



Fluoropolymer Linings and Coatings

# Technical Data

## FluoroGrip® – E (ECTFE)

### Industrial Uses

#### Type

FluoroGrip® – E fluoropolymer films and linings are manufactured from ethylene-chlorotrifluoroethylene. This material offers the outstanding performance of a fluoropolymer film over a temperature range from cryogenic -200°C (-328°F) to 164°C (325°F), depending upon adhesive used.

FluoroGrip® – E film provides the highest abrasion resistance of any fluoropolymer film available. This film has superior chemical resistance and very high tensile strength and flexural modulus.

FluoroGrip® – E is available standard with an advanced pressure sensitive adhesive (PSA) of acrylic or high temperature resistant silicone PSA. Special chemical resistant adhesives are available. Consult Integument Technologies for specific material recommendations.

FluoroGrip® – E is available with either single-sided or double-sided surface plasma modification treatment for a variety of uses.

#### Uses

FluoroGrip® – E films offer low surface energy, making them an excellent choice for release applications such as tanks and hoppers where both abrasion resistance and low surface energy is desirable. Variety of thicknesses and abrasion resistance make it an excellent material for coil coating applications.

The combination of heat stability, abrasion resistance, low surface energy and barrier properties provides physical performance especially suited for material handling equipment for dry goods and service conditions where abrasion and chemical and temperature resistance is required.

Single-side modification makes the material suitable as a weldable lining when low surface energy is demanded.

### Technical Data

#### Generic Description

An oxy-halopolymer of ethylene-chlorotrifluoroethylene modified to incorporate hydroxyl groups with an acrylic or silicone pressure sensitive adhesive.

#### Physical Properties

##### General

	ASTM Method	Metric Value	Metric Units	English Value	English Units
Specific Gravity	D-792	1.68		1.68	
Yield (1mil film)		22	m <sup>2</sup> /kg	115	ft <sup>2</sup> /lb
Flammability	UL-94	V-0		V-0	
Water Absorption (24 hrs)		<0.01	%	<0.01	%

Available Thicknesses (Film Only; Not Including Adhesive) 3 mil, 5 mil, 10 mil

##### Mechanical

	ASTM Method	Metric Value	Metric Units	English Value	English Units
Tensile Strength	D-882	55	MPa	8000	psi
Elongation, Ultimate	D-882	250	%	250	%
Tensile Modulus	D-882	1375	MPa	200000	psi
Initial Tear Strength, 1mil	D-1004	4.4	N	450	gm/mil
Propagating Tear Strength, 1mil	D-1922	11.6	N	>1200	gm/mil
Fold Endurance (M.I.T.)	D-2176	>250000	cycles	>250000	cycles

## Integument

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### Industrial Uses

#### Uses (cont.)

Double-sided treatment is especially useful when installations require seams, overlaps or the application of chemical resistant coatings or top toppings. The double-sided modification makes it an ideal material for pipe wraps and tapes and immersion linings. The modification also creates a superior surface for use as a chemical and temperature resistant lining and paint replacement film and lining in abrasive high temperature and chemical applications.

#### Performance

FluoroGrip® – E film has outstanding resistance to chemicals, abrasives, weathering and high-energy radiation. This material is suitable for pipe wraps, anti-graffiti, paint replacement, splash and spill protection and exterior corrosion protection of steel, concrete, fiberglass and other plastic structures and equipment.

FluoroGrip® – E film offers a UL V-0 rating for flammability. This provides performance suitable for enclosed areas and buildings and ducts and as a high performance paint replacement.

#### Note

Refer to FluoroGrip® installation manual and instruction guide for the use and installation of FluoroGrip® films, membranes and lining systems.

#### Certifications:

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

### Technical Data

#### Physical Properties

##### Electrical

	ASTM Method	Metric Value	Metric Units	English Value	English Units
Dielectric Strength, 1mil	D-149	216	kV/mm	5500	V/mil
Dielectric Constant, 1kHz	D-150	2.55-2.63		2.55-2.63	
Dissipation Factor, 1kHz	D-150	<0.005		<0.005	

##### Thermal

	ASTM Method	Metric Value	Metric Units	English Value	English Units
Melt Point	D-3418	240	°C	465	°F
Continuous Service Temp.*		<b>A</b> 150 <b>S</b> 164	°C	<b>A</b> 300 <b>S</b> 350	°F
Heat Sealing Temp.		245-260	°C	475-500	°F
Degradation Temp.*		<b>A</b> 164 <b>S</b> 178		<b>A</b> 325 <b>S</b> 350	°F

\* **A** = Acrylic Adhesive    **S** = Silicone Adhesive

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