Teflon® PFA 416HP

Perfluoroalkoxy

DuPont Fluoropolymers

Message:

For inventory control purposes product name may be followed by an X.
Products labeled PFA 416 HP and PFA 416 HP X are equivalent and all information in this document is applicable to both.
Typical Application
Applications for DuPont™ Teflon ® PFA 416HP include high performance thin-wall wire coatings; intricate injection molded parts for production of chemicals where purity in the parts-per-billion range is needed; semiconductor components and electronic parts; and fluid handling systems for high performance chemical filters. With a typical melt flow rate of 42, Teflon ® PFA 416HP resin is ideally suited for applications requiring a high processing speed and very low viscosity.
Description
DuPont™ Teflon ® PFA 416HP is a special purpose fluoroplastic resin available in pellet form. This resin has a higher melt flow rate (typical MFR of 42) than most other PFA fluoroplastic resins, which permits higher extrusion speed and easier processing, making Teflon ® PFA 416HP a cost-effective alternative for producing thin-wall and complicated articles. Unlike other high melt flow rate polymers, Teflon ® PFA 416HP is specially formulated to provide a high melt flow rate for processing ease, while still providing good flexural properties and stress-crack resistance. These unique properties, coupled with the resin's high thermal stability, enable thin coatings of ultra-fine wires and injection molding of complex parts. Table 1 shows the typical property data for Teflon ® PFA 416HP.
The enhanced purity of Teflon ® PFA 416HP makes it suitable for applications that require improved color, lower extractable fluorides, and freedom from other foreign materials. Teflon ® PFA 416HP contains no additives and is designed for hostile chemical environments where purity in the parts-per-billion range is needed. Teflon ® PFA 416HP combines the processing ease of conventional thermoplastics with many properties similar to those of polytetrafluoroethylene. Compared to other thermoplastics, the high melt strength and thermal stability of Teflon ® PFA 416HP can be used to improve processing rates, and allows intricate electronics to be insulated with an extremely thin coating and still withstand soldering.
Properly processed products made from neat Teflon ® PFA 416HP resin provide the superior properties typical of the 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 416HP 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 416HP meets the requirements of ASTM D3307, Type IX

General Information	
Features	High purity
	Low friction coefficient
	Low hygroscopicity
	Low smoke
	Good electrical performance
	Good melt strength
	Good flexibility
	High liquidity
	Good chemical resistance
	Good weather resistance
	Heat resistance, medium
	Thermal stability, good
	Good toughness
	Compliance of Food Exposure
Uses	Semiconductor molding compound
	Thin coating

	Electrical components
	Filter
	Liquid treatment
Agency Ratings	FDA 21 CFR 177.1550
	Europe No 10/2011
Forms	Particle
Processing Method	Extrusion
	Resin transfer molding
	Compression molding
	Injection molding

Physical	Nominal Value	Unit	Test Method
Specific Gravity	2.14	g/cm³	ASTM D792
Melt Mass-Flow Rate (MFR) (372°C/5.0 kg)	42	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 (23°C)	25.0	MPa	ASTM D3307, ISO 12086
Tensile Elongation (Break, 23°C)	350	%	ASTM D3307, ISO 12086
Flexural Modulus (23°C)	690	MPa	ASTM D790, ISO 178
Thermal	**Nominal Value**	**Unit**	**Test Method**
Melting Temperature	305	°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)	4.0E+3	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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