



## THV Film

### THV Film/THV Foil

**ESONE's** THV (Tetrafluoroethylene-Hexafluoropropylene-Vinylidene fluoride) Fluorothermoplastic, a polymer made from tetrafluoroethylene, hexafluoropropylene, and vinylidene fluoride, offers unique advantages such as bonding capabilities with elastomers and hydrocarbon-based plastics, along with flexibility and optical clarity. ESONE THV films, produced via melt extrusion casting from THV resin, exhibit exceptional performance characteristics, including low processing temperatures and excellent flexibility. These films can be heat-sealed, thermoformed, and laminated to various substrates, making them ideal for multilayer hoses, tubes, sheets, and films.

### Advantages

- Very high optical clarity and light transmission
- Outstanding flexibility compared to other fluoroplastics
- Good weatherability and UV stability
- Flame retardant and good dielectric properties
- Excellent chemical and permeation resistance
- Bondable to itself and other substrates for multilayer constructions

### Specification

- **Standard Thicknesses:** Available in 100um, 150um and 250um (0.004", 0.006" and 0.010"), other thicknesses available upon request
- **Standard Width:** 300mm (11.8") and 1,600mm (63"), custom slit widths available upon request
- **Standard Color:** Clear/natural, with custom colors available upon request
- **Surface Treatment:** Bondable, chemically etching, plasma-treated surfaces available upon request

### Application

#### ● Clean POD Devices in the Semiconductor Sector

Clean POD devices in the semiconductor industry are made from advanced THV and ePTFE (modified Polytetrafluoroethylene) composites. These materials offer excellent chemical resistance, low permeability, and high thermal stability, making them ideal for protecting sensitive electronic components.

The combination enhances reliability and performance, ensuring effective sealing against contaminants. Customizable in various sizes, these composites meet diverse application needs within the semiconductor sector.

#### ● Chemical and Fuel Storage and Handling

THV films are utilized in fuel and chemical tank linings, drop-in liners, and bag liners due to their exceptional chemical resistance to fuels across a wide temperature range and their low permeability to solvents and gases.

#### ● Safety Glass

With excellent clarity (<1% haze) and outstanding mechanical and thermal properties, THV film is an ideal interlayer for lamination onto glass or for use between layers in multi-layer glass systems. It enhances fire safety and provides anti-shatter performance in various glass applications.

#### ● Photovoltaic Panels

Thanks to their superior barrier properties, fire resistance, and high solar transmittance, THV films are well-suited for use as

## THV film properties

		THV Film
<b>General Properties</b>	<b>Test Method</b>	
Specific Gravity	ASTM D792	1.98
Area Yield m <sup>2</sup> /kg/mm (ft <sup>2</sup> /lb/mil)		782 (97)
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)		100, 150 and 250 (4, 6 and 10)
Colors		Clear
<b>Mechanical Properties</b>		
Tensile Strength MPa(psi)	ASTM D882	30(4,500)
Elongation at Break %	ASTM D882	600
Tensile Modulus MPa(psi)	ASTM D882	210(30,000)
Folding Endurance (MIT) cycles	ASTM D2176	> 100,000
<b>Thermal Properties</b>		
Continuous Use Temp °C(°F)	UL-746B	120(250)
Melt Point °C(°F)	ASTM D3418	165(330)
Coeff. of Lin. Thermal Expansion 10 <sup>-5</sup> /°C	ASTM D696	11.4
<b>Electrical Properties</b>		
Dielectric Strength kv/mm(volts/mil)	ASTM D149	60(1,500)
Dielectric Constant 1kHz	ASTM D150	4.8
<b>Optical Properties</b>		
Refractive Index	ASTM D542	1.36
Solar Transmission %	ASTM E424	95
Haze (4 mil (100 µm) film) %	ASTM E424	1
<b>Surface Treatments Available</b>		
Chemical Etching		Available
Plasma Treatment		Available
<b>Applications</b>		
Release Films		×
Chemical Process		√
Electrical / Electronics		√
Medical		√
Optical / Photovoltaics		√
Protective / Decorative		√



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