

# Summary of Properties of **TEDLAR®** PVF Film

TEDLAR, made only by DuPont, is used in the graphics business as a base film or overlaminates. Available in clear and colors, the film possesses a unique balance of properties for creating state-of-the-art graphics. The clear film screens ultraviolet light and when used to surface decals, extends their life since fading is drastically inhibited. When used as a base film, colors and images remain vivid and brilliant.

TEDLAR is chemically inert and resists attack by chemicals or solvent used in washings. It even resists harsh chemicals, and graffiti can be removed without affecting the decal.

Naturally flexible and with good tensile strength, TEDLAR is essentially unaffected by changes in temperature or humidity. Decals based on TEDLAR do not embrittle or dry out so there is no cracking or chipping. TEDLAR does not contain additives or plasticizers which can create a dirt problem.

The combination of useful properties offered by TEDLAR for the protection of decals is unmatched by any other commercially available film.

PROPERTY	TYPICAL VALUE	TEST METHOD	TEST CONDITION
<b>Physical</b>			
Density	1.37 - 1.72 g./cc.	ASTM D-1505-68	22°C. (72°F.)
Impact Strength	10-20 in. lbs./mil	Spencer ASTM D-3420-80	22°C. (72°F.)
Moisture Absorption	<0.5% for most types	Water immersion	22°C. (72°F.)
Water Vapor Transmission	9-57 g./m <sup>2</sup> d	ASTM E-96-E-80	39.5°C. 80% RH
Refractive Index	1.45n <sub>D</sub>	ASTM D-542-50 Abbé	30°C. (86°F.)
Tear Strength		Refractometer	
Propagated	15-60 g./mil	Elmendorf-ASTM D-1922-67	22°C. (72°F.)
Initial (Graves)	260-500 g./mil	ASTM D-1004-66	22°C. (72°F.)
Tensile Modulus	300-380 x 10 <sup>3</sup> psi	ASTM D-882-80, Method A	
		100% elong./min. -Instron	22°C. (72°F.)
Ultimate Tensile Strength	8-16 x 10 <sup>3</sup> psi.	ASTM D-882-80, Method A	
		100% elong./min. -Instron	22°C. (72°F.)
Ultimate Elongation	90-250%	ASTM D-882-80, Method A	
		100% elong./min. -Instron	22°C. (72°F.)
Ultimate Yield	6000-4900 psi.	ASTM D-882-80, Method A	
		100% elong./min. -Instron	22°C. (72°F.)
<b>Chemical</b>			
Chemical Resistance	No visible effect	1 year immersion in Acids	25°C. (77°F.)
		Bases	25°C. (77°F.)
Chemical Resistance	No visible effect	Solvents	25°C. (77°F.)
		2 hours immersion in	
		Acids	Boiling
		Bases	Boiling
		Solvents	Boiling
Chemical Resistance			
Gas Permeability Carbon Dioxide	Strength and appearance not affected	Soil Burial -5 years	-
Helium	11.1 cc./(100 sq. in.)(24 hrs.)(atm)(mil)	ASTM D-1434-75	24°C. (75°F.)
Hydrogen	150 cc./(100 sq. in.)(24 hrs.)(atm)(mil)	ASTM D-1434-75	24°C. (75°F.)
Nitrogen	58.1 cc./(100 sq. in.)(24 hrs.)(atm)(mil)	ASTM D-1434-75	24°C. (75°F.)
Oxygen	0.25 cc./(100 sq. in.)(24 hrs.)(atm)(mil)	ASTM D-1434-75	24°C. (75°F.)
Vapor Permeability (at part. press. of vapor at given temp.)	3.2 cc./(100 sq. in.)(24 hrs)(atm)(mil)	ASTM D-3985-80	24°C. (75°F.)
Acetic Acid	45 gms./(100m <sup>2</sup> )(hr.)(mil)	ASTM E-96-80 modified	24°C. (75°F.)
Acetone	10,000 gms./(100m <sup>2</sup> )(hr.)(mil)	ASTM E-96-80 modified	24°C. (75°F.)
Benzene	90 gms./(100m <sup>2</sup> )(hr.)(mil)	ASTM E-96-80 modified	24°C. (75°F.)
Carbon Tetrachloride	50 gms./(100m <sup>2</sup> )(hr.)(mil)	ASTM E-96-80 modified	24°C. (75°F.)
Ethyl Acetate	1,000 gms./(100m <sup>2</sup> )(hr.)(mil)	ASTM E-96-80 modified	24°C. (75°F.)
Ethyl Alcohol	35 gms./(100m <sup>2</sup> )(hr.)(mil)	ASTM E-96-80 modified	24°C. (75°F.)
Hexane	55 gms./(100m <sup>2</sup> )(hr.)(mil)	ASTM E-96-80 modified	24°C. (75°F.)
Weatherability	Excellent	Florida exposure	Facing South at 45° to horizontal
<b>Thermal</b>			
Aging	3000 hours	Circulating Air Oven	150°C. (302°F.)
Linear Coefficient of Expansion	2.8 x 10 <sup>-5</sup> ins./in./°F.		
Shrinkage (Type 30) TD only	4% at 170°C. (338°F.)	Air Oven, 30 Minutes	
Temperature Range			
Continuous Use	-72°C. to 107°C.(-98°F. to 225°F.)		
Short Cycles or Release (1-2 hrs.)	up to 175°C (350°F)		