

FluoroGrip® – F Optically Clear (HD-FEP) Teflon®

Industrial Uses

Type

FluoroGrip® Optically Clear, fluoropolymer film protects windows, machine guards and equipment from harsh manufacturing environments. FluoroGrip® optically clear film is manufactured from high molecular weight fluorinated ethylene propylene (HD-FEP) resin by Integument Technologies

FluoroGrip materials are manufactured utilizing a patented plasma surface modification science. The process creates a chemical covalent bond between the fluoropolymer film material and the optically clear, pressure sensitive adhesive. The bond is non-visible and permanent enabling it to be used in surface protection applications where no conventional adhesive-backed film product can be used (i.e. machinery equipment glass).

Uses

FluoroGrip® – F Optically Clear Film is made from high molecular weight resin for applications where chemical resistance, high flex life and stress-crack-resistant performance are required. The films offer an excellent, cost-effective alternative to thicker sheets currently used to protect standard polycarbonate glass used on equipment such as critical clean and etch, post-ash clean/photoresist strip, and other systems.

FluoroGrip® films provide superior resistance to a wide range of aggressive chemicals and withstand the high temperatures found in harsh semiconductor processing environments while remaining optically clear. Films are available in a variety of thicknesses (3-30 mils), widths and lengths. Fabricated shapes and contours can be produced via heat sealing and thermoforming. The outstanding weatherability and optical properties of FluoroGrip F film provides excellent performance in outdoor atmospheric environments. The film remains permanently UV stable and is easy to clean.

The optically clear adhesive delivers a low haze, high clarity bond and is cleanroom suitable. It offers virtually defect-free bonding, long-term durability and excellent temperature resistance.

Technical Data

Physical Properties

General

	ASTM Method	Metric Value	Metric Units	English Value	English Units
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 (24 hrs)		<0.01	%	<0.01	%

Available Thicknesses (Film Only; Not Including Adhesive)	2 mil, 5 mil, 10 mil, 20 mil, 30 mil
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Mechanical

	ASTM Method	Metric Value	Metric Units	English Value	English Units
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

	ASTM Method	Metric Value	Metric Units	English Value	English Units
Dielectric Strength, 1 mil	D-149	240	kV/mm	6000	V/mil
Dielectric Constant, 1kHz	D-150	2.1	2.1		
Dissipation Factor, 1kHz	D-150	0	<0.0003		

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Uses (cont.)

FluoroGrip® optically clear films offer peel and stick installation and can be easily applied over polycarbonate glass and other surfaces. The films are easily cut to match the size and shape of the desired surface area, do not require primers or hazardous solvents, and the solid sheet design assures consistent coverage, even on edges, angles and corners. Installation is simple enough for untrained personnel to apply and its fluoropolymer composition makes cleaning fast and easy. The film systems are engineered for easy maintenance, inspection and repair. They can be furnished pre-applied to polycarbonate sheets or in ready to apply rolls.

Note

Refer to FluoroGrip installation manual and instruction guide for the use and installation of FluoroGrip film systems.

Certifications

FluoroGrip – F is designed to meet the requirements to comply with the FDA's Register of Food Additive Regulations.

Technical Data

Physical Properties

Thermal

	ASTM Method	Metric Value	Metric Units	English Value	English Units
Melt Point	D-3418	252-282	°C	485-540	°F
Continuous Service Temp.		163	°C	325	°F
Specific Heat		1172	J/(k·°K)	0.28	Btu/(lb·°F)
Coefficient of Thermal Conductivity		0.2	w/(m·°K)	1.35	Btu in/(hr·ft²·°F)
Coefficient of Linear Thermal Expansion	D-696	9.9 x 10 ⁻⁵	mm/(mm·°C)	5.5 x 10 ⁻⁵	in/(in·°F)
Limiting Oxygen Index	D-2863	95	%	95	%

Optical Film

	ASTM Method	Metric Value	Metric Units	English Value	English Units
Refractive Index	D-542	1.341-1.347		1.341-1.347	
Solar Transmission	E-424	96	%	96	%

Adhesive

	ASTM Method	Metric Value	Metric Units	English Value	English Units
Refractive Index	D-542	1.47	1.341-1.347		
Visible Light Transmission	ART #4064 (Gardner Haze Meter)	>98	%	>98	%

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Integument

Integument Technologies, Inc.

70 Pearce Avenue, Tonawanda, NY 14150

Phone: (716) 873-1199 • Fax: (716) 873-1303

e-mail: info@integument.com

www.integument.com