



# DuPont™ Teflon® PFA 3000

## FLUOROPOLYMER RESIN

### Product Information

## Extrusion and Molding Resin

### Brand

Teflon® is a registered trademark of DuPont for its brand of fluoropolymer resins, which can only be licensed by DuPont for use in approved applications. Customers who wish to use the Teflon® trademark in connection with DuPont PFA products under license from DuPont should contact (800) 262-2745. Without a license, customers may not identify their product as containing Teflon®, but may refer to the resin as PFA 3000.

### Description

DuPont™ Teflon® PFA 3000 is a general-purpose resin available in clear, 2.5-mm (0.1-in.) pellets. Compared with other grades of Teflon® PFA, its most unique features are high flow rate and properties that make it suitable for a variety of processes and demanding end uses.

Teflon® PFA 3000 and the other Teflon® PFA (perfluoroalkoxy) fluoropolymer resins combine the processing ease of conventional thermoplastics with properties similar to those of polytetrafluoroethylene. They have high melt strength, stability at high processing temperatures, and resistance to creep at high service temperature.

Teflon® PFA 3000 is used when traditional extrusion and molding processes are required for producing products with the superior properties of a fluoro-polymer resin. For a given process, its high melt strength and thermal stability can be used to improve rates. Compared with other fluoropolymers, its creep resistance at its high service temperatures provides a superior balance and level of end-use properties.

Properly processed products made from neat Teflon® PFA 3000 resin provide the superior properties typical of the fluoropolymer resins: retention of properties after service at 260°C (500°F), useful properties at -196°C (-320°F), and chemical inertness to nearly all industrial chemicals and solvents. Dielectric constant and dissipation factor are exceptionally low. Molded products have moderate stiffness and high ultimate elongation.

In a flame situation, products of Teflon® PFA 3000 resist ignition and do not themselves promote flame spread. When ignited by flame from other sources, their contribution of heat is small and with very little smoke.

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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## Typical End Products

Applications for Teflon® PFA 3000 include extruded tubing and other profiles for hose, electrical insulators, and sleeving; industrial film; and injection-molded articles requiring superior electrical, chemical, and thermal properties.

## Processing

Teflon® PFA 3000 can be processed by conventional melt extrusion and by injection, compression, and transfer 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 resin. Extruder barrels should be long, relative to diameter, to provide residence time for heating the resin to approximately 390°C (730°F).

## Safety Precautions

### WARNING!

VAPORS CAN BE LIBERATED THAT MAY BE HAZARDOUS IF INHALED.

Before using Teflon® PFA 3000, read the Material Safety Data Sheet and the detailed information in the "Guide to the Safe Handling of Fluoropolymer Resins," latest edition, published by the Fluoropolymers Division of The Society of the Plastics Industry—available from DuPont.

Open and use containers only in well-ventilated areas using local exhaust ventilation (LEV). Vapors and fumes liberated during hot processing, or from smoking tobacco or cigarettes contaminated with Teflon® PFA 3000, may cause flu-like symptoms (chills, fever, sore throat) that may not occur until several hours after exposure and typically pass within about 24 hours. Vapors and fumes liberated during hot processing should be exhausted completely from the work area; contamination of tobacco with polymers should be avoided.

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 3000 resins 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 Classification

Teflon® PFA 3000 is classified as "Plastics, Materials, Granules."

## Packaging

Teflon® PFA 3000 is packaged in 24.9-kg (55-lb) bags with a polyethylene inner lining. Special packages containing 2.3 kg (5 lb) and 11.3 kg (25 lb) are also available.

**Table 1**  
**Typical Property Data for DuPont™ Teflon® PFA Fluoropolymer Resin Grade 3000**

Property	Test Method <sup>(1)</sup>	Unit	Typical Value
<b>Mechanical/Physical</b>			
Tensile strength, 23°C, AWG #20 insulation	ISO 12086-2 D 638	MPa	
Original			24.8
After aging 96 h at 260°C			27.6
Elongation at break, %	ISO 12086-2 D 638		
Original			395
After aging 96 h at 260°C			465
Flexural modulus, 23°C	ISO 178 D 790	MPa	580
Hardness, Shore durometer	ISO 868 D 2240		D54
Specific gravity	ISO 1183 D 792		2.12–2.17
<b>Electrical</b>			
Dielectric strength, 0.20 mm film	IEC 243 D 149	kV/mm	80
Dielectric constant	IEC 250 D 150	–	2.1
High voltage tracking rate	UL-746A	mm/min	0
<b>Thermal</b>			
Melting point	ISO 11357 D 4591/D 3418	°C	295–315
Melt flow rate	ISO 12086 D 3307	g/10 min.	25
Rate of burning <sup>(2)</sup>	D 635		
ATB		s	<5
AEB		mm	10
Smoke, NBS <sup>(2)</sup>			
F			80
NF			1
Limited Oxygen Index	ISO 4589 D 2863	%	>95
Vertical burn <sup>(2)</sup>	UL		
UL-83			P
UL-94			V–0
Hot wire ignition	UL-746A	s	>300

**Note:** 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.

<sup>(1)</sup> ASTM unless otherwise specified.

<sup>(2)</sup> These results are based on laboratory tests under controlled conditions, and do not reflect performance under actual fire conditions.

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CAUTION: Do not use in medical applications involving permanent implantation in the human body or contact with internal body fluids or tissues. For other medical applications, see "DuPont Medical Caution Statement," H-50102.

