

# Ryton® R-4-220BL

Polyphenylene Sulfide

Solvay Specialty Polymers

## Message:

Ryton® R-4-220NA and R-4-220BL 40% glass fiber reinforced polyphenylene sulfide compounds provide enhanced mechanical strength after constant or repeated exposure to high temperature water.

| General Information            |                                  |                   |                      |
|--------------------------------|----------------------------------|-------------------|----------------------|
| UL YellowCard                  | E95746-102108294                 |                   |                      |
| Filler / Reinforcement         | Glass Fiber,40% Filler by Weight |                   |                      |
| Features                       | Good Strength                    |                   |                      |
| Uses                           | Automotive Applications          |                   |                      |
| RoHS Compliance                | RoHS Compliant                   |                   |                      |
| Appearance                     | Black                            |                   |                      |
| Forms                          | Pellets                          |                   |                      |
| Processing Method              | Injection Molding                |                   |                      |
| Physical                       | Nominal Value                    | Unit              | Test Method          |
| Specific Gravity               | 1.68                             | 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                        | 103                              |                   |                      |
| R-Scale                        | 122                              |                   |                      |
| Mechanical                     | Nominal Value                    | Unit              | Test Method          |
| Tensile Strength               |                                  |                   |                      |
| --                             | 172                              | MPa               | ASTM D638            |
| --                             | 175                              | MPa               | ISO 527-2            |
| Tensile Elongation (Break)     | 1.5                              | %                 | ASTM D638, ISO 527-2 |
| Flexural Modulus               |                                  |                   |                      |
| --                             | 14500                            | MPa               | ASTM D790            |
| --                             | 14000                            | MPa               | ISO 178              |
| Flexural Strength              |                                  |                   |                      |
| --                             | 248                              | MPa               | ASTM D790            |
| --                             | 250                              | MPa               | ISO 178              |
| Compressive Strength           | 275                              | MPa               | ASTM D695            |
| Poisson's Ratio                | 0.37                             |                   | ISO 527              |
| 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                                                 | 480           | J/m               | ASTM D4812  |
| --                                                      | 30            | 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                                      | 1.5E-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                               | 8.5E-5        | cm/cm/°C          |             |
| Thermal Conductivity                                    | 0.31          | 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                                     | 22            | kV/mm             | ASTM D149   |
| Dielectric Constant                                     |               |                   | ASTM D150   |
| 25°C, 1 kHz                                             | 3.80          |                   |             |
| 25°C, 1 MHz                                             | 3.80          |                   |             |
| Dissipation Factor                                      |               |                   | ASTM D150   |
| 25°C, 1 kHz                                             | 2.0E-3        |                   |             |
| 25°C, 1 MHz                                             | 3.0E-3        |                   |             |
| Arc Resistance                                          | 125           | sec               | ASTM D495   |
| Comparative Tracking Index (CTI)                        | 150           | V                 | UL 746      |
| Flammability                                            | Nominal Value | Unit              | Test Method |
| Flame Rating (1.60 mm)                                  | V-0           |                   | UL 94       |
| Oxygen Index                                            | 45            | %                 | ASTM D2863  |
| Additional Information                                  | Nominal Value | Unit              |             |
| Hydrolytic Stability <sup>1</sup>                       |               |                   |             |
| Tensile Strength Retained                               | > 80          | %                 |             |
| Weight Gain                                             | < 1.0         | %                 |             |
| NOTE                                                    |               |                   |             |

1. Test specimens aged 1000 hours in water at 140°C (284°F)

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