

FEP Film

FEP Film/FEP Foil

ESONE FEP films are manufactured using a melt extrusion casting process from Fluorinated Ethylene Propylene (FEP) resin. These films provide all the advantages of fluorinated materials, including exceptional temperature and chemical resistance, non-stick characteristics, and excellent dielectric performance. FEP films can be heat-sealed, thermoformed, laminated to different substrates, and utilized as melt adhesives.

ESONE FEP films are available in four grades

FEP GP – General Purpose

- Made from 100% virgin premium-grade FEP resin with an MFI range of 5-10.
- Ideal for applications that demand high dielectric performance, such as PCB laminates and wire & cable uses.
- Preferred for protective, decorative, and transparent applications where visual clarity is crucial.
- Complies with ASTM D3368 specifications for Type I FEP film.

FEP WF – Welding Film

- Made from 100% virgin premium-grade FEP resin with an MFI range of 5-10.
- Ideal for applications that demand high dielectric performance, such as PCB laminates and wire & cable uses.
- Preferred for protective, decorative, and transparent applications where visual clarity is crucial.
- Complies with ASTM D3368 specifications for Type I FEP film.

FEP MR – Mold Release

- Available in various perforated patterns.
- It offers high elongation and excellent conformability to complex contoured molds.
- Standard colors include red, violet, and clear, with custom colors available upon request.
- With its exceptional non-stick properties and service temperature of up to 400°F (205°C), FEP is the preferred material for high-temperature composite molding.
- Complies with ASTM D3368 standards for Type IV mold release FEP film.

FEP HM – High Molecular Weight

- Ideal for chemical tank linings, pump diaphragms, and rupture discs.
- Provides excellent stress-crack resistance and flex endurance, achieving 250,000 cycles in the MIT test.
- Complies with ASTM D3368 standards for Type III FEP film.

Specification

ESONE offers FEP films with thicknesses ranging from 0.012 to 0.25mm (12 to 250 um) (0.0005 inches to 0.010 inches), with standard widths up to 1,600 mm (63 inches). Additionally, slit widths and bondable surfaces (plasma treated or chemically etched) are available upon request.

Color: ☐ Clear, ☒ Red, ☒ Blue, ☒ Violet and others

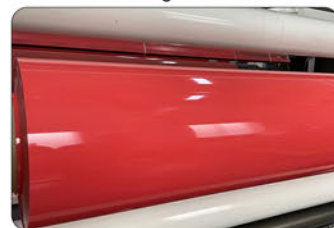
Width: Max 1,600mm (63 inches) Any slit width is available

Surface: Non-treatment, plasma treated or chemically etched

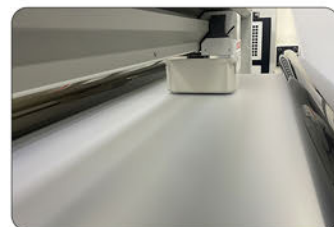
Temperature: Continuously working in temperatures ranging -240°C to 205°C (-400°F to 400°F) Intermittent service temperature up to 260°C(500°F)



FEP film cut to size for seals and gaskets



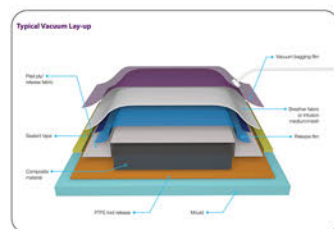
Mold release film



FEP foil for wire & cable insulation



FEP film for chemical tank lining



High temperature vacuum bagging film

FEP film properties

		FEP GP – General Purpose	FEP WF – Welding Film	FEP MR – Mold Release	FEP HM – High Molecular Weight
General Properties	Test Method				
Specific Gravity	ASTM D792	2.15			
Area Yield m²/kg/mm (ft²/lb/mil)		727.4(90)			
Flammability	UL-94	V-0			
Water Absorption %		<0.01			
Standard width mm(in)		Max 1,600mm (63 inches) Any slit width is available			
Thickness Available mm(mil)		0.012 to 0.25mm (0.5 to 10 mil)			
Colors		Clear	Clear	Red, Blue, Violet	Clear
Mechanical Properties					
Tensile Strength MPa(psi)	ASTM D882	24(3,500)			34.5(5,000)
Elongation at Break %	ASTM D882	300			350
Tensile Modulus MPa(psi)	ASTM D882	483(70,000)			
Initial Tear Strength g/mm(g/mil)	ASTM D1004	10,830(275)			
Propagation Tear Strength g/mm(g/mil)	ASTM D1922	4,922(125)			
Folding Endurance (MIT) cycles	ASTM D2176	10,000			250,000
Thermal Properties					
Continuous Use Temp °C(°F)	UL-746B	205(400)			
Melt Point °C(°F)	ASTM D3418	260(500)			270(520)
Electrical Properties					
Dielectric Strength volts/mm(volts/mil)	ASTM D149	256,000(6,500)	N/A	256,000(6,500)	
Dielectric Contant 1kHz	ASTM D150	2.0	N/A	2.0	
Dissipation Factor 1kHz	ASTM D150	0.0003	N/A	0.0003	
Surface Resistivity ohm/sq	ASTM D257	1x10 ¹⁵	N/A	1x10 ¹⁵	
Optical Properties					
Refractive Index	ASTM D542	1.34	N/A	1.34	
Solar Transmission %	ASTM E424	96	N/A	96	
Surface Treatments Available					
Chemical Etching		Available			
Plasma Treatment		Available			
Applications					
Composite Molding Process: Release Films				√	
Chemical Process/Equipment		√	√		√
Heat Sealing/Welding/Melt Adhesive		√	√		
Electrical/Electronics		√			
Medical		√			√
Optical/Photovoltaics		√			
Protective/Decorative		√			



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