

CHEMFILM® FEP Fluoropolymer Film

FEP fluoropolymer film is manufactured from fluorinated ethylene propylene (FEP) resin by Saint-Gobain Films in four grades.

FEP Type FG has low dielectric constant and dissipation over a wide range of temperatures and frequencies for low signal distortion and attenuation in flexible printed circuit and flat cable applications. The high surface and volume resistivity minimizes current leakage and provides excellent insulation in wire and cable applications. FEP FG also has excellent chemical and thermal resistance to withstand aggressive environments, making it an ideal candidate for diaphragms, gaskets, protective linings, sample bags, and containers. Fabricated shapes and contours can be produced via heat sealing and thermoforming. The outstanding weatherability and optical properties of FEP FG film provide excellent performance in environmental growth chambers and solar collectors.

FEP Type FS is a translucent film made from high molecular weight resin for applications where high flex life and stress-crack-resistant performance are required, such as tank linings and diaphragms.

FEP Type RF is a clear or pigmented film designed for release applications. The non-stick surface, chemical resistance, and 205°C (400°F) usage temperature make FEP RF an ideal release film for release for composite molding over a wide range of resin systems. High elongation and a smooth, low-gel film surface allows FEP RF to conform to complex mold contours and produce a smooth part finish. Perforated film is available to control outgassing and resin bleed. Pigmented films increase visibility to speed removal from parts and mold and reduces the risk of downstream foreign object contamination.

FEP Type WF (mechanical grade) film is an ideal economical solution for applications that don't require high aesthetic standards, such as hot melt adhesive (welding tape) application. FEP WF film possesses all physical, mechanical, and thermal properties of FEP FG grade, while offering up to 15% savings.

Features/Benefits

- Outstanding anti-stick release properties
- Performance from -254°C (-425°F) to 205°C (400°F)
- Exceptional chemical resistance and electric properties
- Product thickness from 0.0005" (0.013 mm) to 0.030" (0.76 mm)
- Widths up to 62" (1,575 mm) for 0.0005" to 0.010" and up to 48" for over 0.010" thick
- Optically transparent and pigmented
- Available in cementable (surface treated) form



CHEMFILM® FEP Fluoropolymer Film Typical Physical Properties*

Typical Properties	Test Method	Value	Units
General			
Specific Gravity	ASTM D-792	2.12-2.17	
Yield (1 mil)		18(90)	m ² /kg (ft ² /lb)
Water Absorption, 24 hr.		<0.01	%
Mechanical			
Tensile Strength @ Break (RT)	ASTM D-882	24(3500)	MPa (psi)
Elongation @ Break (RT)	ASTM D-882	300	%
Tensile Modulus (RT)	ASTM D-882	480(70000)	MPa (psi)
Initial Tear Strength, 1 mil	ASTM D-1004	2.2-2.7(0.5-0.6)	N(lb _f)
Initial Tear Strength, 2 mil	ASTM D-1004	4.9-5.3(1.1-1.2)	N(lb _f)
Propagation Tear Strength, 1 mil	ASTM D-1004	1.4-1.5(.32-.33)	N(lb _f)
Propagation Tear Strength, 2 mil	ASTM D-1922	2.4-2.7 (0.55-0.60)	N(lb _f)
Fold Endurance (M.I.T)	ASTM D-2176	10000	cycles
Electrical			
Dielectric Strength, 1 mil	ASTM D-149	240(6000)	kV/mm (V/mil)
Dielectric Constant, 1 kHz	ASTM D-150	2.1	
Dissipation Factor, 1 kHz	ASTM D-150	0.0003	
Thermal			
Melt Point	ASTM D-3418	252-282(485-540)	C (F)
Continuous Service Temperature		205 (400)	C (F)
Specific Heat		1172(.28)	J/(kg·°K) (BTU/(lb·°F))
Coefficient of Thermal Conductivity	ASTM D-2863	0.195(1.35)	W/(m·°K) BTU·in/(hr·ft ² ·°F)
Coefficient of Linear Thermal Expansion	ASTM D-696	9.9x10 ⁻⁵ (5.5x10 ⁻⁵)	Mm/(mm·°C) (in/(in·°F))
Flammability	UL-94	V-0	
Limiting Oxygen Index	ASTM D-2863	95	%
Optical			
Refractive Index	ASTM D-542	1.341-1.347	
Solar Transmission	ASTM E-424	96	%

*Represent typical performance properties and should not be used for specification purposes
Contact your Saint-Gobain Performance Plastics representative for more information.



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