

*Now Available
Exclusively Through*



METAL ALLIANCE

A Value Added Supplier of Metals

**ADVANCED
RESISTANCE TO
UV RAYS,
CHEMICALS, MOLD
& MORE**

DuPont™

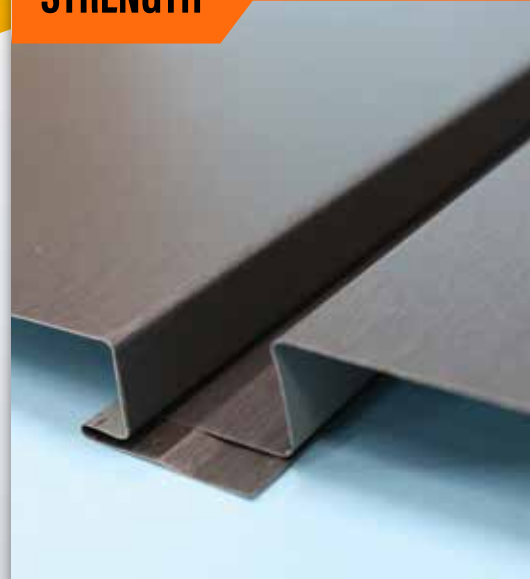
Tedlar® PVF Film

**Revolutionary Protection
for Architectural Metal
Roofing and Wall Panels**

BEAUTY



STRENGTH



DURABILITY



DuPont™

Tedlar® PVF Film

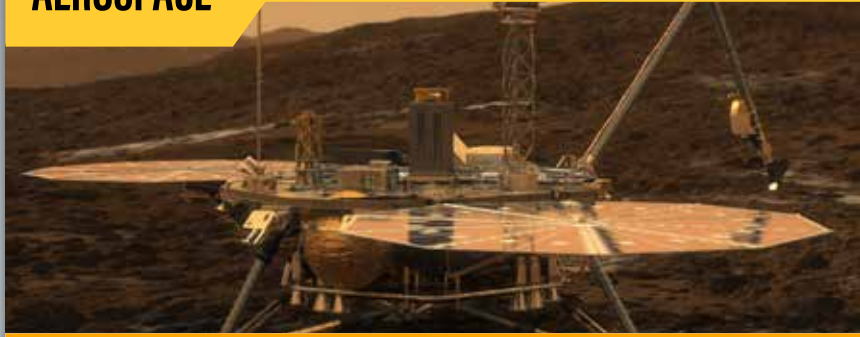
60 Years of Global Leadership in Superior Surface Protection

With its unique combination of strength, chemical inertness and weatherability, Tedlar® PVF film has provided long-lasting protection to important surfaces around the world since 1961. Trusted in a wide range of industries for its proven performance in extreme environments, Tedlar brings time-tested durability and beauty to today's architectural metal building products.

Made in the USA



AEROSPACE



HEALTHCARE



TRANSPORTATION



SOLAR



BUILDING & CONSTRUCTION



Discover Tedlar® PVF Film for Metal Roofing and Wall Panels

- ✓ Finishes that Maintain Their Appearance for Decades
 - ✓ Lot-to-Lot Color Consistency
- ✓ Surfaces Impervious to Harsh Chemicals, Solvents and Pollution
 - ✓ Does Not Support Mold, Mildew or Bacteria Growth
 - ✓ Unmatched Processability for Design Flexibility
 - ✓ Easy to Clean and Maintain & Stain-Proof

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EVOLUTION

DuPont™
Tedlar® PVF Film



1938
 DuPont researcher Roy Plunkett discovers the world's first fluoropolymer while developing fluorinated refrigerants



1947
 DuPont is granted US Patent for the process of polymerizing Vinyl Fluoride into Polyvinyl Fluoride (PVF)



1960
 California Dept of Public Works begins testing weatherability of PVF film on highway signs



1963
 Boeing first uses Tedlar PVF film for aircraft interiors



1978
 Tedlar film-based backsheets developed for protecting solar panels



1990
 Tedlar introduced as primer surface for automotive components



TODAY
 DuPont™ Tedlar® PVF Film is trusted around the globe as the high-performance surface protection standard

1901
 Vinyl Fluoride first synthesized by Belgian chemist Frederic Swarts



1942
 Polyvinyl Fluoride invented by DuPont



1958
 First PVF films developed for release applications



1961
 DuPont receives original registered trademark for Tedlar® PVF film and officially introduces it for commercial use



1965
 Tedlar PVF film enters the home improvement market as a protective finish for siding



1981
 Wall coverings with integral protective Tedlar PVF film introduced in healthcare industry



2007
 NASA's Phoenix Mars Lander uses Tedlar PVF film as part of its bio barrier



DECADES OF ADVANCED PROTECTION

Unlike other finish warranties that require a minimum 1500 ft. setback, metal roofing and wall panels finished with Tedlar® PVF Film are covered even for projects located directly on the shorefront.



- ✓ No Saltwater Corrosion
- ✓ No Cracking, Blistering or Checking
 - ✓ No Fading
 - ✓ No Chalking
- ✓ No Coastal Restrictions on Aluminum!

†Talk with a Metal Alliance representative for full warranty details and restrictions.



TEDLAR® ADVANTAGES

Tedlar's unique molecular structure offers the ultimate protection against UV rays, acid rain, sea water and salt spray, harsh chemicals, graffiti, pollution and more. Retaining its superior physical, chemical and mechanical properties after years of exposure, Tedlar PVF film allows metal roofing and exterior wall panels to maintain their original appearance for decades. Offered on all standard grades of aluminum. Custom grades and steel available for specialty applications.



DURABILITY

- ✓ Won't fade or chalk from UV light
- ✓ Resists corrosion from salt spray
- ✓ No cracking, blistering or checking
- ✓ Impact resistant
- ✓ Impervious to harsh chemicals & cleaning agents



AESTHETICS

- ✓ Maximum formability for flexible design
- ✓ Uniform, smooth, matte finish
- ✓ Remains stain-free
- ✓ Lot-to-lot color consistency
- ✓ Looks new decades after installation



EASY TO CLEAN

- ✓ Dirt-shedding and stain-resistant
- ✓ Safe to clean with strong detergents and solvents
- ✓ Removal of stains and graffiti without ghosting
- ✓ Reduced maintenance costs



ECO-FRIENDLY

- ✓ Non-reactive, inert & non-flammable
- ✓ Low smoke toxicity
- ✓ No support for mold, mildew or bacteria
- ✓ Produces extremely low VOC emissions
- ✓ LEED eligible colors available

Superior Protection Backed by a Superior Performance Guarantee

Metal roofing and wall panels made with Tedlar® PVF Film come with up to a 50-year limited warranty† against:

- ✓ Color change $\Delta E_{94} \geq 5$
- ✓ Chalk rating ≤ 6
- ✓ Visible checking, cracking or blistering
- ✓ No Coastal Restrictions‡!

Weathertight Warranties also available



†Coastal eligibility on aluminum. Term dependent on color selected. Talk with a Metal Alliance representative for full warranty details and exclusions.



GROUNDBREAKING SCIENCE

Since 1961, industries around the globe - from aerospace and transportation to healthcare and construction - have trusted Tedlar® PVF film. Demonstrating advanced protection on a variety of surfaces, the science behind the superior performance of Tedlar is an innovative balance of strength, formability and resistance.

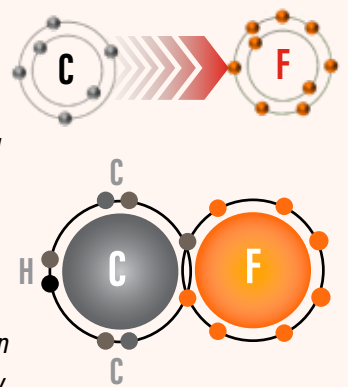
INVENTION AND DEVELOPMENT

In 1938, DuPont researcher Roy Plunkett discovered the first fluorinated polymer, or fluoropolymer, a material that would revolutionize the plastics industry. **Exhibiting extreme resistance to known solvents, acids or bases**, the new substance was characterized by one of the strongest of all chemical bonds, carbon-fluorine (C-F). Mr. Plunkett's breakthrough would give birth to widespread applications not otherwise possible and countless products used throughout the world every day.

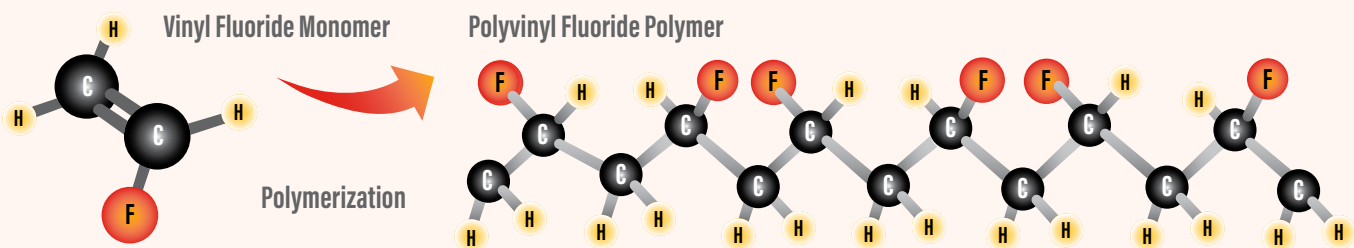
DuPont went on to successfully polymerize vinyl fluoride (VF) in 1942, creating another member of the fluoropolymer family, polyvinyl fluoride or PVF. PVF demonstrated similar chemical and thermal resistance properties to the original fluoropolymer, but with **enhanced mechanical strength making it extremely tough** and resistant to water and sunlight.

Carbon-Fluorine Bond

Fluoropolymers are distinguished by the highly powerful bonding of carbon and fluorine (C-F), considered one of the strongest bonds in organic chemistry.



Making Polyvinyl Fluoride: The Power of Repeated Attraction



The precursor of polyvinyl fluoride (PVF) is vinyl fluoride (VF), an organic compound of carbon, fluorine, and hydrogen.

During polymerization, vinyl fluoride molecules combine to produce the polyvinyl fluoride polymer, a chainlike network of repeated VF monomers. Significantly, VF's single fluorine, the most electronegative of all elements, draws electron density away from the linear carbon backbone, effectively creating **even stronger bonds when repeated throughout the PVF polymer chain.** The resulting combination of unusual strength, chemical inertness and low permeability to air and water contributes to the superior performance of Tedlar against UV light, salt spray, pollution and harsh chemicals.

By the 1950s, DuPont was developing products based on its new polyvinyl fluoride material, recognizing its unique potential as a protective film. Demonstrating steady chemical, physical and thermal properties, **PVF film could withstand harsh and corrosive environments, resist UV light and repel water.** In 1961, DuPont received the original registered trademark for Tedlar® PVF Film and officially introduced it for commercial use.

FILM COMPOSITION: UNRIVALLED BALANCE OF DURABILITY AND FLEXIBILITY

Tedlar® PVF film **outperforms all other types of metal coatings due to its intrinsic chemical properties.** The film's formula does not require a tradeoff between native resistance and additives to facilitate processing.

Paints, for example, require the addition of co-resins or plasticizers to adhere to the substrate, manage flexibility or promote uniform coating or drying. These additives, however, are susceptible to UV and chemical degradation, while also imparting nutrients that can support microbe growth, thus compromising the substrate they are meant to protect.

Tedlar PVF film is made from just two primary ingredients: polyvinyl fluoride (PVF) polymer and pigments. **PVF is the sole binder that creates the film and the central factor in its durability.** Pigments provide color and set the gloss level, both of which dictate Tedlar's ability to reflect instead of absorb solar energy and provide even greater durability.

- 100% PVF The transparent and flexible polyvinyl fluoride film requires no additives to aid in processing, using only the highly stable polyvinyl fluoride matrix. **The film can be surface treated to accept a range of adhesives;** unlike paint, the film does not require any additives to ensure adhesion to the metal. This keeps the exterior surface pure and maximizes performance outdoors.

- Color and Gloss Inorganic pigments with the highest level of inertness and durability provide color with **the extra benefit of absorbing UV light and dissipating solar energy as heat.** Gloss level is achieved using ceramic particles which roughen the surface for a smooth and matte finish that endures for many years.

- Stretching and Finishing A biaxial stretching and drying process creates a dense molecular grid for additional **mechanical strength, abrasion resistance and a smooth surface free of pinholes and other uneven formations.**

Extruded under DuPont strict quality standards, each batch of Tedlar PVF film is then certified to ensure that it meets the technical specs for metal substrate protection and batch-to-batch color uniformity.

When finished, free-standing Tedlar PVF film can be stretched in any direction to more than twice its original length without cracks, loss of adhesion or color change. This **superior formability and impact resistance** compared with painted coatings make it an ideal choice for fabricating architectural metal building products.

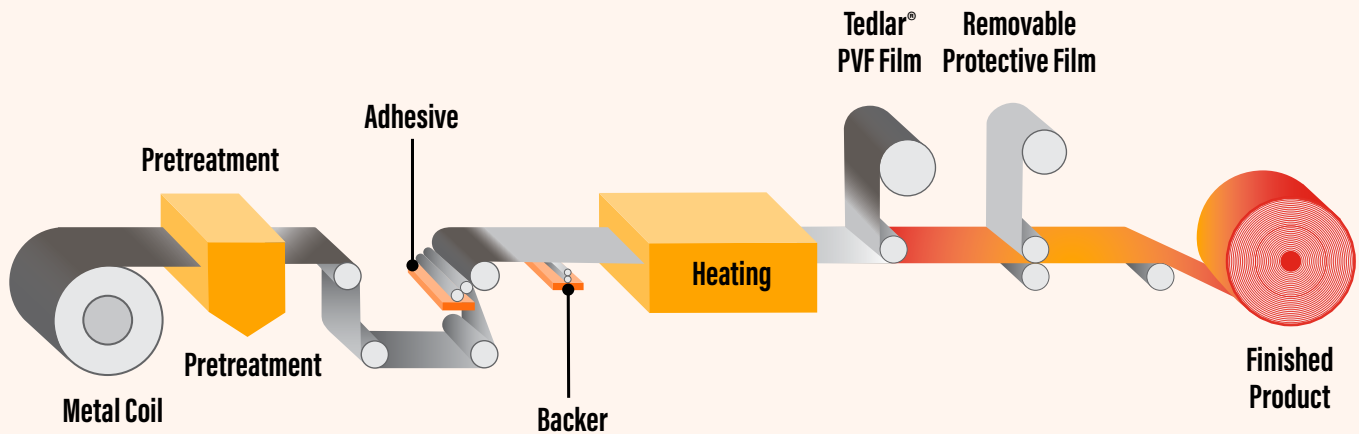
**Finished Tedlar®
PVF Film**



Inspired by Nature - The Colors of Tedlar®

ADHESION TO METAL: AN UNBREAKABLE BOND

Tedlar® PVF film is securely bonded to metal with **flexible adhesives specially chosen to resist moisture and UV radiation using a hot lamination process**. Applied in an automated, continuous fashion, the film permanently becomes part of the metal substrate, allowing the film's protective surface to expand and contract with the underlying substrate during temperature fluctuations and fabrication. **Even after extensive aging, Tedlar film cannot be removed**, ensuring a low maintenance, durable structure with superior resistance to the wind, water, sunlight, hail, acid rain, chemical exposure and pollution.



Tedlar® PVF Film-Based Metal Lamination

Protective Film

Removable, prevents damage during shipping, handling and fabrication

Tedlar® PVF film

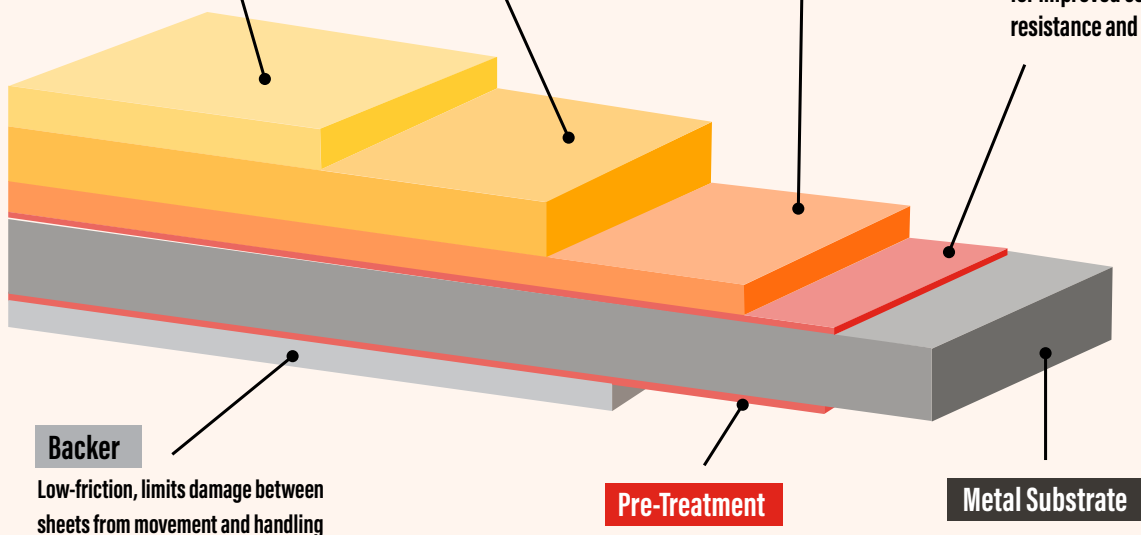
1.5 mil PVF film

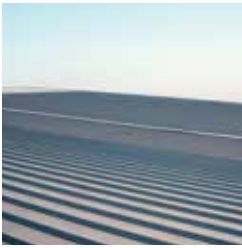
Adhesive

Flexible, durable and weather-resistant formula

Pre-Treatment

Surface cleaning and prep for improved corrosion resistance and adhesion





PERFORMANCE DATA

Colorful. Enduring. Empowering.

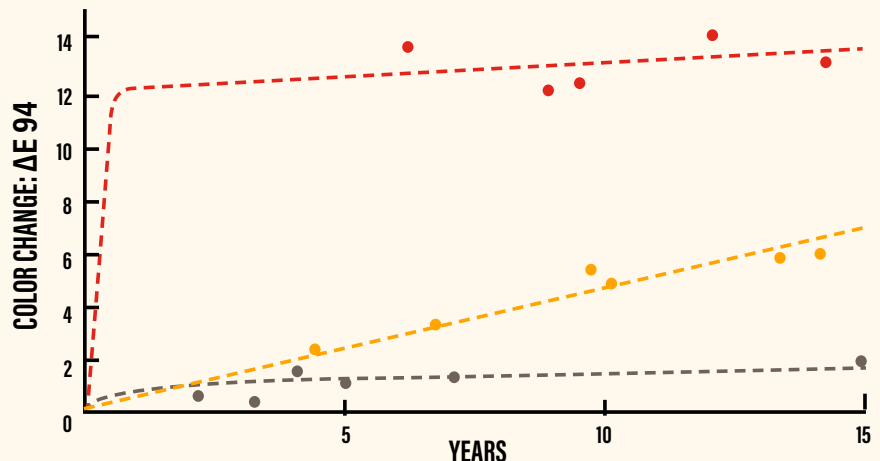
Time-tested for unmatched weather resistance and durability, Dupont™ Tedlar® PVF film offers your metal building projects the superior surface protection they deserve - all backed by rigorous ASTM testing standards.

		Granite Gray	Mist Gray	Splendid White	Verdant Green	River Blue	Midnight Black
COLOR & REFLECTANCE TESTING	Color: Lightness / Red-Green / Blue-Yellow	67.7 / -1.8 / 0.7	80.3 / -1.2 / 1.9	85.8 / -0.8 / 1.7	68.1 / -13.9 / 8.4	51.4 / -5.0 / -7.1	33.9 / -0.2 / -1.3
	Specular Gloss 85°	13	9.4	10.6	14.7	11.6	13.3
	Initial Solar Reflectance	.31	.50	.61	.34	.41	0.7
	Emissivity	0.9	0.9	0.9	0.9	0.9	0.9
	Solar Reflectance Index	32.9	57.9	72.6	36.6	45.6	3.1
PERFORMANCE TESTING	Chemical Resistance ASTM D1308	No blisters or visible changes					
	Falling Sand Abrasion ASTM D968	65±5 L/mil					
	Film Adhesion ASTM D3359	No removal of film under tape in the cross-hatched area (Dry, wet, boiling water)					
	Surface Burning ASTM E84	Meets and exceeds					
	Graffiti Resistance ASTM D6578/D6578M	Meets and exceeds					
	Humidity Resistance ASTM D2247	100 hours: Aluminum - no field blisters					
	Impact Resistance ASTM D2794	Aluminum: 5 x metal thickness inch-pounds, no loss of adhesion					
	Pencil Hardness ASTM D3363	HB - F					
	Salt Spray ASTM B117	2000 hours: Aluminum no creep from scribe, no field blisters					
	T-Bends ASTM D4145	1T-no film breakage or loss of adhesion					
SOUTH FLORIDA EXPOSURE TESTING	Chalk Resistance ASTM D4214	No less than 6 after 25 years					
	Color Change ASTM D2244	No more than 4.5ΔE Hunter units at 25 years					
	Film Integrity ASTM G7	50 years					
	Erosion Resistance ASTM D662	0.025 mils at 10 years					
SUSTAINABILITY	Solar Reflectivity ASTM E1980-11	Up to 2 LEED credits based on Index SRI value					

Built for Performance, South Florida Tested

Proven in the most extreme conditions, Tedlar PVF film is the ultimate solution against corrosion in coastal and tropical environments that experience high temperatures and humidity, sea water and salt spray. With advanced resistance to color fade and chalk over other coatings, metal surfaces finished with Tedlar will maintain their original appearance for decades.

- - - - - Polyester Paint Coating
- - - - - PVDF Paint Coating
- - - - - Tedlar® PVF Film[†]



[†] Color change performance for Midnight Black; 15-year performance ΔE < 4.5 based on color selected.



FAQs

QUALITY



WHAT'S DIFFERENT ABOUT TEDLAR® COMPARED WITH OTHER METAL COATINGS?

Tedlar® PVF film is superior to other protective coatings, including paint. With proven performance in the most extreme environments, it won't fade, chalk, crack, blister or check from UV rays, corrosion, acid rain or dirt. Aluminum applications will not experience corrosion from sea water and salt spray, including on direct oceanfront properties. Tedlar is impervious to harsh chemicals and can be fabricated to the tightest of radii without cracks, loss of adhesion or color change.

IS TEDLAR TESTED FOR PANEL PERFORMANCE IN HURRICANE ZONES?

Yes, metal roofing and wall panels made with Tedlar PVF film are UL listed, Florida Product Approved and approved for use in High Velocity Hurricane Zones (HVHZ), including Miami-Dade County.

VALUE



DOES TEDLAR PVF FILM COST MORE THAN PAINT COATINGS?

Tedlar is a premium product priced comparably to many paint-coated products. At Metal Alliance we are committed to offering the best metal products in the industry, at the best value. Depending on the supplier, investment in Tedlar protected coil and flats may be slightly higher.

IS TEDLAR PVF FILM ECO-FRIENDLY?

Yes, Tedlar PVF film's dense surface is non-reactive and inert. It is non-flammable and has low smoke toxicity. It does not support mold, mildew or bacteria growth and produces very low VOC emissions. Projects that specify Tedlar PVF film qualify for LEED credits based on color selected.

AESTHETICS



I HAVE A LARGE PROJECT THAT REQUIRES A COLOR NOT ON THE CHART. HOW CAN I GET TEDLAR?

Stock colors are always the best choice for timely project completion, but on larger projects we can evaluate additional film and color choice availability to meet your needs.

CAN I ORDER TEDLAR FINISHED METAL TO MATCH A TEDLAR PROJECT I DID YEARS AGO?

Yes! Due to the color uniformity of Tedlar film from lot-to-lot and the resistance to fading once installed, replacement panels or new panels for an addition can be ordered in the same color as the original order.

SERVICE



WHAT TYPE OF TECHNICAL AND DESIGN SUPPORT DO YOU OFFER FOR SPECIFYING TEDLAR?

The technical support and engineering teams at Metal Alliance are available to answer your questions or provide design assistance for your architectural metal building projects.

DO I NEED SPECIAL TOOLS OR EQUIPMENT TO INSTALL PANELS FINISHED WITH TEDLAR?

No. Roof and wall panels made with Tedlar protected metal can be installed by an experienced professional in accordance with your supplier's installation guidelines, regulations, building codes and industry practices in your jurisdiction.

HOW RELIABLE IS THE COMPANY BEHIND TEDLAR?

Developed by DuPont™ in 1961, Tedlar® PVF film has a 60-year history of protecting important surfaces all over the globe. DuPont, founded in the U.S. in 1802, remains one of the world's premier manufacturers of products that have transformed everyday living, including those with familiar names like Kevlar®, Nomex®, Tyvek®, Corian® and many more.

UNMATCHED PROTECTION FOR METAL ROOFING AND WALL PANELS

DuPont™
Tedlar® PVF Film

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METALALLIANCE

A Value Added Supplier of Metals

☎ 844-638-2548 ✉ orders@metalalliance.com 🌐 metalalliance.com

FLORIDA 2120 SW Poma Dr, Palm City, FL 34990 MARYLAND 2500-B Broening Hwy, Baltimore, MD 21224