ULTEM™ 4000 resin

Polyether Imide

SABIC Innovative Plastics

Message:

ULTEM 4000 resin is an amorphous, opaque, glass fiber and polytetrafluorethylene (PTFE) reinforced polyetherimide (PEI) plastic offering a glass transition temperature (Tg) of 217°C. This inherently flame retardant resin has UL94 V0 listing and is RoHs compliant. ULTEMTM 4000 resin is wear resistant and offers a reduced coefficient of friction.

General Information			
Filler / Reinforcement	PTFE fiber Glass fiber reinforced material		
Features	Low friction coefficient Good wear resistance amorphous Flame retardancy		
RoHS Compliance	RoHS compliance		
Appearance	Opacity		
Processing Method	Injection molding		
Physical	**Nominal Value**	**Unit**	**Test Method**
Density	1.68	g/cm³	ISO 1183
Melt Volume-Flow Rate (MVR) (360°C/5.0 kg)	5.00	cm³/10min	ISO 1133
Molding Shrinkage - Flow [1]	0.10 - 0.30	%	Internal method
Water Absorption			ISO 62
Saturated, 23°C	0.70	%	ISO 62
Equilibrium, 23°C, 50% RH	0.30	%	ISO 62
K (wear) Factor			Internal method
-- [2]	380		Internal method
-- [3]	12.0		Internal method
PV Limit [4]	2.3	MPa·m/s	Internal method
Hardness	**Nominal Value**	**Unit**	**Test Method**
Ball Indentation Hardness (H 358/30)	140	MPa	ISO 2039-1
Mechanical	**Nominal Value**	**Unit**	**Test Method**
Tensile Modulus	9900	MPa	ISO 527-2/1
Tensile Stress (Break)	90.0	MPa	ISO 527-2/5
Tensile Strain (Break)	1.0	%	ISO 527-2/5
Flexural Modulus [5]	7000	MPa	ISO 178
Flexural Stress	120	MPa	ISO 178

Taber Abrasion Resistance (1000 Cycles, 1000 g, CS-17 Wheel)	30.0	mg	Internal method
Impact	**Nominal Value**	**Unit**	**Test Method**
Charpy Notched Impact Strength			ISO 179/2C
-30°C	8.0	kJ/m²	ISO 179/2C
23°C	8.0	kJ/m²	ISO 179/2C
Unnotched Izod Impact Strength [6]			ISO 180/1U
-30°C	15	kJ/m²	ISO 180/1U
23°C	15	kJ/m²	ISO 180/1U
Thermal	**Nominal Value**	**Unit**	**Test Method**
Heat Deflection Temperature [7]			
0.45 MPa, unannealed, 100 mm span	210	°C	ISO 75-2/Be
1.8 MPa, unannealed, 100 mm span	205	°C	ISO 75-2/Ae
Vicat Softening Temperature			
--	225	°C	ISO 306/A50
--	215	°C	ISO 306/B50
--	220	°C	ISO 306/B120
Ball Pressure Test (125°C)	Pass		IEC 60695-10-2
Linear thermal expansion coefficient			ISO 11359-2
Flow: 23 to 150°C	1.5E-5	cm/cm/°C	ISO 11359-2
Horizontal: 23 to 150°C	5.0E-5	cm/cm/°C	ISO 11359-2
Thermal Conductivity	0.43	W/m/K	ISO 8302
RTI Elec	105	°C	UL 746
RTI Imp	105	°C	UL 746
RTI	105	°C	UL 746
Electrical	**Nominal Value**	**Unit**	**Test Method**
Surface Resistivity	> 1.0E+15	ohms	IEC 60093
Volume Resistivity	1.0E+15	ohms·cm	IEC 60093
Relative Permittivity			IEC 60250
50 Hz	6.80		IEC 60250
60 Hz	6.80		IEC 60250
1 MHz	6.20		IEC 60250
Dissipation Factor			IEC 60250
50 Hz	0.013		IEC 60250
60 Hz	0.013		IEC 60250
1 MHz	0.022		IEC 60250
Comparative Tracking Index			IEC 60112
--	200	V	IEC 60112
Solution B	100	V	IEC 60112
Flammability	**Nominal Value**	**Unit**	**Test Method**
Flame Rating (0.840 mm)	V-0		UL 94
Glow Wire Flammability Index (3.20 mm)	960	°C	IEC 60695-2-12

Oxygen Index	48	%	ISO 4589-2

Injection	Nominal Value	Unit
Drying Temperature	150	°C
Drying Time	4.0 - 6.0	hr
Suggested Max Moisture	0.020	%
Hopper Temperature	80.0 - 120	°C
Rear Temperature	350 - 395	°C
Middle Temperature	360 - 405	°C
Front Temperature	370 - 415	°C
Nozzle Temperature	360 - 405	°C
Processing (Melt) Temp	370 - 415	°C
Mold Temperature	140 - 180	°C

NOTE	
1.	Tensile Bar
2.	xE-10, PV=2000 psi-fpm vs Self
3.	xE-10, PV=2000 psi-fpm vs Steel
4.	0.51 m/s
5.	2.0 mm/min
6.	80*10*4
7.	120*10*4 mm

Recommended distributors for this material

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