

## Ultem® 1000 PEI

**Material Notes:** PS-PEI™ is an amorphous thermoplastic polyetherimide (PEI) made from Sabic Innovative Plastics' Ultem® 1000 and 2000 series resins. The unreinforced 1000 series materials are translucent amber in color, and combine exceptional mechanical, thermal, and electrical properties. The addition of glass fiber reinforcement in the 2000 series, coupled with proprietary extrusion techniques, provides the PS-PEI™ with both greater tensile strength and rigidity, while also improving dimensional stability.

- Excellent mechanical strength (exhibits high tensile strength at room temperature and retains a significant portion of this strength at elevated temperatures. Glass fibers further increase high-temperature strength)
- Outstanding heat resistance (retains its physical properties at elevated temperatures)
- Exceptional resistance to environmental forces (Environmental characteristics of PS-PEI™ include it's stress resistance)
- Inherent flame resistance with low smoke evolution (Tested internally to UL 94 V-0)
- High mechanical strength
- High dielectric strength and stability
- Low dissipation factor over a wide range of frequencies
- Excellent machinability and finishing characteristics (PS-PEI™ can be easily machined with conventional metalworking tools, painted, hot stamped, printed, or metallized)
- Resin used in natural grade are FDA, USP Class VI and NSF compliant

PS-PEI™ has many applications in medical, electronic/electrical, microwave, automotive, and aircraft industries.

Information Provided by Ensinger Inc.

**Vendors:** Plastic Sales Ltd shapes combine Ultem® PEI polymer with Plastic Sales's proprietary extrusion techniques for exceptional reliability, consistency, dimensional stability, and high temperature mechanical performance. FDA, USP Class VI and NSF compliant.

PS-PEI™ withstand severe environments, resist harsh chemicals, and perform well in extreme temperatures. They offer weight savings that have potential to drive lower cost systems.

Physical Properties	Metric	English	Comments
Specific Gravity	1.27 g/cc	1.27 g/cc	ASTM D792
Water Absorption	0.25 % @Temperature 22.8 °C, Time 86400 sec	0.25 % @Temperature 73.0 °F, Time 24.0 hour	ASTM D570
Water Absorption at Saturation	1.25 % @Temperature 22.8 °C	1.25 % @Temperature 73.0 °F	ASTM D570

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell M	109	109	ASTM D785
Tensile Strength at Break	105 MPa @Temperature 22.8 °C	15200 psi @Temperature 73.0 °F	ASTM D638
Elongation at Break	40 % @Temperature 22.8 °C	40 % @Temperature 73.0 °F	ASTM D638
Elongation at Yield	7.0 - 8.0 %	7.0 - 8.0 %	ASTM D638
Tensile Modulus	2.96 GPa @Temperature 22.8 °C	430 ksi @Temperature 73.0 °F	ASTM D638
Flexural Strength	152 MPa @Temperature 22.8 °C	22000 psi @Temperature 73.0 °F	ASTM D790
Flexural Modulus	3.31 GPa	480 ksi	ASTM D790

@Temperature 22.8 °C @Temperature 73.0 °F

Compressive Strength	151 MPa	21900 psi	ASTM D695
Compressive Modulus	3.31 GPa	480 ksi	ASTM D695
Shear Strength	103 MPa	15000 psi	Ultimate
Izod Impact, Notched	0.534 J/cm	1.00 ft-lb/in	ASTM D256

Electrical Properties	Metric	English	Comments
Volume Resistivity	1.00e+17 ohm-cm	1.00e+17 ohm-cm	1/16"; ASTM D257
Dielectric Constant	3.15	3.15	50% RH; ASTM D150
	@Frequency 1000 Hz	@Frequency 1000 Hz	
Dielectric Strength	28.0 kV/mm	710 kV/in	In Oil; ASTM D149
	32.7 kV/mm	830 kV/in	In Air; ASTM D149
Dissipation Factor	0.0013	0.0013	50% RH; ASTM D150
	@Frequency 1000 Hz, Temperature 22.8 °C	@Frequency 1000 Hz, Temperature 73.0 °F	

Thermal Properties	Metric	English	Comments
CTE, linear, Parallel to Flow	55.8 µm/m-°C	31.0 µin/in-°F	ASTM D696
Thermal Conductivity	0.216 W/m-K	1.50 BTU-in/hr-ft <sup>2</sup> -°F	ASTM D2214
Deflection Temperature at 0.46 MPa (66 psi)	210 °C	410 °F	1/4"; ASTM D648
Deflection Temperature at 1.8 MPa (264 psi)	201 °C	394 °F	1/4"; ASTM D648
Vicat Softening Point	219 °C	426 °F	ASTM D1525
Flammability, UL94	V-0	V-0	

All specifications are deemed to be approximate values and may vary depending on the processing methods used and the specimen or test piece. Information presented herein cannot necessarily be applied to finished items or products. Suitability of materials for a specific field of application must be assessed by the party responsible for processing or the end-user.

All technical specifications presented herein are designed merely to provide assistance in terms of project planning. Under no circumstances do they constitute a guaranteed property or quality of the items presented. Data herein has been provided by the manufacturer of the material and or matweb.com