**Ryton® R-4XT**

polyphenylene sulfide

Ryton® R-4XT and R-4-02XT 40% glass fiber reinforced polyphenylene sulfide compounds provide enhanced mechanical strength with good electrical properties and outstanding chemical resistance, even at elevated temperatures.

### General

<table>
<thead>
<tr>
<th>Material Status</th>
<th>Commercial: Active</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability</td>
<td>Asia Pacific</td>
</tr>
<tr>
<td></td>
<td>Europe</td>
</tr>
<tr>
<td></td>
<td>Latin America</td>
</tr>
<tr>
<td></td>
<td>North America</td>
</tr>
<tr>
<td>Filler / Reinforcement</td>
<td>Glass Fiber, 40% Filler by Weight</td>
</tr>
<tr>
<td>Features</td>
<td>Chemical Resistant</td>
</tr>
<tr>
<td></td>
<td>Good Electrical Properties</td>
</tr>
<tr>
<td></td>
<td>Good Strength</td>
</tr>
<tr>
<td>Uses</td>
<td>Appliance Components</td>
</tr>
<tr>
<td>RoHS Compliance</td>
<td>RoHS Compliant</td>
</tr>
<tr>
<td>Automotive Specifications</td>
<td>GM GMP.PPS.001</td>
</tr>
<tr>
<td>Appearance</td>
<td>Natural Color</td>
</tr>
<tr>
<td>Forms</td>
<td>Pellets</td>
</tr>
<tr>
<td>Processing Method</td>
<td>Injection Molding</td>
</tr>
</tbody>
</table>

### Physical

<table>
<thead>
<tr>
<th>Test</th>
<th>Typical Value</th>
<th>Unit</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density / Specific Gravity</td>
<td>1.69</td>
<td></td>
<td>ASTM D792</td>
</tr>
<tr>
<td>Molding Shrinkage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flow: 3.20 mm</td>
<td>0.20</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Across Flow: 3.20 mm</td>
<td>0.50</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Water Absorption (24 hr, 23°C)</td>
<td>0.020</td>
<td>%</td>
<td>ASTM D570</td>
</tr>
</tbody>
</table>

### Mechanical

<table>
<thead>
<tr>
<th>Test</th>
<th>Typical Value</th>
<th>Unit</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile Strength</td>
<td>200</td>
<td>MPa</td>
<td>ASTM D638</td>
</tr>
<tr>
<td></td>
<td>195</td>
<td>MPa</td>
<td>ISO 527-2</td>
</tr>
<tr>
<td>Tensile Elongation (Break)</td>
<td>1.6</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Flexural Modulus</td>
<td>14500</td>
<td>MPa</td>
<td>ASTM D790</td>
</tr>
<tr>
<td></td>
<td>14000</td>
<td>MPa</td>
<td>ISO 178</td>
</tr>
<tr>
<td>Flexural Strength</td>
<td>276</td>
<td>MPa</td>
<td>ASTM D790</td>
</tr>
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<td></td>
<td>280</td>
<td>MPa</td>
<td>ISO 178</td>
</tr>
<tr>
<td>Compressive Strength</td>
<td>285</td>
<td>MPa</td>
<td>ASTM D695</td>
</tr>
<tr>
<td>Poisson's Ratio</td>
<td>0.39</td>
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</table>

### Impact

<table>
<thead>
<tr>
<th>Test</th>
<th>Typical Value</th>
<th>Unit</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notched Izod Impact 3.18 mm</td>
<td>91</td>
<td>J/m</td>
<td>ASTM D256</td>
</tr>
<tr>
<td></td>
<td>9.0</td>
<td>kJ/m²</td>
<td>ISO 180/A</td>
</tr>
</tbody>
</table>
**Ryton® R-4XT**

**polyphenylene sulfide**

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**Impact**

<table>
<thead>
<tr>
<th>Property</th>
<th>Typical Value</th>
<th>Unit</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unnotched Izod Impact 3.18 mm</td>
<td>640</td>
<td>J/m</td>
<td>ASTM D4812</td>
</tr>
<tr>
<td>Unnotched Izod Impact --</td>
<td>35</td>
<td>kJ/m²</td>
<td>ISO 180</td>
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</tbody>
</table>

**Hardness**

<table>
<thead>
<tr>
<th>Property</th>
<th>Typical Value</th>
<th>Unit</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rockwell Hardness M-Scale</td>
<td>102</td>
<td></td>
<td>ASTM D785</td>
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<tr>
<td>Rockwell Hardness R-Scale</td>
<td>120</td>
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</table>

**Thermal**

<table>
<thead>
<tr>
<th>Property</th>
<th>Typical Value</th>
<th>Unit</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deflection Temperature Under Load 1.8 MPa, Unannealed</td>
<td>265</td>
<td>°C</td>
<td>ASTM D648</td>
</tr>
<tr>
<td>CLTE</td>
<td>2.0E-5</td>
<td>cm/cm/°C</td>
<td>ASTM E831</td>
</tr>
<tr>
<td>Flow : -50 to 50°C</td>
<td>1.5E-5</td>
<td>cm/cm/°C</td>
<td></td>
</tr>
<tr>
<td>Flow : 100 to 200°C</td>
<td>2.0E-5</td>
<td>cm/cm/°C</td>
<td></td>
</tr>
<tr>
<td>Transverse : -50 to 50°C</td>
<td>4.0E-5</td>
<td>cm/cm/°C</td>
<td></td>
</tr>
<tr>
<td>Transverse : 100 to 200°C</td>
<td>9.0E-5</td>
<td>cm/cm/°C</td>
<td></td>
</tr>
<tr>
<td>Thermal Conductivity</td>
<td>0.30</td>
<td>W/m/K</td>
<td></td>
</tr>
<tr>
<td>UL Temperature Rating</td>
<td>200 to 220</td>
<td>°C</td>
<td>UL 746B</td>
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</table>

**Electrical**

<table>
<thead>
<tr>
<th>Property</th>
<th>Typical Value</th>
<th>Unit</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume Resistivity</td>
<td>1.0E+16</td>
<td>ohms·cm</td>
<td>ASTM D257</td>
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<tr>
<td>Dielectric Strength</td>
<td>22</td>
<td>kV/mm</td>
<td>ASTM D149</td>
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<tr>
<td>Dielectric Constant 25°C, 1 kHz</td>
<td>3.80</td>
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<td>ASTM D150</td>
</tr>
<tr>
<td>Dielectric Constant 25°C, 1 MHz</td>
<td>3.90</td>
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<tr>
<td>Dissipation Factor 25°C, 1 kHz</td>
<td>2.0E-3</td>
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<td>ASTM D150</td>
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<tr>
<td>Arc Resistance</td>
<td>125</td>
<td>sec</td>
<td>ASTM D495</td>
</tr>
<tr>
<td>Comparative Tracking Index (CTI)</td>
<td>130</td>
<td>V</td>
<td>UL 746</td>
</tr>
<tr>
<td>Insulation Resistance 1 90°C</td>
<td>1.0E+11</td>
<td>ohms</td>
<td>UL 746</td>
</tr>
</tbody>
</table>

**Flammability**

<table>
<thead>
<tr>
<th>Property</th>
<th>Typical Value</th>
<th>Unit</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flame Rating (1.6 mm) V-0</td>
<td></td>
<td></td>
<td>UL 94</td>
</tr>
<tr>
<td>Flame Rating (1.6 mm) 5VA</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Oxygen Index 2</td>
<td>53</td>
<td>%</td>
<td>ASTM D2863</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ISO 4589-2</td>
</tr>
</tbody>
</table>

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Revised: 6/19/2015
Notes
Typical properties: these are not to be construed as specifications.

1 95%RH, 48 hr
2 ASTM D2863 is technically equivalent to ISO 4589-2.