

# ULTEM®/POLYETHERIMIDE (PEI) - Unfilled

## KEY FEATURES

- Excellent Mechanical Strength
- Outstanding Heat Resistance
- Exceptional Resistance to Environmental Forces
- Inherent Flame Resistance with Low Smoke Evolution
- High Dielectrical Strength
- Low Dissipation Factor over a Wide Range of Frequencies
- Excellent Machinability and Finishing Characteristics

## DESCRIPTION

ULTEM® is a polyetherimide based polymer, also known as PEI, and is an amorphous thermoplastic with high mechanical strength and rigidity. Unfilled PEI thermoplastic is translucent and amber in color, and combines exceptional mechanical, thermal and electrical properties. Often referred to as ULTEM® plastic, polyetherimides are very similar in their physical characteristics to the polyarylsulphones, while simultaneously offering significant advantages. This material has a remarkably high creep resistance over a wide range of temperatures and furthermore, polyetherimides have a high permanent operating temperature. Very good resistance to hydrolysis, along with dimensional stability rounds out the portfolio of typical polyetherimide properties.

## TYPICAL PROPERTY VALUES

	Properties	Condition	Units	Value	ASTM Test
<b>Physical</b>	Chemical Designation			PEI	
	Filler				
	Density		g/cm <sup>3</sup>	1.27	D792
<b>Mechanical</b>	Tensile Modulus	@ 73 °F	PSI	430,000	D638
	Tensile Strength @ Yld	@ 73 °F	PSI	17,500	D638
	Tensile Strength @ Brk	@ 73 °F	PSI	17,500	D638
	Shear Strength	@ 73 °F	PSI		
	Elongation @ Yld	@ 73 °F	%	7-8	D638
	Elongation @ Brk	@ 73 °F	%	40	D638
	Flexural Modulus	@ 73 °F	PSI	480,000	D790
	Flexural Strength	@ 73 °F	PSI	28,000	D790
	Compressive Modulus	@ 73 °F	PSI	480,000	D695
	Compressive Strength	@ 73 °F, 10% strain	PSI	21,500	D695
	Izod (charpy) Impact Strength	@ 73 °F	ft-lbs/in	0.6	D256
	Rockwell Hardness	@ 73 °F	M (R) Scale	111	D785
	Coefficient of Friction	Static			
	Coefficient of Friction	Dynamic, 40PSI			
Wear (K) Factor			in <sup>3</sup> -min/ft-lbs-hr		

### TYPICAL PROPERTY VALUES

	Properties	Condition	Units	Value	ASTM Test
<b>Thermal</b>	Vicat Softening Point		°F	426	D1525
	Melting Temperature		°F		
	Heat Deflection Temperature	@ 66	°F	410	D648
	Heat Deflection Temperature	@ 264	°F	394	D648
	Service Temperature	Intermittent	°F	392	
	Service Temperature	Long Term	°F	338	
	Thermal Expansion (CLTE)		in/in/°F	3.1*10 <sup>-5</sup>	D696
	Specific Heat		BTU/lb-°F		
	Thermal Conductivity		BTU-in/hr-ft <sup>2</sup> -°F	1.5	D2214
<b>Electrical</b>	Surface Resistivity		ohms/square		
	Volume Resistivity		ohm-cm	1.0*10 <sup>17</sup>	D257
	Dielectric Strength		V/mil	830	D149
	Dielectric Constant	@ 60 Hz, 73 °F 50% RH		3.15	D150
	Dissipation Factor	@ 60 Hz, 73 °F		0.0013	D150
<b>Other</b>	Moisture Absorption	@ 24 hrs, 73 °F	%	0.25	D570
	Moisture Absorption	@ Saturation, 73 °F	%	1.25	D570
	Flammability	UL 94		V-0	
	Food Grade			Y	
	Relative Cost			\$\$\$	

\*The data stated above are typical values intended for reference and comparison purposes only.

\*The data should not be used as a basis for design specifications or quality control.

\*The information is provided as a guide to the best of our knowledge and given without obligation or liability.

\*Testing under individual application circumstances is recommended.