Hyflon® PFA P420
perfluoroalkoxy

Hyflon® PFA is a family of semi-crystalline, melt processable perfluoropolymers which combine excellent mechanical characteristics to unique properties such as chemical inertness, heat resistance, inherent flame resistance, low surface energy and exceptional dielectric properties. PFA resins are designed to retain their properties over a wide range of temperatures (-196/260°C or -320/500°F) and are the material of choice in applications such as linings in the Chemical Process Industry, specialty cables, semiconductor industry, aero space, etc.

Hyflon® PFA P420 is a high molecular weight, low melt flow rate multi-purpose resin designed for pipe, cable and stock shapes extrusion, injection, compression, and transfer molding. Hyflon® PFA P420 is an ASTM D3307 - Type II resin.

General
Material Status • Commercial: Active
Availability • Africa & Middle East • Asia Pacific • Europe
• Latin America • North America
Features • Flame Retardant • High Heat Resistance • High Molecular Weight
• Low Flow • Semi Crystalline
Uses • Aerospace Applications • Cable Jacketing • Liners
• Piping • Semiconductor Molding Compounds
Agency Ratings • ASTM D3307 Type II
Forms • Pellets
Processing Method • Compression Molding • Extrusion
• Injection Molding • Resin Transfer Molding

Physical
Typical Value Unit Test method
Density / Specific Gravity 2.13 to 2.18 ASTM D792
Melt Mass-Flow Rate (MFR) (372°C/5.0 kg) 1.5 to 3.0 g/10 min ASTM D1238

Mechanical
Typical Value Unit Test method
Tensile Modulus 1 (23°C) 500 to 600 MPa ASTM D1708
Tensile Strength (Break, 23°C) > 26.0 MPa ASTM D1708
Tensile Elongation (Break, 23°C) > 300 % ASTM D1708
Flex Life (300.0 µm) 9.0E+4 to 1.2E+5 Cycles ASTM D2176

Impact
Typical Value Unit Test method
Charpy Notched Impact Strength No Break ASTM D256

Hardness
Typical Value Unit Test method
Durometer Hardness (Shore D) 59 ASTM D2240

Thermal
Typical Value Unit Test method
Continuous Use Temperature 260 °C
Melting Temperature 300 to 310 °C ASTM D3307
Peak Crystallization Temperature (DSC) 275 to 285 °C DSC
CLTE - Flow 1.2E-4 to 2.0E-4 cm/cm/°C ASTM D696
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<table>
<thead>
<tr>
<th>Thermal</th>
<th>Typical Value</th>
<th>Unit</th>
<th>Test method</th>
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</thead>
<tbody>
<tr>
<td>Specific Heat (23°C)</td>
<td>900 to 1100</td>
<td>J/kg/°C</td>
<td>DSC</td>
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<tr>
<td>Thermal Conductivity (40°C)</td>
<td>0.20</td>
<td>W/m/K</td>
<td>ASTM C177</td>
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<tr>
<td>Crystallization Heat</td>
<td>25.0 to 35.0</td>
<td>J/g</td>
<td>DSC</td>
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<tr>
<td>Heat of Fusion</td>
<td>25.0 to 35.0</td>
<td>J/g</td>
<td>DSC</td>
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<tr>
<th>Electrical</th>
<th>Typical Value</th>
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<th>Test method</th>
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<tr>
<td>Surface Resistivity</td>
<td>&gt; 1.0E+17</td>
<td>ohms</td>
<td>ASTM D257</td>
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<tr>
<td>Volume Resistivity</td>
<td>&gt; 1.0E+17</td>
<td>ohms·cm</td>
<td>ASTM D257</td>
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<tr>
<td>Dielectric Strength</td>
<td>35 to 40</td>
<td>kV/mm</td>
<td>ASTM D149</td>
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<tr>
<td>Dielectric Constant 23°C, 50 Hz</td>
<td>2.10</td>
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<td>ASTM D150</td>
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<tr>
<td>Dielectric Constant 23°C, 100 kHz</td>
<td>2.10</td>
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<td>ASTM D150</td>
</tr>
<tr>
<td>Dissipation Factor 23°C, 50 Hz</td>
<td>&lt; 5.0E-4</td>
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<td>ASTM D150</td>
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<tr>
<td>Dissipation Factor 23°C, 100 kHz</td>
<td>&lt; 5.0E-4</td>
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<td>ASTM D150</td>
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<table>
<thead>
<tr>
<th>Flammability</th>
<th>Typical Value</th>
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<tbody>
<tr>
<td>Flame Rating</td>
<td>V-0</td>
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<td>UL 94</td>
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<tr>
<td>Oxygen Index</td>
<td>95 %</td>
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<td>ASTM D2883</td>
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Additional Information

PROCESSING

- Because PFA is corrosive in the melt, machinery used to process Hyflon® is typically lined with nickel content alloys. Clean, reworked material can be used up to 25% in weight.

HEALTH SAFETY AND ENVIRONMENT

- Hyflon® PFA P420 is a very inert polymer and it is not harmful if used and handled according to standard processing procedures. If handled inappropriately, it may release harmful toxic chemicals. Please refer to the Material Safety Data Sheets for more information on handling and safety.

PACKAGING AND STORAGE

- Hyflon® PFA P420 resin is available in 25 kg (55 lbs) and 500 kg (1102 lbs) packaging. Though it has an indefinite shelf life, it is recommended to store it in a clean area, protected by direct sun light and possible contamination.
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Notes
Typical properties: these are not to be construed as specifications.

1 1.0 mm/min