ESONE
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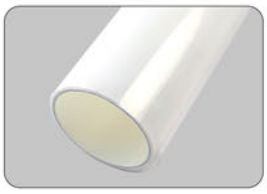
ETFE Film

ETFE Film/ETFE Foil

ESONE'S ETFE film and foil is made from a co-polymer resin of ethylene and tetrafluoroethylene, utilizing a melt extrusion casting process. These ETFE films exhibit low permeability to liquids, gases, moisture, and organic vapors, while also offering high elongation and tear resistance. ETFE foils can be heat-sealed, thermoformed, and laminated to various materials. Importantly, ESONE ETFE films do not contain plasticizers, processing aids, or additives.

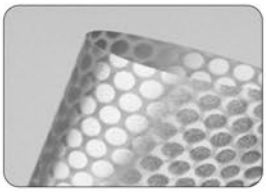
ESONE ETFE films are available in four grades

ETFE GP – General Purpose



- Made from 100% virgin premium grade ETFE resin.
- ETFE GP is the preferred choice for projects needing visual excellence.
- With its exceptional light transmission, clarity, and durability, ETFE is ideal for various applications, including architectural roofing, solar panel front glazing, decorative elements, anti-graffiti surfaces, and greenhouses.

ETFE AG –Architectural Grade



- Made from 100% virgin premium grade ETFE resin.
- ETFE AG is the preferred choice for projects that demand visual excellence.
- The unique attributes of ETFE, including high light transmission, clarity, and durability, make it essential for applications like architectural roofing.
- Offered in clear, white, or printed films for solar control and shading, with various standard patterns available, including:

ETFE MG –Matte Grade

- Exceptional solar light transmission and outstanding release characteristics.
- Excellent chemical and mechanical performance alongside remarkable weather resistance.
- Capable of being thermoformed and heat-sealed.
- Free from additives.

ETFE MR – Mold Release

- ETFE MR is the preferred material for release films in high-temperature composite molding, thanks to its excellent non-stick properties and elevated upper use temperature in static applications.
- It provides a 20% higher area yield compared to FEP and PTFE, achieving 22.6 m²/kg for a 25 μm film (110 ft²/lb for a 1 mil film).
- The material features high elongation and outstanding conformability for complex, contoured molds.
- Standard colors include red and light blue, with custom color options available upon request.
- It is offered in various perforated patterns, including:

Specification

ESONE ETFE film provide excellent light transmission (over 90%) and clarity, allowing high transmittance of ultraviolet light and other wavelengths, excluding far infrared. They also have outstanding non-stick properties and superior resistance to outdoor weathering. ESONE's ETFE foils are well-suited for applications in architecture, photovoltaic solar technology, and mold release.

We offer ETFE films and foils in thicknesses from 0.012 to 0.25mm (0.0005 inches to 0.010 inches), with a max width of 1,600 mm (63 inches), and slit widths can be requested. These films feature a high dielectric strength of 215 kV/mm for 0.025mm (equivalent to 5,500 V/mil for 1mil film). ETFE foils are reliable across a broad temperature range, with continuous use temperatures spanning from -200°C to 165°C (-328°F to 330°F). They can withstand short-term exposure to temperatures up to 204°C (400°F), with a melt temperature starting at 260°C (500°F). Bondable surfaces, either plasma treated or chemically etched, are also available.

- Color: Clear, Red, Blue 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 from -200°C to 165°C (-328°F to 330°F)

ETFE film properties

		ETFE GP – General Purpose	ETFE AG – Architectural Grade	ETFE MG – Matte Grade	ETFE MR – Mold Release
General Properties	**Test Method**				
Specific Gravity	ASTM D792	1.74			
Area Yield m²/kg/mm (ft²/lb/mil)		0.89(110)			
Flammability	UL-94	V-0			
Water Absoption %		<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	Clear	Red, Blue
Mechanical Properties					
Tensile Strength MPa(psi)	ASTM D882	48(7,000)	52(7,500)	48(7,000)	48(7,000)
Elongation at Break %	ASTM D882	300	350	300	300
Tensile Modulus MPa(psi)	ASTM D882	965(140,000)	850(125,000)	965(140,000)	965(140,000)
Initial Tear Strength g/mm(g/mil)	ASTM D1004	9,831(250)			
Propagation Tear Strength g/mm(g/mil)	ASTM D1922	1,476(37.5)			
Folding Endurance (MIT) cycles	ASTM D2176	>50,000	>80,000	>50,000	>50,000
Thermal Properties					
Continuous Use Temp ℃(℉)	UL-746B	165(330)			
Melt Point ℃(℉)	ASTM D3418	260(500)			
Electrical Properties					
Dielectric Strength volts/mm(volts/mil)	ASTM D149	216,535(5,500)	N/A		
Dielectric Contant 1kHz	ASTM D150	2.6	N/A		
Dissipation Factor 1kHz	ASTM D150	<0.0008	N/A		
Optical Properties					
Refractive Index	ASTM D542	1.4	N/A		
Solar Transmission %	ASTM E424	96	N/A		
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		√		√	
Architectural			√		

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