



ULTEM™ Resin 1000
Americas: COMMERCIAL

ULTEM™ 1000 resin is an amorphous, transparent polyetherimide (PEI) plastic offering a glass transition temperature (Tg) of 217°C. This inherently flame retardant resin has UL94 V0, V2 and 5VA ratings and is RoHS compliant. ULTEM™ 1000 resin is an unreinforced general purpose grade offering high heat resistance, high strength and modulus and broad chemical resistance up to high temperatures.

TYPICAL PROPERTIES ¹	TYPICAL VALUE	Unit	Standard
MECHANICAL			
Tensile Stress, yld, Type I, 0.2 in/min	15900	psi	ASTM D 638
Tensile Strain, yld, Type I, 0.2 in/min	7	%	ASTM D 638
Tensile Strain, brk, Type I, 0.2 in/min	60	%	ASTM D 638
Tensile Modulus, 0.2 in/min	519000	psi	ASTM D 638
Flexural Stress, yld, 0.10 in/min, 4 in span	23900	psi	ASTM D 790
Flexural Modulus, 0.10 in/min, 4 in span	509000	psi	ASTM D 790
Hardness, Rockwell M	109	-	ASTM D 785
Taber Abrasion, CS-17, 1 kg	10	mg/1000cy	ASTM D 1044
IMPACT			
Izod Impact, unnotched, 73°F	25	ft-lb/in	ASTM D 4812
Izod Impact, notched, 73°F	1	ft-lb/in	ASTM D 256
Izod Impact, Reverse Notched, 73°F	25	ft-lb/in	ASTM D 256
Gardner Impact, 73°F	26	ft-lb	ASTM D 3029
THERMAL			
Vicat Softening Temp, Rate B/50	426	°F	ASTM D 1525
HDT, 66 psi, 0.250 in, unannealed	410	°F	ASTM D 648
HDT, 264 psi, 0.250 in, unannealed	394	°F	ASTM D 648
CTE, flow, 0°F to 300°F	3.1E-05	1/°F	ASTM E 831
CTE, xflow, 0°F to 300°F	3.E-05	1/°F	ASTM E 831
Thermal Conductivity	0.22	W/m-°C	ASTM C 177
Relative Temp Index, Elec	170	°C	UL 746B
Relative Temp Index, Mech w/impact	170	°C	UL 746B
Relative Temp Index, Mech w/o impact	170	°C	UL 746B

(1) Typical values only. Variations within normal tolerances are possible for various colors. All values are measured after at least 48 hours storage at 23°C/50% relative humidity. All properties, except the melt volume and melt flow rates, are measured on injection molded samples. All samples tested under ISO test standards are prepared according to ISO 294.

(2) Only typical data for selection purposes. Not to be used for part or tool design.

(3) This rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.

(4) Internal measurements according to UL standards.

(5) Measurements made from laboratory test coupon. Actual shrinkage may vary outside of range due to differences in processing conditions, equipment, part geometry and tool design. It is recommended that mold shrinkage studies be performed with surrogate or legacy tooling prior to cutting tools for new molded article.

(6) Needs hard coat to consistently pass 60 sec Vertical Burn.

Source GMD, last updated:

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TYPICAL PROPERTIES ¹	TYPICAL VALUE	Unit	Standard
PHYSICAL			
Specific Gravity	1.27	-	ASTM D 792
Water Absorption, 24 hours @ 73°F	0.25	%	ASTM D 570
Water Absorption, equilibrium, 73F	1.25	%	ASTM D 570
Mold Shrinkage, flow, 0.125" (5)	0.5 - 0.7	%	SABIC Method
Melt Flow Rate, 337°C/6.6 kgf	9	g/10 min	ASTM D 1238
ELECTRICAL			
Volume Resistivity	1.E+17	Ohm-cm	ASTM D 257
Dielectric Strength, in air, 62 mils	831	V/mil	ASTM D 149
Dielectric Strength, in oil, 62 mils	710	V/mil	ASTM D 149
Dielectric Strength, in oil, 125 mils	500	V/mil	ASTM D 149
Relative Permittivity, 100 Hz	3.15	-	ASTM D 150
Relative Permittivity, 1 kHz	3.15	-	ASTM D 150
Dissipation Factor, 100 Hz	0.0015	-	ASTM D 150
Dissipation Factor, 1 kHz	0.0012	-	ASTM D 150
Dissipation Factor, 2450 MHz	0.0025	-	ASTM D 150
Arc Resistance, Tungsten {PLC}	5	PLC Code	ASTM D 495
Hot Wire Ignition {PLC}	1	PLC Code	UL 746A
High Voltage Arc Track Rate {PLC}	2	PLC Code	UL 746A
High Ampere Arc Ign, surface {PLC}	3	PLC Code	UL 746A
Comparative Tracking Index (UL) {PLC}	4	PLC Code	UL 746A
FLAME CHARACTERISTICS			
UL Recognized, 94V-2 Flame Class Rating (3)	0.015	in	UL 94
UL Recognized, 94V-0 Flame Class Rating (3)	0.029	in	UL 94
UL Recognized, 94-5VA Rating (3)	0.118	in	UL 94
Oxygen Index (LOI)	47	%	ASTM D 2863

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TYPICAL PROPERTIES ¹	TYPICAL VALUE	Unit	Standard
FLAME CHARACTERISTICS			
NBS Smoke Density, Flaming, Ds 4 min	0.7	-	ASTM E 662

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PROCESSING PARAMETERS	TYPICAL VALUE	Unit
Injection Molding		
Drying Temperature	300	°F
Drying Time	4 - 6	hrs
Drying Time (Cumulative)	24	hrs
Maximum Moisture Content	0.02	%
Melt Temperature	660 - 750	°F
Nozzle Temperature	650 - 750	°F
Front - Zone 3 Temperature	650 - 750	°F
Middle - Zone 2 Temperature	640 - 750	°F
Rear - Zone 1 Temperature	630 - 750	°F
Mold Temperature	280 - 330	°F
Back Pressure	50 - 100	psi
Screw Speed	40 - 70	rpm
Shot to Cylinder Size	40 - 60	%
Vent Depth	0.001 - 0.003	in
Extrusion Blow Molding		
Drying Temperature	280 - 300	°F
Drying Time	4 - 6	hrs
Drying Time (Cumulative)	24	hrs
Maximum Moisture Content	0.01 - 0.02	%
Melt Temperature (Parison)	610 - 670	°F
Barrel - Zone 1 Temperature	620 - 660	°F
Barrel - Zone 2 Temperature	620 - 670	°F
Barrel - Zone 3 Temperature	620 - 670	°F
Barrel - Zone 4 Temperature	620 - 670	°F
Adapter - Zone 5 Temperature	620 - 670	°F
Head - Zone 6 - Top Temperature	620 - 670	°F
Head - Zone 7 - Bottom Temperature	620 - 670	°F
Screw Speed	10 - 70	rpm

- DO NOT purge with low melting styrene or acrylic resins.
- Up to 30% Regrind has been successfully reprocessed.

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PROCESSING PARAMETERS	TYPICAL VALUE	Unit
Extrusion Blow Molding		
Mold Temperature	150 - 350	°F
Die Temperature	620 - 670	°F

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