Properties of Tedlar®

July 2020

DUPONT™

What is Tedlar®?

Tedlar® is a DuPont registered trademark for a **highly versatile polyvinyl fluoride (PVF) film** that provides a long-lasting finish to a wide variety of surfaces exposed to harsh environments; while its inert, non-stick properties make it an excellent release film.

DUPONT™

Tedlar®

Why Tedlar®?

Interiors

- ✓Cleanability
- ✓Chemical/solvent resistant
- ✓Stain/graffiti resistant
- ✓Excellent flame & smoke rating
- ✓Long term protection
- ✓Endurable style
- ✓Excellent formability
- ✓Does not support the growth of Mold and Mildew
- ✓Heat sealable
- ✓Ink & print receptive

Exteriors

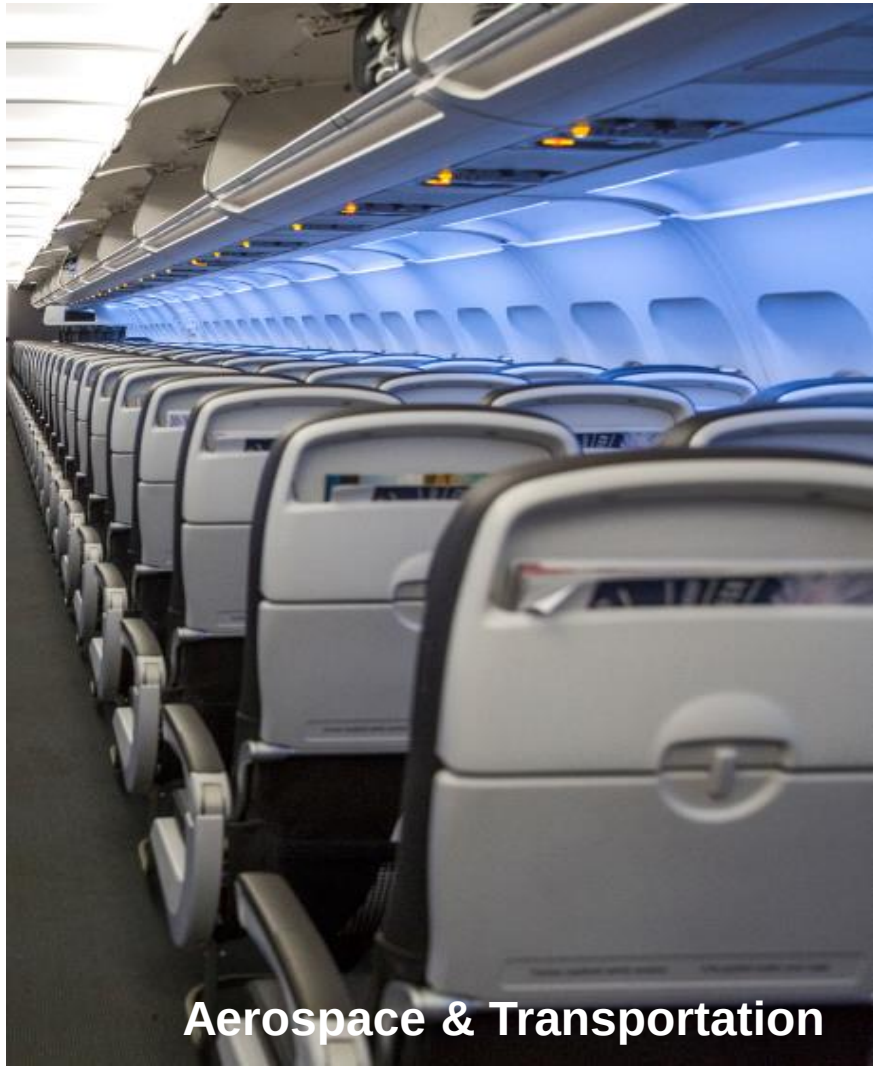
- ✓UV & weather stability
- ✓Chemical resistance
- ✓Stain/dirt resistant
- ✓Temperature stability
- ✓Colour stability
- ✓Range of surface gloss
- ✓Low toxicity & volatiles
- ✓Bendability
- ✓Low gas/ vapor permeability
- ✓Sound transmitting

DUPONT™

Tedlar®

Tedlar® PVF Applications

Proven applications, globally, for over 50 years

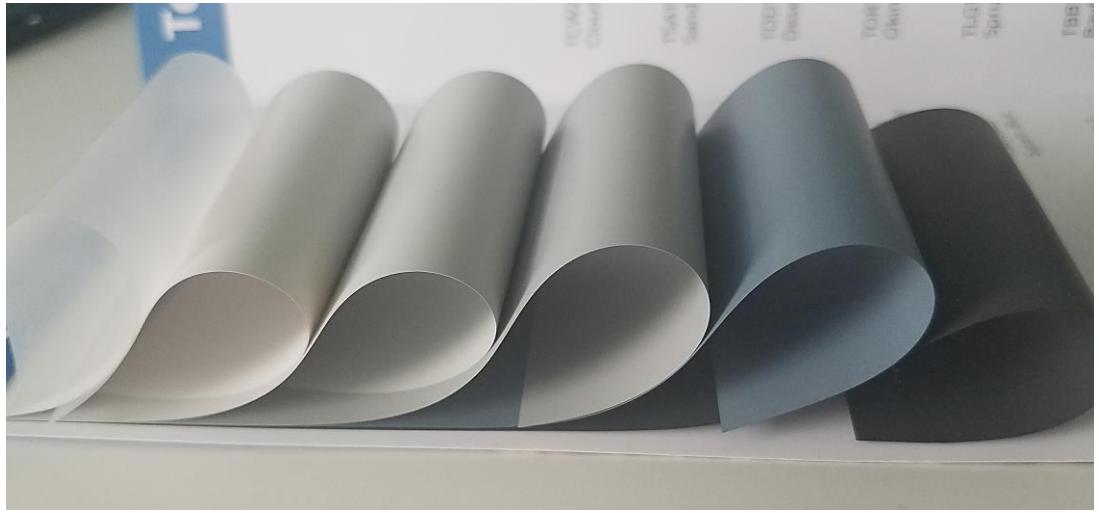


DUPONT™

Tedlar®

Overview of Properties

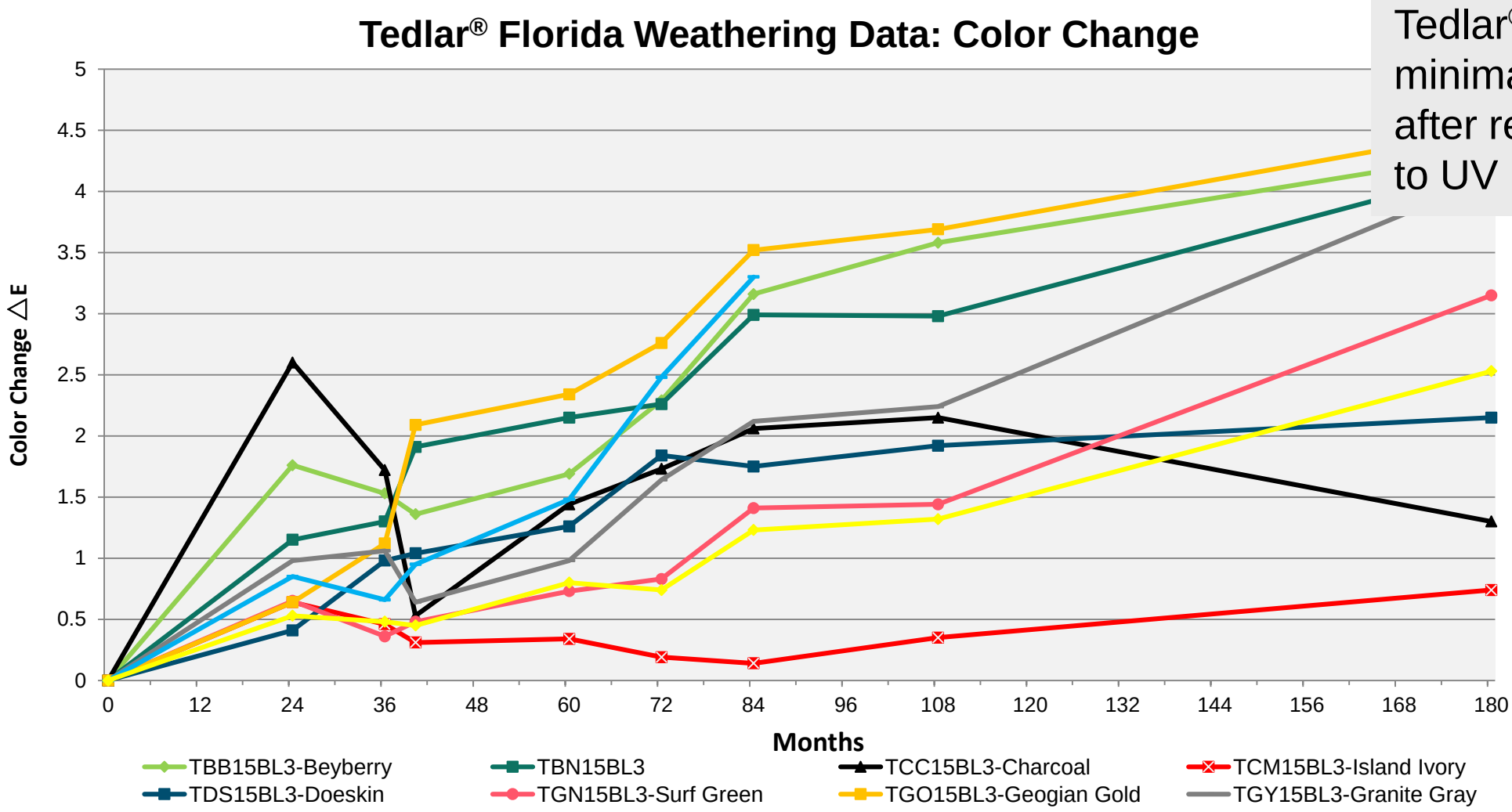
- UV Durability & Weathering
- Processing and Corrosion Resistance
- Chemical Resistance
- Cleanability & Stain Resistance
- Mold, Mildew, and Bacteria
- Flame and Smoke
- Elongation and Formability



DUPONT™

Tedlar®

UV Durability – 15-year Exposure Test in Florida



Tedlar® PVF Film shows minimal color changes after repeated exposure to UV

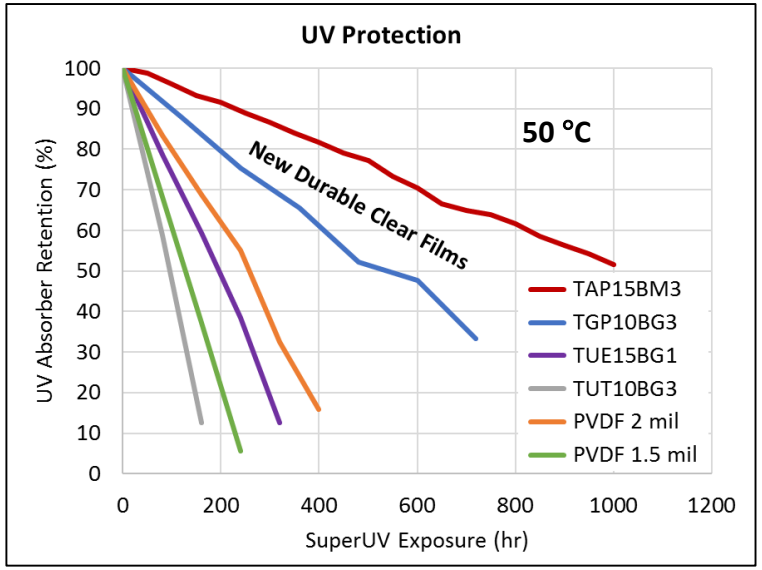
DUPONT™

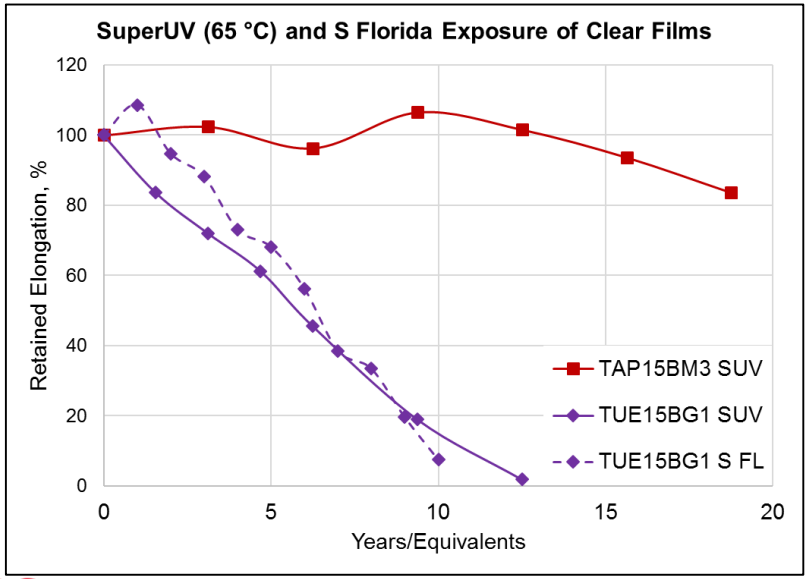
Tedlar®

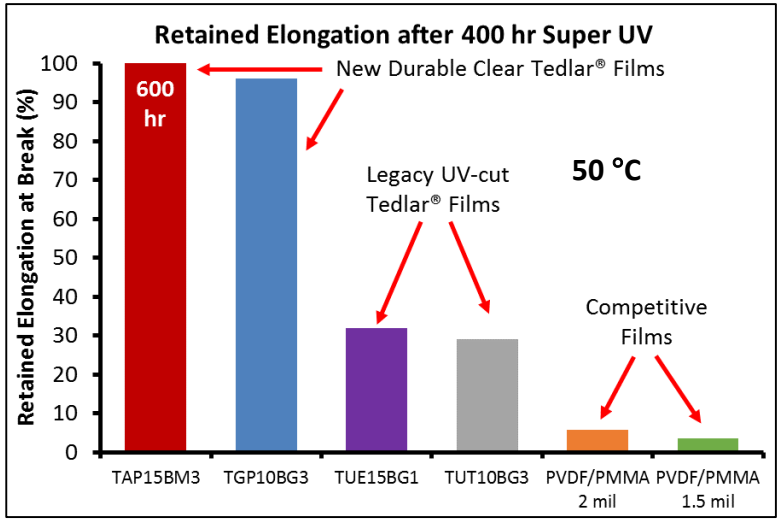
Tedlar® Clear Films Have Superior Performance

Our clear films have superior performance in properties critical for architectural protection (TAP15BM3) and graphics (TGP10BG3).

- Higher retention of UV protection
  - Prevent color change and loss of adhesion
- Better retention of elongation
  - Crack and peel resistance of clear topcoat



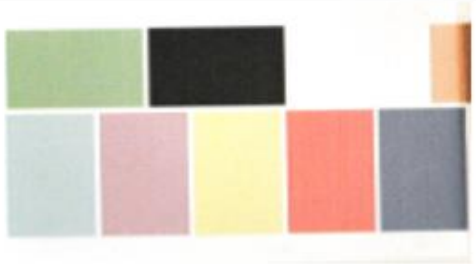




DUPONT™

Tedlar®

Accelerated Weathering of TGP10BG3 on Colored Prints

Time in QUV-UVA	Bare Digital Print	TGP10BG3	PVDF Clear Film
Initial			
3000 hr			
6000 hr			
8000hr			

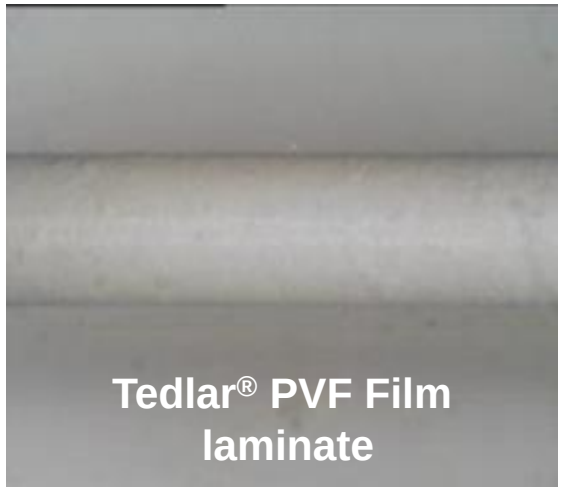
DUPONT

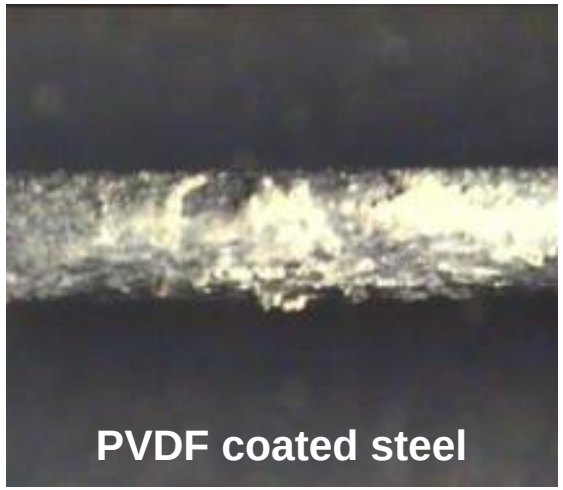
dlar®

Superior Processability & Corrosion Resistance

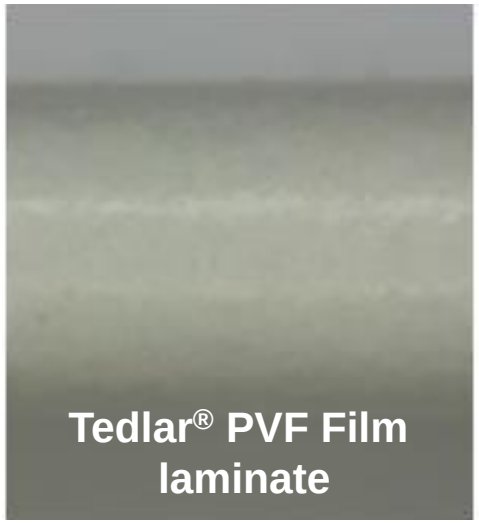
Tedlar® PVF Film vs. PVDF Coating:

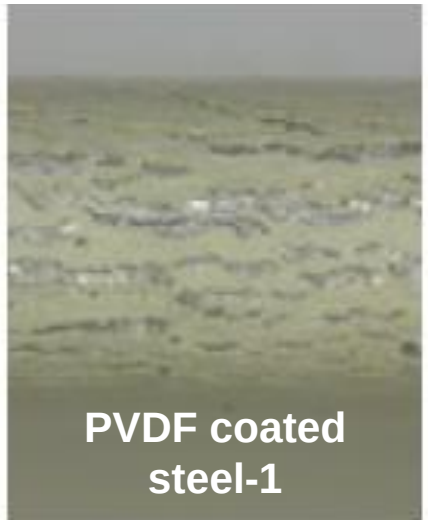
Salt spray 2,000hrs (0T bending)

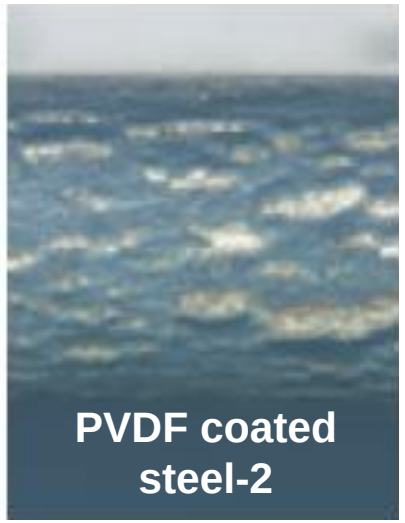




0T bending test
(magnification by 40 times)







Tedlar® PVF film has excellent formability, allowing for Zero T-Bend without mircocracking even after applying a salt spray. Polyvinylidene fluoride (PVDF) coatings crack when trying to achieve extreme bends, but the elongation properties of Tedlar(R) film allow for unlimted designs.

DUPONT™

Tedlar®

Chemical Resistance

Tedlar® PVF Film vs. PVDF Coating:

Acid and Alkali Immersion Test

PVDF Coated Steel

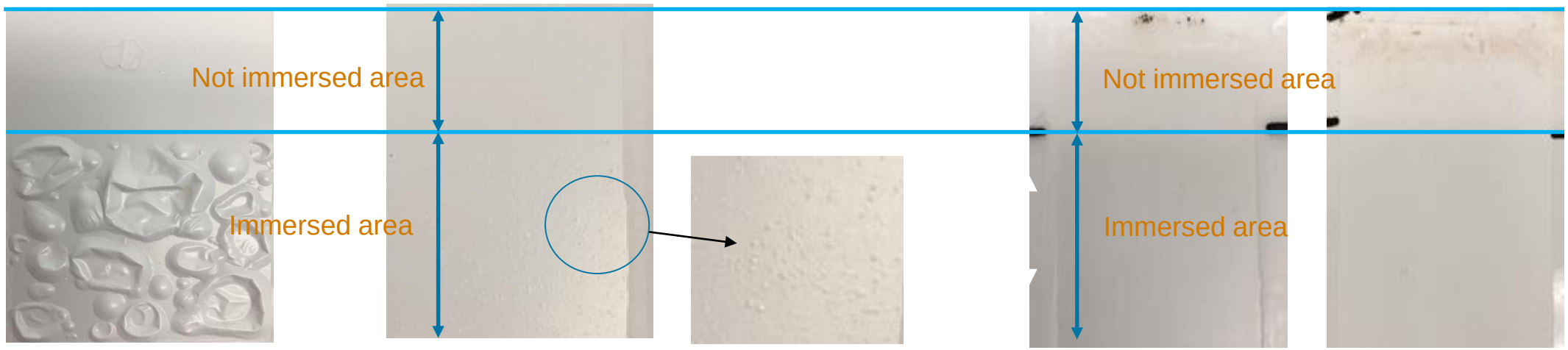
5% HCl, 168 hrs

10% NaOH, 336 hrs

Tedlar® Film Laminate

5% HCl, 1,000 hrs

10% NaOH, 1,000 hrs



Bubbling on the surface

Bubbling on the surface

Only Tedlar® PVF film provides superior protection to steel!

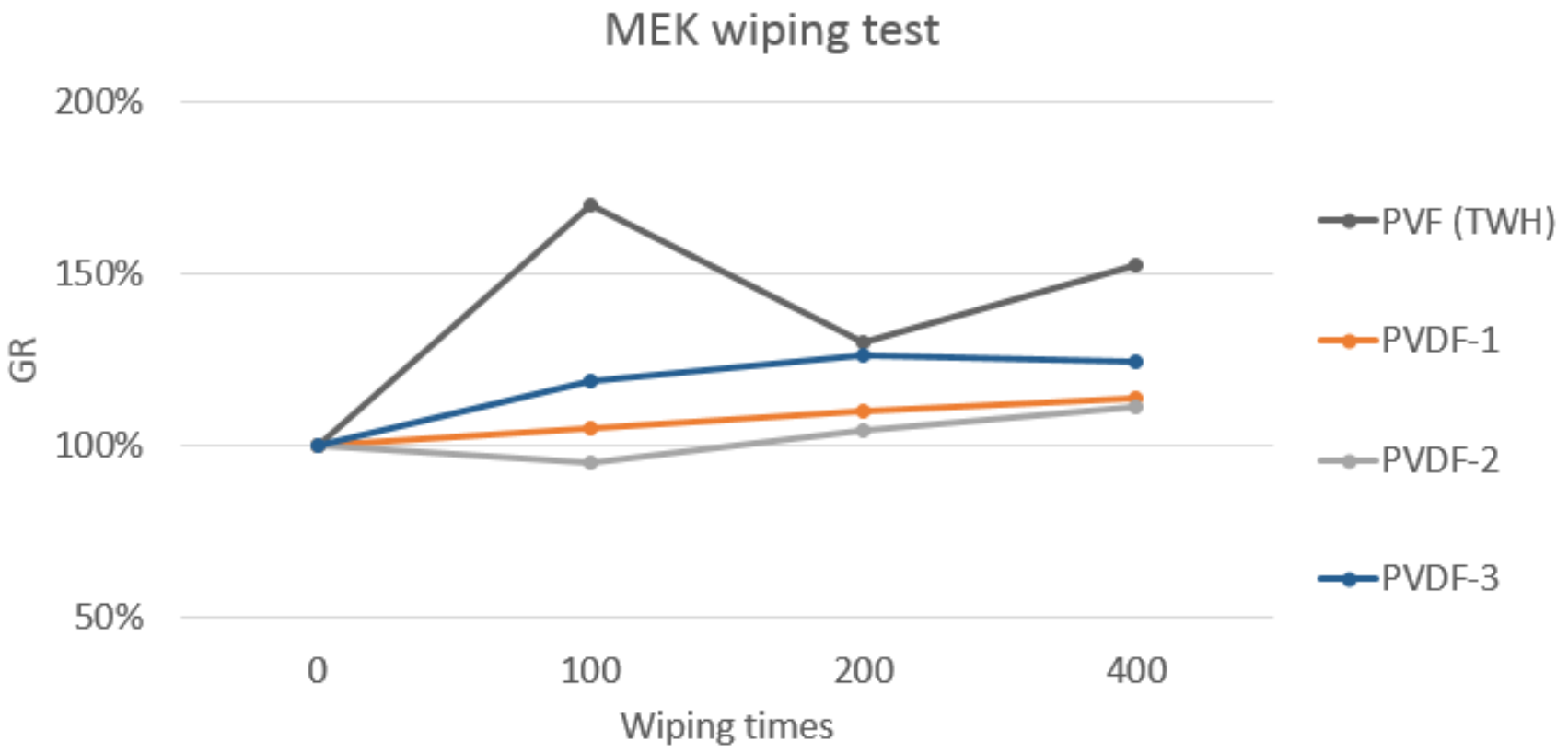
DUPONT™

Tedlar®

Chemical Resistance

Tedlar® PVF Film vs. PVDF Coating:

MEK Wiping and Gloss Retention



Tedlar® PVF film has excellent solvent resistance allowing it to withstand detergents and commercial grade cleaners.

DUPONT™

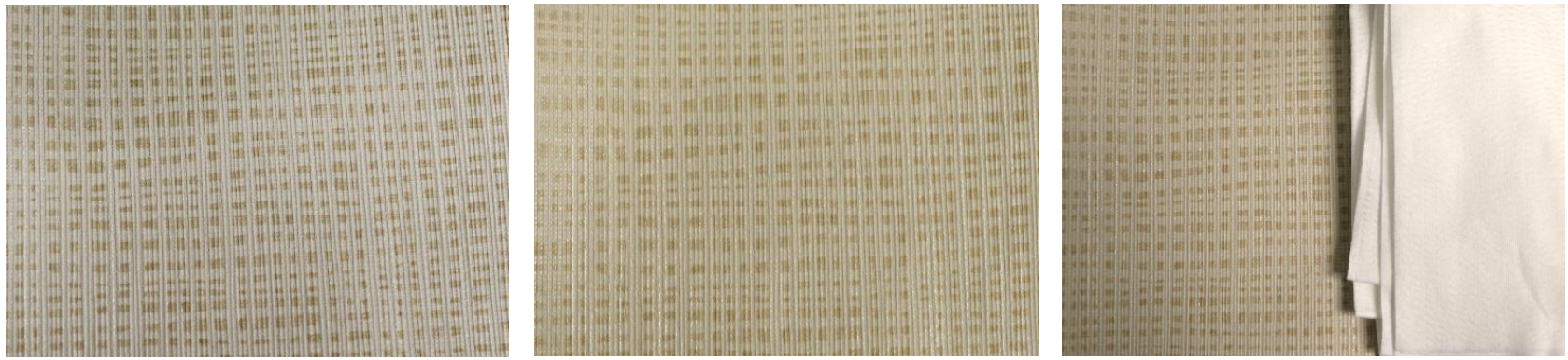
Tedlar®

Chemical Resistance

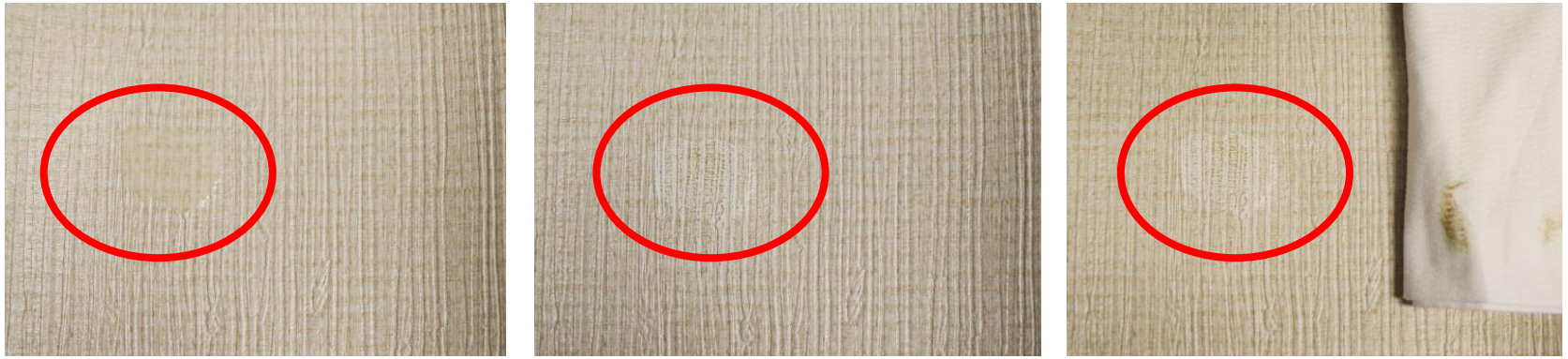
Tedlar® PVF Film vs. Vinyl:

Acetone Test

Tedlar™ Wallcovering



Standard Vinyl Type II Wallcovering



- Acetone was applied to both wallcoverings in equal amounts and let to rest for ~4 hours.
- The acetone evaporated from the Tedlar™ Wallcovering while remaining on the standard.
- A dry cloth was then used to wipe the surfaces clean.
- The coloring from the standard wallcovering was removed in the area where the acetone sat.
- **The Tedlar™ Wallcovering remained unharmed.**

DUPONT™

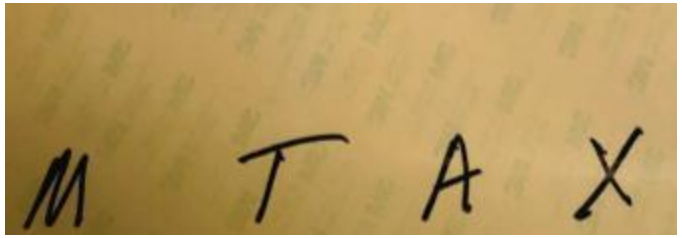
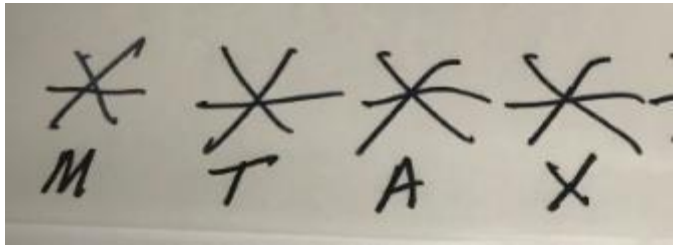
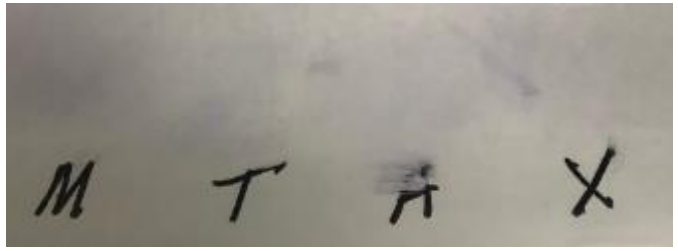
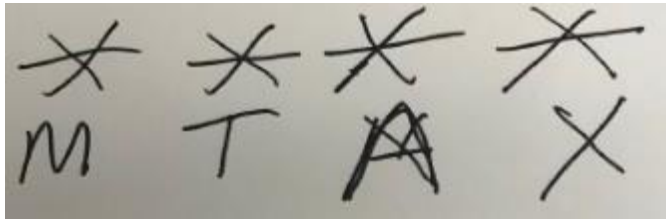
Tedlar®

Cleanability of Permanent Marker

Tedlar® PVF Film vs. Competitive:

Solvent Cleaners

Tedlar® PVF film did not show any ghosting and was not damaged during cleaning.

	Before Cleaning	After Cleaning
Tedlar® TGP10BG3		
Competitor PVDF		 Ghosting
Premium Cast PVC		Ghosting and Film damage

M = MEK
T = Toluene
A = Acetone
X = Xylene

DUPONT™

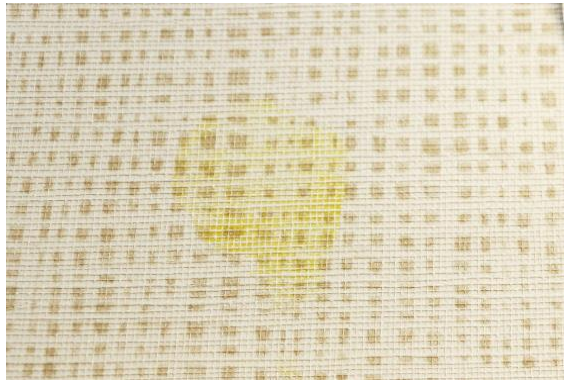
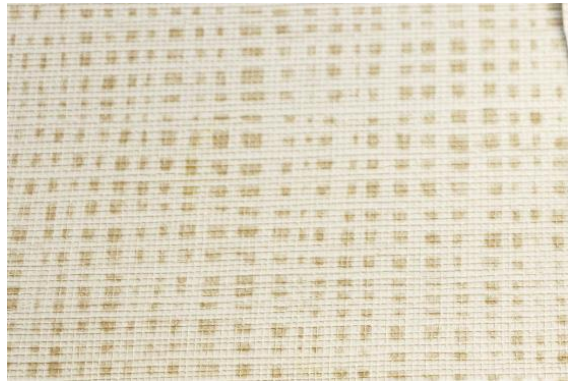
Tedlar®

Cleanability of Permanent Marker

Tedlar® PVF Film vs. Competitive:

Mustard Test

Tedlar™ Wallcovering

Standard Type II Vinyl Wallcovering

- Yellow mustard was applied to both wallcoverings and allowed to sit for ~4 hours.
- A dry cloth was then used to wipe the surface.
- The standard wallcovering was cleaned with a wet cloth and then bleach was applied, but did not come clean.
- **The Tedlar™ Wallcovering only needed to be cleaned with a wet cloth.**

DUPONT™

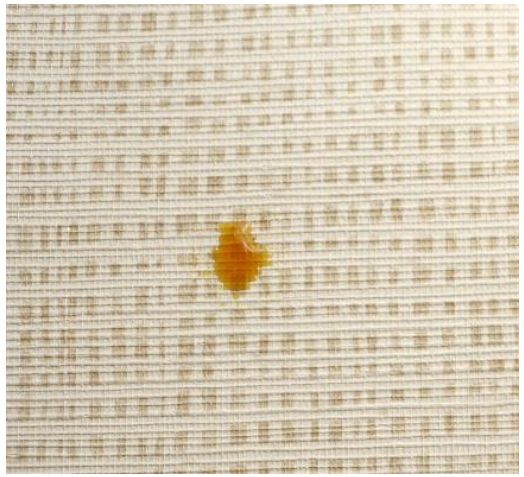
Tedlar®

Cleanability of Permanent Marker

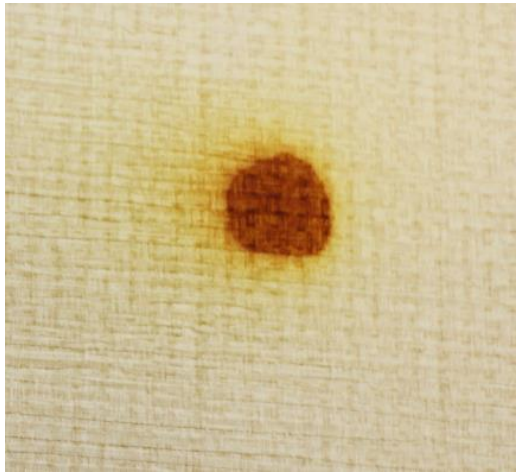
Tedlar® PVF Film vs. Competitive:

Iodine Test

Tedlar™ Wallcovering



Standard Type II Vinyl Wallcovering



- Iodine was applied in equal amounts to both wallcoverings and allowed to rest for 4 hours.
- During that time the iodine seeped into the surface of the standard wallcovering.
- The iodine on the Tedlar™ Wallcovering stayed on the surface.
- A dry cloth was used to wipe the Tedlar™ Wallcovering clean
- Not even bleach could clean the standard wallcovering.

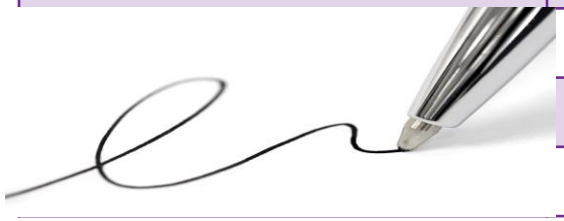
DUPONT™

Tedlar®

Staining Agents and Required Cleaning Methods

All products were applied to Tedlar® PVF film and allowed to set for 24 hours. Utilizing the following methods, all products were successfully removed from the Tedlar® film.

Dry Cloth Cleaning	Wet Cloth Cleaning	Detergent	Solvent
Acid Solutions*	Coffee	Ketchup	Ballpoint pen
Acetone	Grape juice	Black crayons	Spray paint
Butanone	Mustard sauce	Brown shoe polish	
Ethyl alcohol	Red wine	Lipstick	
Gasoline	Tea stains	White board marker	
Glycol	Worcestershire sauce	Oily pen	
Toluene	Chocolate syrup	Asphalt	
	Brake fluid	Mercurochrome	
	Iodine		
	Sodium hydroxide		



DUPONT™

Tedlar®

Mold, Mildew and Bacteria

Tedlar® PVM Film does not support the growth of mold, mildew. This is because Tedlar® does not have any nutrients to support growth and is chemically inert.

- Mold and mildew testing: ASTM G21: Standard Practice For Determining Resistance Of Synthetic Polymeric Materials To Fungi
- Tedlar™ Wallcoverings are also UL Greenguard Gold certified and verified UL mold & mildew resistant.

VALIDATED
• MOLD RESISTANT PER UL 2824
UL.COM/ECV

GREENGUARD
GOLD

DUPONT™

Tedlar®

Mold Resistance

Tedlar® PVF surface shows mold-resistant Grade 1 after material aging.

Defination of Grades:

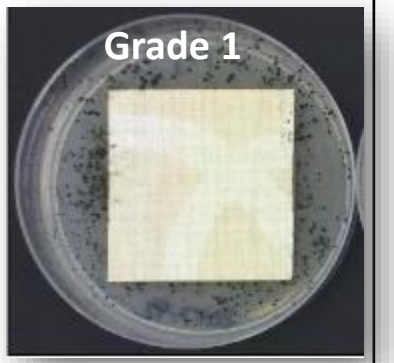
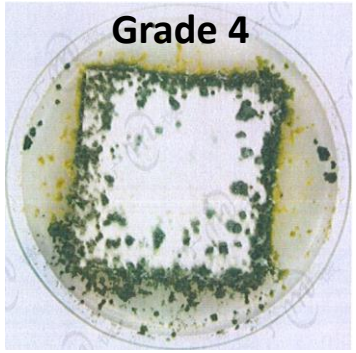
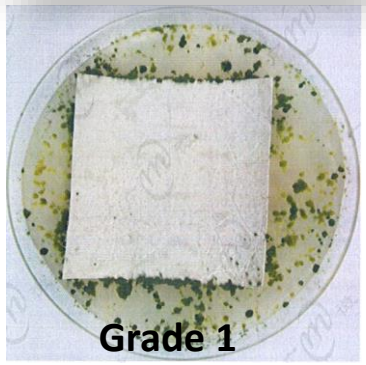
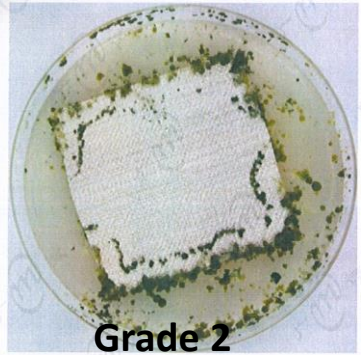
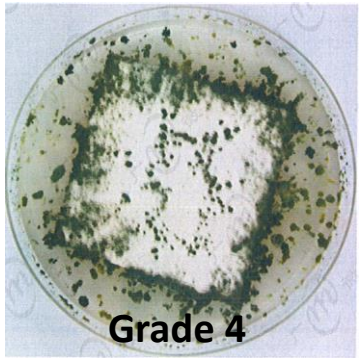
Grade 0 = No Growth

Grade 1 = Taces of growth (less than 10%)

Grade 2 = Light growth (10 to 30%)

Grade 3 = Medium growth (30 to 60%)

Grade 4 = Heavy growth (60% to complete coverage)

	Tedlar® PVF	EVOH	PP	PVC
Before aging		Grade 0	Grade 0	
After aging				N/A

Aging condition: 85℃/85% humidity， 1000 hours

DUPONT™

Tedlar®

Flame and Smoke

- Tedlar® PVF film has long been recognized as a safe material for the interior of transportation vehicles due to its low flammability and smoke development.
- Components containing Tedlar® as a protective film have performed well against current industry test protocols.
- Certified by FAA and EASA with excellent Fire Resistance
- Class A Rating for Interiors: ASTM E84 Class A and NFPA 286

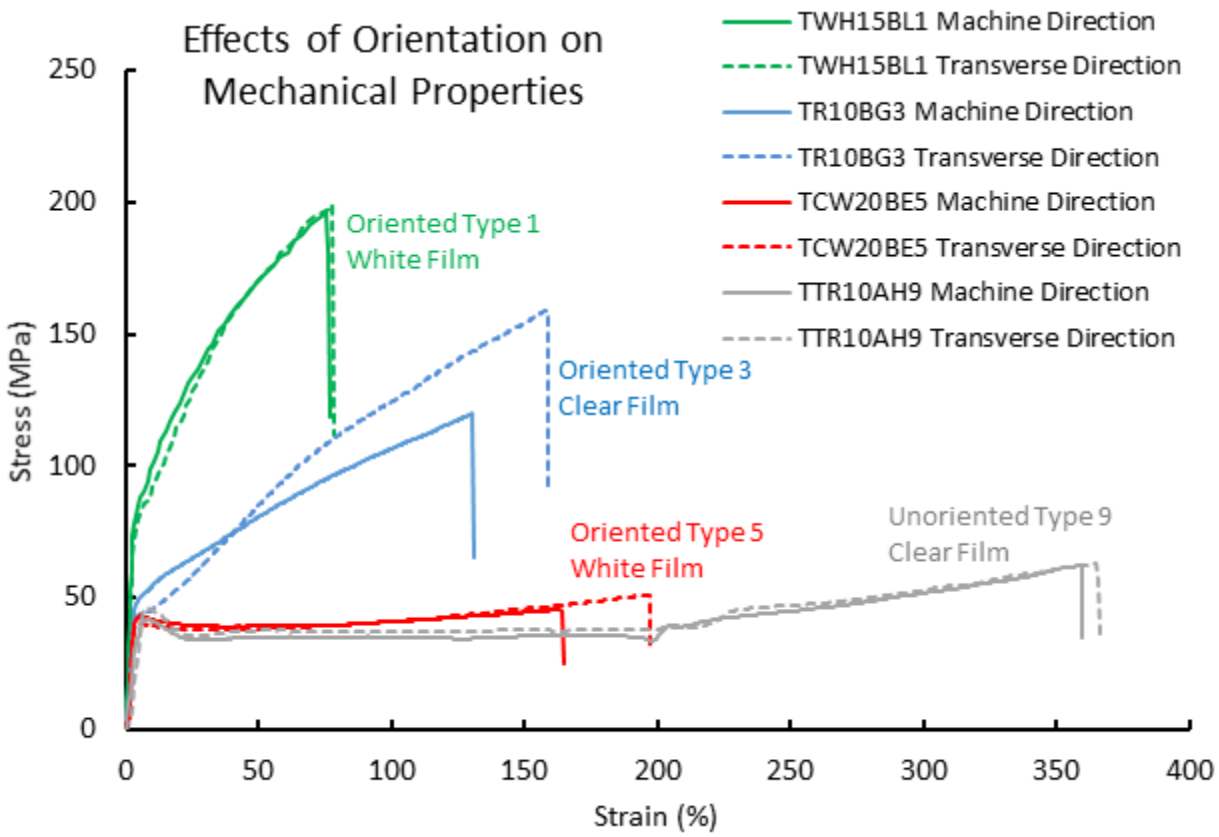
Tedlar® film is used extensively on cabin interior walls and ceilings of commercial aircraft.

DUPONT™

Tedlar®

Elongation and Formability

Tedlar® PVF film is strong, flexible and fatigue-resistant. Its resistance to failure by flexing is outstanding. Since the surface aesthetics are imparted by the film formulation, the aesthetics do not change when stretching the film for most film types.



Typical stress versus strain curves for a variety of film orientations. Lower orientation causes lower strength but greater formability.

Tedlar®

Copyright © 2019 DuPont. All rights reserved. DuPont™ and the DuPont Oval Logo are trademarks or registered trademarks of DuPont or its affiliates.

Nothing contained herein shall be construed as a representation that any recommendations, use or resale of the product or process described herein is permitted and complies with the rules or regulations of any countries, regions, localities, etc., or does not infringe upon patents or other intellectual property rights of third parties.

The information provided herein is based on data DuPont believes to be reliable, to the best of its knowledge and is provided at the request of and without charge to our customers. Accordingly, DuPont does not guarantee or warrant such information and assumes no liability for its use. If this product literature is translated, the original English version will control and DuPont hereby disclaims responsibility for any errors caused by translation. This document is subject to change without further notice.