

# Ryton® R-4-02

Polyphenylene Sulfide

Solvay Specialty Polymers

## Message:

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 Information            |                                  |                   |             |
|--------------------------------|----------------------------------|-------------------|-------------|
| UL YellowCard                  | E95746-102108302                 |                   |             |
| Filler / Reinforcement         | Glass Fiber,40% Filler by Weight |                   |             |
| Features                       | Good Chemical Resistance         |                   |             |
|                                | Good Electrical Properties       |                   |             |
| Uses                           | Automotive Applications          |                   |             |
| RoHS Compliance                | RoHS Compliant                   |                   |             |
| Appearance                     | Black                            |                   |             |
| Forms                          | Pellets                          |                   |             |
| Processing Method              | Injection Molding                |                   |             |
| Physical                       | Nominal Value                    | Unit              | Test Method |
| Specific Gravity               | 1.69                             | g/cm <sup>3</sup> | ASTM D792   |
| Molding Shrinkage              |                                  |                   |             |
| Flow : 3.20 mm                 | 0.20                             | %                 |             |
| Across Flow : 3.20 mm          | 0.50                             | %                 |             |
| Water Absorption (23°C, 24 hr) | 0.020                            | %                 | ASTM D570   |
| Hardness                       | Nominal Value                    | Unit              | Test Method |
| Rockwell Hardness              |                                  |                   | ASTM D785   |
| M-Scale                        | 104                              |                   |             |
| R-Scale                        | 122                              |                   |             |
| Mechanical                     | Nominal Value                    | Unit              | Test Method |
| Tensile Strength               |                                  |                   |             |
| --                             | 152                              | MPa               | ASTM D638   |
| --                             | 140                              | MPa               | ISO 527-2   |
| Tensile Elongation             |                                  |                   |             |
| Break                          | 1.1                              | %                 | ASTM D638   |
| Break                          | 1.0                              | %                 | ISO 527-2   |
| Flexural Modulus               |                                  |                   |             |
| --                             | 14500                            | MPa               | ASTM D790   |
| --                             | 14000                            | MPa               | ISO 178     |
| Flexural Strength              |                                  |                   |             |
| --                             | 207                              | MPa               | ASTM D790   |

| --                                                      | 200           | MPa               | ISO 178     |
|---------------------------------------------------------|---------------|-------------------|-------------|
| Compressive Strength                                    | 270           | MPa               | ASTM D695   |
| Poisson's Ratio                                         | 0.38          |                   |             |
| Impact                                                  | Nominal Value | Unit              | Test Method |
| Notched Izod Impact                                     |               |                   |             |
| 3.18 mm                                                 | 80            | J/m               | ASTM D256   |
| --                                                      | 8.0           | kJ/m <sup>2</sup> | ISO 180/A   |
| Unnotched Izod Impact                                   |               |                   |             |
| 3.18 mm                                                 | 350           | J/m               | ASTM D4812  |
| --                                                      | 20            | kJ/m <sup>2</sup> | ISO 180     |
| Thermal                                                 | Nominal Value | Unit              | Test Method |
| Deflection Temperature Under Load (1.8 MPa, Unannealed) | 265           | °C                | ASTM D648   |
| 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                                              | Nominal 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 <sup>1</sup> (90°C)               | 1.0E+11       | ohms              |             |
| Flammability                                            | Nominal Value | Unit              | Test Method |
|                                                         | V-0           |                   |             |
| Flame Rating (1.60 mm)                                  | 5VA           |                   | UL 94       |
| Oxygen Index                                            | 47            | %                 | ASTM D2863  |
| NOTE                                                    |               |                   |             |
| 1.                                                      | 95%RH, 48 hr  |                   |             |

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