TEFPASS®
PFA HP Plus GBK Lining Sheet

- Safeguarding Process Purity
- Excellent Permeation Resistance
- Ozone Resistance
- Increase Mechanical Reliability
- Smoother Surface
- Better Stress Crack Resistance

Safety
Innovation
Quality
Service

ASC 上品綜合工業股份有限公司 ALLIED SUPREME CORP.

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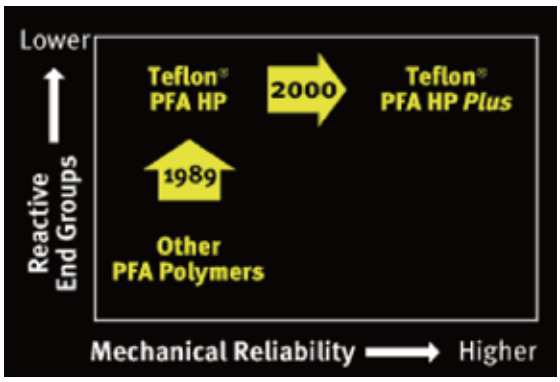
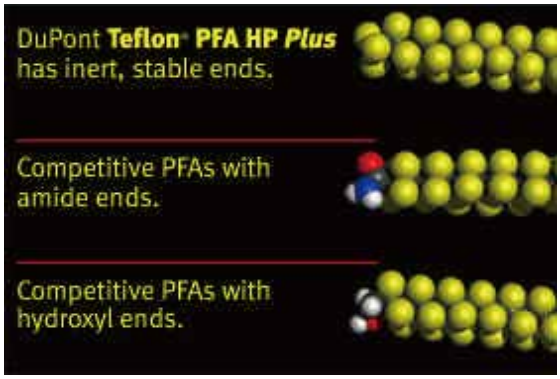
Safeguarding process purity

Dupont has enhanced Teflon PFA HP in such a way that gives Teflon® PFA HP Plus the same unsurpassed purity but have improved mechanical toughness and stress crack resistance, while also improving clarity and smoothness.

Since 1989, Teflon® PFA HP has been the proven standard for the ultra high level of purity and inertness required for wetted semiconductor components. A patented DuPont process replaces end groups with fluorine to both reduce the potential for chemical contamination and reduce polarity for minimal attraction of ions.

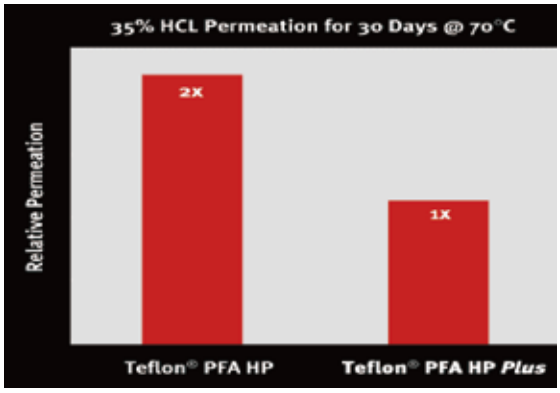


Conventional PFAs have end groups containing carbon, oxygen and hydrogen atoms in arrangements that interact with ions because they are strongly polar. Some PFAs have chemically substituted end groups (e.g. amide or hydroxyl ends) with lower reactivity but the remaining end groups have much higher polarity. Teflon® PFA HP has fully fluorinated inert, stable ends.



HCL Permeation

As the semiconductor industry has moved from aluminum to copper conductors in chip manufacture, the industry has increased its usage of hydrochloric acid (HCl). HCl is a very small molecule which can permeate through fluoropolymers. With Dupont' s Teflon® PFA HP Plus we could be able to reduce HCl permeation by almost 50%.

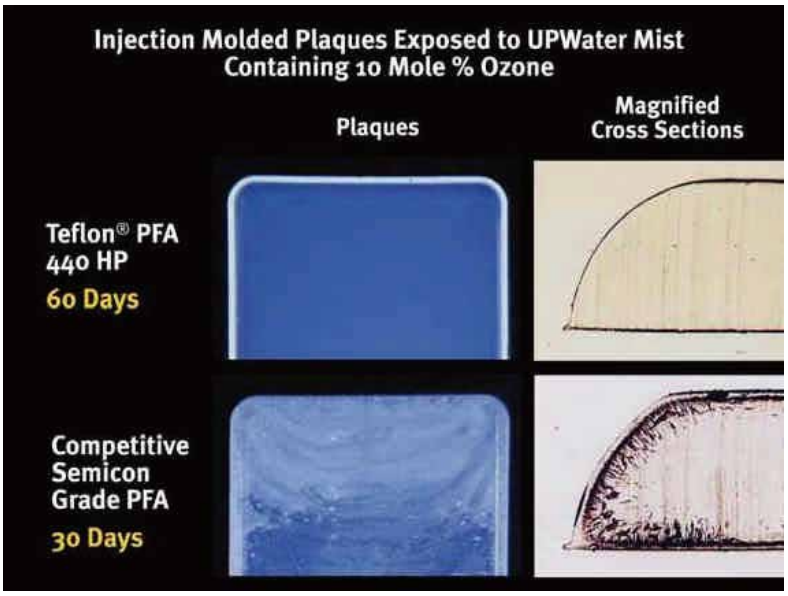


Ozone Resistance

The increased usage of ozonated fluids in the semiconductor industry to enhance the cleaning process steps has further confirmed the need for Teflon® PFA HP and Teflon® PFA HP Plus. Teflon® PFA HP and Teflon® PFA HP Plus have patented fluorinated end groups which protect the molecular chain from ozone attack during exposure of the omponents to ozonated fluids.

The picture shows injected molded parts of Teflon® PFA 440 HP after 60 day exposure to ultra pure water mist containing 10 mole % ozone. You will notice both the flat view and the magnified side cut view show no deterioration what so ever in Teflon® PFA 440 HP.

The competitive semiconductor grade material PFA has bubbles and crazing on the flat view after only 30 day exposure. The magnified side corner cut view shows stress cracking into the polymer surface.



Non- or partially fluorinated polymers have reactive end groups that can contribute to contamination in three ways:

- Reactive end groups can extract metals from the processing equipment whose metal ions then contaminate finished products
- Reactive end groups can attract and then release contaminants that can produce intermittent spikes in contaminant levels in process fluids which, in turn, may upset processes where purity is critical
- Reactive end groups can be attacked by the very aggressive ozone molecule resulting in crazing, bubbling and stress cracking of the polymer.

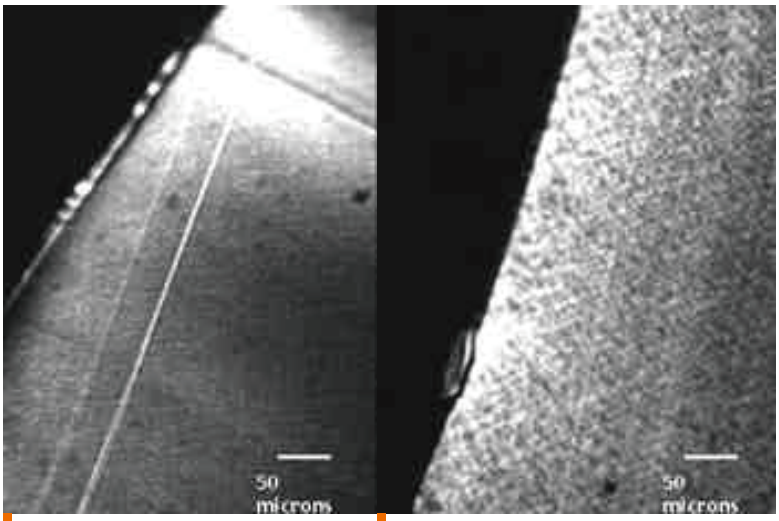
But thanks to DuPont’ s patented, fully fluorinated process that produces non-reactive end groups, those contamination worries are eliminated.

Increased Mechanical Reliability

You make a fine product and you want it to last. Teflon® PFA HP Plus provides increased flex life and improved chemical resistance that can extend component life for reduced downtime and lower cost of ownership.

Parts molded from Teflon® PFA HP Plus provide up to 10 times the flex life of standard HP parts, offering design freedom to makers of fluid handling components and systems for the semiconductor industry.

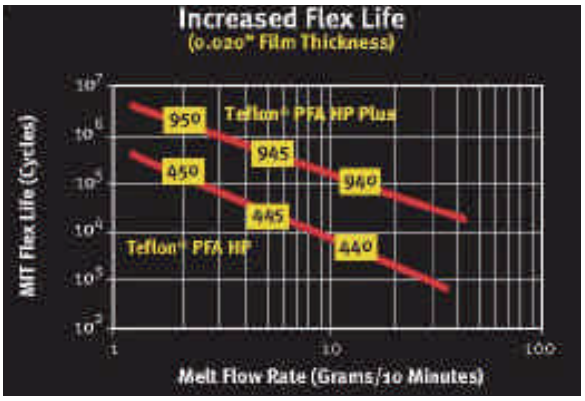
The flex life improvement, and therefore increased mechanical reliability, is due to the tougher micro structure of Teflon® PFA HP Plus.



Inside wall of commercially made tubing of Teflon® PFA HP Plus

Inside wall of commercially made tubing of Teflon® PFA HP

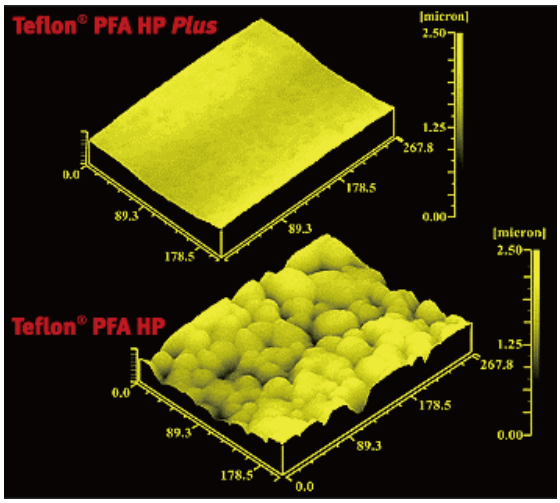
The fine spherulite structure shown on the left contributes to the improved structure of Teflon® PFA HP Plus.



Smoother Surface

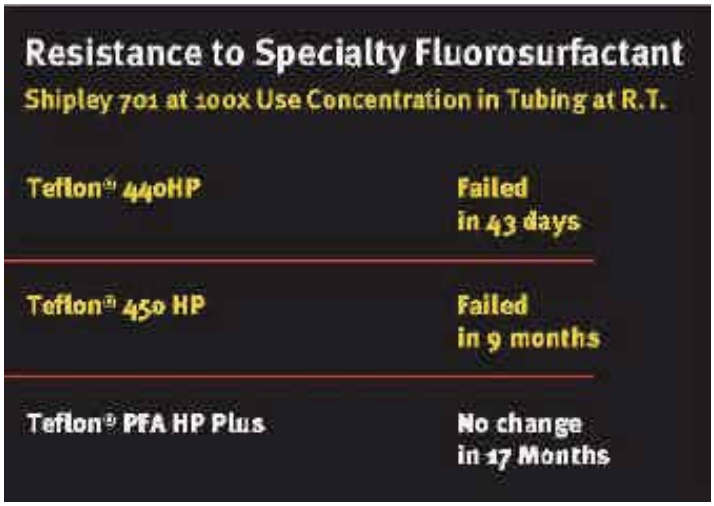
Nothing matches high-purity Teflon® PFA HP Plus in making ultra-reliable, non-contaminating parts for semiconductor manufacturing, with unsurpassed smooth as-molded surfaces. Smooth surfaces are easier to clean, and resist generating particles into the system.

The magnification on the vertical axis has been enhanced 25X to show the difference in the smoothness between Teflon® PFA HP and Teflon® PFA HP Plus.



More Stress Crack Resistance

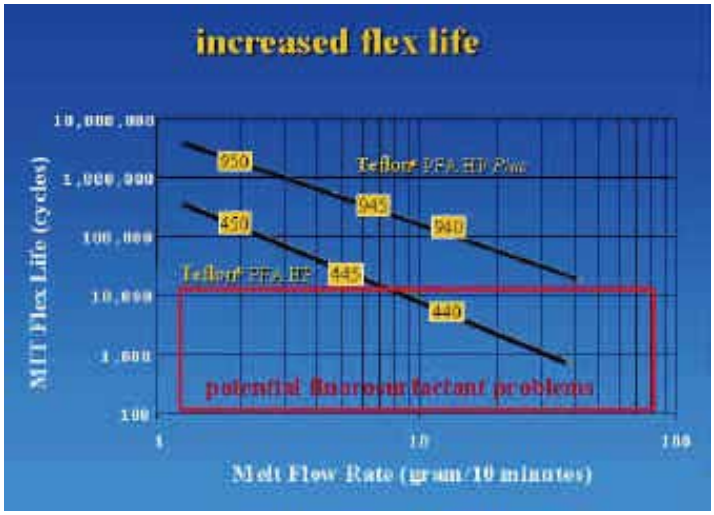
Teflon® PFA HP Plus delivers outstanding resistance to stress crack promoting chemicals, including fluorosurfactants.



The chemically aggressive fluorosurfactants increasingly being used in semiconductor processes can result in stress cracking, thus limiting product life while increasing replacement costs. Parts made with Teflon® PFA HP Plus have shown significant improvement in resistance to these aggressive stress-cracking agents, with no cracking experienced in laboratory tests or field installations.

The improved chemical resistance of Teflon® PFA HP Plus will, in turn, lower future costs by allowing current fluid-handling systems to handle new process chemistries and reduce development time.

As via's become narrower, and aspect ratios increase, more and more fluorosurfactants are being used to enhance wet cleaning. Flex life and fluorosurfactant resistance are both determined by the micro structure of the polymer. Improved flex life resins also show increased resistance to fluorosurfactants.



As shown in the red box in the chart above, materials that show a MIT flex life at less than 10,000 cycles are more prone to surfactant stress crack failure from fluorosurfactants.

Standard

Property	ASTM Test Method	Unit	PFA HP Plus
Nominal Melting Point	D 3418	℃	285~300
Specific Gravity	D 792		≥2.13
Tensile strength, 23℃	D 3307	MPa	25
200℃		MPa	15
Ultimate Elongation, 23℃	D 3307	%	250
200℃		%	455
Flexural Module, 23℃	D 790	MPa	689
200℃		MPa	55
Deformation Under Load 23℃	D 621	% Strain	4
150℃			5
Hardness Durometer	D 2240	Share	D 55
MIT Folding Endurance	D 2176	Cycles	1,800,000
Water Absorption, 24Hrs	D 570	%	<0.05

PFA HP Plus Glass Fabric Backed Sheet

Style Number	PFA Thickness (mm)	Total thickness (mm)	Width (mm)
951HP Plus	2.3	2.9	1,200
	3.0	3.6	1,200

Roll length: Minimum 20M

Welding Material

Item	PFA Rod				PFA Cap Strip	
Dimension (mm)	3Ø	3.5Ø	4Ø	5Ø	14w×2.5t	14.7w×2.7t
Roll length	100M/Roll				50M/Roll	
Weight (g/M)	15.2	19.4	26.8	41.9	74.9	84.7

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