

Tedlar® PVF Films for Pipe Jacketing

DUPONT
Tedlar®

Key Benefits of Tedlar®:

- Highly Corrosion Resistant
- Durable in Outdoor Exposure
- High Emissivity
- Highly Flexible and Formable

Tedlar® meets or exceeds ASTM standards C1423-21, C1729-21, C1767-21 for Pipe Jacketing applications. Tedlar® is a non-PFAS material.

Recommended by ASTM standards, Tedlar® films bring excellent corrosion and chemical resistance to pipe jacketing, as well as stable emissivity to maintain desired surface temperature.

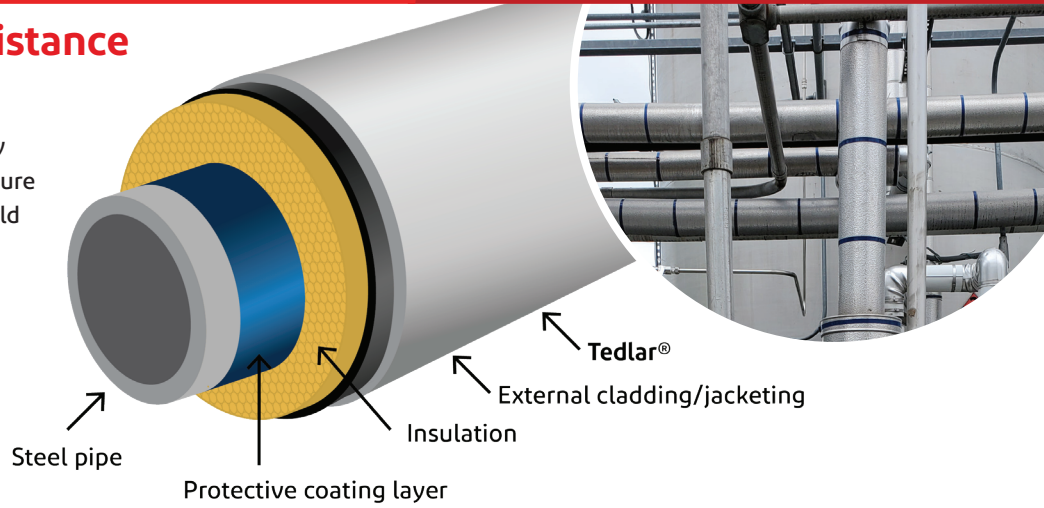
Corrosion and Chemical Resistance

Tedlar® Film

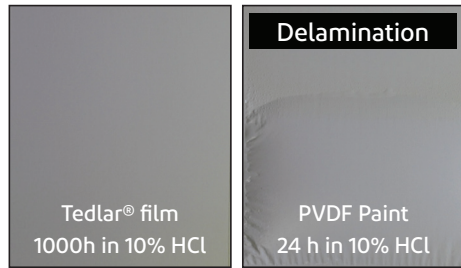
Tedlar® exhibits chemical resistance superior to any coil coating on the market, thanks to the film structure and PVF polymer properties. In decades of real world applications, Tedlar® remains looking brand new in applications by the coast or inside chemical plants

PVDF/Alternative Coatings

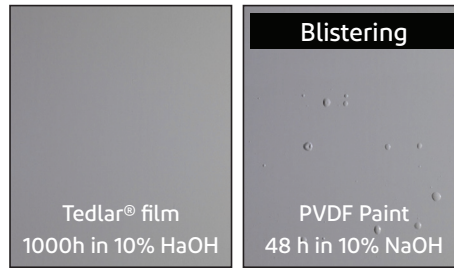
While some coatings exhibit good chemical resistance, they all exhibit blistering and cracking significantly faster than Tedlar®, in both lab tests and real world applications.



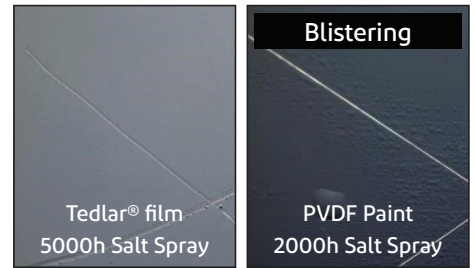
Acid Test on Steel



Base Test on Steel



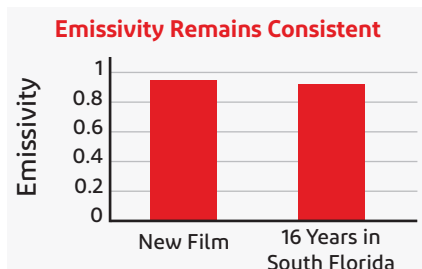
Salt Spray Test on Aluminum



Surface Emissivity

High emissivity value of Tedlar® keeps the pipe jacketing surface temperature close to ambient. For cold liquids, it keeps pipe temperature above the dew point to avoid corrosion-causing condensation. For hot, it keeps pipes below burning temperatures for worker safety.

Tedlar® film maintains its high surface emissivity over 16+ years and continuously regulates surface temperatures for pipe jacketing.



Sample	Emissivity
Steel	0.09
Aluminum	0.12
PVDF Paint	0.8
Tedlar® film	0.9-0.95

Weather resistance

Tedlar® films have 40+ years of proven performance outdoors, without losing its color and mechanical properties. It provides long-lasting protection to the pipe jacketing from precipitation, ultraviolet radiation, and potential abrasion caused by blowing sand.

Cleanability and fungal resistance

The hydrophobic and impermeable nature makes Tedlar® PVF films excellent in stain and dirt resistance. It can be easily cleaned to maintain the fresh look of pipe jacketing.

Tedlar® film does not support the growth of mold and mildew, which can keep the pipe jacketing clean when exposed continuously to damp conditions.

Technical Data Summary

Property	Test Method	Performance
Nominal Film Thickness		1.5 mil
Gloss	ASTM D523 @60°	5-10
Emissivity	ASTM E408	>0.9
Pencil Hardness	ASTM D3363	F-2H
Flexibility	T-bend, ASTM D4151	0T, no pick off
Adhesion	Cross-hatch, ASTM D3359	5B, no adhesion loss
Abrasion, Falling sand	ASTM D968	100 L
Salt spray resistance	ASTM B117	6000h (aluminum)
Humidity resistance	85°C / 85% RH tests	4000h, no change

Corrosion and chemical resistance case study

Immersing the PVF-laminated metal in strong acids, bases, oxidants, and disinfectants are used to accelerate the degradation seen in real harsh-environment scenarios. Examples are exposure to acid rain or chemical spills. The longevity data shows that PVF-laminated metal offers substantially more resistance to chemicals compared to existing premium PVDF painted metal.

	Acid				Base		Oxidants/ disinfectants		
	10% HCl	10% H ₂ SO ₄	10% H ₃ PO ₄	10% acetic acid	10% NaOH	10% NH ₄ OH	10% NaClO	10% H ₂ O ₂	5% Virkon
Tedlar® laminate	>1000h	>1000h	>1000h	>1000h	>1000h	>1000h	>1000h	>1000h	>1000h
PVDF Paint	24h	48h	700h	400h	48h	800h	1000h	300h	1000h

Surface emissivity case study

By applying Tedlar® film on metal jacketing (steel or aluminum), the surface emissivity increases from 0.1 to 0.95. The higher emissivity regulates the surface temperature closer to ambient temperature regardless of temperature of liquid transported.

	Emissivity	Temperature difference between surface and air, °C
Bare steel	0.1	7°C
Tedlar® films	0.95	3°C

For transporting cold liquid such as LNG, a jacket with a higher surface emissivity result in a warmer surface and consequently less condensation. The increased surface temperature could potentially reduce the amount of insulation material required.

	Emissivity	Insulation thickness needed for 10°C difference to air
Bare steel	0.1	4.7 inch
Tedlar® films	0.95	3.9 inch

For transporting hot liquid, a jacket with a higher surface emissivity can lower surface temperature and is desired in some cases for personnel protection.