FEP Film

Norton® FEP fluoropolymer film is manufactured from flourinated ethylene propylene (FEP) resin by Saint Gobain Advanced films and Fabrics in four grades.

FEP **Type FG** utilizes the low dielectric constant and dissipation over a wide range of temperatures and frequencies for a 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. Norton® FEP also provides the chemical and thermal resistance to withstand aggressive environments, making it an excellent candidate for diaphragms, gaskets, protective linings, sample bags, and containers. Fabricated shapes and contours can be produced via heat sealing and thermal forming. The outstanding weatherability and optical properties of FEP 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 is 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 Type RF an ideal release film for composite molding over a wide range of resin systems. High elongation and a smooth, low gel film surface allow FEP 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.

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)
- Can be chemically etched for bondability
- Exceptional chemical resistance and electric properties
- Complies with FDA requirements

215 Oak Street, PO Box 3775, Natick, MA 01760-3775 ■ TEL 1.508.653.6412 ■ FAX 1.508.651.3055

www.andrewroberts.com

FEP Film
(continued)

Norton® FEP Fluoropolymer Film — Typical Physical Properties*

Property	ASTM Method	Metric Value	Metric Units	English Value	English Units
General					
Specific Gravity	D-792	2.12-2.17		2.12-2.17	
Yield (1 mil film)		18	m^2/kg	90	ft^2/lb
Flammability	UL-94	V-0		V-0	
Water Absorption		<0.01	%	<0.01	%
Mechanical					
Tensile Strength @ Break	D-882	24	MPa	3500	psi
Elongation @ Break	D-882	300	%	300	%
Tensile Modulus	D-882	480	MPa	70000	psi
Initial Tear Strength, 1 mil	D-1004	2.2-2.7	N	0.5-0.6	lb_f
Initial Tear Strength, 2 mil	D-1004	4.9-5.3	N	1.1-1.2	lb_f
Propagating Tear Strength, 1 mil	D-1922	1.4-1.5	N	0.32-0.33	lb_f
Propagating Tear Strength, 2 mil	D-1922	2.4-2.7	N	0.55-0.60	lb_f
Fold Endurance (M.I.T.)	D-2176	10000	cycles	10000	cycles
Electrical					
Dielectric Strength, 1 mil	D-149	240	kV/mm	6000	V/mil
Dielectric Constant, 1 kHz	D-150	2.1		2.1	
Dissipation Factor, 1 kHz	D-150	0.0003		0.0003	
Thermal					
Melt Point	D-3418	252-282	°C	485-540	
Maximum Continuous Service Temperature		205	°C	400	°F
					°F
Specific Heat		1172	J/(kg•°K)	0.28	
Coefficient of Thermal Conductivity		0.195	W/(m•°K)	1.35	Btu/(lb•°F)
Coefficient of Linear Thermal Expansion	D-696	9.9×10^{-5}	mm/(mm•°C)	5.5×10^{-5}	Btu•in/(hr•ft^2•°F)
Limiting Oxygen Index	D-2863	95	%	95	in/(in•°F)
Optical					
Refractive Index	D-542	1.341-1.347		1.341-1.347	
Solar Transmission	E-424	96	%	96	%