

ULTEM™ 1010 resin

Polyether Imide
SABIC Innovative Plastics

Message:

ULTEM™ 1010 resin is an amorphous, transparent polyetherimide (PEI) plastic offering enhanced flow and a glass transition temperature (Tg) of 217°C. This inherently flame retardant resin has UL94 V0 and 5VA ratings. ULTEM™ 1010 resin is an unreinforced general purpose grade offering high heat resistance, high strength and modulus and broad chemical resistance up to high temperatures.

General Information	
UL YellowCard	E121562-101048269
Features	Amorphous
	Flame Retardant
	General Purpose
	Good Chemical Resistance
	Good Flow
	High Heat Resistance
	High Strength
Uses	General Purpose
Appearance	Clear/Transparent
Processing Method	Injection Molding
Multi-Point Data	Coefficient of Thermal Expansion vs. Temperature (ASTM E831)
	Flexural DMA (ASTM D4065)
	Instrumented Impact (Energy) (ASTM D3763)
	Instrumented Impact (Load) (ASTM D3763)
	Pressure-Volume-Temperature (PVT - Zoller Method)
	Shear DMA (ASTM D4065)
	Specific Heat vs. Temperature (ASTM D3417)
	Tensile Creep (ASTM D2990)
	Tensile Fatigue
	Tensile Stress vs. Strain (ASTM D638)
	Thermal Conductivity vs. Temperature (ASTM E1530)
	Viscosity vs. Shear Rate (ASTM D3835)

Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.27	g/cm³	ASTM D792
Melt Mass-Flow Rate (MFR) (337°C/6.6 kg)	18	g/10 min	ASTM D1238
Molding Shrinkage - Flow (3.20 mm)	0.50 to 0.70	%	Internal Method
Water Absorption			ASTM D570
24 hr	0.25	%	
Equilibrium, 23°C	1.3	%	

Hardness	Nominal Value	Unit	Test Method
Rockwell Hardness (M-Scale)	109		ASTM D785
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus ¹	3590	MPa	ASTM D638
Tensile Strength ² (Yield)	110	MPa	ASTM D638
Tensile Elongation ³			ASTM D638
Yield	7.0	%	
Break	60	%	
Flexural Modulus ⁴ (100 mm Span)	3520	MPa	ASTM D790
Flexural Strength ⁵ (Yield, 100 mm Span)	165	MPa	ASTM D790
Taber Abrasion Resistance (1000 Cycles, 1000 g, CS-17 Wheel)	10.0	mg	ASTM D1044
Impact	Nominal Value	Unit	Test Method
Notched Izod Impact (23°C)	32	J/m	ASTM D256
Unnotched Izod Impact (23°C)	1300	J/m	ASTM D4812
Reverse Notch Izod Impact (3.20 mm)	1200	J/m	ASTM D256
Gardner Impact (23°C)	33.9	J	ASTM D3029
Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load			ASTM D648
0.45 MPa, Unannealed, 6.40 mm	207	°C	
1.8 MPa, Unannealed, 6.40 mm	199	°C	
Vicat Softening Temperature	219	°C	ASTM D1525 ⁶
CLTE - Flow (-20 to 150°C)	5.6E-5	cm/cm/°C	ASTM E831
Thermal Conductivity	0.22	W/m/K	ASTM C177
RTI Elec	170	°C	UL 746
RTI Imp	170	°C	UL 746
RTI Str	170	°C	UL 746
Electrical	Nominal Value	Unit	Test Method
Volume Resistivity	1.0E+17	ohms · cm	ASTM D257
Dielectric Strength			ASTM D149
1.60 mm, in Air	33	kV/mm	
1.60 mm, in Oil	28	kV/mm	
Dielectric Constant (1 kHz)	3.15		ASTM D150
Dissipation Factor			ASTM D150
1 kHz	1.3E-3		
2.45 GHz	2.5E-3		
Arc Resistance ⁷	PLC 5		ASTM D495
Comparative Tracking Index (CTI)	PLC 4		UL 746
High Amp Arc Ignition (HAI)	PLC 3		UL 746
High Voltage Arc Tracking Rate (HVTR)	PLC 2		UL 746
Hot-wire Ignition (HWI)	PLC 1		UL 746
Flammability	Nominal Value	Unit	Test Method

Flame Rating			UL 94
0.750 mm	V-0		
3.00 mm	5VA		
Oxygen Index	44	%	ASTM D2863
NBS Smoke Density - Flaming, Ds, 4 min	2.00		ASTM E662
Injection	Nominal Value	Unit	
Drying Temperature	149	°C	
Drying Time	4.0 to 6.0	hr	
Drying Time, Maximum	24	hr	
Suggested Max Moisture	0.020	%	
Suggested Shot Size	40 to 60	%	
Rear Temperature	332 to 399	°C	
Middle Temperature	338 to 399	°C	
Front Temperature	343 to 399	°C	
Nozzle Temperature	343 to 399	°C	
Processing (Melt) Temp	349 to 399	°C	
Mold Temperature	135 to 163	°C	
Back Pressure	0.345 to 0.689	MPa	
Screw Speed	40 to 70	rpm	
Vent Depth	0.025 to 0.076	mm	
NOTE			
1.	5.0 mm/min		
2.	Type I, 5.0 mm/min		
3.	Type I, 5.0 mm/min		
4.	2.6 mm/min		
5.	2.6 mm/min		
6.	Rate B (120°C/h), Loading 2 (50 N)		
7.	Tungsten Electrode		

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Recommended distributors for this material

Susheng Import & Export Trading Co.,Ltd.

Tel: +86 21 5895 8519

Phone: +86 13424755533

Email: sales@su-jiao.com

No. 215, Lianhe North Road, Fengxian District, Shanghai, China



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