Shelter-Rite®
ARCHITECTURAL FABRICS
BY SEAMAN CORPORATION

DuPont™ Tedlar® Films

Long-Lasting Protection for Shelter-Rite® Architectural Fabrics

DUPONT

MADE IN THE USA

Tedlar® PVF film

Polyvinyl fluoride (PVF) is a fluoropolymer invented by DuPont in the 1940s. Put into commercial use in 1961, DuPont™ Tedlar® film is a registered trademark of DuPont. With over 50 years of proven performance, Tedlar® PVF film is used in various fields such as aerospace components, building façades and roofs, solar cell modules, outdoor advertisements and interior surface protection.

Tedlar® film thickness for architectural fabrics is either 1.0 mil for white or 1.5 mil for colors. Compared to coating and other film materials, Tedlar® is made up of 100% fluorescein PVF and possesses unique properties, including excellent weatherability, ductility, durability, physical stability and resistance to many chemicals, solvents, pollutants and corrosive agents. In addition, Tedlar® film, free of plasticizers such as acrylic acid, comes with excellent aging resistance and maintains toughness and flexibility over a wide temperature range. Its dense film surface is also easy to clean; non-reactive and inert; resistant to stains, graffiti and fire, as well as fading, chalking and cracking; and safe and environmentally friendly, making it ideal for a wide range of industries and applications.

Used for Over 50 Years in These Applications

Architecture

Resistant to fading, cracking, mold and mildew, Tedlar® film can help prolong the life and aesthetics of both interior and exterior constructions. It can be used for metal roofing, curtain walls and ceilings, wall exteriors and interiors, membrane fabric materials and highway sound barriers.

Aerospace

With its durability, colors and resistance to stains and chemicals, Tedlar® film provides excellent surface protection for aerospace applications such as aircraft interiors and composite parts.

Transportation

An easy-to-clean surface that resists weathering, ultraviolet (UV) rays and harmful chemicals, Tedlar® film keeps vehicles and vessels looking their best. Transportation applications include automobile trim, brake tube coating, fiberglass reinforced plastic (FRP) and aluminum board protection for trucks and trailers.

Photovoltaics

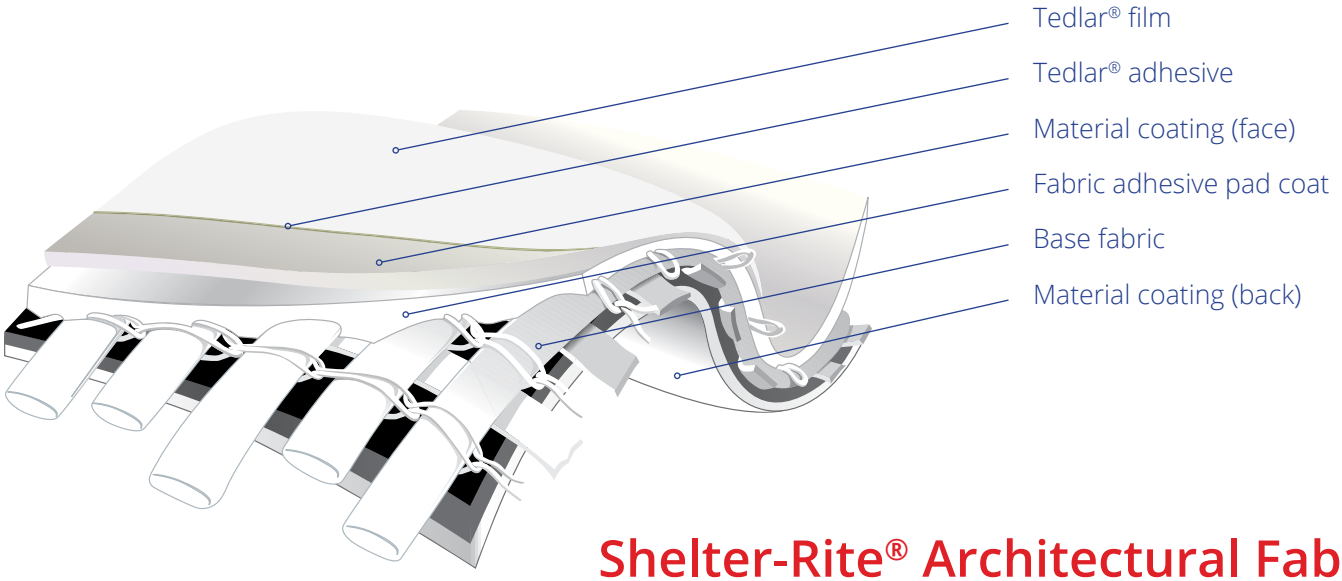
The high-performance protective film is ideal for photovoltaic module backsheet in solar panels. The use of Tedlar® film in photovoltaics dates back 40 years to some of the very first photovoltaics made. It is used in extreme heat and environmental challenging conditions.

Signage

Long-lasting and resistant to graffiti and pollution, Tedlar® film preserves the appearance of graphics in even the most harsh environments, making it the perfect choice for indoor and outdoor graphic overlays, awnings and advertising signage.

Tedlar® Films for Architectural Fabrics

Composition of Shelter-Rite® Architectural Fabric membrane



Shelter-Rite® Architectural Fabric with Tedlar® Film

Seaman Corporation®, a pioneer in using the Tedlar® PVF film products for their flexible PVC-coated fabrics; made the first Tedlar®-coated architectural fabric in the mid-70s. Seaman has perfected the application of the Tedlar® film to Shelter-Rite® Architectural Fabric, eliminating any concerns of delamination. We are so confident in the Shelter-Rite® bonding process that we include protection from delamination in our 20-year warranty for Tedlar® materials.

Shelter-Rite® Architectural fabric with Tedlar® film can be used to form membrane fabric structures at much lower construction costs than steel. With excellent weatherability and dirt-shedding properties, membrane fabric is a cost-effective material for buildings like stadiums, convention centers, commercial facilities and transportation hubs.

Tedlar® Features

Durability

Tedlar® film delivers excellent weatherability and proven protection in a number of practical applications.

Style

With ultra-low color differences, a smooth and fine texture and excellent formability, Tedlar® film is stylish and aesthetically pleasing from installation until its removal. Its matte surface finish even prevents light pollution.

Easy to Clean

Non-sticky and stain resistant, Tedlar® film can withstand all types of dirt and grime. Chemically inert, the film can be cleaned with various cleaning agents and requires little maintenance.

Safety

Tedlar® film is non-flammable and non-reactive, and prohibits bacterial growth. Additionally, it produces minimal volatile organic compound (VOC) emissions during processing.

Durability

Tedlar® film has delivered excellent weatherability and proven protection in a number of practical applications. The combination of Shelter-Rite®'s UV resistance and abrasion resistance contributes to the long-term durability. It is used for applications that will be in use 20+ years.

Tennis Center, Chaoyang Park
Beijing, China

Three Shelter-Rite® Architectural Fabric structures with Tedlar® film, first one installed in 2006, followed by the second in 2008 and the final one in 2014. Despite the heavily polluted environment, the earlier ones installed remain unchanged in color and all three air bearing structures look new.

United Airlines, Honolulu Cargo Storage Hangar
Hawaii, USA

Used to store cargo being shipped to and from Japan and the Mainland, this structure is the largest of its kind in Honolulu. A Tedlar® top-finish on the fabric enhances its ability to resist the effects of long-term exposure to UV rays and damaging jet fuel fumes, and sheds dirt for a long-term attractive appearance.

Enduring Color

Tedlar® dramatically extends the membrane's lifespan and maintains its visual integrity by guarding against harmful UV rays and airborne contaminants.

Shelter-Rite® Tedlar® coated fabrics are available in a large selection of colors, and come with a 20-year pro-rata guarantee.

Sprung Instant Structures
Aldersyde Campus
Alberta, Canada

Sprung Structures' Aldersyde campus upon installation, featuring a Shelter-Rite® Tedlar® exterior in the color Bayberry.

The Tedlar exterior today shows little difference to when it was installed.

Buckley Recreational Field
Drexel University (left)
Pennsylvania, USA

Airline Maintenance Hangar
Boston/Logan Airport
Massachusetts, USA

Tedlar® coating keeps this air-supported athletics dome at Drexel a beautiful addition to the University's outdoor space.

This Delta Air Lines hangar in Boston has stood up to fumes, jet fuel and other harsh environmental contaminants since 2001.

Case Study: Paddock Golf Dome

The Paddock Golf Dome is a recreational Air Supported Dome that was made from the Seaman Corporation style 8028 FRLTC, DC-184 Trans-White, with Brite-White Tedlar on the exterior side of the material.

Paddock Golf Dome
Tonawanda, NY USA

Material:
8028 FRLTC DC-184, Brite-White Tedlar

Installed:
2002

Tested:
2019

The structure was installed in 2002 and the building was replaced in 2019. Replacement of the building was driven by the need for improvements in the anchoring system that held the cable net to the ground. The 8028 BW Tedlar material still looked in very good shape.

Samples of the old fabric skin were collected and tested to determine the overall condition on the material after 17 years of continual service. Samples were taken from all 4 sides of the building and from the top/center of the dome.

The physical testing of the 5 samples indicated that the material had maintained nearly all of its original properties as seen from the table below:

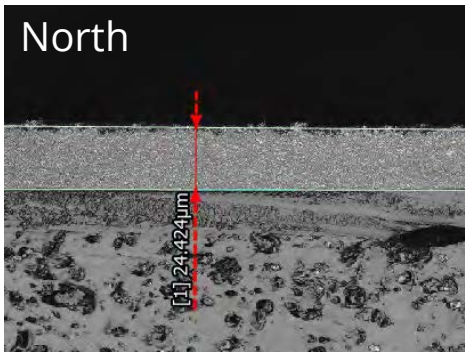
Property	Original Specification	North side	South side	West side	East side	Top/Center
Weight oz/yd²	28.0 ±2.0	29.5	28.2	28.8	28.7	28.1
Strip Tensile lbs per in (warp/fill)	515/ 515	532/ 487	503/ 461	505/ 463	514/ 481	458/ 467
Elongation at Break % (warp/fill)	20/ 30 min.	23/ 41	24/ 35	25/ 37	26/ 41	23/ 29
Trapezoid Tear lb (warp/fill)	85/ 85	91/ 124	82/ 130	108/ 143	98/ 125	89/ 117
Low Temp. Cold Crack	Pass @-40° F	Pass	Pass	Pass	Pass	Pass
Flame Resistance	2.0 sec. max. flameout	0.9 sec	1.0 sec.	1.0 sec.	1.0 sec.	0.8 sec.
Light Transmission at 650nm	10-12%	11.05%	10.64%	12.67%	10.88%	10.46%

Case Study: Paddock Golf Dome

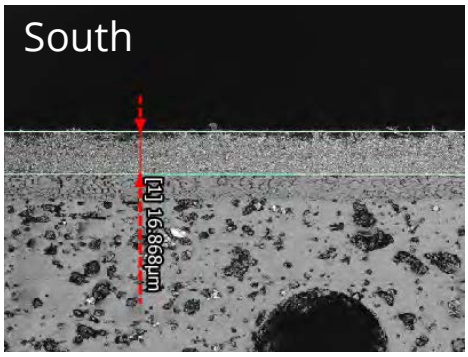
(continued)

The results from testing the 8028 FRLTC, DC-184, Brite-White Tedlar, after 17 years of continuous service, show that the fabric maintains most of its original properties. This is directly related to the protection that the Brite White Tedlar provides to the PVC coated Polyester fabric. The Tedlar prevented any significant loss of plasticizer from the material; as observed by no weight loss and maintaining the Cold Crack properties. The BW Tedlar also provide UV protection to the PVC compound and the Polyester fibers as seen from the Tensile, Elongation, and Tear properties. In addition, the BW Tedlar provided great self-cleaning properties identified in the retention of the high light transmission of over 10%.

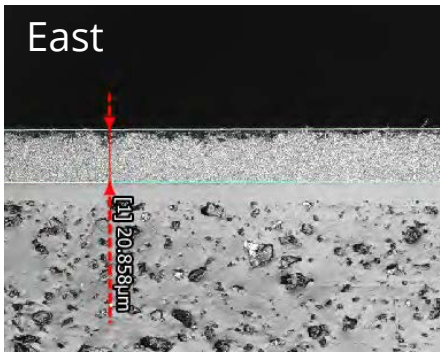
The protection of the Brite White Tedlar film can also be observed when examining the samples under a microscope. Each sample was prepared by cross-cutting the sample and looking at it under the microscope. Measurements of the BW Tedlar film thickness, over the PVC compound were taken and compared to the original film thickness of the BW Tedlar film; original thickness is 23.5 µm.



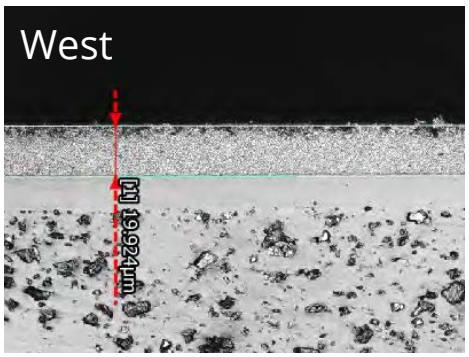
Film Thickness, after wear: 24.4 µm



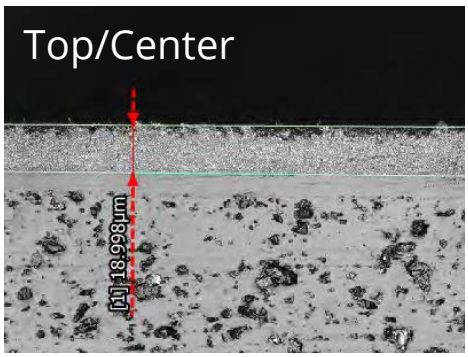
Film Thickness, after wear: 16.9 µm



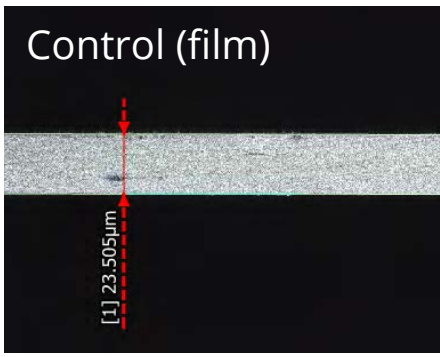
Film Thickness, after wear: 20.9 µm



Film Thickness, after wear: 19.9 µm



Film Thickness, after wear: 19.0 µm



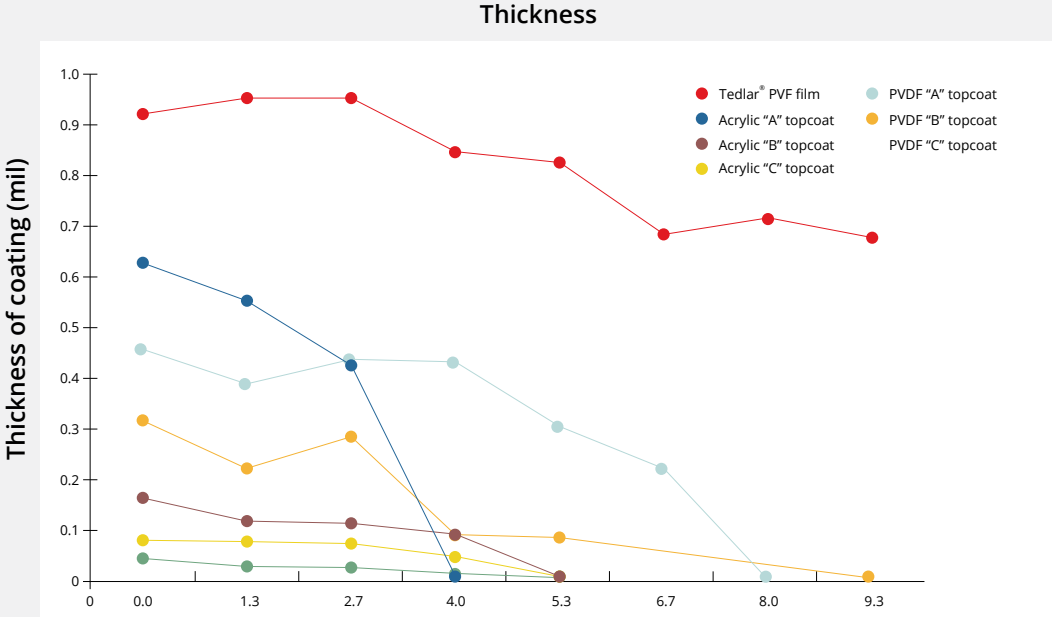
Original Film Thickness: 23.5 µm

Analysis By: Lucas Amspacher & Nate Schwartz
Notebook Number: 2019_079
Date: August 20th, 2019
Courtesy, Dupont de Nemours, Inc

Weather Resistance

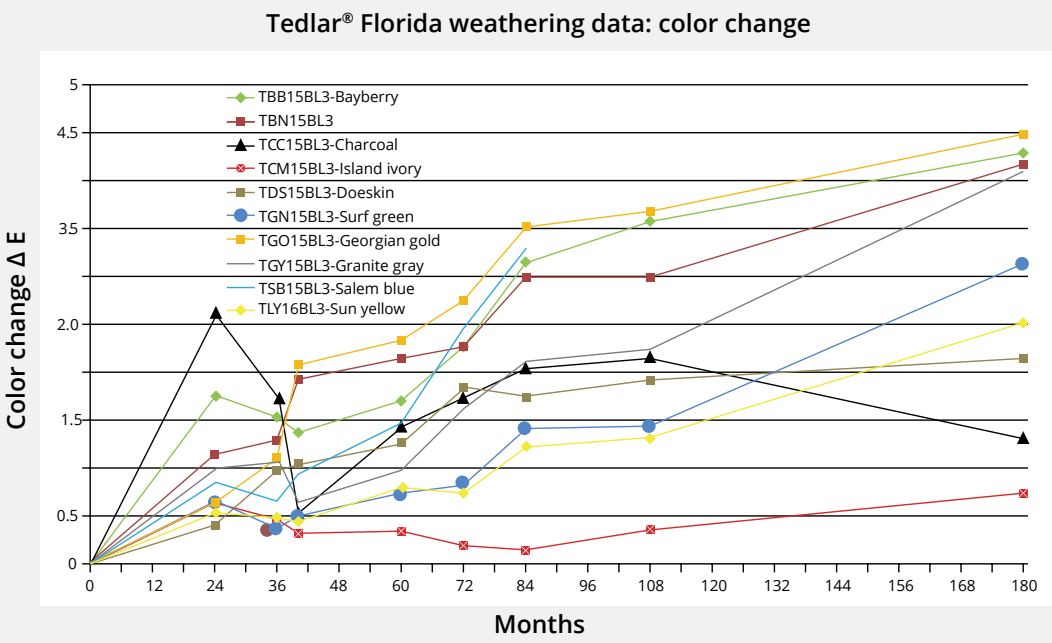
Test results show that, compared with the surface protection coatings such as acrylic and PVDF top finishes, Tedlar® film can better resist UV and acid rain. It also prevents dust buildup and retains its thickness, color and gloss for a longer time, thus maintaining the building's original appearance.

Thickness retention under accelerated aging and UV exposure



15-year Florida weather exposure test

Florida's outdoor exposure field is recognized in the industry as a standard test site for assessing the weatherability of coatings. Ten-year Florida exposure is an important indicator of the American Architectural Manufacturers Association (AAMA) 2605, which is the highest weatherability rating for PVDF. Not only has Tedlar® film passed the 15-year Florida exposure test (color difference E < 4.5), but its color stability and weatherability rating is 50% higher than ordinary PVDF.



Style

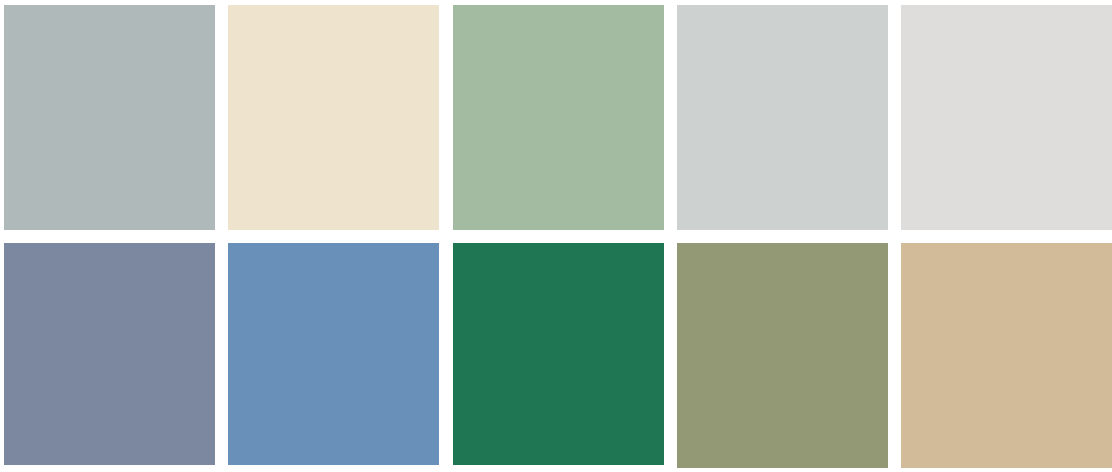
Tedlar® film's lot-to-lot color reproducibility is controlled to a delta of <0.5.

Seaman Corporation offers a line of 10 DuPont™ Tedlar® (PVF) film color for the entire line of Shelter-Rite® Architectural Products.

Shelter-Rite® Tedlar® standard colors

(top row, left to right):
Granite Gray, Sand Stone, Spruce Green, Misty Gray, Dawn Gray

(bottom row, left to right):
Salem Blue, High Sky, Highway Green, Bayberry, Desert Sand.



Easy to Clean

Tedlar® is stain resistant and chemically inert, so it can be completely cleaned with a cleaning agent, even when exposed to stubborn stains such as spray paint or caulking compound.

Stain resistant and non-sticky

Tedlar® film resists all types of dirt, including bird droppings, water marks, paint, cooking fumes, grease, dust, acid rain and more.

Chemically inert

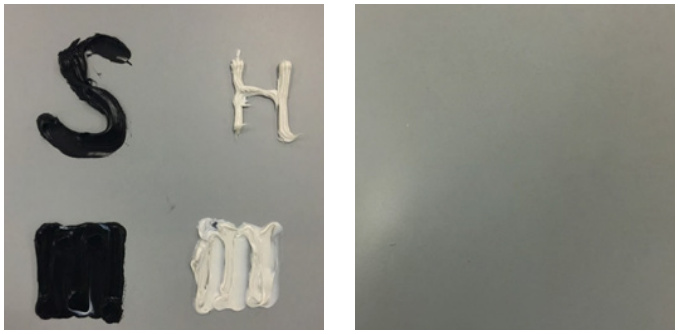
Tedlar® film can stand up to a wide variety of detergents and strong solvents to remove stains such as asphalt, tar, grease, paint or caulking compound. Fabric with Tedlar® resists attack from graffiti removers, allowing for easy and safe cleaning.

Self-cleaning

Contaminants can be easily washed away by rain water, keeping the building's appearance fresh and new, and reducing cleaning and maintenance costs.

Caulking compound and solvent cleaning test

Paint and caulk applied to Tedlar® film, before and after cleaning.



Safe

Excellent fire resistance

Tedlar® film is inherently flame resistant and does not contribute to the flammability of the coated fabric.

Exceptional bacteria resistance

Tedlar® film does not support the growth of bacteria, mold and mildew.

Long-term Performance

Because of its durability, it is the only product that effectively self-cleans throughout its entire lifespan—a factor that extends its usable lifespan and helps it to remain aesthetically pleasing beyond the range of competitors.

clockwise from top:

Martensville Athletic Pavilion
Saskatchewan, Canada

Arizona Cardinals Practice Dome
Arizona, USA

Tension Awning, Prisoner Wine Vineyard
California, USA

next page:

Private Office Structure
Washington, USA

Shelter-Rite®
ARCHITECTURAL FABRICS
BY SEAMAN CORPORATION

Shelter-Rite® Architectural Fabrics with Tedlar® PVF Film

Choose the Right Material for Your Structure

When looking at the long-term performance of your structure, the initial design criteria for architectural fabric structures is critical. To ensure the performance of the structure, you must give consideration to tensile strength, flame resistance, weight, coating adhesion, type of coating and top finish.

UV light, acid rain and other environmental elements can affect the performance of your structure. These elements can degrade the coating and top finish, resulting in exposure of the base cloth. A properly engineered architectural fabric will be designed to protect from the damage caused by these elements. That's where the top finish comes in.

In addition to providing another layer of protection, a top finish improves the cleanability of your structure. Unlike standard top finishes, Tedlar® provides color stability and exceptional protection of the architectural-coated fabric.

Simply the Longest-Lasting Fabric of its type in the World

- Superior UV & weather stability/outdoor durability
- Chemical /solvent resistant
- Stain / graffiti resistant
- Cleanability
- Mold & mildew resistant
- High thermal stability
- Low gas/vapor permeability
- Low toxicity & volatiles
- Hydrolytic stability
- High light transmission
- Excellent flame & smoke rating
- Multiple color options

DuPont™ Tedlar® Films

DUPONT

Shelter-Rite®
ARCHITECTURAL FABRICS
BY SEAMAN CORPORATION

www.ArchitecturalFabrics.com

MADE IN THE USA

a product of Seaman Corporation
1000 Venture Blvd. | Wooster, Ohio 44691 USA | www.SeamanCorp.com
Phone 330.262.1111 | U.S. Toll-Free: 800.927.8578