

# Generic Phenolic - Glass Fiber

Phenolic

Generic

Message:

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This information is provided for comparative purposes only.

| General Information    |                                 |                   |             |
|------------------------|---------------------------------|-------------------|-------------|
| Filler / Reinforcement | Glass fiber reinforced material |                   |             |
| Physical               | Nominal Value                   | Unit              | Test Method |
| Specific Gravity       |                                 |                   |             |
| --                     | 1.68 - 2.01                     | g/cm <sup>3</sup> | ASTM D792   |
| 23°C                   | 1.60 - 2.01                     | g/cm <sup>3</sup> | ISO 1183    |
| Apparent Density       |                                 |                   |             |
| --                     | 0.70 - 0.81                     | g/cm <sup>3</sup> | ASTM D1895  |
| --                     | 0.62 - 0.81                     | g/cm <sup>3</sup> | ISO 60      |
| Bulk Factor            | 2.0 - 3.0                       |                   | ASTM D1895  |
| Molding Shrinkage      |                                 |                   |             |
| Flow: 23°C             | 0.098 - 0.31                    | %                 | ASTM D955   |
| 23°C                   | 0.038 - 0.37                    | %                 | ISO 294-4   |
| Water Absorption       |                                 |                   |             |
| 23°C, 24 hr            | 0.020 - 0.12                    | %                 | ASTM D570   |
| 23°C, 24 hr            | 0.020 - 0.16                    | %                 | ISO 62      |
| Hardness               | Nominal Value                   | Unit              | Test Method |
| Rockwell Hardness      |                                 |                   |             |
| 23°C                   | 80 - 125                        |                   | ASTM D785   |
| 23°C                   | 79 - 100                        |                   | ISO 2039-2  |
| Mechanical             | Nominal Value                   | Unit              | Test Method |
| Tensile Modulus        |                                 |                   |             |
| 23°C                   | 2.70 - 17200                    | MPa               | ASTM D638   |
| 23°C                   | 12800 - 18000                   | MPa               | ISO 527-2   |
| Tensile Strength       |                                 |                   |             |
| Yield, 23°C            | 34.9 - 65.7                     | MPa               | ASTM D638   |
| Fracture, 23°C         | 44.9 - 131                      | MPa               | ISO 527-2   |
| 23°C                   | 32.0 - 138                      | MPa               | ASTM D638   |
| Tensile Elongation     |                                 |                   |             |
| Fracture, 23°C         | 0.60 - 0.81                     | %                 | ASTM D638   |
| Fracture, 23°C         | 0.54 - 1.0                      | %                 | ISO 527-2   |
| Flexural Modulus       |                                 |                   |             |
| 23°C                   | 8660 - 17600                    | MPa               | ASTM D790   |

|                                         |                   |                   |             |
|-----------------------------------------|-------------------|-------------------|-------------|
| 23°C                                    | 9800 - 20000      | MPa               | ISO 178     |
| Flexural Strength                       |                   |                   |             |
| 23°C                                    | 72.9 - 190        | MPa               | ASTM D790   |
| 23°C                                    | 88.5 - 186        | MPa               | ISO 178     |
| Yield, 23°C                             | 73.6 - 170        | MPa               | ASTM D790   |
| Compressive Strength                    |                   |                   |             |
| 23°C                                    | 161 - 293         | MPa               | ASTM D695   |
| 23°C                                    | 166 - 314         | MPa               | ISO 604     |
| Impact                                  | Nominal Value     | Unit              | Test Method |
| Charpy Notched Impact Strength          |                   |                   |             |
| 23°C                                    | 19.1 - 99.3       | J/m               | ASTM D256   |
| 23°C                                    | 3.2 - 4.5         | kJ/m <sup>2</sup> | ISO 179     |
| Charpy Unnotched Impact Strength (23°C) | 9.8 - 21          | kJ/m <sup>2</sup> | ISO 179     |
| Notched Izod Impact                     |                   |                   |             |
| 23°C                                    | 6.9 - 66          | J/m               | ASTM D256   |
| 23°C                                    | 2.4 - 4.5         | kJ/m <sup>2</sup> | ISO 180     |
| Thermal                                 | Nominal Value     | Unit              | Test Method |
| Deflection Temperature Under Load       |                   |                   |             |
| 1.8 MPa, not annealed                   | 180 - 320         | °C                | ASTM D648   |
| 1.8 MPa, not annealed                   | 177 - 287         | °C                | ISO 75-2/A  |
| 1.8 MPa, annealed                       | 282               | °C                | ISO 75-2/A  |
| 8.0 MPa, not annealed                   | 136 - 250         | °C                | ISO 75-2/C  |
| Continuous Use Temperature              | 180 - 236         | °C                | ASTM D794   |
| Linear thermal expansion coefficient    |                   |                   |             |
| Flow                                    | 1.1E-5 - 3.8E-5   | cm/cm/°C          | ASTM D696   |
| Flow                                    | 1.2E-5 - 3.9E-5   | cm/cm/°C          | ASTM E831   |
| Flow                                    | 5.0E-6 - 3.7E-5   | cm/cm/°C          | ISO 11359-2 |
| Lateral                                 | 2.7E-5 - 4.5E-5   | cm/cm/°C          | ASTM E831   |
| Thermal Conductivity (23°C)             | 0.34 - 0.81       | W/m/K             | ASTM C177   |
| RTI Elec                                | 150 - 180         | °C                | UL 746      |
| RTI Imp                                 | 150 - 151         | °C                | UL 746      |
| RTI                                     | 150 - 151         | °C                | UL 746      |
| Electrical                              | Nominal Value     | Unit              | Test Method |
| Surface Resistivity                     | 1.0E+11 - 2.0E+13 | ohms              | IEC 60093   |
| Volume Resistivity                      |                   |                   |             |
| 23°C                                    | 4.0E+9 - 1.0E+13  | ohms·cm           | ASTM D257   |
| 23°C                                    | 4.0E+9 - 7.6E+14  | ohms·cm           | IEC 60093   |
| Dielectric Strength                     |                   |                   |             |
| 23°C                                    | 7.9 - 17          | kV/mm             | ASTM D149   |
| 23°C                                    | 9.7 - 30          | kV/mm             | IEC 60243-1 |
| Dielectric Constant                     |                   |                   |             |
| 23°C                                    | 4.97 - 6.31       |                   | ASTM D150   |

| 23°C                             | 4.30 - 5.50   |      | ASTM D2520  |
|----------------------------------|---------------|------|-------------|
| Dissipation Factor (23°C)        | 0.010 - 0.044 |      | ASTM D150   |
| Arc Resistance                   | 178 - 191     | sec  | ASTM D495   |
| Comparative Tracking Index (CTI) | 175 - 200     | V    | UL 746      |
| Comparative Tracking Index       | 175 - 203     | V    | IEC 60112   |
| Flammability                     | Nominal Value | Unit | Test Method |
| Oxygen Index                     | 31 - 47       | %    | ASTM D2863  |
| Injection                        | Nominal Value | Unit |             |
| Rear Temperature                 | 60.0 - 60.4   | °C   |             |
| Middle Temperature               | 73.8 - 74.1   | °C   |             |
| Nozzle Temperature               | 87.8 - 88.0   | °C   |             |
| Processing (Melt) Temp           | 107 - 164     | °C   |             |
| Mold Temperature                 | 173 - 177     | °C   |             |
| Injection Pressure               | 8.60 - 175    | MPa  |             |
| Holding Pressure                 | 59.8          | MPa  |             |
| Back Pressure                    | 0.207 - 10.0  | MPa  |             |
| Screw Speed                      | 50 - 60       | rpm  |             |
| Injection instructions           |               |      |             |

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