



SECTION 12 24 00

CLUTCH-OPERATED FLEXSHADE MANUAL WINDOW SHADES

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PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Manually operated, roll-up fabric interior window shades including mounting and operating hardware.

1.2 RELATED SECTIONS

- A. Section 06100[06 10 00] – Rough Carpentry:Blocking for support of window shade hardware.
- B. Section 07900 [07 90 00] - Joint Sealers: Sealants for perimeter of shade system.
- C. Section 09260 [09 21 23] - Gypsum Board Assemblies: Suspended gypsum board ceilings to contain recessed window shade pockets.
- D. Section 09510 [09 51 23] - Acoustical Tile Ceilings: Suspended acoustical panel ceilings to contain recessed window shade pockets.

1.3 REFERENCES

- A. NFPA 701-99 - Fire Tests for Flame-Resistant Textiles and Films.
- B. GREENGUARD Environmental Institute Gold.
- C. US Green Building Council.
- D. ANSI/WCMA A100.1-2022. For manual window shades with closed loop bead chains, all shades will meet all current standards mandated by the Consumer Product Safety Commission.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01330 [01 33 26] - Submittal Procedures:

- B. Product Data:Manufacturer's data sheets on each product specified, including:
 1. Preparation instructions and recommendations.
 2. Installation and maintenance instructions.
 3. Styles, material descriptions, dimensions of individual components, profiles, features, finishes, and operating instructions.
 4. Storage and handling requirements and recommendations.
 5. Mounting details and installation methods.
- C. Shop Drawings:Plans, elevations, sections, product details, installation details, operational clearances, and relationship to adjacent work.
- D. LEED Submittals:Provide documentation of how the requirements of Credit will be met.
- E. Window Treatment Schedule:For all roller shades.Use same room designations as indicated on the Drawings,field verified window dimensions, quantities, type of shade, controls, fabric, and color, and include opening sizes and key to typical mounting details.
- F. Selection Samples:For each finish product specified, one complete set of shade cloth options and aluminum finish color samples representing manufacturer's full range of available colors and patterns.
- G. Verification Samples:For each finish product specified, one complete set of shade components, unassembled, demonstrating compliance with specified requirements.Shade fabric sample and aluminum finish sample as selected,representing actual product, color, and patterns.Mark face of material to indicate interior faces.
- H. Maintenance Data:Methods for maintaining roller shades, precautions regarding cleaning materials and methods, instructions for operating hardware and controls.
- I. Standard manufacturer's defect warranty:Standard manufacturer's warranty documents indicating compliance with requirements of Section 1.9 below.
- J. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Obtain roller shades through one source from a single manufacturer with a minimum of twenty years' experience in manufacturing products comparable to those specified in this section.If manufacturer does not meet minimum experience requirement, please submit life cycle test data showing minimum 2000 complete operational cycles for each year of warranty showing no failure and that shade remains fit for use as an operable shade).
- B. NFPA Flame-Test: Passes NFPA 701. Materials tested shall be identical to products proposed for use.Show complete manufacturer data (name,location,contact) and certification from manufacturer that the fabrics sourced for this project comply with the test data provided.
- C. Mock-Up:Provide a mock-up of one of each type of roller shade assembly specified for evaluation of mounting, appearance, and accessories.
 1. Locate mock-up in window(s) designated by Architect.
 2. Do not proceed with remaining work until mock-up is accepted by Architect.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver window shades until building is enclosed and construction within spaces where shades will be installed is substantially complete.
- B. Deliver products in manufacturer's original, unopened, undamaged containers with labels intact.
- C. Label containers and shades according to Window Shade Schedule.
- D. Store products in manufacturer's unopened packaging until ready for installation.

1.7 SEQUENCING

- A. Ensure that locating templates and other information required for installation of products of this section are furnished to affected trades in time to prevent interruption of construction progress.
- B. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.8 PROJECT CONDITIONS

- A. Install roller shades after finish work and ambient temperature, humidity, and ventilation conditions are maintained at levels recommended for project upon completion.

1.9 WARRANTY

- A. Hardware and Shade Fabric: Draper® standard twenty-five-year limited warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Draper, Inc., which is located at: 411 S. Pearl P. O. Box 425; Spiceland, IN47385-0425.ASD.Toll Free Tel: 800-238-7999; Tel: 765-987-7999; Fax: 866-637-5611; Web: www.draperinc.com.
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600. Contractor to be responsible for ALL COSTS related to a substitution requested less than 10 days prior to bid date, including cost of review by Architect.

2.2 MANUALLY OPERATED WINDOW SHADES

- A. Manually Operated Window Shades with Independent Control: Manually operated, vertical roll-up, fabric window shade with components necessary for complete installation; Clutch-operated FlexShade® as manufactured by Draper, Inc.
 - 1. Operation: Bead chain and clutch operating mechanism allowing shade to stop when chain is released. Designed never to need adjustment or lubrication. Provide limit stops to prevent shade from being raised or lowered too far.

- a. Clutch mechanism: Fabricated from high carbon steel and molded fiberglass reinforced polyester or injected molded nylon. White or Black color as selected by Architect.
 - b. Spring-assist bead chain clutch mechanism: Adjustment-free system includes spring-assist components to reduce lifting forces required to raise the shade. Manufacturer shall provide estimated torque for shade unit. Spring-assist is recommended on estimated non-spring-assist torque above 6 lb.-in; required on shades with an estimated torque higher than 15 lb.-in.
 - c. Bead chain loop: Polyester bead chain, Ivory.
 - d. Bead chain loop: Polyester bead chain, Grey.
 - e. Bead chain loop: Polyester bead chain, White.
 - f. Bead chain loop: Polyester bead chain, Bronze.
 - g. Bead chain loop: Polyester bead chain, Black.
 - h. Bead chain loop: Stainless Steel.
 - i. Idler Assembly: Provide roller idler assembly of molded nylon with adjustable or spring-loaded length idler pin to facilitate easy installation, and removal of shade for service.
 - j. Bead Chain Hold Down: Spring-Loaded Tensioner complying with ANSI/WCMA A100.1-2022 safety standard.
2. Single Roller Configuration:
- a. Mounting:
 - 1) Universal Mounting brackets.
 - 2) Endcaps only.
 - 3) Endcaps and fascia.
 - 4) Ceiling/Wall Style Headbox.
 - 5) Recessed Pocket Headbox.
 - b. Brackets: Plated stamped steel. Provide size compatible with roller size.
 - 1) Mounted to ceiling.
 - 2) Mounted to wall.
 - 3) Mounted to jamb.
 - 4) Finish: White.
 - 5) Finish: Black.
 - c. Endcaps: Stamped steel with universal design suitable for mounting to ceiling, wall, and jamb. Provide size compatible with roller size.
 - 1) Idler endcap to have optional levelling adjustment.
 - 2) Endcap covers: To match fascia or headbox color.
 - d. Fascia: L shaped aluminum extrusion to conceal shade roller and hardware.
 - 1) Attachment: Snaps onto endcaps without requiring exposed fasteners of any kind. Fascia can be mounted continuously across two or more shade bands. No notching is required.
 - 2) Shape: Square Fascia Panel.
 - 3) Shape: Reverse Roll Fascia Panel.
 - 4) Finish: Selected from Manufacturers standard range.
 - 5) Finish: Custom powder coat as selected by the Architect.
 - e. Headbox Ceiling/Wall style: "L" shaped extruded aluminum back and top cover piece with removable extruded aluminum closure and stamped steel endcaps:
 - 1) Finish: Selected from Manufacturers standard range.
 - 2) Finish: Custom powder coat as selected by the Architect.
 - f. Headbox, Pocket style: Extruded aluminum U-shaped pocket with removable closure and endcaps.
 - 1) Finish: Selected from Manufacturers standard range.
 - 2) Finish: Custom powder coat as selected by the Architect.

- g. Type D Shade pocket: Rectangular pocket and endcaps designed for recessed ceiling installation of window shades with ceiling tile lip.
 - 1) Material: Extruded aluminum with white finish.
 - 2) Size: 5 inches (127 mm) wide by 5-3/8 inches (137 mm) high.
 - 3) Closure Panel:
 - (a) 1-1/2 (38 mm) closure dimension, recommended for bead chain operation.
 - 4) Pocket End Cap Kit: Metal endcaps with 7/8 inch (22 mm) lip for support of acoustical ceiling panel.
 - 5) Corners: Welded one-piece aluminum sections connecting to and matching pockets to allow continuous shade recess at ceiling corners.
- h. Wall Clip with Closure Panel: For site constructed ceiling recesses, provide removable closure panel to minimize slot for shade passage but allowing access to shade for maintenance.
 - 1) Material: Aluminum alloy with white finish.
 - 2) Tile Lip: Provide wall clip with 7/8-inch tile lip (22 mm).
 - 3) Closure width: 1-1/2 inches (38 mm).
 - 4) Closure width: 3 inches (76 mm).
 - 5) Closure Width: 5 inches (127 mm).
 - 6) Provide continuous wall clip, 1-3/4 (44 mm) by 3/16 inch (5 mm), for snap-in attachment of closure panel without fasteners.
- 3. Roller Tube: Fabricated from extruded aluminum, galvanized steel, or enameled steel. Diameter, wall thickness, and material selected by manufacturer to accommodate shade type and size. Minimum roller diameter 1.5 inches. Tube diameters less than 1.5 inches shall not be acceptable unless manufacturer provides deflection analysis showing deflection limited to $\leq \text{width(inches)}/700$ at 1.5X design load.
- 4. Fabric to tube attachments: LSE (low surface energy) double sided adhesive specifically developed to attach coated textiles to metal. Adhesive attachment to eliminate horizontal impressions in fabric.
- 5. Shade slat:
 - a. Closed pocket elliptical slat: 1inch (25 mm) aluminum elliptical slat inside of a 1-5/8inch (41 mm) pocket with heat sealed ends.
 - b. Open pocket elliptical slat: 1inch (25mm) aluminum elliptical slat with plastic ends inside of a 1-5/8 inch (41 mm) pocket.
 - c. Small flat exposed hem bar: 7/8inch by 5/16inch (22 mm by 8 mm) aluminum rectangular hem bar with plastic end caps.
 - d. Large flat exposed hem bar: 1-1/2 inch by 5/16 inch (38 mm by 8 mm) aluminum rectangular hem bar with plastic end caps.
 - e. Small round exposed hem bar: 5/8inch (16 mm). Aluminum with plastic end caps.
- 6. Light Gap Reduction Channels.
 - a. Aluminum L Angle – 3/4 inch (19 mm) by 1 inch (25 mm).
 - b. Aluminum L Angle -1 inch (25 mm) by 2-3/4 inches (70mm).
 - c. Vinyl L Angle-1-1/2 inches (38 mm) by 3/4 inch (19 mm).
 - d. U Channel -1 inch (25 mm) by 2-1/2 inches (64 mm).
 - e. H Channel – 1 inch (25 mm) by 5 inches (127 mm).
- 7. Interior cable guide kit.
 - a. Slat/hem bar is a 5/8-inch (16 mm) round bar for use in a 1-5/8 inch (41 mm) open-ended hem pocket.

2.3 FABRIC

A. Light-Filtering Fabrics

1. PVC Coated Fiberglass
 - a. Basketweave
 - 1) E Screen™ 1% by Mermet®: PVC coated fiberglass yarn woven in 2 by 2 basketweave. Fire rating: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal resistance: ASTM E2180, ASTM G21. Average 1 percent open, .020 inches thick, 13.3 oz/square yard.
 - 2) E Screen™ 3% by Mermet®: PVC coated fiberglass yarn woven in 2 by 2 basketweave. Fire rating: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal resistance: ASTM E2180, ASTM G21. Average 3 percent open, .017 inches thick, 11.6 oz/square yard.
 - 3) E Screen™ 5% by Mermet®: PVC coated fiberglass yarn woven in 2 by 2 basketweave. Fire rating: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal resistance: ASTM E2180, ASTM G21. Average 5 percent open, .016 inches thick, 10.7 oz/square yard.
 - 4) E Screen™ 10% by Mermet®: PVC coated fiberglass yarn woven in 2 by 2 basketweave. .016 inches thick. Fire rating: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal resistance: ASTM E2180, ASTM G21. Average 10 percent open, .020 inches thick, 10.3 oz/square yd.
 - 5) E Screen™ 1% with KOOLBLACK® by Mermet®: PVC coated fiberglass yarn woven in 2 by 2 basketweave. Fire rating: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal resistance: ASTM E2180, ASTM G21. Average 1 percent open, .021 inches thick. Weight: 12.95 oz/square yard.
 - 6) E Screen™ with KOOLBLACK®. 3 percent openness factor by Mermet®: PVC coated fiberglass yarn woven in 2 by 2 basketweave. Fire rating: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal resistance: ASTM E2180, ASTM G21.

Average 3 percent open, .020 inches thick, 11.3 oz. per square yard.

- 7) E Screen™ with KOOLBLACK®. 5 percent openness factor by Mermet®: PVC coated fiberglass yarn woven in 2 by 2 basketweave. Fire rating: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal resistance: ASTM E2180, ASTM G21. Average 5 percent open, .019 inches thick, 10.6 oz/square yard.
- 8) E Screen Deco™ 1% by Mermet®: PVC coated fiberglass yarn woven in 2 by 2 basketweave. Fire rating: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal resistance: ASTM E2180, ASTM G21. 1 percent open, .022 inches thick. 12.30 oz/square yard.
- 9) E Screen Deco™ 3% by Mermet®: PVC coated fiberglass yarn woven in 2 by 2 basketweave. Fire rating: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal resistance: ASTM E2180, ASTM G21. 3 percent open, .019 inches thick. 11.50 oz/square yard.
- 10) Natte™ 5% by Mermet: PVC coated fiberglass yarn woven in 2 by 2 basketweave. NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal resistance: ASTM E2180, ASTM G21. Openness factor: 5%. Thickness: 0.022 inches. Weight: 14.13 oz/square yard.
- 11) Natte™ 10% by Mermet: PVC coated fiberglass yarn woven in 2 by 2 basketweave. NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal resistance: ASTM E2180, ASTM G21. Openness factor: 5%. Thickness: 0.021 inches. Weight: 13.48 oz/square yard.
- 12) S Screen™ 1% by Mermet®: PVC coated fiberglass wrapped in polyester thread in a plain weave. Fire rating: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal resistance: ASTM E2180, ASTM G21. 3 percent open, .041 inches thick, 19.10 oz/square yard.
- 13) S Screen™ 4% by Mermet®: PVC coated fiberglass wrapped in polyester thread in a plain weave. Fire rating: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Environmental Benefits: Certified to UL

GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal resistance: ASTM E2180, ASTM G21. ASTM E2180 and ASTM G21.

Environmental benefits: RoHS – lead free. 4 percent open, .037 inches thick, 18.9 oz/square yard.

- 14) S Screen Naturals™ 5% by Mermet®: PVC coated fiberglass wrapped in polyester thread in a fancy weave. Fire rating: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal resistance: ASTM E2180, ASTM G21. 5 percent open, .042 inches thick 15 oz/square yard.
- 15) SheerWeave® Series SW2000 by Phifer®: 500 denier fiberglass, vinyl coated and woven into a 2 by 2 basket weave. Fire rating: California U.S. Title 19 (small scale), NFPA 701 TM#1 (small scale), NFPA 101 (Class A Rating), IBC Section 803.1.1 (Class A Rating), BS 5867 Part 2 Type B Performance, NFPA 701 TM#2 (large scale), CAN/ULC-S 109 (large and small scale), CAN/CGSB2-4.162-M80. Bacteria and fungal resistance: ASTM E 2180, ASTM G21, ASTM G22, AATCC30 Part 3, ASTM D 3273, UL GREENGUARD® Mold and Bacteria Standard ASTM 6329; includes Microban® antimicrobial additives. Environmental certification: Certified to UL GREENGUARD and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Safe use: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101 and ANSI/WCMA A 100.1-2007 for lead content and REACH (EC 1907/2006) compliant. 14.26 oz/sq yd, .019 inches thick. Series SW2000 average 5 percent open.
- 16) SheerWeave® Series SW2100 by Phifer®: 500 denier fiberglass, vinyl coated and woven into a 2 by 2 basket weave. Fire rating: California U.S. Title 19 (small scale), NFPA 701 TM#1 (small scale), NFPA 101 (Class A Rating), IBC Section 803.1.1 (Class A Rating), BS 5867 Part 2 Type B Performance, NFPA 701 TM#2 (large scale), CAN/ULC-S 109 (large and small scale), CAN/CGSB2-4.162-M80. Bacteria and fungal resistance: ASTM E 2180, ASTM G21, ASTM G22, AATCC30 Part 3, ASTM D 3273, UL GREENGUARD® Mold and Bacteria Standard ASTM 6329; includes Microban® antimicrobial additives. Environmental certification: Certified to UL GREENGUARD and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Safe use: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101 and ANSI/WCMA A 100.1-2007 for lead content and REACH (EC 1907/2006) compliant. 14.26 oz/sq yd, .019 inches thick. Series SW2100 average 10 percent open.
- 17) SheerWeave® Series SW2400 (2410) by Phifer®: 500 denier fiberglass, vinyl coated and woven into a 2 x 2 basket weave. Fire rating: California U.S. Title 19 (small scale), NFPA 701 TM#1 (small scale), NFPA 101 (Class A Rating), IBC Section 803.1.1 (Class A Rating), BS 5867 Part 2 Type B Performance, NFPA 701 TM#2 (large scale), CAN/ULC-S 109 (large and small scale), CAN/CGSB2-4.162-M80. Bacteria and fungal resistance:

- ASTM E 2180, ASTM G21, ASTM G22, AATCC30 Part 3, ASTM D 3273, UL GREENGUARD® Mold and Bacteria Standard ASTM 6329; includes Microban® antimicrobial additives. Environmental certification: Certified to UL GREENGUARD and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Safe use: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101 and ANSI/WCMA A 100.1-2007 for lead content and REACH (EC 1907/2006) compliant. 3 percent open .019 inches thick. 14.1 oz/square yard.
- 18) SheerWeave® Series SW2500 by Phifer®: 500 denier fiberglass, vinyl coated and woven into a 2 x 2 basket weave. Fire rating: California U.S. Title 19 (small scale), NFPA 701 TM#1 (small scale), NFPA 101 (Class A Rating), IBC Section 803.1.1 (Class A Rating), BS 5867 Part 2 Type B Performance, NFPA 701 TM#2 (large scale), CAN/ULC-S 109 (large and small scale), CAN/CGSB2-4.162-M80. Bacteria and fungal resistance: ASTM E 2180, ASTM G21, ASTM G22, AATCC30 Part 3, ASTM D 3273, UL GREENGUARD® Mold and Bacteria Standard ASTM 6329; includes Microban® antimicrobial additives. Environmental certification: Certified to UL GREENGUARD and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Safe use: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101 and ANSI/WCMA A 100.1-2007 for lead content and REACH (EC 1907/2006) compliant. 1 percent open, .024 inches thick. 16.39 oz/square yard.
- 19) SheerWeave® Series SW2600 (2360) by Phifer®: 500 denier fiberglass, vinyl coated and woven into a 2 x 2 basket weave. Fire rating: California U.S. Title 19 (small scale), NFPA 701 TM#1 (small scale), NFPA 101 (Class A Rating), IBC Section 803.1.1 (Class A Rating), BS 5867 Part 2 Type B Performance, NFPA 701 TM#2 (large scale), CAN/ULC-S 109 (large and small scale), CAN/CGSB2-4.162-M80. Bacteria and fungal resistance: ASTM E 2180, ASTM G21, ASTM G22, AATCC30 Part 3, ASTM D 3273, GREENGUARD® Mold and Bacteria Standard ASTM 6329; includes Microban® antimicrobial additives. Environmental certification: Certified to UL GREENGUARD and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Safe use: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101 and ANSI/WCMA A 100.1-2007 for lead content and REACH (EC 1907/2006) compliant. 10 percent open, .017 inches thick. 10.4 oz/square yard.
- 20) SheerWeave® Series SW2900 (2390) by Phifer®: 500 denier fiberglass, vinyl coated and woven into a 2 x 2 basket weave. Fire rating: California U.S. Title 19 (small scale), NFPA 101 (Class A Rating), BS 5867 Part 2 Type B Performance, CAN/ULC-S 109 (large and small scale), CAN/CGSB2-4.162-M80, NFPA 701 TM#1 (small scale), IBC Section 803.1.1 (Class A Rating), NFPA 701 TM#2 (large scale). Bacteria and fungal resistance: ASTM E 2180, ASTM G21, ASTM G22, AATCC30 Part 3, ASTM D 3273, GREENGUARD® Mold and Bacteria Standard ASTM 6329; includes Microban® antimicrobial additives. Environmental certification: Certified to UL GREENGUARD and GREENGUARD Gold® standards for low

chemical emissions into indoor air during product usage. Safe use: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101 and ANSI/WCMA A 100.1-2007 for lead content and REACH (EC 1907/2006) compliant. 5 percent open. .017 inches thick. 11.8 oz/square yard.

- 21) SheerWeave® Basic 3% by Phifer®. An economical alternative to traditional solar screen fabrics. Fire Rating: California U.S. Title 19 (small scale), NFPA 701 TM#1 (small scale), NFPA 101 (Class A Rating), IBC Section 803.1.1 (Class A Rating), BS 5867 Part 2 Type B Performance, CAN/ULC-S 109 (large and small scale), NFPA 701 TM#2 (large scale), CAN/CGSB2-4.162-M80. Bacteria and Fungal Resistance ASTM E 2180, ASTM G21, ASTM G22, AATCC30 Part 3, ASTM D 3273, UL GREENGUARD® Mold and Bacteria Standard ASTM 6329; includes Microban® antimicrobial additives. Environmental Certification: Certified to UL GREENGUARD and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Safe use: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101, ANSI/WCMA A 100.1-2007 for lead content and REACH (EC 1907/2006) compliant. Average 3 percent Openness. Average Fabric Thickness: .025 inch. Average Fabric Weight: 16.4 ounces per square yard.
- 22) SheerWeave® Basic 5% by Phifer®. An economical alternative to traditional solar screen fabrics. Fire Rating: California U.S. Title 19 (small scale), NFPA 701 TM#1 (small scale), NFPA 101 (Class A Rating), IBC Section 803.1.1 (Class A Rating), BS 5867 Part 2 Type B Performance, CAN/ULC-S 109 (large and small scale), NFPA 701 TM#2 (large scale), CAN/CGSB2-4.162-M80. Bacteria and Fungal Resistance ASTM E 2180, ASTM G21, ASTM G22, AATCC30 Part 3, ASTM D 3273, UL GREENGUARD® Mold and Bacteria Standard ASTM 6329; includes Microban® antimicrobial additives. Environmental Certification: Certified to UL GREENGUARD and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Safe use: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101, ANSI/WCMA A 100.1-2007 for lead content and REACH (EC 1907/2006) compliant. Average 5 percent Openness. Average Fabric Thickness: 0.022 inch. Average Fabric Weight: 14.1 ounces per square yard.

b. Ribbed Weave

- 1) M Screen™ 1% by Mermet®: PVC coated fiberglass in 1 by 2 ribbed weave. Fire rating: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal resistance: ASTM E2180, ASTM G21. 1 percent open, .022 inches thick, 13.12 oz/square yard.
- 2) M Screen™ 3% by Mermet®: PVC coated fiberglass in 1 by 2 ribbed weave. Fire rating: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free.

- Bacterial and fungal resistance: ASTM E2180, ASTM G21. 3 percent open, .022 inches thick, 12.27 oz/square yard.
- 3) M Screen™ 5% by Mermet®: PVC coated fiberglass in 1 by 2 ribbed weave. Fire rating: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal resistance: ASTM E2180, ASTM G21. 5 percent open, .022 inches thick, 11.3 oz/square yard.
 - 4) M Screen Deco™ 5% by Mermet®: PVC coated fiberglass in 1 by 2 ribbed weave. Fire rating: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal resistance: ASTM E2180, ASTM G21. 5 percent open, .020 inches thick, 11.3 oz/square yd.
 - 5) SheerWeave® Series SW1000 SunScreen® by Phifer. PVC coated fiberglass in a ribbed weave. Fire Classification: California U.S. Title 19 (small scale), NFPA 701 TM#1 (small scale), NFPA 101 (Class A Rating), IBC Section 803.1.1 (Class A Rating), BS 5867 Part 2 Type B Performance, NFPA 701 TM#2 (large scale), CAN/ULC-S 109 (large scale). Bacteria and Fungal Resistance: ASTM E 2180, ASTM G21, AATCC30 Part 3, ASTM D 3273, GREENGUARD Mold and Bacteria Standard ASTM 6329; includes Microban® antimicrobial additives. Environmental: Certified to UL GREENGUARD® and GREENGUARD Gold® standards. Lead Free: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101, ANSI/WCMA A 100.1-2007 for lead content and REACH (EC 1907/2006) compliant. Approximate openness factor: 25%.
 - 6) SheerWeave® Series SW3000 by Phifer®: Vinyl coated fiberglass and vinyl coated polyester woven into 62 by 20 mesh. Fire rating: NFPA 701 TM#1 (small scale), NFPA 101 (Class A Rating), IBC Section 803.1.1 (Class A Rating), NFPA 701 TM#2 (large scale). Bacteria and fungal resistance: ASTM E 2180, ASTM G21, ASTM G22, AATCC30 Part 3, ASTM D 3273, UL GREENGUARD® Mold and Bacteria Standard ASTM 6329; includes Microban® antimicrobial additives. Environmental certification: Certified to UL GREENGUARD and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Safe use: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101, ANSI/WCMA A 100.1-2007 for lead content and REACH (EC 1907/2006) compliant. 13.46 oz/sq yd, .028 inches thick. Average 14 percent open.
- c. Satin Weave
- 1) T Screen™ with KOOLBLACK® 1% by Mermet®: PVC coated fiberglass woven mesh. Dark on one side, light on the other. Fire rating: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal

- resistance: ASTM E2180, ASTM G21. Average 1 percent open, .024 inches thick, 13.54 oz/square yard.
- 2) T Screen™ with KOOLBLACK® 3% by Mermet®: PVC coated fiberglass woven mesh. Dark on one side, light on the other. Fire rating: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal resistance: ASTM E2180, ASTM G21. Average 3 percent open, .029 inches thick, 13.27 oz/square yard.
 - 3) T Screen™ with KOOLBLACK®. 5 percent openness factor by Mermet®: PVC coated fiberglass woven mesh. Dark on one side, light on the other. Fire rating: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal resistance: ASTM E2180, ASTM G21. Average 5 percent open, .027 inches thick, 12.48 oz/square yard.
 - 4) T Screen Deco™ 1% by Mermet®: PVC coated fiberglass satin style. Fire rating: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal resistance: ASTM E2180, ASTM G21. Average 1 percent open, .028 inches thick, 13.76 oz/square yd.
 - 5) T Screen Deco™ 3% by Mermet®: PVC coated fiberglass satin style. Fire rating: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal resistance: ASTM E2180, ASTM G21. Average 3 percent open, .028 inches thick, 12.98 oz/square yard.
 - 6) T Screen Deco™ 5% by Mermet®: PVC coated fiberglass satin style. Fire rating: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal resistance: ASTM E2180, ASTM G21. Average 5 percent open, .028 inches thick, 11.89 oz/square yard.
- d. Twill Weave
- 1) 9803 3% by Mermet®: PVC coated fiberglass woven mesh. Dark on one side, light on the other. Fire rating: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal resistance: ASTM E2180, ASTM G21. Average 3 percent open, .025 inches thick, 11.6 oz/square yard.

- 2) SheerWeave® Series SW2701 by Phifer®: Duplex basketweave fabric—light exterior color combined with dark interior color for thermal comfort and view-through. Fire rating: California U.S. Title 19 (small scale), NFPA 701 TM#1 (small scale), NFPA 101 (Class A Rating), IBC Section 803.1.1 (Class A Rating), BS 5867 Part 2 Type B Performance, NFPA 701 TM#2 (large scale), CAN/ULC-S 109 (large and small scale), CAN/CGSB2-4. 162-M80. Bacteria and fungal resistance: ASTM E 2180, ASTM G21, ASTM G22, AATCC30 Part 3, ASTM D 3273, GREENGUARD® Mold and Bacteria Standard ASTM 6329; includes Microban® antimicrobial additives. Environmental Certification: Certified to UL GREENGUARD and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Safe use: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101, ANSI/WCMA A 100.1-2007 for lead content and REACH (EC 1907/2006) compliant. 1 percent open. .027 inches thick. 14.6 oz/square yard.
- 3) SheerWeave® Series SW2703 by Phifer®: Duplex basketweave fabric—light exterior color combined with dark interior color for thermal comfort and view-through. Fire rating: California U.S. Title 19 (small scale), NFPA 701 TM#1 (small scale), NFPA 101 (Class A Rating), IBC Section 803.1.1 (Class A Rating), BS 5867 Part 2 Type B Performance, NFPA 701 TM#2 (large scale), CAN/ULC-S 109 (large and small scale), CAN/CGSB2-4. 162-M80, CAN/ULC S-102. Bacteria and fungal resistance: ASTM E 2180, ASTM G21, ASTM G22, AATCC30 Part 3, ASTM D 3273, UL GREENGUARD® Mold and Bacteria Standard ASTM 6329; includes Microban® antimicrobial additives. Environmental certification: Certified to UL GREENGUARD and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. 3 percent open. .028 inches thick. 14.0 oz/square yard.
- 4) SheerWeave® Series SW2705 by Phifer®: Duplex basketweave fabric—light exterior color combined with dark interior color for thermal comfort and view-through. GREENGUARD Gold®. Manufacturer to supply GREENGUARD Gold certificate. Fire rating: California U.S. Title 19 (small scale), NFPA 701 TM#1 (small scale), NFPA 101 (Class A Rating), IBC Section 803.1.1 (Class A Rating), BS 5867 Part 2 Type B Performance, NFPA 701 TM#2 (large scale), CAN/ULC-S 109 (large and small scale), CAN/CGSB2-4. 162-M80. Bacteria and fungal resistance: ASTM E 2180, ASTM G21, ASTM G22, AATCC30 Part 3, ASTM D 3273, UL GREENGUARD® Mold and Bacteria Standard ASTM 6329; includes Microban® antimicrobial additives. Environmental Certification: Certified to UL GREENGUARD and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Safe use: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101, ANSI/WCMA A 100.1-2007 for lead content and REACH (EC 1907/2006) compliant. 5 percent open. .025 inches thick. 11.8 oz/square yard.
- 5) SheerWeave® Series SW2710 by Phifer®: Duplex basketweave fabric—light exterior color combined with dark interior color for thermal comfort and view-through. Fire rating: California U.S. Title 19 (small scale), NFPA 701 TM#1 (small scale), NFPA 101 (Class A Rating), IBC Section 803.1.1 (Class A Rating), BS 5867

Part 2 Type B Performance, NFPA 701 TM#2 (large scale), CAN/ULC-S 109 (large and small scale), CAN/CGSB2-4. 162-M80. Bacteria and fungal resistance: ASTM E 2180, ASTM G21, ASTM G22, AATCC30 Part 3, ASTM D 3273, UL GREENGUARD® Mold and Bacteria Standard ASTM 6329; includes Microban® antimicrobial additives. Environmental Certification: Certified to UL GREENGUARD and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Safe use: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101, ANSI/WCMA A 100.1-2007 for lead content and REACH (EC 1907/2006) compliant. 10 percent open. .023 inches thick. 10.4 oz/square yard.

- 6) T Screen™ 1% by Mermet®: PVC coated fiberglass woven mesh. White, charcoal, or pearl backing color. Fire rating: NFPA 701-15 TM#1, California U.S. Title 19 CAN/ULC-S109-14 Small Flame Test. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal resistance: ASTM E2180, ASTM G21. Average 1 percent open, .028 inches thick, 13.83 oz/square yard.

2. Fiberglass

a. Mock Leno Weave

- 1) GreenScreen® Nature™ 5%: GreenScreen Nature is an inherently fire-retardant fabric constructed of 100 percent fiberglass yarn in a mock leno weave. Additional fire retardancy chemicals are not required. Recyclable, halogen- and PVC-free. Red List compliant. Fire rating: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109 Small & Large Scale. Microbial Resistance, ASTM E2180 and ASTM G21: Pass. UL GREENGUARD®, GREENGUARD Gold®. Approximate Openness Factor: 5 percent. Average Fabric Thickness: 0.010 inch (.024 mm). Average Fabric Weight: 5.10 ounces per square yard (174 grams per square meter).

b. Ribbed Weave

- 1) Vizela™ < 1% by Mermet®: 100 percent fiberglass with an EVA coating and PVC free. Fire rating: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal resistance: ASTM E2180, ASTM G21. < 1% open, .013 inches thick, 8.7 oz/square yard.
- 2) SilverScreen 4% by Verosol: 36 percent fiberglass and 64 percent vinyl with an ultra-fine layer of aluminum on the backside. Fire rating: NFP 92503 specification M1, NFPA 701, B5 5867 Part 2 Type B, AS 1530. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant - Lead Free, Formaldehyde free. 5 percent Open, 0.020 inches thick, 11.7974 oz/square yard.

3. Vinyl Coated Polyester

a. Basketweave

- 1) SunTex® 90 by Phifer. Vinyl-coated polyester woven into a basketweave. For outdoor use. Fire Classification: NFPA 101

- (Class A Rating), IBC Section 803.1.1 (Class A Rating), CFR 49V 571.302 (FMVSS 302), California Technical Bulletin 117, CAN/ULC S-109 (large scale) and ASTM E-662. Bacteria and Fungal Resistance: ASTM E 2180 and ASTM G21; includes Microban® antimicrobial additives. Environmental: Certified to UL GREENGUARD® and GREENGUARD Gold® standards. Lead Free: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101, ANSI/WCMA A 100.1-2007 for lead content and REACH (EC 1907/2006) compliant. Openness factor: approximately 10%. Thickness: 0.039 inches. Weight: 17.2 oz/square yard.
- 2) SunTex® 95 by Phifer. Vinyl-coated polyester woven into a basketweave. For outdoor use. Fire Classification: NFPA 101 (Class A Rating), IBC Section 803.1.1 (Class A Rating), CFR 49V 571.302 (FMVSS 302), California Technical Bulletin 117, CAN/ULC S-109 (large scale) and ASTM E-662. Bacteria and Fungal Resistance: ASTM E 2180 and ASTM G21; includes Microban® antimicrobial additives. Environmental: Certified to UL GREENGUARD® and GREENGUARD Gold® standards. Lead Free: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101, ANSI/WCMA A 100.1-2007 for lead content and REACH (EC 1907/2006) compliant. Openness factor: approximately 5%. Thickness: 0.029 inches. Weight: 15.4 oz/square yard.
 - 3) SunTex® 97 by Phifer. Vinyl-coated polyester woven into a basketweave. For outdoor use. Fire Classification: NFPA 101 (Class A Rating), IBC Section 803.1.1 (Class A Rating), CFR 49V 571.302 (FMVSS 302), California Technical Bulletin 117, CAN/ULC S-109 (large scale) and ASTM E-662. Bacteria and Fungal Resistance: ASTM E 2180 and ASTM G21; includes Microban® antimicrobial additives. Environmental: Certified to UL GREENGUARD® and GREENGUARD Gold® standards. Lead Free: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101, ANSI/WCMA A 100.1-2007 for lead content and REACH (EC 1907/2006) compliant. Openness factor: approximately 3%. Thickness: 0.033 inches. Weight: 16.0 oz/square yard.
 - 4) SheerWeave® Series PW3500 (4000) by Phifer®: Vinyl coated polyester yarn woven into basketweave pattern. Uses DOW ECOLIBRIUM™ bio-based, phthalate-free plasticizer. Fire rating: California U.S. Title 19 (small scale), NFPA 701 TM#1 (small scale), NFPA 101 (Class A Rating), IBC Section 803.1.1 (Class A Rating), BS 5867 Part 2 Type B Performance, NFPA 701 TM#2 (large scale), CAN/ULC-S 109 (large and small scale), CAN/CGSB2-4.162-M80. Bacteria and fungal resistance: ASTM E 2180, ASTM G21, ASTM G22, AATCC30 Part 3, ASTM D 3273, UL GREENGUARD® Mold and Bacteria Standard ASTM 6329; includes Microban® antimicrobial additives. Environmental Certification: Certified to UL GREENGUARD and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Safe use: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101 and ANSI/WCMA A 100.1-2007 for lead content, REACH (EC 1907/2006) compliant. Average 5 percent open, 19.2 oz/sq yd, .036 inches thick.

- 5) SheerWeave® Series PW4100 by Phifer®: Vinyl coated polyester yarn woven into basketweave pattern. Uses DOW ECOLIBRIUM™ bio-based, phthalate-free plasticizer. Fire rating: California U.S. Title 19 (small scale), NFPA 701 TM#1 (small scale), NFPA 101 (Class A Rating), IBC Section 803.1.1 (Class A Rating), BS 5867 Part 2 Type B Performance, NFPA 701 TM#2 (large scale), CAN/ULC-S 109 (large and small scale), CAN/CGSB2-4.162-M80. Bacteria and fungal resistance: ASTM E 2180, ASTM G21, ASTM G22, AATCC30 Part 3, ASTM D 3273, UL GREENGUARD® Mold and Bacteria Standard ASTM 6329; includes Microban® antimicrobial additives. Environmental Certification: Certified to UL GREENGUARD and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Safe use: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101 and ANSI/WCMA A 100.1-2007 for lead content, REACH (EC 1907/2006) compliant. Average 10 percent open, 17.5 oz/sq yd, .035 inches thick.
- 6) SheerWeave® Series PW4400 by Phifer®: Vinyl coated polyester yarn woven into basketweave pattern. Uses DOW ECOLIBRIUM™ bio-based, phthalate-free plasticizer. Fire rating: California U.S. Title 19 (small scale), NFPA 701 TM#1 (small scale), NFPA 101 (Class A Rating), IBC Section 803.1.1 (Class A Rating), BS 5867 Part 2 Type B Performance, NFPA 701 TM#2 (large scale), CAN/ULC-S 109 (large and small scale), CAN/CGSB2-4.162-M80. Bacteria and fungal resistance: ASTM E 2180, ASTM G21, ASTM G22, AATCC30 Part 3, ASTM D 3273, UL GREENGUARD® Mold and Bacteria Standard ASTM 6329; includes Microban® antimicrobial additives. Environmental Certification: Certified to UL GREENGUARD and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Safe use: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101 and ANSI/WCMA A 100.1-2007 for lead content, REACH (EC 1907/2006) compliant. Average 3 percent open, 20.7 oz/sq yd, .037 inches thick.
- 7) SheerWeave® Series PW4500 by Phifer®: Vinyl coated polyester yarn woven into basketweave pattern. Fire rating: California U.S. Title 19 (small scale), NFPA 701 TM#1 (small scale), NFPA 101 (Class A Rating), IBC Section 803.1.1 (Class A Rating), BS 5867 Part 2 Type B Performance, NFPA 701 TM#2 (large scale), CAN/ULC-S 109 (large and small scale). Bacteria and fungal resistance: ASTM E 2180, ASTM G21, ASTM G22, AATCC30 Part 3, ASTM D 3273, UL GREENGUARD® Mold and Bacteria Standard ASTM 6329; includes Microban® antimicrobial additives. Environmental certification: Certified to GREENGUARD and GREENGUARD UL Gold® standards for low chemical emissions into indoor air during product usage. Safe use: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101, ANSI/WCMA A 100.1-2007 for lead content and REACH (EC 1907/2006) compliant. Average 5 percent open, 14.4 oz/sq yd, .024 inches thick.
- 8) SheerWeave® Series PW4600 by Phifer®: Vinyl coated polyester yarn woven into basketweave pattern. Fire rating: Fire rating: California U.S. Title 19 (small scale), NFPA 701 TM#1

(small scale), NFPA 101 (Class A Rating), IBC Section 803.1.1 (Class A Rating), BS 5867 Part 2 Type B Performance, NFPA 701 TM#2 (large scale), CAN/ULC-S 109 (large and small scale). Bacteria and fungal resistance: ASTM E 2180, ASTM G21, ASTM G22, AATCC30 Part 3, ASTM D 3273, UL GREENGUARD® Mold and Bacteria Standard ASTM 6329; includes Microban® antimicrobial additives. Environmental certification: Certified to UL GREENGUARD and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Safe use: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101, ANSI/WCMA A 100.1-2007 for lead content and REACH (EC 1907/2006) compliant. Average 3 percent open, 17.4 oz/sq yd, .030 inches thick.

- 9) Soltis Harmony 88 by Ferrari. PVC-coated polyester with pre-tensioning process for dimensional stability. Flame Retardancy: B-s2,d0 / EN 13501-1, M1/NFP92-507, B1/DIN 4102-1, BS 7837, BS 5867, Schwerbrennbar Q1-Tr1/ONORM, A3800-1, CAN/ULC-S 109, M1/UNE 23727-90, Classe 1/EN 13773, CSFM T19, Method 1 & 2/ NFPA 701, Class A/ASTM E84, 1530.3/AS NZS, Group 1/AS NZS 3837, G1/GOST.30244.94. Environment: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Recyclable through TaxyLoop®. 8 percent open, .018 inches thick, 10.61 oz/square yard.
 - 10) Soltis Horizon 86 by Ferrari. PVC-coated polyester with pre-tensioning process for dimensional stability. Flame Retardancy: B-s2,d0 / EN 13501-1, M1/NFP92-507, B1/DIN 4102-1, BS 7837, BS 5867, Schwerbrennbar Q1-Tr1/ONORM, A3800-1, CAN/ULC-S 109, M1/UNE 23727-90, Classe 1/EN 13773, CSFM T19, Method 1 & 2/ NFPA 701, Class A/ASTM E84, 1530.3/AS NZS, Group 1/AS NZS 3837, G1/GOST.30244.94. Environment: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Recyclable through TaxyLoop®. 14 percent open, .018 inches thick, 11.2 oz/square yard.
 - 11) Soltis® Master 99 by Serge Ferrari®: PVC-coated polyester with silver backing on outside and pre-tensioning process for dimensional stability. Fire rating: Method 1/NFPA 701, CSFM T19, Class A/ ASTM E84. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Recyclable through TaxyLoop®. 3 percent open, .0156 inches thick, 8.6 oz/ square yard.
 - 12) Soltis® Perform 92 by Serge Ferrari®: PVC-coated polyester with silver backing on outside and pre-tensioning process for dimensional stability. Fire rating: Method 1/NFPA 701, CSFM T19, Class A/ ASTM E84. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Recyclable through TaxyLoop®. 4 percent open, .018 inches thick, 12.4 oz/square yard.
- b. Decorative Weave
- 1) SheerWeave® Series SW5000 by Phifer®: Polyester and vinyl coated polyester woven into a 42 by 20 mesh. Fire rating: California Technical Bulletin 117 Sect. E. Part 1/ UBC (Class

1)/British Standard 5867. Varies depending on color. Bacteria and fungal resistance: ASTM E 2180, ASTM G21, ASTM G22, ASTM D3273, AATCC 30 Part 3, UL GREENGUARD® Mold and Bacteria Standard ASTM 6329; includes Microban® antimicrobial additives. Environmental certification: Certified to UL GREENGUARD and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Safe use: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101 and ANSI/WCMA A 100.1-2007 for lead content and REACH (EC 1907/2006) compliant. 12.3 to 14.5 oz/sq yd, .035 inches - .044 inches thick, depending on color. 5 to 10 percent open, depending on color.

c. Plain Weave

1) SheerWeave® PW4800 by Phifer®: Vinyl coated polyester with maximum UV blockage. Fire rating: California U.S. Title 19 (small scale), NFPA 701 TM#1 (small scale), NFPA 101 (Class A Rating), IBC Section 803.1.1 (Class A Rating), BS 5867 Part 2 Type B Performance, NFPA 701 TM#2 (large scale), CAN/ULC-S 109 (large and small scale), CAN/CGSB2-4.162-M80. Bacteria and fungal resistance: ASTM E 2180, ASTM G21, ASTM G22, AATCC30 Part 3, ASTM D 3273, UL GREENGUARD® Mold and Bacteria Standard ASTM 6329; includes Microban® antimicrobial additives. Environmental certification: Certified to UL GREENGUARD and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Safe use: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101, ANSI/WCMA A 100.1-2007 for lead content and REACH (EC 1907/2006) compliant. 1 percent openness factor. 18.5 oz/sq yd, .036 inches thick.

d. Twill Weave

1) SheerWeave® Series PW4550 by Phifer®: Vinyl coated polyester yarn woven into basketweave pattern. Fire rating: California U.S. Title 19 (small scale), NFPA 701 TM#1 (small scale), NFPA 101 (Class A Rating), IBC Section 803.1.1 (Class A Rating), BS 5867 Part 2 Type B Performance, NFPA 701 TM#2 (large scale), CAN/ULC-S 109 (large and small scale). Bacteria and fungal Resistance. ASTM E 2180, ASTM G21, ASTM G22, AATCC30 Part 3, ASTM D 3273, UL GREENGUARD® Mold and Bacteria Standard ASTM 6329; includes Microban® antimicrobial additives. Environmental certification: Certified to UL GREENGUARD and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Safe use: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101, ANSI/WCMA A 100.1-2007 for lead content and REACH (EC 1907/2006) compliant. Average 5 percent open, 12.5 oz/sq yd, .025 inches thick.

2) SheerWeave® Series PW4650 by Phifer®: Vinyl coated polyester yarn woven into basketweave pattern. Fire rating: California U.S. Title 19 (small scale), NFPA 701 TM#1 (small scale), NFPA 101 (Class A Rating), IBC Section 803.1.1 (Class A Rating), BS 5867 Part 2 Type B Performance, NFPA 701 TM#2 (large scale), CAN/ULC-S 109 (large and small scale). Bacteria and fungal Resistance. ASTM E 2180, ASTM G21, ASTM G22, AATCC30 Part 3, ASTM D 3273, UL GREENGUARD® Mold and Bacteria Standard ASTM 6329;

includes Microban® antimicrobial additives. Environmental certification: Certified to UL GREENGUARD and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Safe use: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101, ANSI/WCMA A 100.1-2007 for lead content and REACH (EC 1907/2006) compliant. Average. 3 percent open, 13.3 oz/sq yd, .026 inches thick.

3) SheerWeave® PW4901 by Phifer®: Vinyl coated polyester with maximum UV blockage. Fire rating: California U.S. Title 19 (small scale), NFPA 701 TM#1 (small scale), NFPA 101 (Class A Rating), IBC Section 803.1.1 (Class A Rating), BS 5867 Part 2 Type B Performance, NFPA 701 TM#2 (large scale), CAN/ ULC-S 109 (large and small scale), CAN/CGSB2-4. 162-M80. Bacteria and fungal resistance: ASTM E 2180, ASTM G21, ASTM G22, AATCC30 Part 3, ASTM D 3273, UL GREENGUARD® Mold and Bacteria Standard ASTM 6329; includes Microban® antimicrobial additives. Environmental certification: Certified to UL GREENGUARD and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Safe use: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101 and ANSI/WCMA A 100.1-2007 for lead content and REACH (EC 1907/2006) compliant. UV protection: Seal of Approval by the Melanoma International Foundation (MIF) for effectiveness in preventing sun damage to the skin or eyes. 1 percent openness factor. 15.85 oz/sq yd, .028 inches thick.

4) SheerWeave® PW4903 by Phifer®: Vinyl coated polyester with maximum UV blockage. Fire rating: California U.S. Title 19 (small scale), NFPA 701 TM#1 (small scale), NFPA 101 (Class A Rating), IBC Section 803.1.1 (Class A Rating), BS 5867 Part 2 Type B Performance, NFPA 701 TM#2 (large scale), CAN/ ULC-S 109 (large and small scale), CAN/CGSB2-4. 162-M80. Bacteria and fungal resistance: ASTM E 2180, ASTM G21, ASTM G22, AATCC30 Part 3, ASTM D 3273, UL GREENGUARD® Mold and Bacteria Standard ASTM 6329; includes Microban® antimicrobial additives. Environmental certification: Certified to UL GREENGUARD and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Safe use: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101 and ANSI/WCMA A 100.1-2007 for lead content and REACH (EC 1907/2006) compliant. UV protection: Seal of Approval by the Melanoma International Foundation (MIF) for effectiveness in preventing sun damage to the skin or eyes. 3 percent openness factor. 14.9 oz/sq yd, .027 inches thick.

4. Polyester

a. Basketweave

1) SheerWeave® Series SW8000 by Phifer®: PVC-free polyester. Fire rating: California U.S. Title 19 (small scale), BS 5867 2008 Part 2 Type B Performance, IBC Section 803.1.1 (Class A Rating), NFPA 701 TM#1 (small scale), NFPA 701 TM#2 (large scale), CAN/ULC-S 109 (large and small scale), CAN/CGSB2-4. 162-M80, B1 (DIN 4102-1), NFPA 101 (Class A Rating). Bacteria and fungal resistance: ASTM E 2180, ASTM G21. Environmental certification: Cradle to Cradle Certified™ Bronze and certified to

ul GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Safe use: RoHS/Directive 2002/95/EC, ANSI/WCMA A 100.1-2007 for lead content, US Consumer Product Safety Commission Section 101 and REACH (EC 1907/2006) compliant. UV Protection: Seal of Approval by the Melanoma International Foundation (MIF) for effectiveness in preventing sun damage to the skin or eyes. Average 3% open. .019 inches thick. 7.35 oz/square yard.

b. Decorative Weave

- (1) SheerWeave® Series SW7450 by Phifer®: PVC-free polyester with acrylic coating. Fire rating: California Technical Bulletin 117, IBC Section 803.1.1 (Class A Rating), NFPA 101 (Class A Rating). Bacteria and Fungal Resistance: ASTM G21-96, AATCC 174-1998 Part II and III. Environmental Certification: Certified to GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Safe Use: RoHS/Directive 2002/95/EC, ANSI/WCMA A 100.1-2007 for lead content, US Consumer Product Safety Commission Section 101. UV Protection: Seal of Approval by the Melanoma International Foundation (MIF) for effectiveness in preventing sun damage to the skin or eyes. .026 inches thick, 6.54 oz/square yard.

c. Fancy Weave

- 1) Verona Daylight™ by Mermet. 100% polyester. Fire Classifications: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Bacterial Resistance: ASTM E2180, ASTM G21. Environment: RoHS - Lead Free, certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Openness factor: less than 1%. .021 inches thick, 5.90 oz/square yard.

d. Diamond Knit

- 1) GreenScreen Evolve® 3%: GreenScreen Evolve is a fire retardant PVC-free fabric is constructed of 100 percent polyester yarn, with up to 78% Repreve polyester. Repreve is recycled and recyclable, contains low VOC's, and made in the USA. Fire rating: NFPA 701-99 TM#1, California U.S. Title 19, Cradle to Cradle Certified Silver, UL GREENGUARD®, GREENGUARD Gold®, PVC Free. Approximate Openness Factor: 3 percent. Average Fabric Thickness: 0.027 inch (.068 mm). Average Fabric Weight: 8.41 ounces per square yard. Microbial Resistance, ASTM E2180 and ASTM G21: Pass.
- 2) GreenScreen Revive® 1%. GreenScreen Revive is a fire retardant PVC-free fabric constructed of 100 percent polyester yarn, with a minimum of 89 percent Repreve polyester. Repreve is recycled and recyclable, contains low VOC's, and made in the USA. Fire rating: NFPA 701-99 TM#1, California U.S. Title 19, Cradle to Cradle Certified Silver, UL GREENGUARD®, GREENGUARD Gold®. Approximate Openness Factor: 1 percent. Average Fabric Thickness: 0.019 inch (0.48 mm). Average Fabric Weight: 5.87 ounces per square yard.

- 3) GreenScreen Revive® 5%. GreenScreen Revive is a fire retardant PVC-free fabric is constructed of 100 percent polyester yarn, with a minimum of 89 percent Repreve polyester. Repreve is recycled and recyclable, contains low VOC's, and made in the USA. Fire rating: NFPA 701-99 TM#1, California U.S. Title 19, Cradle to Cradle Certified Silver, UL GREENGUARD, GREENGUARD Gold, Green PVC Free. Approximate Openness Factor: 5 percent. Average Fabric Thickness: 0.017 inch (.043 mm). Average Fabric Weight: 5.01 ounces per square yard.
- e. Linen Pattern
 - 1) SheerWeave® Series SW7650 by Phifer®: PVC-free polyester. Fire rating: California U.S. Title 19 (small scale), NFPA 701 TM#1 (small scale), BS 5867 Part 2 Type B Performance, CAN/ULC-S 109 (large and small scale). Bacteria and fungal resistance: ASTM G21-96, AATCC 174-1998 Part II and III. Environmental certification: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Safe use: RoHS/Directive 2002/95/EC, ANSI/WCMA A 100.1-2007 for lead content, US Consumer Product Safety Commission Section 101. UV protection: Seal of Approval by the Melanoma International Foundation (MIF) for effectiveness in preventing sun damage to the skin or eyes. .014 inches thick, 6.2 oz/square yard.
 - f. Thermoplastic Olefin
 - g. Basketweave
 - 1) SheerWeave® Infinity2 1%: sustainable window treatment fabric eco-friendly basketweave. Core yarn and coating are PVC-free, lead-free and 100 percent recyclable. Fire classification: ASTM E-84 (Class I), NFPA 701-2004 TM#1 (small scale), NFPA 101 (Class A Rating) and CAN/ULC-S 109-03 Large, UL GREENGUARD®, GREENGUARD Gold®. Average 1 percent open. Average Fabric Thickness: .033 inch (.838 mm) Average Fabric Weight: 14.63 ounces per square yard.
 - 2) SheerWeave® Infinity2 3%: sustainable window treatment fabric eco-friendly basketweave. Core yarn and coating are PVC-free, lead-free and 100 percent recyclable. Fire classification: ASTM E-84 (Class I), NFPA 701-2004 TM#1 (small scale), NFPA 101 (Class A Rating) and CAN/ULC-S 109-03 Large, UL GREENGUARD®, GREENGUARD Gold®. Average 3 percent open. Average Fabric Thickness: .031 inch (.79 mm) Average Fabric Weight: 13.69 ounces per square yard.
 - 3) SheerWeave® Infinity2 5%: sustainable window treatment fabric eco-friendly basketweave. Core yarn and coating are PVC-free, lead-free and 100 percent recyclable. Fire classification: ASTM E-84 (Class I), NFPA 701-2004 TM#1 (small scale), NFPA 101 (Class A Rating) and CAN/ULC-S 109-03 Large, UL GREENGUARD®, GREENGUARD Gold®. Average 5 percent open. Average Fabric Thickness: .03 inch (.76 mm). Average Fabric Weight: 12.82 ounces per square yard.

B. Room Darkening Fabrics

1. Opaque

a. PVC Coated Fiberglass

- 1) SheerWeave® Series SW7100 Blackout by Phifer®: PVC-coated Fiberglass laminated with a 2-ply PVC film. Fire rating: NFPA 701 TM#1 (small scale), NFPA 701 TM#2 (large scale), BS 5867

Part 2 Type B Performance, CAN/ULC-S 109 (large and small scale), NFPA 101 (Class B Rating), IBC Section 803.1.1 (Class B Rating). Bacterial and fungal resistance: ASTM E 2180, ASTM G21, ASTM G22, AATCC30 Part 3, ASTM D 3273, GREENGUARD® Mold and Bacterial Standard ASTM 6329; Style 2000 face includes Microban® antimicrobial additives. Environmental certification: Certified to UL GREENGUARD and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Safe Use: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101, ANSI/WCMA A 100.1-2007 for lead content and REACH (EC 1907/2006) compliant. Opaque, .025 inches thick, 21.6 oz/square yard, opaque.

b. Fiberglass

- 1) Apagón Style III is a 3-ply opaque shade fabric consisting of vinyl, fiberglass, and a proprietary coating for maximum blackout. Thread Count: 59 threads per square inch. Fire rating: NFPA 701-2019 Test Method 1. Environmental Benefits: ASTM D3335 85a - Lead Testing. Bacterial and fungal resistance: ASTM Method G-21-15 – Resistance to Fungi. Opaque, .0131 inches thick, 12.8 oz/square yard.
- 2) Flocké® by Mermet®: Opaque, PVC-free fiberglass textile with acrylic flocked backing. Antistatic treated. Fire rating: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal resistance: ASTM E2180, ASTM G21. Draper shades made with this fabric are GreenSpec® listed. Opaque, .020 inches thick, 15.93 oz/square yard.
- 3) SunBloc Series SB9000: Close woven fiberglass base textile with sun-resistant vinyl film bonded to each side, opaque with minimum tensile strength of 190 pounds for warp and 180 pounds for fill. Fire rating: NFPA 701 1006-Test 1, California U.S. Title 19. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. REACH and RoHS compliant - Lead Free. Bacterial and fungal resistance: ASTM E2180, ASTM G21. Washable and stain resistant. Same color both sides. Opaque, .015 inches thick, 12 oz/square yard.
- 4) SunBloc Series SB9100: Close woven fiberglass base textile with sun-resistant vinyl film bonded to each side, opaque with minimum tensile strength of 190 pounds for warp and 180 pounds for fill. Fire rating: NFPA 701 1006-Test 1, California U.S. Title 19. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. REACH and RoHS compliant - Lead Free. Bacterial and fungal resistance: ASTM E2180, ASTM G21. Washable and stain resistant. White exterior in all colors. Opaque, .013 inches thick, 12 oz/square yard.

c. PVC Coated Polyester.

- 1) Soltis® Opaque B92 by Serge Ferrari®. PVC-coated polyester with silver backing on outside and pre-tensioning process for

dimensional stability. Fire rating: Method 1 and 2/NFPA 701, Class A / ASTM E84. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Recyclable through TexyLoop®. 0 percent open, .0312 inches thick, 19.1 oz/square yard.

d. Polyester

- 1) SheerWeave® Series SW7000 Blackout by Phifer®: PVC-free polyester with acrylic foamed backing. Fire rating: California U.S. Title 19 (small scale), BS 5867 Part 2 Type B Performance, IBC Section 803.1.1 (Class A Rating), NFPA 101 (Class A Rating), NFPA 701 TM#1 (small scale), CAN/ULC-S 109 (large and small scale), CAN/CGSB2-4. 162-M80. Bacteria and fungal resistance: ASTM G21, AATCC 174-1998 Part II and III. Environmental certification: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Safe use: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101 and ANSI/WCMA A 100.1-2007 for lead content. Draper shades made with this fabric are GreenSpec® listed. Opaque, .030 inches thick, 13.92 oz/square yard.
- 2) SheerWeave® Series SW7400 by Phifer®: PVC-free polyester with acrylic foamed backing. Fire rating: California U.S. Title 19 (small scale), CAN/ULC-S 109 (large and small scale), CAN/CGSB 2-4. 162-M80, NFPA 701 TM#1 (small scale), NFPA 701 TM#2 (large scale). Bacteria and Fungal Resistance: ASTM G21-96, AATCC 174-1998 Part II and III. Environmental Certification: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Safe Use: RoHS/Directive 2002/95/EC, ANSI/WCMA A 100.1-2007 for lead content, US Consumer Product Safety Commission Section 101. UV Protection: Seal of Approval by the Melanoma International Foundation (MIF) for effectiveness in preventing sun damage to the skin or eyes. Opaque, .029 inches thick, 12.53 oz/square yard.
- 3) SheerWeave® Series SW7500 by Phifer®: PVC-free polyester with an acrylic coating. Fire rating: California U.S. Title 19 (small scale), NFPA 101 (Class A Rating), NFPA 701 TM#1 (small scale), BS 5867 Part 2 Type B Performance, CAN/ULC-S 109 (large and small scale), IBC Section 803.1.1 (Class A Rating), CAN/CGSB 2-4.162-M80. Bacterial and fungal resistance: ASTM E 2180 and ASTM G21. Environmental certification: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. Safe use: RoHS/Directive 2002/95/EC, US Consumer Product Safety Commission Section 101 and ANSI/WCMA A 100.1-2007 for lead content. Opaque, .016 inches thick, 12.14 oz/square yard.
- 4) SheerWeave® Series SW7600 by Phifer®: PVC-free polyester with an acrylic foamed backing. Fire rating: California U.S. Title 19 (small scale), NFPA 701 TM#1 (small scale), BS 5867 Part 2 Type B Performance, CAN/ULC-S 109 (large and small scale). Bacterial and fungal resistance: ASTM G21-96, AATCC 174-1998 Part II and III. Environmental certification: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low

chemical emissions into indoor air during product usage. Safe use: RoHS/Directive 2002/95/EC, ANSI/WCMA A 100.1-2007 for lead content, US Consumer Product Safety Commission Section 101. UV protection: Seal of approval by the Melanoma International Foundation (MIF) for effectiveness in preventing sun damage to the skin or eyes. Opaque, .020 inches thick, 11.8 oz/square yard.

- 5) Verona Twilight™ by Mermet®. 50 percent Polyester and 50 percent acrylic with foam backing. Duraguard fabric protector and Sanitized Antimicrobial Protection. Plain weave that is 100% PVC free. Fire rating: NFPA 701-10 TM#1, California U.S. Title 19, CAN/ULC-S109-03 Small & Large Flame Test. Environmental Benefits: Certified to UL GREENGUARD® and GREENGUARD Gold® standards for low chemical emissions into indoor air during product usage. RoHS compliant – lead free. Bacterial and fungal resistance: ASTM E2180. 0% open, .024 inches thick, 11.65 oz/square yard.

- C. Color and pattern: _____, No. _____.
- D. Color and pattern: As indicated in Color Schedule on Drawings.
- E. Color and pattern: As selected by Architect from manufacturer's standard range.
- F. Custom colors, patterns, and graphics: As submitted to manufacturer in accordance with manufacturer's guidelines.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Coordinate requirements for blocking and structural supports to ensure adequate means for installation of window shades.
- B. Coordinate requirements for blocking, construction of shade pockets, and structural supports to ensure adequate means for installation of window shades.
- C. Coordinate installation of recessed shade pockets with construction of suspended acoustical panel ceilings specified in Section 09510.
- D. Coordinate installation of recessed shade pockets with construction of suspended gypsum board ceilings specified in Section 09260.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

- B. Install roller shades level, plumb, square, and true. Allow proper clearances for window operation hardware.
- C. Shade pockets:
 - 1. Install shade pockets prior to installation of suspended ceiling system. Attach to supporting structure with screws through top of pocket at 24 inches (610 mm) minimum centers.
 - 2. Install shade pockets in conjunction with installation of suspended ceiling system. Attach to supporting structure with screws through top of pocket at 24 inches (610 mm) minimum centers.
 - 3. Install corner pieces securely and in alignment with pockets.
 - 4. Install pocket ends securely and in alignment with pockets.
 - 5. After interior construction is essentially complete, install shade and operating mechanism in pocket.
- D. Install the following items to conceal roller and operating mechanism. Do not use exposed fasteners.
 - 1. Fascias.
 - 2. Closure panels.
 - 3. Endcaps.
- E. Install headbox, side channels, and sill channel with sealant specified in Section 07900 - Joint Sealers to eliminate light leaks at perimeter of shade system.
- F. Position shades level, plumb, and at proper height relative to adjacent construction. Secure with fasteners recommended by manufacturer.

3.4 TESTING AND DEMONSTRATION

- A. Test window shades to verify that operating mechanism and other operating components are functional. Correct deficiencies.
- B. Demonstrate operation of shades to Owner's designated representatives.

3.5 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair, or replace damaged products before Substantial Completion.

3.6 SCHEDULES

- A. Refer to Drawings for shade types and locations.

END OF SECTION