed: 10/14/2001	Letter: W1	her	P.O.#: T8006109	Test Report #:	2-37201-1-DU
Client's Identification	Thermoveil					
Tested For: Joel Berman	Mecho Shade Systems, Inc.				Key Test: NFPA 701-99 TM#2 Flat DURC	25
	42-03 35th Street				Tel: 1-(718)-729-2020	Ext: 210
	Long Island City, NY 11101				Fax: 1-(718)-752-9507	

REMARKS:
None.

CONVERSION FACTORS:
mm + 25.4 = inches
g/m² + 28.35 x .835 = oz/yd²

** Note (April 2000):
The NFPA 701 - 1999 Edition supersedes the NFPA 701 - 1996 Edition.





AIR QUALITY SCIENCES, INC.
 Business Solutions for Healthy Indoor Environments

**PRODUCT EMISSIONS CRITERIA FOR ACCEPTABLE INDOOR AIR QUALITY
 TEXTILE**

Air Quality Sciences, Inc. (AQS) has tested the product(s) below following the environmental chamber guidelines of ASTM D 5116-97 and ASTM D 6670-01, the U.S. Environmental Protection Agency's (USEPA) Environmental Technology Verification (ETV) protocol, or the State of Washington (SOW). Test results indicate how the product's emissions compare to currently available GREENGUARD emission standards of the SOW, World Health Organization (WHO), and the German Federal Environmental Agency (Blue Angel Programs). The product is not certified by The GREENGUARD Environmental Institute (GEI), but favorable test results indicate that the product is low emitting and should be considered for certification. The product below has been tested once on the date indicated.

MANUFACTURER INFORMATION	Contact: John Maloney MechoShade Systems, Inc. 42-03 35th Street Long Island City, NY 11101 Phone: 718-729-2020
GREENGUARD™ Code Product Test Date	WTAA93-02 2/04/03
PRODUCT DESCRIPTION	TO7AA 1800 Series Thermoall

Below you will see an organization and the specified compliance requirements for each of the qualifying protocols for that organization. A "Yes" indicates the product(s) have been found to meet the low-emission requirements, and a "No" indicates the product(s) have failed to comply with the low-emission requirements.

Acceptable Indoor Air Quality Criteria			Product Acceptable for IAQ
State of Washington (SOW)	Formaldehyde	0.05 ppm	Yes
	TVOC	0.50 mg/m ³	Yes
	Meets 1/10 th TLV for emitting VOCs		Yes
	Meets any regulated primary or secondary National Ambient Air Quality Standard (NAAQS)		Yes
U.S. Environmental Protection Agency (EPA)	TVOC	0.50 mg/m ³	Yes
	Formaldehyde	0.05 ppm	Yes
	Total Aldehydes	0.10 ppm	Yes
	4-phenylcyclohexene	0.0065 mg/m ³	Yes
U.S. Occupational Safety & Health Administration (OSHA)	Formaldehyde	0.10 ppm	Yes
World Health Organization (WHO)	Formaldehyde	0.10 ppm	Yes

Emissions data were obtained on the product as selected and delivered to AQS by the manufacturer. AQS did not oversee sample collection and packaging of product. AQS expressly disclaims any warranty or representation that the emissions criteria, met by the tested product, have been or will be approved, sanctioned, or authorized by any government agency, or that those emission criteria are sufficient or safe for human exposure. This product is not GREENGUARD Certified™. Test results that the product, as received and tested at AQS, initially meets acceptable IAQ criteria. For more information on GREENGUARD Certification Programs™ visit www.greenguard.org or call 1-800-427-9661. Copyright ©2003 Air Quality Sciences, Inc.



M E M O R A N D U M

DATE: July 30, 1993

TO: All MechoShade Sales Personnel

FROM: Joel Berman

SUBJECT: NEW YORK STATE BUILDING MATERIALS AND FINISHES DATA
FILE, COMBUSTION TOXICITY PRODUCT DATA REPORT for DOS
FILE NUMBER 12050-900130-4109

RE: **COMPARATIVE FIRE GAS TOXICITY RESULTS OF THERMOVEIL
FABRIC**

In testing required by the State of New York, pertinent properties, (toxicity), of our ThermoVeil fabrics, we discovered very low fire gas toxicity values. This is notable versus other architectural materials such as wood and other natural fabrics, in view of the great concern and specifically the current monitoring in New York State of this critical life-safety property (toxicity).

The fact that the initial results suggest superior results than even that of wood, positions ThermoVeil in a most advantageous comparison. Results have been registered with the Fire Gas Toxicity File in New York State. The attached provided the specific comparative data.

Contact MechoShade Systems, Inc. for copies of the actual test or contact the State of New York, indicating the above referenced file number.



THERMOVEIL - FIRE GAS TOXICITY RESULTS

Using the University of Pittsburgh test method protocol, as designated by New York State, it may be useful to compare exploratory raw data, in understanding the relative fire gas toxicity values of various materials. One main method of comparison results, is through the comparative LC_{50} ¹ value, with the higher value indicating less toxicity than lower values.

These values are usually compared to the LC_{50} of wood, which has been suggested by toxicity laboratories at 19.7 grams, which is the average of 44 test values of a range of woods.

The initial test results by MechoShade Systems and StretchWall Products would suggest superior (less toxic) fire gas toxicity properties over wood and other popular textile materials.

<u><i>MATERIAL</i></u>	<u><i>LC₅₀</i></u> <u><i>(GRAMS)</i></u>
<i>ThermoVeil PVC Coated Polyester</i> ²	<i>22.5</i>
<i>PVC Plastic Slats</i>	<i>15.6</i>
<i>Wood (Standard)</i> ³	<i>19.7</i>
<i>100% Linen</i> ⁴	<i>12.0</i>
<i>100% Wool</i> ⁵	<i>6.4</i>

¹ LC_{50} is the point at which 50% of the test animals expire, the higher the value (grams of test material) the lower the relative toxicity as it takes more material to reach the LC_{50} point in a test.

²ThermoVeil (vinyl and polyester) by MechoShade (single test).

³Average value of wood used by major fire gas toxicity laboratories (single test).

⁴Fabric treated with flame retardant, soil and stain repellent (single test).

⁵Fabric treated with flame retardant (single test).