ULTEM™ RESIN 1000R

REGION ASIA

DESCRIPTION

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

INDUSTRY	SUB INDUSTRY
Automotive	Heavy Truck, Automotive Interiors, Bus, Automotive Under the Hood
Building and Construction	Outdoor, Lawn and Landscape
Consumer	Ophthalmics, Sport/Leisure, Personal Accessory, Home Appliances, Personal Recreation, Commercial Appliance, Recreational Vehicle
Electrical and Electronics	Electrical Devices and Displays, Lighting, Electrical Components and Infrastructure
Hydrocarbon and Energy	Fossil, Electric Vehicle, Wind Energy, Energy Storage
Industrial	Defense, Semiconductors, Textile, Servomotor, Electronic Material Handling, Industrial Material Handling, Composite, Electronic Material
Mass Transportation	Aircraft Interiors, Specialty Vehicles, Rail
Packaging	Rigid Packaging, Consumer Packaging

TYPICAL PROPERTY VALUES

Revision 20191031

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL			
Tensile Stress, yld, Type I, 5 mm/min	110	MPa	ASTM D 638
Tensile Strain, yld, Type I, 5 mm/min	7	%	ASTM D 638
Tensile Strain, brk, Type I, 5 mm/min	60	%	ASTM D 638
Tensile Modulus, 5 mm/min	3580	MPa	ASTM D 638
Flexural Stress, yld, 2.6 mm/min, 100 mm span	165	MPa	ASTM D 790
Flexural Modulus, 2.6 mm/min, 100 mm span	3510	MPa	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, 23°C	1335	J/m	ASTM D 4812
Izod Impact, notched, 23°C	53	J/m	ASTM D 256
Izod Impact, Reverse Notched, 3.2 mm	1602	J/m	ASTM D 256
Gardner, 23°C	36	J	ASTM D 3029
THERMAL			
Vicat Softening Temp, Rate B/50	218	°C	ASTM D 1525
HDT, 0.45 MPa, 6.4 mm, unannealed	210	°C	ASTM D 648
HDT, 1.82 MPa, 6.4 mm, unannealed	201	°C	ASTM D 648
CTE, -20°C to 150°C, flow	5.58E-05	1/°C	ASTM E 831
CTE, -20°C to 150°C, xflow	5.4E-05	1/°C	ASTM E 831
Thermal Conductivity	0.22	W/m-°C	ASTM C177
Relative Temp Index, Elec [1]	170	°C	UL 746B

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PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Relative Temp Index, Mech w/impact [1]	170	°C	UL 746B
Relative Temp Index, Mech w/o impact [1]	170	°C	UL 746B
PHYSICAL			
Specific Gravity	1.27	-	ASTM D 792
Water Absorption, 24 hours	0.25	%	ASTM D 570
Water Absorption, equilibrium, 23C	1.25	%	ASTM D 570
Mold Shrinkage, flow, 3.2 mm	0.5 – 0.7	%	SABIC method
Melt Flow Rate, 337°C/6.6 kgf	9.7	g/10 min	ASTM D 1238
Poisson's Ratio	0.36	-	ASTM E 132
ELECTRICAL			
Volume Resistivity	1.E+17	Ohm-cm	ASTM D 257
Dielectric Strength, in air, 1.6 mm	32.7	kV/mm	ASTM D 149
Dielectric Strength, in oil, 1.6 mm	28	kV/mm	ASTM D 149
Relative Permittivity, 1 kHz	3.15	-	ASTM D 150
Dissipation Factor, 1 kHz	0.0013	-	ASTM D 150
Dissipation Factor, 2450 MHz	0.0025	-	ASTM D 150
Comparative Tracking Index (UL) {PLC}	4	PLC Code	UL 746A
Hot-Wire Ignition (HWI), PLC 1	≥3	mm	UL 746A
Hot-Wire Ignition (HWI), PLC 2	≥0.75	mm	UL 746A
High Amp Arc Ignition (HAI), PLC 3	≥3	mm	UL 746A
High Amp Arc Ignition (HAI), PLC 4	≥0.75	mm	UL 746A
High Voltage Arc Track Rate {PLC}	2	PLC Code	UL 746A
Arc Resistance, Tungsten {PLC}	5	PLC Code	ASTM D 495
FLAME CHARACTERISTICS [1]			
UL Yellow Card Link	E121562-101048254	-	-
UL Recognized, 94-5VA Flame Class Rating	≥3	mm	UL 94
UL Recognized, 94V-0 Flame Class Rating	≥0.75	mm	UL 94
UL Recognized, 94V-2 Flame Class Rating	≥0.4	mm	UL 94
Oxygen Index (LOI)	47	%	ASTM D 2863
NBS Smoke Density, Flaming, Ds 4 min	0.7	-	ASTM E 662
INJECTION MOLDING			
Drying Temperature	150	°C	
Drying Time	4 – 6	hrs	
Drying Time (Cumulative)	24	hrs	
Maximum Moisture Content	0.02	%	
Melt Temperature	350 – 400	°C	
Nozzle Temperature	345 – 400	°C	
Front - Zone 3 Temperature	345 – 400	°C	
Middle - Zone 2 Temperature	340 – 400	°C	
Rear - Zone 1 Temperature	330 – 400	°C	
Mold Temperature	135 – 165	°C	
Back Pressure	0.3 – 0.7	MPa	
Screw Speed	40 – 70	rpm	
Shot to Cylinder Size	40 – 60	%	
Vent Depth	0.025 – 0.076	mm	

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(1) UL Ratings shown on the technical datasheet might not cover the full range of thicknesses and colors. For details, please see the UL Yellow Card.

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