

## PPS (Polyphenylene Sulfide)

PPS offers the broadest resistance to chemicals of any advanced engineering plastic. It has no known solvents below 392°F (200°C) and offers inertness to steam, strong bases, fuels and acids. PPS also exhibits a very low coefficient of linear thermal expansion.

<b>Physical Properties</b>	<b>Metric</b>	<b>English Comments</b>	
Specific Gravity	1.35 g/cc	0.0488 lb/in <sup>3</sup>	ASTM D792
Water Absorption	0.01 %	0.01 %	Immersion, 24hr; ASTM D570(2)
Water Absorption at Saturation	0.03 %	0.03 %	Immersion; ASTM D570(2)
<b>Mechanical Properties</b>			
Hardness, Rockwell M	95	95	ASTM D785
Hardness, Rockwell R	125	125	ASTM D785
Hardness, Shore D	85	85	ASTM D2240
Tensile Strength, Ultimate	93.1 MPa	13500 psi	ASTM D638
Elongation at Break	15 %	15 %	ASTM D638
Tensile Modulus	3.45 GPa	500 ksi	ASTM D638
Flexural Modulus	3.96 GPa	575 ksi	ASTM D790
Flexural Yield Strength	145 MPa	21000 psi	ASTM D790
Compressive Strength	148 MPa	21500 psi	10% Def.; ASTM D695
Compressive Modulus	2.96 GPa	430 ksi	ASTM D695
Shear Strength	62.1 MPa	9000 psi	ASTM D732
Coefficient of Friction	0.4	0.4	Dry vs. Steel;

			QTM55007
K (wear) Factor	4830 x 10 <sup>-8</sup> mm <sup>3</sup> /N-M	2400 x 10 <sup>-10</sup> in <sup>3</sup> -min/ft-lb-hr	QTM 55010
Limiting Pressure Velocity	0.105 MPa-m/sec	3000 psi-ft/min	4:1 safety factor; QTM 55007
Izod Impact, Notched	0.32 J/cm	0.6 ft-lb/in	ASTM D256 Type A

### Electrical Properties

Surface Resistivity per Square	Min 1e+013 ohm	Min 1e+013 ohm	EOS/ESD S11.11
Dielectric Constant	3	3	1MHz; ASTM D150
Dielectric Strength	21.3 kV/mm	540 V/mil	Short Term; ASTM D149
Dissipation Factor	0.0013	0.0013	1MHz; ASTM D150

### Thermal Properties

CTE, linear 68°F	50.4 μm/m-°C	28 μin/in-°F	(-40°F to 300°F); ASTM E831
Thermal Conductivity	0.288 W/m-K	2 BTU-in/hr-ft <sup>2</sup> -°F	ASTM F433
Melting Point	282 °C	540 °F	Crystalline, Peak; ASTM D3418
Maximum Service Temperature, Air	218 °C	425 °F	Long Term
Deflection Temperature at 1.8 MPa (264 psi)	121 °C	250 °F	ASTM D648
Flammability, UL94	V-0	V-0	1/8 inch

### Descriptive Properties

Compliance - FDA	Compliant		
Machinability	3	1-10, 1=Easier to Machine	

Service in Alcohols	Acceptable
Service in Aliphatic Hydrocarbons	Acceptable
Service in Aromatic Hydrocarbons	Acceptable
Service in Chlorinated Solvents	Acceptable
Service in Ethers	Acceptable
Service in Ketones	Acceptable
Service in Strong Acids	Limited
Service in Strong Alkalies	Acceptable
Service in Sunlight	Limited
Service in Weak Acids	Acceptable
Service in Weak Alkalies	Acceptable