SOLVAY
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# Ryton® R-4
## polyphenylene sulfide

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

### General

| | | |
|---|---|---|
| Material Status | • Commercial: Active | |
| Availability | • Asia Pacific<br>• Europe | • Latin America<br>• North America |
| Filler / Reinforcement | • Glass Fiber, 40% Filler by Weight | |
| Features | • Chemical Resistant | • Good Electrical Properties |
| Uses | • Automotive Applications | |
| RoHS Compliance | • RoHS Compliant | |
| Automotive Specifications | • FORD ESF-M4D388-A3 | |
| Appearance | • Natural Color | |
| Forms | • Pellets | |
| Processing Method | • Injection Molding | |

| Physical | Typical Value | Unit | Test method |
|---|---|---|---|
| Density / Specific Gravity | 1.69 | | ASTM D792 |
| Molding Shrinkage | | | |
| Flow : 3.20 mm | 0.20 | % | |
| Across Flow : 3.20 mm | 0.50 | % | |
| Water Absorption (24 hr, 23°C) | 0.020 | % | ASTM D570 |

| Mechanical | Typical Value | Unit | Test method |
|---|---|---|---|
| Tensile Strength | | | |
| -- | 159 | MPa | ASTM D638 |
| -- | 150 | MPa | ISO 527-2 |
| Tensile Elongation | | | |
| Break | 1.1 | % | ASTM D638 |
| Break | 1.2 | % | ISO 527-2 |
| Flexural Modulus | | | |
| -- | 14500 | MPa | ASTM D790 |
| -- | 14000 | MPa | ISO 178 |
| Flexural Strength | | | |
| -- | 221 | MPa | ASTM D790 |
| -- | 220 | MPa | ISO 178 |
| Compressive Strength | 270 | MPa | ASTM D695 |
| Poisson's Ratio | 0.38 | | |

| Impact | Typical Value | Unit | Test method |
|---|---|---|---|
| Notched Izod Impact | | | |
| 3.18 mm | 91 | J/m | ASTM D256 |
| -- | 9.0 | kJ/m² | ISO 180/A |

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| Impact | Typical Value | Unit | Test method |
|---|---|---|---|
| Unnotched Izod Impact | | | |
| 3.18 mm | 400 | J/m | ASTM D4812 |
| -- | 25 | kJ/m² | ISO 180 |

| Hardness | Typical Value | Unit | Test method |
|---|---|---|---|
| Rockwell Hardness | | | ASTM D785 |
| M-Scale | 104 | | |
| R-Scale | 122 | | |

| Thermal | Typical Value | Unit | Test method |
|---|---|---|---|
| Deflection Temperature Under Load | | | ASTM D648 |
| 1.8 MPa, Unannealed | 265 | °C | |
| CLTE | | | ASTM E831 |
| Flow : -50 to 50°C | 2.0E-5 | cm/cm/°C | |
| Flow : 100 to 200°C | 1.5E-5 | cm/cm/°C | |
| Transverse : -50 to 50°C | 4.0E-5 | cm/cm/°C | |
| Transverse : 100 to 200°C | 8.0E-5 | cm/cm/°C | |
| Thermal Conductivity | 0.32 | W/m/K | |
| UL Temperature Rating | 200 to 220 | °C | UL 746B |

| Electrical | Typical Value | Unit | Test method |
|---|---|---|---|
| Surface Resistivity | 1.0E+16 | ohms | ASTM D257 |
| Volume Resistivity | 1.0E+16 | ohms·cm | ASTM D257 |
| Dielectric Strength | 20 | kV/mm | ASTM D149 |
| Dielectric Constant | | | ASTM D150 |
| 25°C, 1 kHz | 3.90 | | |
| 25°C, 1 MHz | 3.80 | | |
| Dissipation Factor | | | ASTM D150 |
| 25°C, 1 kHz | 2.0E-3 | | |
| 25°C, 1 MHz | 2.0E-3 | | |
| Arc Resistance | 125 | sec | ASTM D495 |
| Comparative Tracking Index (CTI) | 130 | V | UL 746 |
| Insulation Resistance [1] (90°C) | 1.0E+11 | ohms | |

| Flammability | Typical Value | Unit | Test method |
|---|---|---|---|
| Flame Rating (1.6 mm) | • V-0<br>• 5VA | | UL 94 |
| Oxygen Index | 47 | % | ASTM D2863 |

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**Notes**

Typical properties: these are not to be construed as specifications.

[1] 95%RH, 48 hr


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