



Teflon™ PFA 350

Molding and Extrusion Resin

Product Information

For inventory control purposes, product name may be followed by an X.

Products labeled PFA 350 and PFA 350 X are equivalent, and all information in this document is applicable to both.

Typical Applications

Applications for Teflon™ PFA 350 include extruded tubing for use in handling aggressive fluids at high pressures; chemical linings for pipes used in the chemical processing industry; film for high flex service; and traditional extruded, injection-molded, or blow-molded articles requiring the unique performance of Teflon™.

Description

Teflon™ PFA 350 is a general-purpose fluoropolymer resin available in pellet form. Compared with other grades of Teflon™ PFA, its most unique features are a relatively low flow rate, greatly increased flex life, and enhanced resistance to environmental stress-cracking over both Teflon™ PFA 340 and 345 (Teflon™ PFA 350 has a typical MIT folding endurance of 500,000*, compared to that of 15,000 and 50,000 for Teflon™ PFA 340 and 345, respectively). Teflon™ PFA 350 is preferred when extended service is required in hostile environments involving chemical, thermal, and mechanical stress. Table 1 shows the typical property data for Teflon™ PFA 350.

Teflon™ PFA 350 is used when traditional extrusion and molding processes are required for producing products with the superior properties of a fluoropolymer resin. Compared to other thermoplastics, the high melt strength and thermal stability of Teflon™ PFA 350 can be used to improve processing rates. Compared with other fluoropolymers, creep resistance at high service temperatures provides a superior balance and level of end-use properties. Teflon™ PFA 350 combines the processing ease of conventional thermoplastics with many properties similar to those of polytetrafluoroethylene.

Properly processed products made from neat Teflon™ PFA 350 resin provide the superior properties characteristic of fluoropolymer 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 350 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.

Processing

Teflon™ PFA 350 can be processed by conventional melt extrusion, and by injection, compression, transfer, and blow molding processes. High melt strength and heat stability permit the use of relatively large die openings and high temperature draw-down techniques that increase production rates. Reciprocating screw injection molding machines are preferred. Corrosion-resistant metals should be used in contact with molten fluoropolymer resin. Extruder barrel should be long, relative to diameter, to provide residence time for heating the resin to approximately 390 °C (730 °F). For more detailed processing information, including recommended draw-down ratios, consult your Chemours sales representative.

Safety Precautions

WARNING! VAPORS CAN BE LIBERATED THAT MAY BE HAZARDOUS IF INHALED.

Before using Teflon™ PFA 350 resin, refer to the Safety Data Sheet and the latest edition of "The Guide to the Safe Handling of Fluoropolymer Resins," published by the Plastics Industry Association (www.fluoropolymers.org) or by PlasticsEurope (www.plasticseurope.org). Open and use containers only in well-ventilated areas using local exhaust ventilation (LEV). Vapors and fumes liberated during hot processing of Teflon™ PFA 350 should be exhausted completely from the work area. Contamination of tobacco with these polymers must be avoided. Vapors and fumes liberated during hot processing and which are not properly exhausted, or from smoking tobacco or cigarettes contaminated with Teflon™ PFA 350 may cause flu-like symptoms such as chills, fever, and sore throat. This may not occur until several hours after exposure and will typically pass within about 24 hours. Mixtures with some finely divided metals, such as magnesium or aluminum, can be flammable or explosive under some conditions.

Storage and Handling

The properties of Teflon™ PFA 350 resin are not affected by storage time. Ambient storage conditions should be designed to avoid airborne contamination and water condensation on the resin when it is removed from containers.

Freight Classifications

Teflon™ PFA 350 resin is classified as "Plastics, Materials, Pellets."

Packaging

Teflon™ PFA 350 is supplied as pellets and is available in 25-kg multilayer bags with an integral polyethylene liner.

Table 1: Typical Property Data for Teflon™ PFA 350 Molding and Extrusion Resin

Property	Test Method		Unit	Typical Value
GENERAL				
Melt Flow Rate	ISO 12086	ASTM D3307	g/10 min	2
Melting Point	—	ASTM D4591	°C (°F)	305 (581)
Specific Gravity	—	ASTM D792	—	2.15
Critical Shear Rate, 372 °C (702 °F)	—	—	1/s	12
MECHANICAL				
Tensile Strength	ISO 12086	ASTM D3307	MPa (psi)	
23 °C (73 °F)				28 (4,000)
250 °C (482 °F)				14 (2,000)
Ultimate Elongation	ISO 12086	ASTM D3307	%	
23 °C (73 °F)				300
250 °C (482 °F)				500
Flexural Modulus	ISO 178	ASTM D790	MPa (psi)	
23 °C (73 °F)				520 (75,000)
250 °C (482 °F)				35 (5,000)
MIT Folding Endurance (0.20 mm, 8 mil film)	—	ASTM D2176 [‡]	Cycles	500,000*
Hardness Durometer	ISO 868	ASTM D2240	—	D55
ELECTRICAL				
Dielectric Strength, Short Time, 0.25 mm (0.010 in)	IEC 243	ASTM D149	kV/mm (V/mil)	80 (2,000)
Dielectric Constant, 1 MHz (10 ⁶ Hz)	IEC 250	ASTM D150	—	2.03
Dissipation Factor, 1 MHz (10 ⁶ Hz)	IEC 250	ASTM D150	—	<0.0002
Volume Resistivity	ISO 1325	ASTM D257	ohm-cm	10 ¹⁸
OTHER				
Water Absorption, 24 hr	—	ASTM D570	%	<0.03
Weather and Chemical Resistance	—	—	—	Outstanding
Limiting Oxygen Index	ISO 4589	ASTM D2863	%	>95
Continuous Service Temperature [‡]	—	—	°C (°F)	260 (500)
Flammability Classification [†]	—	UL 94	—	V-0

* Depending on fabrication conditions

† Historical standard

‡ Definition of continuous service temperature: The continuous service temperature is based on accelerated heat-aging tests, and represents the temperature at which tensile strength and ultimate elongation retain 50% of the original values after 20,000 hr thermal aging. Continuous service temperature above 260 °C (500 °F) may be feasible, depending on such factors as chemical exposure, support from the substrate, etc. When considering uses of Teflon™ PFA 350 above 260 °C (500 °F), preliminary testing should be done to verify suitability.

* 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.

Note: Teflon™ PFA 350 meets the requirements of ASTM D3307, Type II

Typical properties are not suitable for specification purposes.

Statements or data regarding behavior in a flame situation are not intended to reflect hazards presented by this or any other material when under actual fire conditions.

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