ULTEM®
(Polyetherimide)

ULTEM is an amorphous thermoplastic polyetherimide (PEI) material that combines exceptional mechanical, thermal, and electrical properties. Natural ULTEM® 1000 (unreinforced) is a translucent amber material. The addition of glass fiber reinforcement to the basic ULTEM® provides it with both greater tensile strength and rigidity while at the same time improving dimensional stability.

- Excellent mechanical strength - ULTEM® 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 - ULTEM® retains its physical properties at elevated temperatures.
- Exceptional resistance to environmental forces - Environmental characteristics of ULTEM® include it's stress resistance
- Inherent flame resistance with low smoke evolution
- High mechanical strength
- High dielectric strength and stability - The high dielectric strength and constant values of ULTEM® make it an excellent electrical insulator UL94 VO
- Low dissipation factor over a wide range of frequencies
- Excellent machinability and finishing characteristics - ULTEM® can be easily machined with conventional metalworking tools, painted, hot stamped, printed, or metallized.
- Natural Grade is FDS, NSF, and USP Class VI compliant

ULTEM® has many applications in medical, electronic/electrical, microwave, automotive, and aircraft industries.

Properties	ASTM Test Method	Units	ULTEM®	ULTEM® 10% Glass Reinforced	ULTEM® 20% Glass Reinforced	ULTEM® 30% Glass Reinforced
Physical						
Specific Gravity	D792	-	1.27	1.34	1.42	1.51
Water Absorption, @24 hours, 73°F (23C) @Equilibrium, 73°F (23C)	 D570 D570	 % %	 0.25 1.25	 0.21 1.20	 0.19 1.10	 0.16 0.90
Mechanical						
Tensile Strength, Break, 73°F	D638	psi	15,200	16,600	20,100	24,500
Tensile Modulus, 73°F	D638	psi	430,000	650,000	1,000,000	1,300,000
Elongation, Break, 73°F	D638	%	60	6	3	13
Elongation, Yield, 73°F	D638	%	7-8	5	N/A	N/A
Flexural Strength, 73°F	D790	psi	22,000	28,000	30,000	33,000
Flexural Modulus, 73°F	D790	psi	480,000	650,000	900,000	1,300,000
Izod Impact Strength, Notched, 73°F	D256	ft-lbs/in	1.0	1.1	1.6	1.6
Rockwell Hardness	D785	"M" Scale	109	114	114	114
Compressive Strength	D695	psi	21,900	22,000	28,700	30,700
Compressive Modulus	D695	psi	480,000	541,000	809,000	938,000
Shear Strength, Ultimate	-	psi	15,000	13,000	13,500	14,000
Thermal						
Deflection Temperature @ 66 psi, 1/4" @264 psi, 1/4"	D648 D648	°F °F	410 392	410 405	410 408	414 410
Coefficient of Thermal Expansion	D696	in/in-°F	3.1×10^{-5}	1.8×10^{-5}	1.4×10^{-5}	1.1×10^{-5}
Melting Point	-	°F	426	-	-	-
Thermal Conductivity	D2214	BTU-in/hr-ft^2-°F	0.85	1.22	1,43	1.56
Flammability	UL94	-	V-0	V-0	V-0	V-0
Electrical						
Dielectric Strength, In Oil In Air	D149 D149	V/mil V/mil	710 830	700 -	670 -	630 770
Dielectric Constant, 1kHz, 50% RH	D150	-	3.15	3.5	3.5	3.7
Dissipation Factor 1kHz, 50% RH, 73°F (23°C)	D150	-	0.0013	0.0014	0.0015	0.0015
Volume Resistivity, 1/16"	D257	ohm-cm	1.0×10^{17}	1.0×10^{17}	7.0×10^{16}	3.0×10^{16}

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.