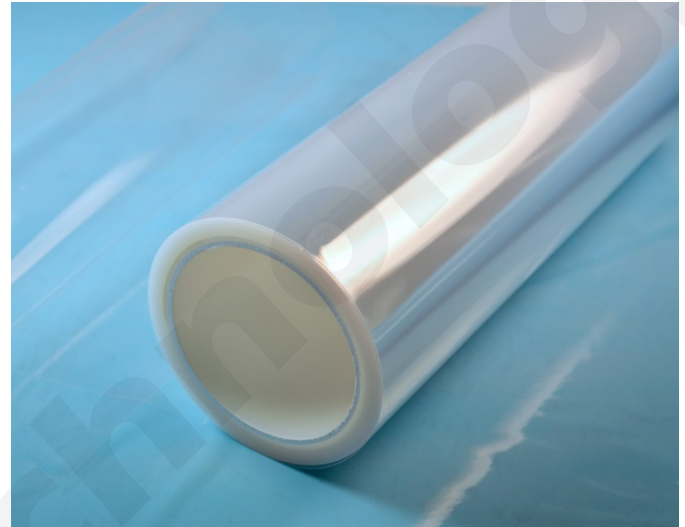




## PERFLUOROALCOXY FILM FOR USE IN HIGH-PERFORMANCE APPLICATIONS

PFA films are produced from Perfluoroalcoxy (PFA) resin by a melt extrusion casting process. PFA films offer all the benefits of fully fluorinated films, such as a high continuous use temperature of 500°F (260°C), high chemical and stress crack resistance, and superior dielectric performance.

- PFA films can be heat-sealed, thermoformed, laminated to various substrates, and used as an excellent hot-melt adhesive.
- PFA film is chemically inert and resistant to virtually all chemicals. It is best suited for applications where the combination of high temperature resistance and high chemical resistance is required, such as chemical pumps, tank linings, shrink roll covers, rupture discs and gaskets.
- PFA films possess excellent dielectric properties over a widest temperature range, which make them invaluable in circuit board laminates and wire & cable insulation applications.



### PFA Films-General Availability

- Thickness range from 0.0005" to 0.010" (12 to 250 μm)
- Standard width: up to 60" (1,524 mm)
  - ◊ Thicknesses >0.002": up to 62" (1,575 mm)
- Any slit widths available upon request
- Bondable (plasma treated or chemically etched) surfaces available

### PFA Films are Available In Two Grades

#### PFA PG (Premium Grade)

- Manufactured out of 100% virgin premium grade PFA resin with MFI range of 1.5-2.5
- PFA PG is a grade of choice for dielectric applications, and/or where visual perfection and clarity are required

#### PFA WG (Welding Grade)

- Offers 15-20% cost savings vs. PG grade, while possessing all physical, mechanical, and thermal properties of the Premium Grade PFA film
- Perfect economical solution for heat sealing, welding, and other melt adhesive applications that don't have high aesthetics requirements

### PFA Films Characteristics

- The best high and low temperature resistance among melt process fluoropolymers:
- Continuous service temperature range from -425 to 500°F (-254 to 260°C)
- Melt temperature range: 572 to 590°F (300 to 310°C)
- Chemically inert and solvent resistant to virtually all chemicals
- Outstanding dielectric properties over a wide range of frequencies and temperatures.
- High dielectric strength, over 6,500 V/mil for 1-mil film (260 kV/mm for 25 micron film)
- Excellent light transmission and clarity
- Free of plasticizers, processing aids, or additives



## PERFLUOROALCOXY FILM FOR USE IN HIGH-PERFORMANCE APPLICATIONS

General Properties	Units	Test Method	PFA PG	PFA WG
Specific Gravity		ASTM D792	2.15	
Area Yield	ft <sup>2</sup> /lb/mil		90	
Flammability		UL-94	V-0	
Water Absorption	%		<0.01	
<b>Mechanical Properties</b>				
Tensile Strength	psi (MPa)	ASTM D882	2,500 (17)	
Elongation at Break	%	ASTM D882	300	
Tensile Modulus	psi (MPa)	ASTM D882	70,000 (480)	
Initial Tear Strength (2 mil film)	g	ASTM D1004	500	
Propagation Tear Strength (2 mil film)	g	ASTM D1922	75	
Folding Endurance (MIT)	cycles, min.	ASTM D2176	100,000	
<b>Thermal Properties</b>				
Continuous Use Temp	°F (°C)	UL-746 B	500 (260)	
Melt Point	°F (°C)	ASTM D3418	575 - 590 (302 - 310)	
Coeff. of Lin. Thermal Expansion	in/(in °F) (mm/(mm°C))	ASTM D696	5.5x10 <sup>-5</sup> (9.9x10 <sup>-5</sup> )	
<b>Electrical Properties</b>				
Dielectric Strength (1mil film)	volts / mil	ASTM D149	6,500 (260)	n/a
Dielectric Contant 1kHz		ASTM D150	2.0	n/a
Dissipation Factor, 1kHz		ASTM D150	0.0002 - 0.0007	n/a
<b>Optical Properties</b>				
Refractive Index		ASTM D542	1.35	n/a
Solar Transmission	%	ASTM E424	96	n/a
<b>Product Offering</b>				
Width	inches (mm)		0.5-2 mil: up to 60" (1,524); 3-10 mil: up to 62" (1,575)	
Thickness	mils (µm)		0.5 - 10 (12.5 - 250)	
Standard Colors			Clear	Clear Tinted
<b>Surface Treatments Available</b>				
Chemical Etching			•	•
Plasma Treatment			•	•
<b>Applications, Markets</b>				
Composite Molding Process: Release Films				
Chemical Process / Equipment			•	•
Heat Sealing / Welding / Melt Adhesive				•
Electrical / Electronics			•	
Medical			•	
Optical /Photovoltaics			•	
Protective/Decorative			•	