

FluoroGrip[®]

Fluoropolymer Films and Coatings



**Fluoropolymer Films and Coatings
From Integument Technologies, Inc.**

Better corrosion control through science and technology.

Integument Technologies, Inc. is a science-based developer and manufacturer of engineered fluoropolymer systems of linings, films and coatings for unique, extreme temperature and chemical service.

Through core competencies in materials science and engineering – and a broad range of experience in industries such as chemical processing, wastewater treatment, pharmaceutical and transportation – Integument has advanced the state-of-the-art in corrosion control with FluoroGrip® fluoropolymer film and coating systems.

Our engineered FluoroGrip® systems offer the highest resistance to the harshest chemicals up to 450° F – at a lower cost and with easier installation than traditional reinforced coatings and high performance linings.

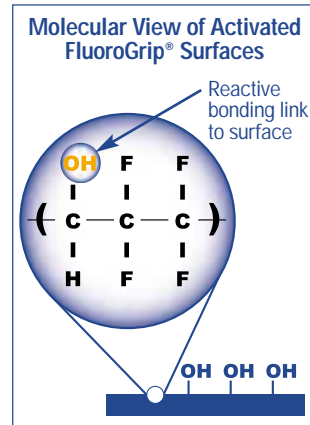
The science of plasma surface treatment makes it possible.

Integument manufactures FluoroGrip® using patented, advanced surface modification science and pressure-sensitive adhesive technologies in our world class plasma treatment facility.

Our proprietary equipment and processes are custom designed and built for Integument's unique cold gas plasma surface modification –

the science that makes it possible to apply adhesives that bond permanently to surfaces of any fluoropolymer film including FEP, ECTFE, MFA, PTFE, PVDF, PFA, etc.

FluoroGrip materials do not rely upon etching or other forms of physical degradation to promote adhesion. The chemical covalent bond formed between the FluoroGrip materials and the adhesive is permanent – enabling FluoroGrip® to be used in applications where no conventional adhesive fluoropolymer sheet or film product can. The covalent bond withstands a variety of industrial stresses including extreme temperature cycling, UV, humidity and a wide range of aggressive chemicals without delaminating from the adhesive.



Advanced Materials Technology



Crack /Joint Sealant System



Non-Stick Applications

Splash and Spill • Secondary Containment Immersion Service Linings • Pipe Wraps

Chemical Processing

- Primary storage and processing tanks
- Secondary containment
- Stacks, reactors, scrubbers, etc.
- Duct work and high temperature piping
- Trenches, pits and sumps
- Specialty floors and membranes
- Pipe wraps

Waste Water Treatment

- Piping and manholes
- Clarifiers, equalization, aeration tanks, etc.
- Secondary containment
- Trenches and pits

Pharmaceutical/Food and Beverage

- Easy-clean, non-stick surfaces
- Equipment paint protection
- Storage and processing tanks
- Concrete containment areas
- Ductwork, stacks, etc.
- Silos
- Trenches and pits

Electronics

- Chemical and solvent storage areas
- Secondary containment
- Trenches and pits
- Duct work
- High purity applications
- Clean rooms

Mining

- Tanks
- Chutes and Bins
- Secondary containment
- Trenches and pits
- Acid brick membranes

Transportation

- Aerospace appliques
- Transport vessels/ISO-tainers
- Barge and ship tankers
- Rail and truck tank cars/center bands
- Hopper cars – non-stick

Power

- Water boxes
- Stacks and scrubbers
- Storage tanks
- Pits, trenches and sumps
- Secondary containment

Pulp and Paper

- Couch pits, wire pits
- Storage tanks
- Chests, vats and digesters
- Head boxes
- Secondary containment
- Trenches and sumps
- Tile and brick membranes

Architectural

- Coil coating - sheet metal
- Corrugated roof, wall and ceiling panels
- Metallized films — gold, copper, silver
- Structural steel
- Doors
- Ductwork

Compare FluoroGrip® to other commonly used coatings and linings

	Traditional* Coatings/Linings	Thick Sheet Fluoropolymers	FluoroGrip®
Advanced peel & stick installation technology			•
No VOCs, noxious fumes or explosive hazards			•
Minimal surface preparation			•
No thinners or primers		•	•
Minimal installation inspection requirements		•	•
Elongation and high chemical resistance		•	•
Ease of repair	•		•
No cure time		•	•
No disposal of hazardous wastes		•	•
High temperature resistance to 450°F		•	•
Cost-effective	•		•

*e.g. epoxy, novolac, vinyl ester



Splash and Spill Protection



Secondary Containment



Immersion Service Linings – Welded

There's a FluoroGrip® Product to Meet Your Needs

FluoroGrip® is available in a variety of fluoropolymers (FEP, PTFE, ECTFE, MFA) to suit most any corrosive or high temperature environment. There are a variety of FluoroGrip® fluoropolymer film grades and sizes to choose from depending on your application.

Integument also offers a full complement of adhesives, sealants and other fluoroelastomer products – such as concrete rehabilitation materials, primers and toppings – to provide you with a complete corrosion control solution. Special chemical resistant adhesives and edge sealants are also available.

Our staff of corrosion and material engineers is ready to assist you in selecting the right material and system for your specific application.

Dimensions

Standard Widths: 6", 12", 24", 48"

Length: 10-foot increments (special lengths to order)

Single-Sided FluoroGrip®

A single-sided modified version of FluoroGrip® comes with adhesive and liner laminated to the bondable side and virgin fluoropolymer on the reverse side.

The single-sided product is ideal for non-stick uses such as hoppers and silos for dry goods, molds and other types of high temperature release or low-friction applications.

Double-Sided FluoroGrip®

FluoroGrip® is also available modified on both sides. The product is laminated on

one side with pressure sensitive adhesive and liner. The reverse side is modified without adhesive.

Double-sided FluoroGrip® is especially useful when installations involve seams, overlaps or top coating. By overlapping seam areas and applying pressure, a tight seal forms. If the installation warrants additional reinforcement, cap strips can be laid over or underneath the seam to create an impervious seal.

The top side modification also allows the application of FluoroGrip® chemical resistant toppings and coatings for traffic areas.

Tape and Pipe Wrap

Same as films in convenient roll forms from 1" to 6" widths in 5 and 10 mil thicknesses.

Typical FluoroGrip® Properties

	M (MFA)		E (ECTFE)		F (HD-FEP)		P (PTFE)		PV (PVDF)	
	A	S	A	S	A	S	A	S	A	S
Adhesion – Concrete† (ASTM D-4541)	1,930 psi min.†		1,340 psi min.†		NT*		NT*		NT*	
Adhesion – Steel†† (ASTM D-4541)	795 psi min.††		1,085 psi min.††		NT*		NT*		NT*	
Maximum Continuous Temperature °F	300	450	300	350	300	450	300	450	265	315
Thickness Available										
40 mil							•	•		
30 mil	•				•	•	•	•		
20 mil							•	•		
10 mil	•	•	•	•	•	•	•	•	•	•
5 mil	•	•	•	•	•	•	•	•	•	•
3 mil	•	•	•	•	•	•	•	•	•	•
Elongation @ Break, RT, (%)	300-350		200-300		250-330		250-450		50-250	
Hardness (Shore D)	60		80		55		50-65		80	
Abrasion Resistance**	Good		Excellent		Good		Good-Moderate		Good-Moderate	
Permeation **	Good		Excellent		Good		Moderate		Good	
Chemical Resistance**	Excellent		Good		Excellent		Excellent		Good	
Flammability (UL-94)	V-0†††		V-0		V-0		V-0		V-0	

*Not tested – values expected to be comparable with other films **Compared with each other †Failed cohesively within the concrete

††Adhesive failure between dolly and film

†††Film only. V-0 is flame classification of UL 94, the standard for flammability of plastic materials for parts in devices and applications, used to distinguish a material's burning characteristics

NOTE: The ratings given are a guide and do not constitute a warranty of any kind, express or implied, with respect to the performance of the products in any specific applications – actual performance depends upon service conditions (temperatures, reagents, physical uses, etc.)

Solve problems. Improve reliability. Reduce downtime.

FluoroGrip® fluoropolymer films are better than traditional high performance coatings, and thinner and easier to use than other films. FluoroGrip® delivers the technical edge to solve problems resulting in lower costs and reduced downtime.

Superior performance and reliability

- Temperature resistance to 450°F
- Withstands thermal shock and cycling
- Superior chemical resistance
- High reliability in the widest range of environments
- Quality-controlled manufacturing assures uniform thickness
- Solid sheet design assures consistent coverage, even on edges and corners
- Remains effective over expanding and contracting substrates such as concrete, due to superior elongation properties
- Systems engineered for ease of inspection and repair

The peel and stick advantage

Due to our advanced surface activation science and adhesive technologies, FluoroGrip® adheres to clean surfaces without the need for primers or surface blasting. Application is simple:

- Surface is cleaned and degreased to remove any contaminants
- Release liner is peeled from the back of the FluoroGrip® film.
- Exposed adhesive side is then applied to the material surface by hand or mechanical pressure.
- Bonds *immediately* with 90% cure in 72 hours.
- May be modified on both sides of the film to enable top coating, layering and wrapping of the film around complex geometric surfaces.

Easier to install

- Applied in a single application process
- May be installed at temperatures as low as 40°F
- No multi-coats or reinforced materials
- Minimal surface preparation

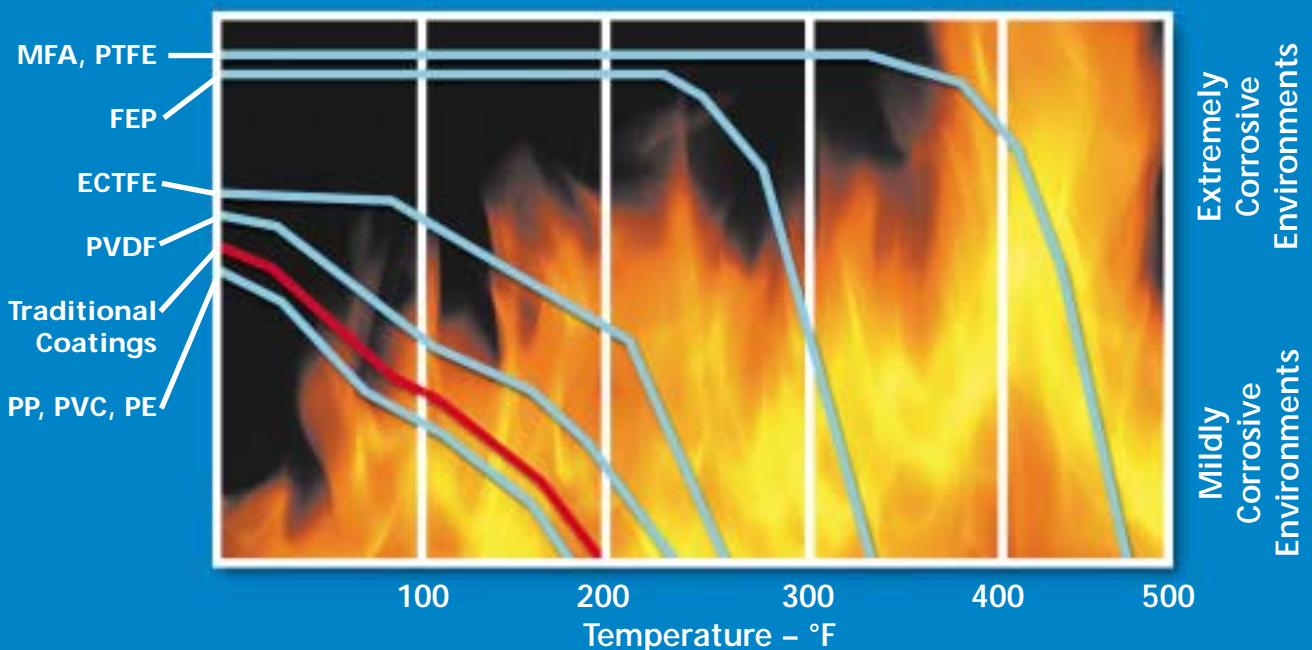
- Easier and faster clean-up; no spilled coatings
- May be applied to damp surfaces
- Can be applied in environments not suitable for traditional coatings

Safer

- No VOCs or hazardous solvents
- Safer to apply reducing potential workplace hazards
- No need for solvent-related protective clothing and equipment
- Environmentally safer for handling and shipping
- Eliminates disposal of hazardous waste

Less cost

- Reduce labor and installation costs
- Reduce downtime costs
- No costly waste disposal
- No expensive application equipment required
- Eliminate overspray waste and damage
- Prevents failures associated with multi-layered systems
- Lower cost per year of service



Graph shows maximum chemical/corrosion resistance of different coating and lining materials at increasing temperature

Expert service and support from Integument Technologies, Inc.

Integument Technologies is committed to the creation of innovative products to meet and anticipate needs of today's dynamic industries. The scientists, engineers and technicians at Integument offer the best combination of materials science, chemistry, and corrosion engineering in the world.

We have the experience, knowledge and expertise to help you specify the FluoroGrip® fluoropolymer film that's right for your application.

- Up front technical, testing, specifying and engineering support
- Accurate technical product recommendations and support services
- Technical services and field personnel with broad experience in the corrosion control industry

- Qualified and competent installations via manufacturer trained and recommended installers if preferred
- Corrosion engineering education for specifiers, project engineers and installers



Qualified and competent installations via manufacturer trained and recommended installers

Integument offers a nationwide network of trained, experienced installers with proven track records for installing high performance films and coatings.



For more information on FluoroGrip® Fluoropolymer Films and Coatings contact your Integument Technologies representative today.

Integument

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