

# Fortron® 1140L4

Polyphenylene Sulfide  
Celanese Corporation



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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>     | • <a href="#">Technical Datasheet - ASTM (English)</a><br>• <a href="#">Technical Datasheet - ISO (English)</a> |                                                               |                                                         |
| UL Yellow Card <sup>2</sup> | • <a href="#">E107854-237735</a><br>• <a href="#">E107854-237738</a><br>• <a href="#">E107854-237739</a>        |                                                               |                                                         |
| Search for UL Yellow Card   | • <a href="#">Celanese Corporation</a><br>• <a href="#">Fortron®</a>                                            |                                                               |                                                         |
| Availability                | • Africa & Middle East<br>• Europe                                                                              | • Latin America<br>• North America                            | • South America                                         |
| Filler / Reinforcement      | • Glass Fiber Reinforcement, 40% Filler by Weight                                                               |                                                               |                                                         |
| Features                    | • Flame Retardant<br>• Good Chemical Resistance<br>• Good Electrical Properties                                 | • High Hardness<br>• High Heat Resistance<br>• High Stiffness | • High Strength<br>• Ultra High Toughness<br>• Weldable |
| Uses                        | • Automotive Applications<br>• Electrical/Electronic Applications                                               | • Housings<br>• Pump Parts                                    | • Valves/Valve Parts                                    |
| 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                    |                          |             |
| --                                  | 1.64 g/cm <sup>3</sup>   | ASTM D792   |
| --                                  | 1.65 g/cm <sup>3</sup>   | ISO 1183    |
| Specific Volume                     | 0.611 cm <sup>3</sup> /g | ASTM D792   |
| Molding Shrinkage                   |                          |             |
| Flow                                | 0.20 to 0.30 %           | ASTM D955   |
| Across Flow                         | 0.50 to 0.70 %           | ASTM D955   |
| Across Flow                         | 0.40 to 0.60 %           | ISO 294-4   |
| Flow                                | 0.20 to 0.60 %           | ISO 294-4   |
| Water Absorption (Saturation, 23°C) | 0.020 %                  | ISO 62      |

| 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        |                    |                |
| Break, 23°C             | 200 MPa            | ASTM D638      |
| Break                   | 195 MPa            | ISO 527-2/1A/5 |
| Tensile Elongation      |                    |                |
| Break, 23°C             | 1.7 %              | ASTM D638      |
| Break                   | 1.9 %              | ISO 527-2/1A/5 |
| Flexural Modulus (23°C) | 14500 MPa          | ISO 178        |

| Mechanical                                | Nominal Value Unit   | Test Method             |
|-------------------------------------------|----------------------|-------------------------|
| Flexural Strength <sup>4</sup>            | 285 MPa              | ISO 178                 |
| Impact                                    | Nominal Value Unit   | Test Method             |
| Charpy Notched Impact Strength            |                      | ISO 179/1eA             |
| -30°C                                     | 10 kJ/m <sup>2</sup> |                         |
| 23°C                                      | 10 kJ/m <sup>2</sup> |                         |
| Charpy Unnotched Impact Strength          |                      | ISO 179/1eU             |
| -30°C                                     | 53 kJ/m <sup>2</sup> |                         |
| 23°C                                      | 53 kJ/m <sup>2</sup> |                         |
| Notched Izod Impact Strength              |                      | ISO 180/1A              |
| -30°C                                     | 10 kJ/m <sup>2</sup> |                         |
| 23°C                                      | 10 kJ/m <sup>2</sup> |                         |
| Unnotched Izod Impact Strength (23°C)     | 34 kJ/m <sup>2</sup> | ISO 180/1U              |
| Hardness                                  | Nominal Value Unit   | Test Method             |
| Rockwell Hardness (M-Scale)               | 100                  | ASTM D785<br>ISO 2039-2 |
| Thermal                                   | Nominal Value Unit   | Test Method             |
| Deflection Temperature Under Load         |                      |                         |
| 0.45 MPa, Annealed                        | 280 °C               | ASTM D648               |
| 1.8 MPa, Unannealed                       | 265 °C               | ASTM D648               |
| 1.8 MPa, Unannealed                       | 270 °C               | ISO 75-2/A              |
| 8.0 MPa, Unannealed                       | 215 °C               | ISO 75-2/C              |
| Glass Transition Temperature <sup>5</sup> | 90.0 °C              | ISO 11357-2             |
| Melting Temperature <sup>5</sup>          | 280 °C               | ISO 11357-3             |
| CLTE                                      |                      | ISO 11359-2             |
| Flow                                      | 0.000026 cm/cm/°C    |                         |
| Transverse                                | 0.000042 cm/cm/°C    |                         |
| Electrical                                | Nominal Value Unit   | Test Method             |
| Surface Resistivity                       | > 1.0E+15 ohm        | IEC 60093               |
| Volume Resistivity                        |                      |                         |
| --                                        | 1.0E+16 ohm·cm       | ASTM D257               |
| --                                        | > 1.0E+15 ohm·cm     | IEC 60093               |
| Electric Strength                         | 28 kV/mm             | IEC 60243-1             |
| Dielectric Constant                       |                      |                         |
| 1 kHz                                     | 3.50                 | ASTM D150               |
| 1 MHz                                     | 3.50                 | ASTM D150               |
| 10 kHz                                    | 4.00                 | IEC 60250               |
| 1 MHz                                     | 4.60                 | IEC 60250               |
| Dissipation Factor                        |                      |                         |
| 1 kHz                                     | 0.0010               | ASTM D150               |
| 1 MHz                                     | 0.0010               | ASTM D150               |
| 10 kHz                                    | 0.00020              | IEC 60250               |
| 1 MHz                                     | 0.0062               | 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                  |                         |
| 1.50 mm                                   | V-0                  |                         |
| 3.00 mm                                   | 5VA                  |                         |
| Oxygen Index                              | 47 %                 | ISO 4589-2              |
| Fill Analysis                             | Nominal Value Unit   | Test Method             |
| Specific Heat Capacity of Melt            | 1500 J/kg/°C         | Internal Method         |

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| Additional Information         | Nominal Value Unit | Test Method     |
|--------------------------------|--------------------|-----------------|
| Specimen Thickness - Shrinkage | 3.18 mm            | Internal Method |

| Injection              | Nominal Value Unit |
|------------------------|--------------------|
| Drying Temperature     | 130 to 140 °C      |
| Drying Time            | 3.0 to 4.0 hr      |
| Suggested Max Moisture | 0.020 %            |
| Hopper Temperature     | 20.0 to 30.0 °C    |
| Rear Temperature       | 290 to 300 °C      |
| Middle Temperature     | 310 to 320 °C      |
| Front Temperature      | 330 to 340 °C      |
| Nozzle Temperature     | 310 to 330 °C      |
| Processing (Melt) Temp | 330 to 340 °C      |
| Mold Temperature       | 140 to 160 °C      |
| Injection Pressure     | 50.0 to 100 MPa    |
| Injection Rate         | Fast               |
| Holding Pressure       | 30.0 to 70.0 MPa   |
| Back Pressure          | 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

### 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 IDES 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

#### Supplier

##### Celanese Corporation

Florence, KY USA

Telephone: 800-833-4882

Web: <http://www.celanese.com/engineered-materials>

#### Distributor

##### Channel Prime Alliance

Telephone: 800-247-8038

Web: <http://www.channelpa.com/>

Availability: North America

##### Entec Polymers

Telephone: 800-375-5440

Web: <http://www.entecpolymers.com/>

Availability: North America

##### RESINEX Group

*RESINEX is a Pan European distribution company. Contact RESINEX for availability of individual products by country.*

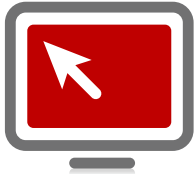
Telephone: +32-14-672511

Web: <http://www.resinex.com/>

Availability: Europe



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– Birgit Elvardt Bader, Production Manager, Micotron

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