# Teflon® PFA 940HP Plus

Perfluoroalkoxy

DuPont Fluoropolymers

## Message:

For inventory control purposes product name may be followed by an X.
Products labeled PFA 940HP Plus and PFA 940HP Plus X are equivalent and all information in this document is applicable to both.
Typical Application
With a typical MIT folding endurance of 300,000* cycles, DuPont™ Teflon ® PFA 940HP Plus is designed to withstand repeated flexing and aggressive chemical stress-cracking agents. Applications for Teflon ® PFA 940HP 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 critical.
Description
DuPont™ Teflon ® PFA 940HP Plus is a premium fluoroplastic resin available in pellet form. Teflon ® PFA 940HP Plus possess-es 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 (typical MIT flex of 300,000*) and chemical stress-crack resistance. Teflon ® PFA 940HP Plus meets the increasingly stringent requirements for ultra-reliable and non-contaminating parts, as well as unmatched HCl permeation resistance. 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. Additionally, parts molded with Teflon ® PFA 940HP Plus have improved clarity and a 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 940HP Plus.
This special purpose resin has a relatively high melt flow rate (typical MFR of 16), which permits higher extrusion speed and easier processing. The enhanced resistance to environmental stress-cracking makes Teflon ® PFA 940HP 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 940HP 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 940HP Plus combines the processing ease of conventional thermoplastics with the properties similar to those of polytetrafluoroethylene.
With Teflon ® PFA 940HP Plus, components can last longer under dynamic loads and resist damage caused by ozonated fluids and fluorosurfactants. Combined with excellent 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 940HP Plus can reduce contamination to protect process yields.
Properly processed products made from neat Teflon ® PFA 940HP 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 940HP 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 940HP Plus meets the requirements of ASTM D3307, Type IV

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

| | |
|---|---|
| | Medium transparency |
| Uses | Lining |
| | Pipe fittings |
| | Liquid treatment |
| 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) | 16 | 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 | 11.0 | MPa | ASTM D3307, ISO 12086 |
| Tensile Elongation | | | ASTM D3307, ISO 12086 |
| Fracture, 23°C | 310 | % | ASTM D3307, ISO 12086 |
| Fracture, 200°C | 450 | % | ASTM D3307, ISO 12086 |
| Flexural Modulus | | | ASTM D790, ISO 178 |
| 23°C | 650 | MPa | ASTM D790, ISO 178 |
| 200°C | 60.0 | MPa | ASTM D790, ISO 178 |
| **Thermal** | **Nominal Value** | **Unit** | **Test Method** |
| Melting Temperature | 290 | °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) | 56.0 | sec^-1 | |

| | | | |
|---|---|---|---|
| MIT Folding Endurance [3] (200.0 µm) | 3.0E+5 | 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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