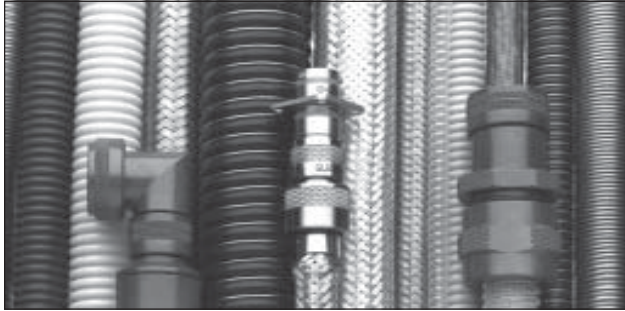


PFA/PTFE Properties Comparison Choosing the Right Teflon® Fluoropolymer Resin



Summary and Analysis

Understanding the performance characteristics of available material types is an essential first step in specifying the correct convoluted tubing for your interconnect application. But two of DuPont's most popular materials, Teflon® PFA and Teflon® PTFE are so close in most major performance areas that selection is more often an issue of price, rather than performance. Both materials show outstanding chemical properties for resistance to corrosive agents, nonsolubility, and nonflammability. Both are virtually identical in terms of their electrical properties for dielectric, dissipation, and surface resistivity. Even in critical melting point (service temperature) ratings, both materials have identical properties. In fact, it is only in three areas, cold flow, folding endurance and cost that these virtually identical fluoropolymer resins differ significantly. Because PFA is melt extruded, it exhibits better cold flow values than PTFE, which translates to better long-term sealing and reduced loosening of fittings. PTFE, on the other hand, exhibits better folding endurance than PFA, but at 500,000 bends before failure, PFA is well

within the operational tolerances of most applications. In terms of cost, PFA convoluted tubing is typically the better performer, as the melt extruded product is less costly to fabricate and can be produced in any length, effectively eliminating the scrap associated with PTFE.

Comparison Chart

Property	PFA 350	PTFE
Service Temperature	-95 °F/500 °F -71 °C/260 °C	-95 °F/500 °F -71 °C/260 °C
Thermal Conductivity	.25 W/MK	.19 W/MK
Tensile Strength	4,000 PSI (20,684 KP)	3,600 PSI (17,237 KP)
Specific Gravity	2.12 - 2.17	2.13 - 2.25
Hardness	55	55
Cold Flow	>2% 6.9 MPa (1,000 PSI) @25 °C (73 °F) at 1,000 hrs.	>10% 6.9 MPa (1,000 PSI) @25 °C (73 °F) at 1,000 hrs.
Flexural Modulus	590 - 625 MPa 85,000 - 90,000 PSI	345 - 620 MPa 50,000 - 90,000 PSI
MIT Folding Endurance	5 x 10 ⁵	1 x 10 ⁶
Chemical Properties	Inert	Inert
Electrical Resistivity	>10 ¹⁸ OHM/CM	>10 ¹⁸ OHM/CM
Water Absorption	<.03%	<.01%

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