

Fortron® 1140L4

Polyphenylene Sulfide

Celanese Corporation

Message:

Fortron 1140L4 is a 40% glass-reinforced grade that is the strongest and toughest product available. It exhibits excellent heat and chemical resistance, good electrical properties and is inherently flame-retardant. The high hardness and rigidity at elevated temperatures allows for good load bearing performance. This product has good weldability due to the modest filler level. Applications made of this grade are electronical components (i.e. bobbins, lamp housings, brush holders) and various other components requiring strength and resistance to aggressive chemicals (i.e. automotive heaters, pumps, valves, fuel rails, microwave oven rings and distillation column packings).

General Information			
UL YellowCard	E107854-237735	E107854-237738	E107854-237739
Filler / Reinforcement	Glass fiber reinforced material, 40% filler by weight		
Features	Ultra high toughness		
	Rigidity, high		
	High strength		
	Weldable		
	Good electrical performance		
	Good chemical resistance		
	Heat resistance, high		
	High hardness		
Uses	Flame retardancy		
	Pump parts		
	Electrical/Electronic Applications		
	Valve/valve components		
	Application in Automobile Field		
	Shell		
RoHS Compliance	Contact manufacturer		
Multi-Point Data	Isochronous Stress vs. Strain (ISO 11403-1)		
	Isothermal Stress vs. Strain (ISO 11403-1)		
	Shear Modulus vs. Temperature (ISO 11403-1)		
Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.65	g/cm ³	ASTM D792, ISO 1183
Specific Volume	0.611	cm ³ /g	ASTM D792
Specific Heat Capacity of Melt	1500	J/kg/°C	Internal method
Specimen Thickness - Shrinkage	3.18	mm	Internal method
Molding Shrinkage			
Flow	0.20 - 0.30	%	ASTM D955

Transverse flow	0.50 - 0.70	%	ASTM D955
Vertical flow direction	0.40 - 0.60	%	ISO 294-4
Flow direction	0.20 - 0.60	%	ISO 294-4
Water Absorption (Saturation, 23°C)	0.020	%	ISO 62
Hardness	Nominal Value	Unit	Test Method
Rockwell Hardness			
Class m	100		ASTM D785
M scale	100		ISO 2039-2
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus			
-40°C	14500	MPa	ASTM D638
75°C	11900	MPa	ASTM D638
150°C	4270	MPa	ASTM D638
200°C	3240	MPa	ASTM D638
--	14700	MPa	ISO 527-2/1A/1
Tensile Strength			
Fracture, 23°C	200	MPa	ASTM D638
Fracture	195	MPa	ISO 527-2/1A/5
Tensile Elongation			
Fracture, 23°C	1.7	%	ASTM D638
Fracture	1.9	%	ISO 527-2/1A/5
Flexural Modulus (23°C)	14500	MPa	ISO 178
Flexural Stress ¹	285	MPa	ISO 178
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength			ISO 179/1eA
-30°C	10	kJ/m ²	ISO 179/1eA
23°C	10	kJ/m ²	ISO 179/1eA
Charpy Unnotched Impact Strength			ISO 179/1eU
-30°C	53	kJ/m ²	ISO 179/1eU
23°C	53	kJ/m ²	ISO 179/1eU
Notched Izod Impact			ISO 180/1A
-30°C	10	kJ/m ²	ISO 180/1A
23°C	10	kJ/m ²	ISO 180/1A
Unnotched Izod Impact Strength (23°C)	34	kJ/m ²	ISO 180/1U
Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load			
0.45 MPa, annealed	280	°C	ASTM D648
1.8 MPa, not annealed	265	°C	ASTM D648
1.8 MPa, not annealed	270	°C	ISO 75-2/A
8.0 MPa, not annealed	215	°C	ISO 75-2/C
Glass Transition Temperature ²	90.0	°C	ISO 11357-2
Melting Temperature ³	280	°C	ISO 11357-3

Linear thermal expansion coefficient			ISO 11359-2
Flow	2.6E-5	cm/cm/°C	ISO 11359-2
Lateral	4.2E-5	cm/cm/°C	ISO 11359-2
Electrical	Nominal Value	Unit	Test Method
Surface Resistivity	> 1.0E+15	ohms	IEC 60093
Volume Resistivity			
--	1.0E+16	ohms·cm	ASTM D257
--	> 1.0E+15	ohms·cm	IEC 60093
Dielectric Strength	28	kV/mm	IEC 60243-1
Dielectric Constant			
1 kHz	3.50		ASTM D150
1 MHz	3.50		ASTM D150
1 MHz	4.60		IEC 60250
Dissipation Factor			
1 kHz	1.0E-3		ASTM D150
1 MHz	1.0E-3		ASTM D150
1 MHz	6.2E-3		IEC 60250
Arc Resistance	134	sec	ASTM D495
Comparative Tracking Index	125	V	IEC 60112
Flammability	Nominal Value	Unit	Test Method
Flame Rating			UL 94
0.380 mm	V-0		UL 94
1.50 mm	V-0		UL 94
3.00 mm	5VA		UL 94
Oxygen Index	47	%	ISO 4589-2
Injection	Nominal Value	Unit	
Drying Temperature	130 - 140	°C	
Drying Time	3.0 - 4.0	hr	
Suggested Max Moisture	0.020	%	
Hopper Temperature	20.0 - 30.0	°C	
Rear Temperature	290 - 300	°C	
Middle Temperature	310 - 320	°C	
Front Temperature	330 - 340	°C	
Nozzle Temperature	310 - 330	°C	
Processing (Melt) Temp	330 - 340	°C	
Mold Temperature	140 - 160	°C	
Injection Pressure	50.0 - 100	MPa	
Injection Rate	Fast		
Holding Pressure	30.0 - 70.0	MPa	
Back Pressure	0.00 - 3.00	MPa	
Injection instructions			
Manifold Temperature: 330 to 340°CZone 4 Temperature: 330 to 340°CFeed Temperature: 60 to 80°C			

NOTE

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| 1. | Break |
| 2. | 10°C/min |
| 3. | 10°C/min |

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