

# Fortron® 1140L4

Polyphenylene Sulfide  
Celanese Corporation

**PROSPECTOR®**

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## Technical Data

### Product Description

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 electrical 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

Material Status	• Commercial: Active		
Literature <sup>1</sup>	<ul style="list-style-type: none"> <li>• <a href="#">Technical Datasheet - ASTM (English)</a></li> <li>• <a href="#">Technical Datasheet - ISO (English)</a></li> </ul>		
UL Yellow Card <sup>2</sup>	<ul style="list-style-type: none"> <li>• <a href="#">E107854-237735</a></li> <li>• <a href="#">E107854-237738</a></li> <li>• <a href="#">E107854-237739</a></li> </ul>		
Search for UL Yellow Card	<ul style="list-style-type: none"> <li>• <a href="#">Celanese Corporation</a></li> <li>• <a href="#">Fortron®</a></li> </ul>		
Availability	<ul style="list-style-type: none"> <li>• Africa &amp; Middle East</li> <li>• Europe</li> </ul>	<ul style="list-style-type: none"> <li>• Latin America</li> <li>• North America</li> </ul>	
Filler / Reinforcement	• Glass Fiber, 40% Filler by Weight		
Features	<ul style="list-style-type: none"> <li>• Chemical Resistant</li> <li>• Flame Retardant</li> <li>• Good Electrical Properties</li> </ul>	<ul style="list-style-type: none"> <li>• High Hardness</li> <li>• High Heat Resistance</li> <li>• High Stiffness</li> </ul>	<ul style="list-style-type: none"> <li>• High Strength</li> <li>• Ultra High Toughness</li> <li>• Weldable</li> </ul>
Uses	<ul style="list-style-type: none"> <li>• Automotive Applications</li> <li>• Electrical/Electronic Applications</li> </ul>	<ul style="list-style-type: none"> <li>• Housings</li> <li>• Pump Parts</li> </ul>	<ul style="list-style-type: none"> <li>• Valves/Valve Parts</li> </ul>
RoHS Compliance	• Contact Manufacturer		
Automotive Specifications	<ul style="list-style-type: none"> <li>• AC 8929</li> <li>• CHRYSLER MS-DB-48 CPN3502 Color: Black</li> <li>• CHRYSLER MS-DB-48 CPN3502 Color: Natural</li> <li>• CHRYSLER MS-DB-570 CPN3314 Color: Black</li> </ul>	<ul style="list-style-type: none"> <li>• CHRYSLER MS-DB-570 CPN3502 Color: Black</li> <li>• CHRYSLER MS-DB-570 CPN4241 Color: Natural</li> <li>• DELCO 10700-21</li> <li>• DELCO 10702-03</li> </ul>	<ul style="list-style-type: none"> <li>• FORD WSL-M4D807-A</li> <li>• GM GMP.PPS.001</li> </ul>
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 (English)	Nominal Value (SI)	Test Method
Density / Specific Gravity			
--	1.65	1.65 g/cm <sup>3</sup>	ASTM D792
--	1.65 g/cm <sup>3</sup>	1.65 g/cm <sup>3</sup>	ISO 1183
Specific Volume	16.9 in <sup>3</sup> /lb	0.611 cm <sup>3</sup> /g	ASTM D792
Molding Shrinkage			
Flow	2.0E-3 to 3.0E-3 in/in	0.20 to 0.30 %	ASTM D955
Across Flow	5.0E-3 to 7.0E-3 in/in	0.50 to 0.70 %	ASTM D955
Across Flow	0.40 to 0.60 %	0.40 to 0.60 %	ISO 294-4
Flow	0.20 to 0.60 %	0.20 to 0.60 %	ISO 294-4
Water Absorption (Saturation, 73°F (23°C))	0.020 %	0.020 %	ISO 62

Mechanical	Nominal Value (English)	Nominal Value (SI)	Test Method
Tensile Modulus			
-40°F (-40°C)	2.10E+6 psi	14500 MPa	ASTM D638
167°F (75°C)	1.73E+6 psi	11900 MPa	ASTM D638
302°F (150°C)	620000 psi	4270 MPa	ASTM D638
392°F (200°C)	470000 psi	3240 MPa	ASTM D638
--	2.13E+6 psi	14700 MPa	ISO 527-2/1A/1



Mechanical	Nominal Value (English)	Nominal Value (SI)	Test Method
Tensile Strength			
Break, 73°F (23°C)	29000 psi	200 MPa	ASTM D638
Break	28300 psi	195 MPa	ISO 527-2/1A/5
Tensile Elongation			
Break, 73°F (23°C)	1.7 %	1.7 %	ASTM D638
Break	1.9 %	1.9 %	ISO 527-2/1A/5
Flexural Modulus (73°F (23°C))	2.10E+6 psi	14500 MPa	ISO 178
Flexural Stress <sup>4</sup>	41300 psi	285 MPa	ISO 178
Impact	Nominal Value (English)	Nominal Value (SI)	Test Method
Charpy Notched Impact Strength			ISO 179/1eA
-22°F (-30°C)	4.8 ft·lb/in <sup>2</sup>	10 kJ/m <sup>2</sup>	
73°F (23°C)	4.8 ft·lb/in <sup>2</sup>	10 kJ/m <sup>2</sup>	
Charpy Unnotched Impact Strength			ISO 179/1eU
-22°F (-30°C)	25 ft·lb/in <sup>2</sup>	53 kJ/m <sup>2</sup>	
73°F (23°C)	25 ft·lb/in <sup>2</sup>	53 kJ/m <sup>2</sup>	
Notched Izod Impact Strength			ISO 180/1A
-22°F (-30°C)	4.8 ft·lb/in <sup>2</sup>	10 kJ/m <sup>2</sup>	
73°F (23°C)	4.8 ft·lb/in <sup>2</sup>	10 kJ/m <sup>2</sup>	
Unnotched Izod Impact Strength (73°F (23°C))	16 ft·lb/in <sup>2</sup>	34 kJ/m <sup>2</sup>	ISO 180/1U
Hardness	Nominal Value (English)	Nominal Value (SI)	Test Method
Rockwell Hardness (M-Scale)	100	100	ASTM D785 ISO 2039-2
Thermal	Nominal Value (English)	Nominal Value (SI)	Test Method
Deflection Temperature Under Load			
66 psi (0.45 MPa), Unannealed	536 °F	280 °C	ASTM D648
264 psi (1.8 MPa), Unannealed	509 °F	265 °C	ASTM D648
264 psi (1.8 MPa), Unannealed	518 °F	270 °C	ISO 75-2/A
1160 psi (8.0 MPa), Unannealed	419 °F	215 °C	ISO 75-2/C
Glass Transition Temperature <sup>5</sup>	194 °F	90.0 °C	ISO 11357-2
Melting Temperature <sup>5</sup>	536 °F	280 °C	ISO 11357-3
CLTE			ISO 11359-2
Flow	1.4E-5 in/in/°F	2.6E-5 cm/cm/°C	
Transverse	2.3E-5 in/in/°F	4.2E-5 cm/cm/°C	
Electrical	Nominal Value (English)	Nominal Value (SI)	Test Method
Surface Resistivity	> 1.0E+15 ohms	> 1.0E+15 ohms	IEC 60093
Volume Resistivity			
--	1.0E+16 ohms·cm	1.0E+16 ohms·cm	ASTM D257
--	> 1.0E+15 ohms·cm	> 1.0E+15 ohms·cm	IEC 60093
Electric Strength	710 V/mil	28 kV/mm	IEC 60243-1
Dielectric Constant			
1 kHz	3.50	3.50	ASTM D150
1 MHz	3.50	3.50	ASTM D150
1 MHz	4.10	4.10	IEC 60250
Dissipation Factor			
1 kHz	1.0E-3	1.0E-3	ASTM D150
1 MHz	1.0E-3	1.0E-3	ASTM D150
1 MHz	2.0E-3	2.0E-3	IEC 60250
Arc Resistance	134 sec	134 sec	ASTM D495
Comparative Tracking Index	125 V	125 V	IEC 60112



Flammability	Nominal Value (English)	Nominal Value (SI)	Test Method
Flame Rating			UL 94
0.015 in (0.38 mm)	V-0	V-0	
0.06 in (1.5 mm)	V-0	V-0	
0.12 in (3.0 mm)	5VA	5VA	
Oxygen Index	47 %	47 %	ISO 4589-2

Fill Analysis	Nominal Value (English)	Nominal Value (SI)	Test Method
Specific Heat Capacity of Melt	0.359 Btu/lb/°F	1500 J/kg/°C	Internal Method

Additional Information	Nominal Value (English)	Nominal Value (SI)	Test Method
Specimen Thickness - Shrinkage	0.13 in	3.18 mm	Internal Method

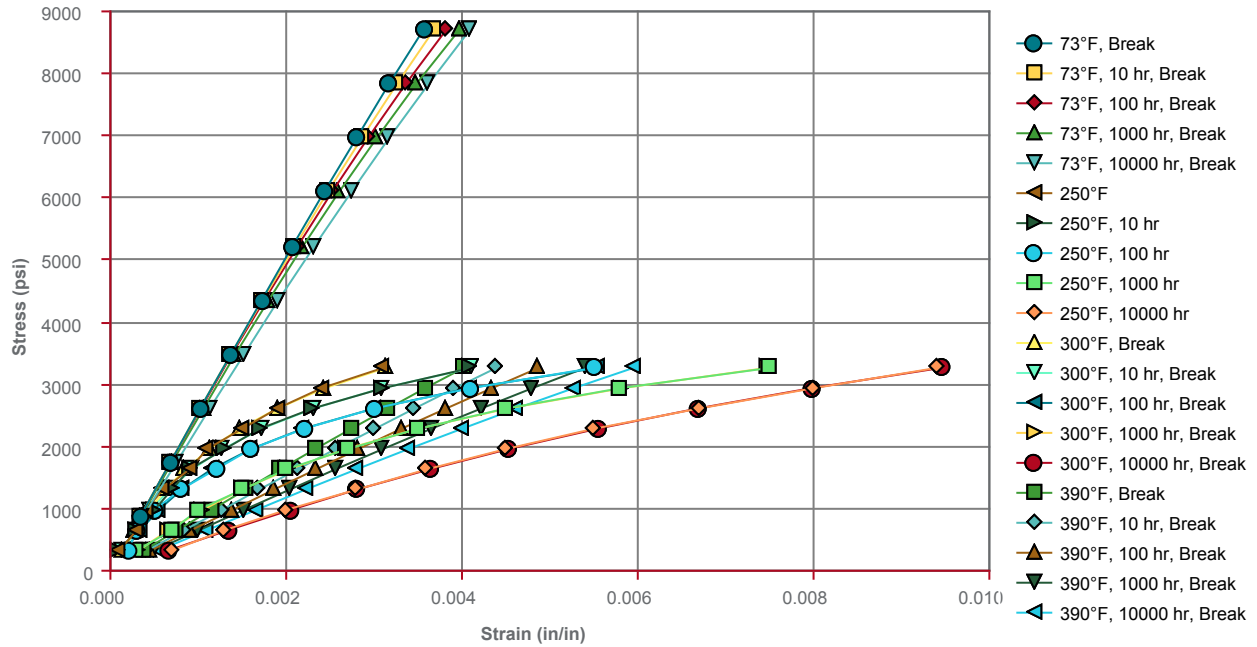
Injection	Nominal Value (English)	Nominal Value (SI)
Drying Temperature	266 to 284 °F	130 to 140 °C
Drying Time	3.0 to 4.0 hr	3.0 to 4.0 hr
Suggested Max Moisture	0.020 %	0.020 %
Hopper Temperature	68 to 86 °F	20 to 30 °C
Rear Temperature	554 to 572 °F	290 to 300 °C
Middle Temperature	590 to 608 °F	310 to 320 °C
Front Temperature	626 to 644 °F	330 to 340 °C
Nozzle Temperature	590 to 626 °F	310 to 330 °C
Processing (Melt) Temp	626 to 644 °F	330 to 340 °C
Mold Temperature	284 to 320 °F	140 to 160 °C
Injection Pressure	7250 to 14500 psi	50.0 to 100 MPa
Injection Rate	Fast	Fast
Holding Pressure	4350 to 10200 psi	30.0 to 70.0 MPa
Back Pressure	0.00 to 435 psi	0.00 to 3.00 MPa

**Injection Notes**

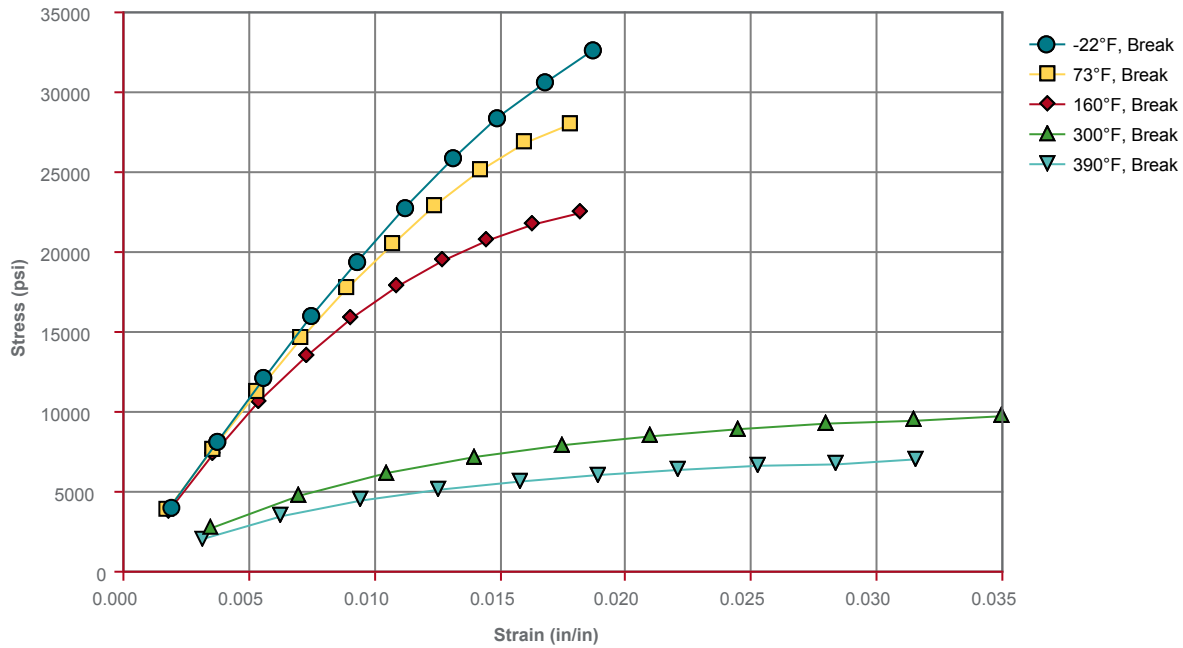
Manifold Temperature: 330 to 340°C  
 Zone 4 Temperature: 330 to 340°C  
 Feed Temperature: 60 to 80°C



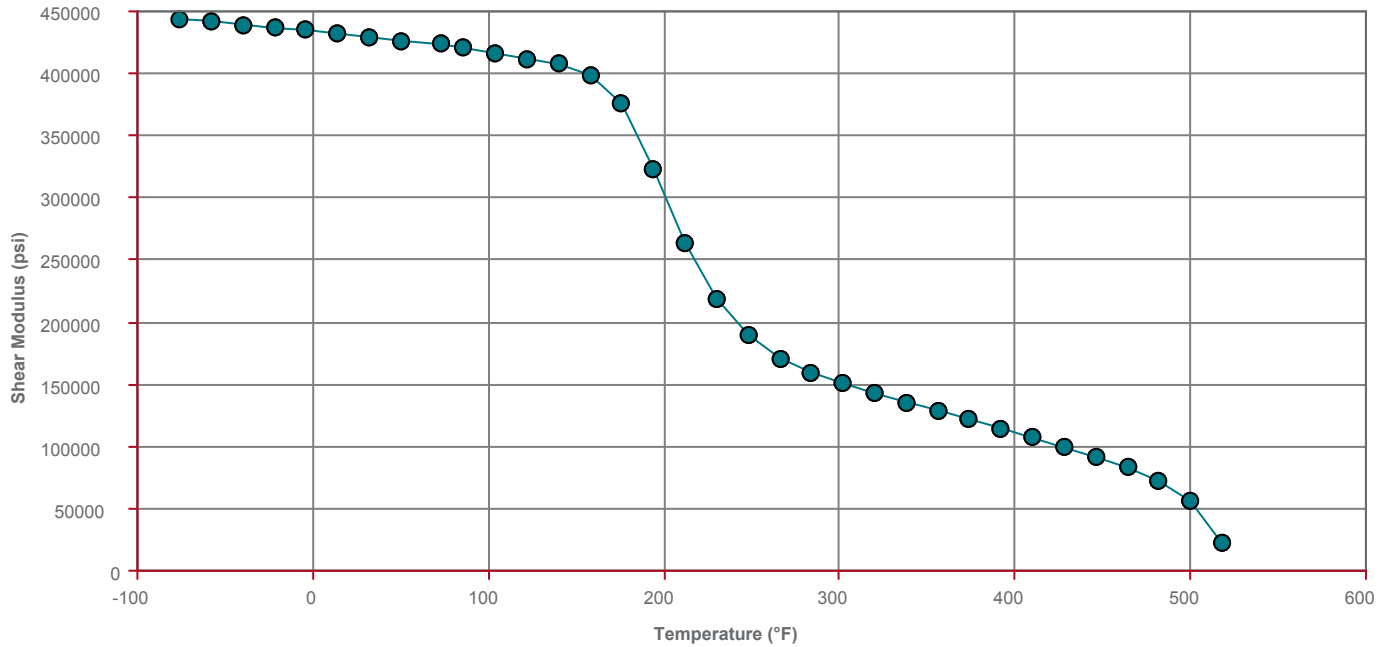
**Isochronous Stress vs. Strain (ISO 11403-1)**



**Isothermal Stress vs. Strain (ISO 11403-1)**



Shear Modulus vs. Temperature (ISO 11403-1)



**Notes**

<sup>1</sup> These links provide you with access to supplier literature. We work hard to keep them up to date; however you may find the most current literature from the supplier.

<sup>2</sup> A UL Yellow Card contains UL-verified flammability and electrical characteristics. UL Prospector continually works to link Yellow Cards to individual plastic materials in Prospector, however this list may not include all of the appropriate links. It is important that you verify the association between these Yellow Cards and the plastic material found in Prospector. For a complete listing of Yellow Cards, visit the UL Yellow Card Search.

<sup>3</sup> Typical properties: these are not to be construed as specifications.

<sup>4</sup> Break

<sup>5</sup> 10°C/min



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**Where to Buy**

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**Supplier**

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**Celanese Corporation**

Florence, KY USA

**Telephone:** 800-833-4882**Web:** <http://www.celanese.com/engineered-materials>

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**Distributor**

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