

# TECHNICAL DATA SHEET

## Ultem® (PEI)

(PolyEtherImide)

Ultem® is a semi-transparent high temperature plastic material with extremely high strength and stiffness. Ultem is resistant to hot water and steam and can withstand repeated cycles in a steam autoclave. Ultem has outstanding electrical properties offer one of the highest dielectric strengths of any commercially available thermoplastic material. Ultem offers excellent chemical resistance, high dielectric strength, natural flame resistance, and extremely low smoke generation. Ultem provides exceptionally high mechanical properties

### GRADES OF ULTEM

#### Ultem® 1000 (unfilled)

Ultem® excels in hot air and water environments.

UUltem® is hydrolytically stable; it retains 100% of tensile strength after 2,000 steam autoclave cycles at 270°F. Ultem® also retains 85% of its tensile strength after 10,000 hour boiling water immersion. It is also UV and gamma radiation resistant.

#### Ultem® 2100 (10% glass filled)

#### Ultem® 2200 (20% glass filled)

#### Ultem® 2300 (30% glass filled)

\*Glass filled Ultem® provides even greater rigidity and dimensional stability while maintaining many of the useful characteristics of basic Ultem®. The glass reinforcement in Ultem® yields exceptional strength-to-weight ratio and increased tensile strength.

#### Benefits

- Chemical resistance
- Dimensional stability
- High dielectric strength
- Natural flame resistance
- Low smoke generation KPSI
- High strength
- FDA, USDA, USP Class VI & NSF Approved (natural color only)
- Available in glass-reinforced grades 30% (Ultem 2300), 20% (Ultem 2200), 10% (Ultem 2100).

#### Applications

- Medical reusable
- Aircraft components
- Electric/electrical components
- Circuit boards
- Computer circuitry
- Automotive
- Pump and valve parts
- Structural Probes
- Surgical Probes
- High Frequency Insulators used in Microwave Communications
- Pump Housings
- Wafer Processing

#### SHAPES AVAILABLE



### SEE NEXT PAGE FOR ADDITIONAL INFORMATION

ULTEM is a registered trademark of SABIC Innovative Plastics IP BV (formerly GE Plastics).  
 DURATRON is a registered trademark of Quadrant Engineering Plastic Products.

NOTE: The information contained herein are typical values intended for reference and comparison purposes only. They should NOT be used as a basis for design specifications or quality control. Contact us for manufacturers' complete material property datasheets.  
 All values at 73°F (23°C) unless otherwise noted.



**TYPICAL PROPERTIES of ULTEM® PEI POLYETHERIMIDE**

ASTM or UL test	Property	Ultem® 1000 unfilled	Ultem® 2100 10% glass	Ultem® 2200 20% glass	Ultem® 2300 30% glass
<b>PHYSICAL</b>					
D792	Density (lb/in <sup>3</sup> ) (g/cm <sup>3</sup> )	0.046 1.28	0.048 1.34	0.051 1.42	0.055 1.51
D570	Water Absorption, 24 hrs (%)	0.25	0.21	0.19	0.18
D570	Water Absorption, Saturation (%)	1.25	1.20	1.10	0.90
<b>MECHANICAL</b>					
D638	Tensile Strength (psi)	16,500	16,800	16,900	17,000
D638	Tensile Modulus (psi)	500,000	650,000	700,000	800,000
D638	Tensile Elongation at Break (%)	80	6	3	3
D790	Flexural Strength (psi)	20,000	23,000	25,000	27,000
D790	Flexural Modulus (psi)	500,000	-	-	850,000
D695	Compressive Strength (psi)	22,000	24,000	28,000	32,000
D695	Compressive Modulus (psi)	480,000	-	-	625,000
D785	Hardness, Rockwell	M112 / R125	M114 / R127	M114 / R127	M114 / R127
D256	IZOD Notched Impact (ft-lb/in)	0.5	0.6	0.8	1.0
<b>THERMAL</b>					
D696	Coefficient of Linear Thermal Expansion (x 10 <sup>-5</sup> in./in./°F)	3.1	1.8	1.4	1.1
D648	Heat Deflection Temp (°F / °C) at 264 psi	400 / 204	405 / 207	408 / 208	410 / 210
D3418	Glass Transition Temp (°F / °C)	410 / 210	410 / 210	410 / 210	410 / 210
-	Max Operating Temp (°F / °C)	340 / 171	340 / 171	340 / 171	340 / 171
C177	Thermal Conductivity (BTU-in/ft <sup>2</sup> -hr-°F) (x 10 <sup>-4</sup> cal/cm-sec-°C)	0.85 2.93	1.22 4.20	1.43 4.93	1.56 5.37
UL94	Flammability Rating	V-0	V-0	V-0	V-0
<b>ELECTRICAL</b>					
D149	Dielectric Strength (V/mil) short time, 1/8" thick	830	-	-	770
D150	Dielectric Constant at 1 KHz	3.15	3.5	3.5	3.7
D150	Dissipation Factor at 1 KHz	0.0013	0.0014	0.0015	0.0015
EOS/ESD S11.11	Surface Resistivity (ohms/square)	> 10 <sup>13</sup>	> 10 <sup>13</sup>	> 10 <sup>13</sup>	> 10 <sup>13</sup>

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