

DuPont™ 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 Application

Applications for DuPont™ 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

DuPont™ Teflon® PFA 350 is a general-purpose fluoroplastic 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 fluoroplastic 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 fluoroplastics, 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 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 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 fluoroplastic 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 DuPont representative.

Safety Precautions

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

Before using DuPont™ 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 Society of the Plastics Industry, Inc. (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

DuPont™ 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.



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Table 1: Typical Property Data for Teflon® PFA 350

| PROPERTY | TEST METHOD | | UNIT | TYPICAL VALUE |
|--|-------------|-------------|---------------|------------------|
| GENERAL | | | | |
| Melt Flow Rate | ISO 12086 | ASTM D3307 | g/10min | 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) | | | | 625 (90,000) |
| 250°C (482°F) | | | | 69 (10,000) |
| MIT Folding Endurance (0.20mm, 8mils film) | - | ASTM D2176‡ | Cycles | 500,000* |
| Hardness Durometer | ISO 868 | ASTM D2240 | - | D55 |
| ELECTRICAL | | | | |
| Dielectric Strength, Short Time, 0.25mm (0.010 in) | IEC 243 | ASTM D149 | kV/mm (V/mil) | 80 (2,000) |
| Dielectric Constant, 1 MHz (106 Hz) | IEC 250 | ASTM D150 | - | 2.03 |
| Dissipation Factor, 1 MHz (106 Hz) | IEC 250 | ASTM D150 | - | <0.0002 |
| Volume Resistivity | ISO 1325 | ASTM D257 | ohm•cm | 10 ¹⁸ |
| OTHER | | | | |
| Water Absorption, 24h | - | ASTM D570 | % | <0.03 |
| Weather and Chemical Resistance | - | - | - | Outstanding |
| Limiting Oxygen Index | ISO 4589 | ASTM D2863 | % | >95 |
| Flammability Classification† | - | UL 94 | - | V-0 |

* Depending on fabrication conditions

‡ Historical standard

† 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 III

Nominal 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

This product is manufactured with technology that meets the goals of the U.S. Environmental Protection Agency (EPA) 2010/15 PFOA stewardship program.

See www.fluoropolymers.dupont.com for more details.

For more information, visit www.teflon.com/industrial

For sales and technical support contacts, visit www.teflon.com/industrialglobalsupport

HOW TO USE THE DUPONT™ TEFLON® BRAND NAME WITH YOUR PRODUCT

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Unlicensed customers may refer to the DuPont product offering when used as an ingredient in their products by the DuPont product code number and generic descriptor. In this instance, when the product offering is to be sold and used without a license, the customer may refer to the ingredient as **DUPONT™ PFA 350** resin.

If you are interested in applying for a trademark licensing agreement for the DuPont™ Teflon® brand, please contact us at (800) 207-0756 in the US or (302) 996-7906 (outside of the US).

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For medical emergencies, spills, or other critical situations, call (800) 441-7515 within the United States. For those outside of the United States, call (302) 774-1000.

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