

Fortron® 4184L4

Polyphenylene Sulfide

Celanese Corporation

Message:

Fortron 4184L4 is the strongest and toughest glass/mineral reinforced product available. It offers excellent heat resistance at high loads and good chemical resistance. The electrical properties are excellent and the product is inherently flame-retardant. This product also offers low creep resistance and good rigidity due to the mineral content. Applications made of this grade include electronic components (i.e. bobbins, connectors and solenoid valves).

General Information			
UL YellowCard	E107854-237743	E107854-237744	
Filler / Reinforcement	Glass \mineral, 53% filler by weight		
Features	Rigid, good		
	Good electrical performance		
	Good creep resistance		
	Good chemical resistance		
	Heat resistance, high		
	Flame retardancy		
Uses	Electrical/Electronic Applications		
	Valve/valve components		
	Connector		
RoHS Compliance	Contact manufacturer		
Multi-Point Data	Isothermal Stress vs. Strain (ISO 11403-1)		
Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.80	g/cm³	ASTM D792, ISO 1183
Specific Volume	0.556	cm³/g	ASTM D792
Specific Heat Capacity of Melt	1600	J/kg/°C	Internal method
Specimen Thickness - Shrinkage	3.18	mm	Internal method
Molding Shrinkage			
Flow	0.10 - 0.30	%	ASTM D955
Transverse flow	0.40 - 0.60	%	ASTM D955
Vertical flow direction	0.40 - 0.70	%	ISO 294-4
Flow direction	0.30 - 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	16600	MPa	ISO 527-2/1A/1

Tensile Strength			
Fracture, 23°C	165	MPa	ASTM D638
Fracture	165	MPa	ISO 527-2/1A/5
Tensile Elongation			
Fracture, 23°C	1.5	%	ASTM D638
Fracture	1.4	%	ISO 527-2/1A/5
Flexural Modulus (23°C)	16200	MPa	ISO 178
Flexural Stress ¹	250	MPa	ISO 178
Compressive Strength (1% strain, 23°C)	207	MPa	ASTM D695
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength			ISO 179/1eA
-30°C	7.0	kJ/m ²	ISO 179/1eA
23°C	7.0	kJ/m ²	ISO 179/1eA
Charpy Unnotched Impact Strength			ISO 179/1eU
-30°C	29	kJ/m ²	ISO 179/1eU
23°C	29	kJ/m ²	ISO 179/1eU
Notched Izod Impact			ISO 180/1A
-30°C	7.0	kJ/m ²	ISO 180/1A
23°C	7.0	kJ/m ²	ISO 180/1A
Unnotched Izod Impact Strength (23°C)	27	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	2.4E-5	cm/cm/°C	ISO 11359-2
Lateral	3.2E-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			
-- ⁴	18	kV/mm	ASTM D149
--	27	kV/mm	IEC 60243-1
Dielectric Constant			
1 kHz	3.80		ASTM D150
1 MHz	3.80		ASTM D150

1 MHz	4.70		IEC 60250
Dissipation Factor			
60 Hz	1.0E-3		ASTM D150
1 kHz	1.0E-3		ASTM D150
1 MHz	8.0E-4		ASTM D150
1 MHz	2.0E-3		IEC 60250
Arc Resistance	156	sec	ASTM D495
Comparative Tracking Index	150	V	IEC 60112
Flammability	Nominal Value	Unit	Test Method
Flame Rating			
0.750 mm	V-0		UL 94
1.50 mm	V-0		UL 94
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			
1.	Break		
2.	10°C/min		
3.	10°C/min		
4.	Method B (step by step)		

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