

FORTRON® 1140L6 | PPS | Glass Reinforced

Description

Fortron 1140L6 is an easier flow version of Fortron 1140L4. It offers essentially the same characteristics of 1140L4. Especially used for thin walled parts with long flow lengths. Applications made of this grade include components for pumps and electronics.

| Physical properties | Value | Unit | Test Standard |
|-----------------------------|-------------------|-------------------|---------------|
| Density | 1650 | kg/m ³ | ISO 1183 |
| Mold shrinkage - parallel | 0.2 to 0.6 | % | ISO 294-4 |
| Mold shrinkage - normal | 0.4 to 0.6 | % | ISO 294-4 |
| Water absorption (23°C-sat) | 0.02 | % | ISO 62 |

| Mechanical properties | Value | Unit | Test Standard |
|--|--------------|-------------------|---------------|
| Tensile modulus (1mm/min) | 14700 | MPa | ISO 527-2/1A |
| Tensile stress at break (5mm/min) | 195 | MPa | ISO 527-2/1A |
| Tensile strain at break (5mm/min) | 1.9 | % | ISO 527-2/1A |
| Flexural modulus (23°C) | 14500 | MPa | ISO 178 |
| Flexural stress @ break | 285 | MPa | ISO 178 |
| Charpy impact strength @ 23°C | 53 | kJ/m ² | ISO 179/1eU |
| Charpy impact strength @ -30°C | 53 | kJ/m ² | ISO 179/1eU |
| Charpy notched impact strength @ 23°C | 10 | kJ/m ² | ISO 179/1eA |
| Charpy notched impact strength @ -30°C | 10 | kJ/m ² | ISO 179/1eA |
| Unnotched impact str (Izod) @ 23°C | 34 | kJ/m ² | ISO 180/1U |
| Notched impact strength (Izod) @ 23°C | 10 | kJ/m ² | ISO 180/1A |
| Notched impact strength (Izod) @ -30°C | 10 | kJ/m ² | ISO 180/1A |
| Rockwell hardness | 100 | M-Scale | ISO 2039-2 |

| Thermal properties | Value | Unit | Test Standard |
|--|---------------------------|-------------|-------------------|
| Melting temperature (10°C/min) | 280 | °C | ISO 11357-1,-2,-3 |
| Glass transition temperature (10°C/min) | 90 | °C | ISO 11357-1,-2,-3 |
| DTUL @ 1.8 MPa | 270 | °C | ISO 75-1/-2 |
| DTUL @ 8.0 MPa | 215 | °C | ISO 75-1/-2 |
| Coeff.of linear therm. expansion (parallel) | 0.26 | E-4/°C | ISO 11359-2 |
| Coeff.of linear therm. expansion (normal) | 0.42 | E-4/°C | ISO 11359-2 |
| Flammability @1.6mm nom. thickn. thickness tested (1.6) | V-0 1.5 | class mm | UL94 UL94 |
| Flammability at thickness h thickness tested (h) | V-0 0.38 | class mm | UL94 UL94 |

| Electrical properties | Value | Unit | Test Standard |
|--------------------------------|-----------------|-------|---------------|
| Relative permittivity - 1 MHz | 4.1 | - | IEC 60250 |
| Dissipation factor - 1 MHz | 20 | E-4 | IEC 60250 |
| Volume resistivity | >1E13 | Ohm*m | IEC 60093 |
| Surface resistivity | >1E15 | Ohm | IEC 60093 |
| Electric strength | 28 | kV/mm | IEC 60243-1 |
| Comparative tracking index CTI | 125 | - | IEC 60112 |

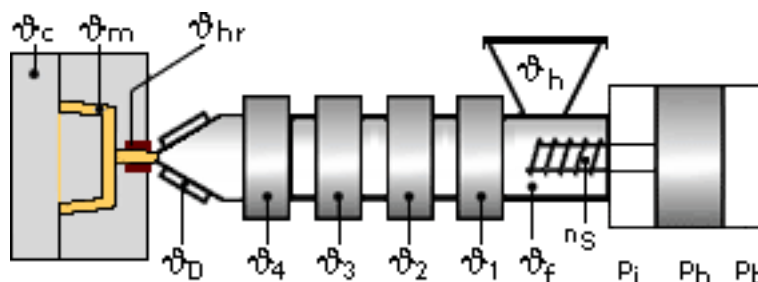
| Other properties | Value | Unit | Test Standard |
|----------------------|------------|------|---------------|
| CSA rating @ 0.84 mm | A00 | - | CSA F-1 |

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| Test specimen production | Value | Unit | Test Standard |
|------------------------------------|------------------|------|---------------|
| Injection molding melt temperature | 310 - 340 | °C | ISO 294 |
| Injection molding mold temperature | 135 - 160 | °C | ISO 294 |

| Rheological Calculation properties | Value | Unit | Test Standard |
|------------------------------------|-------------|----------|---------------|
| Specific heat capacity of melt | 1500 | J/(kg K) | Internal |

Typical injection moulding processing conditions



Pre Drying:

Necessary low maximum residual moisture content: 0.02%

FORTRON should in principle be predried. Because of the necessary low maximum residual moisture content the use of dry air dryers is recommended. The dew point should be $\leq -30^\circ\text{C}$. The time between drying and processing should be as short as possible.

For subsequent storage the material should be stored dry in the dryer until processed (≤ 60 h).

Drying time: 3 - 4 h

Drying temperature: 130 - 140 °C

Temperature:

| | $\varnothing_{\text{Manifold}}$ | $\varnothing_{\text{Mold}}$ | $\varnothing_{\text{Melt}}$ | $\varnothing_{\text{Nozzle}}$ | $\varnothing_{\text{Zone4}}$ | $\varnothing_{\text{Zone3}}$ | $\varnothing_{\text{Zone2}}$ | $\varnothing_{\text{Zone1}}$ | $\varnothing_{\text{Feed}}$ | $\varnothing_{\text{Hopper}}$ |
|----------|---------------------------------|-----------------------------|-----------------------------|-------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|-----------------------------|-------------------------------|
| min (°C) | 330 | 140 | 330 | 310 | 330 | 330 | 310 | 290 | 60 | 20 |
| max (°C) | 340 | 160 | 340 | 330 | 340 | 340 | 320 | 300 | 80 | 30 |

Pressure:

| | Inj press | Hold press | Back pressure |
|-----------|-----------|------------|---------------|
| min (bar) | 500 | 300 | 0 |
| max (bar) | 1000 | 700 | 30 |

Speed:

Injection speed: fast

Screw speed

| Screw diameter (mm) | 16 | 25 | 40 | 55 | 75 |
|---------------------|----|-----|----|----|----|
| Screw speed (RPM) | - | 120 | 75 | 50 | - |

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Injection Molding

On injection molding machines with 15-25 D long three-section screws, as are usual in the trade, the FORTRON is processable. A shut-off nozzle is preferred to a free-flow nozzle.

Melt temperature 320-340 degC
Mold wall temperature at least 140 degC

A medium injection rate is normally preferred. All mold cavities must be effectively vented.

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General Disclaimer

NOTICE TO USERS: Values shown are based on testing of laboratory test specimens and represent data that fall within the standard range of properties for natural material. These values alone do not represent a sufficient basis for any part design and are not intended for use in establishing maximum, minimum, or ranges of values for specification purposes. Colorants or other additives may cause significant variations in data values.

Properties of molded parts can be influenced by a wide variety of factors including, but not limited to, material selection, additives, part design, processing conditions and environmental exposure. Any determination of the suitability of a particular material and part design for any use contemplated by the users and the manner of such use is the sole responsibility of the users, who must assure themselves that the material as subsequently processed meets the needs of their particular product or use.

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