Teflon® PFA 951HP Plus

Perfluoroalkoxy

DuPont Fluoropolymers

Message:

For inventory control purposes product name may be followed by an X.
Products labeled PFA 951HP Plus and PFA 951HP Plus X are equivalent and all information in this document is applicable to both.
Typical Application
With permeation resistance that is up to 60% greater than standard PFA, DuPont™ Teflon ® PFA 951HP Plus is designed for applications where reduced chemical permeation, resistance to stress-cracking, and surface smoothness are critical to reducing contamination and protecting process yields. Applications for Teflon ® PFA 951HP Plus include fluid handling components for high-performance chemical delivery systems, as well as tubing, unsupported pipe linings for the production of ultra-pure chemicals, and semiconductor components where purity in the parts-per-billion range is needed.
Description
DuPont™ Teflon ® PFA 951HP Plus is a premium fluoroplastic resin available in pellet form. Teflon ® PFA 951HP Plus possesses the same exceptional chemical resistance, high purity, and protection against ionic contamination as Teflon ® PFA HP grades with the added benefits of improved flex life and chemical stress-crack resistance. Teflon ® PFA 951HP Plus has unmatched HCl permeation resistance, and is also 45% less permeable to nitrogen than other PFAs (permeation by nitrogen is a general indication of the rate of permeation by other molecules). Additionally, the improved flex life and chemical resistance will reduce the cost of ownership of high purity fluid handling systems by reducing downtime caused by mechanical or chemical stresses. Parts molded with Teflon ® PFA 951HP Plus have an xceptionally smooth finish, which can further help prevent buildup of microbial contamination in water handling systems. Table 1 shows the typical property data for Teflon ® PFA 951HP Plus.
Teflon ® PFA 951HP Plus is a relatively low melt flow rate (typical MFR of 2), special purpose resin with the lowest level of extractables designed to meet ultra-high purity requirements. The enhanced resistance to environmental stress-cracking makes Teflon ® PFA 951HP Plus a preferred resin when extended service is required in hostile environments involving chemical, thermal, and mechanical stress. Additionally, the enhanced purity of Teflon ® PFA 951HP Plus makes it suitable for applications that require improved color, lower extractable fluorides, and freedom from other foreign materials. This product contains no additives and is designed for hostile chemical environments where purity in the parts-per-billion range is needed. Examples are in semiconductor manufacture, fluid handling systems for industry or life sciences, and instrumentation for precise measurements of fluid systems. Teflon ® PFA 951HP Plus combines the processing ease of conventional thermoplastics with the properties similar to those of polytetrafluoroethylene.
With Teflon ® PFA 951HP Plus, components can last longer under dynamic loads and resist damage caused by ozonated fluids nd fluorosurfactants. Combined with exceptional chemical, permeation, and stress-crack resistance, this durability leads to a reduced cost of ownership. The high purity and fully fluorinated molecule end groups of Teflon ® PFA 951HP Plus can reduce contamination to protect process yields.
Properly processed products made from neat Teflon ® PFA 951HP Plus resin provide the superior properties characteristic of fluoroplastic resins: chemical inertness, exceptional dielectric properties, heat resistance, toughness and flexibility, low coefficient of friction, non-stick characteristics, negligible moisture absorption, low flammability, performance at temperature extremes, and excellent weather resistance.
In a flame situation, products of Teflon ® PFA 951HP Plus resist ignition and do not promote flame spread. When ignited by flame from other sources, their contribution of heat is very small and added at a slow rate with very little smoke.
Teflon ® PFA 951HP Plus meets the requirements of ASTM D 2116-07(2012), Type V

General Information	
Features	High purity
	Low friction coefficient
	Low hygroscopicity
	Low smoke
	High ESCR (Stress Cracking Resistance)
	Good electrical performance
	Good flexibility
	Low liquidity
	Good chemical resistance
	Good weather resistance
	Heat resistance, medium
	Thermal stability, good

	Good toughness
	Compliance of Food Exposure
Uses	Lining
	Pipe fittings
	Liquid treatment
Agency Ratings	FDA not rated
Forms	Particle
Processing Method	Blow molding
	Extrusion
	Resin transfer molding
	Compression molding
	Injection molding

Physical	Nominal Value	Unit	Test Method
Specific Gravity	2.15	g/cm³	ASTM D792
Melt Mass-Flow Rate (MFR) (372°C/5.0 kg)	2.0	g/10 min	ASTM D3307, ISO 12086
Water Absorption (24 hr)	< 0.030	%	ASTM D570
Hardness	**Nominal Value**	**Unit**	**Test Method**
Durometer Hardness (Shore D)	55		ASTM D2240, ISO 868
Mechanical	**Nominal Value**	**Unit**	**Test Method**
Tensile Strength			ASTM D3307, ISO 12086
23°C	28.0	MPa	ASTM D3307, ISO 12086
200°C	15.0	MPa	ASTM D3307, ISO 12086
Tensile Elongation			ASTM D3307, ISO 12086
Fracture, 23°C	290	%	ASTM D3307, ISO 12086
Fracture, 200°C	450	%	ASTM D3307, ISO 12086
Flexural Modulus			ASTM D790, ISO 178
23°C	600	MPa	ASTM D790, ISO 178
200°C	55.0	MPa	ASTM D790, ISO 178
Thermal	**Nominal Value**	**Unit**	**Test Method**
Melting Temperature	315	°C	ASTM D4591
Electrical	**Nominal Value**	**Unit**	**Test Method**
Volume Resistivity	1.0E+18	ohms·cm	ASTM D257, ISO 1325
Dielectric Strength			
0.250 mm [1]	80	kV/mm	ASTM D149
0.250 mm	80	kV/mm	IEC 60243-1
Dielectric Constant (1 MHz)	2.03		ASTM D150, IEC 60250
Dissipation Factor (1 MHz)	< 2.0E-4		ASTM D150, IEC 60250
Flammability	**Nominal Value**	**Unit**	**Test Method**
Flame Rating [2]	V-0		UL 94

Oxygen Index	> 95	%	ASTM D2863, ISO 4589-2
Additional Information	Nominal Value	Unit	Test Method
Critical Shear Rate (372°C)	12.0	sec^-1	
MIT Folding Endurance [3] (200.0 µm)	1.8E+6	Cycles	ASTM D2176
Weather and Chemical Resistance: Outstanding			

NOTE	
1.	Method A (short time)
2.	These results are based on laboratory tests under controlled conditions and do not reflect performance under actual fire conditions, current rating is a typical theoretical value.
3.	Depending on fabrication conditions

Recommended distributors for this material

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