

# NORYL GTX™ GTX678 resin

Polyphenylene Ether + PS + Nylon

SABIC Innovative Plastics

## Message:

NORYL GTX678 resin is a high performance blend of PPE/PA that exhibits an excellent balance on non-halogenated flame retardance, conductivity, ductility, and high-heat resistance. This grade can be electro-statically painted or powder coated without the need for a conductive primer.

| General Information |                           |
|---------------------|---------------------------|
| UL YellowCard       | E121562-516521            |
| Features            | Conductivity              |
|                     | Sprayable                 |
|                     | Heat resistance, high     |
|                     | Halogen-free              |
|                     | ductility                 |
|                     | Flame retardancy          |
|                     |                           |
| Processing Method   | Profile extrusion molding |
|                     | Injection molding         |

| Physical                                   | Nominal Value | Unit                   | Test Method         |
|--------------------------------------------|---------------|------------------------|---------------------|
| Specific Gravity                           | 1.12          | g/cm <sup>3</sup>      | ASTM D792, ISO 1183 |
| Melt Mass-Flow Rate (MFR) (300°C/5.0 kg)   | 7.8           | g/10 min               | ASTM D1238          |
| Melt Volume-Flow Rate (MVR) (300°C/5.0 kg) | 7.00          | cm <sup>3</sup> /10min | ISO 1133            |
| Molding Shrinkage - Flow (3.20 mm)         | 1.3 - 1.5     | %                      | Internal method     |
| Water Absorption                           |               |                        | ISO 62              |
| Saturated, 23°C                            | 4.0           | %                      | ISO 62              |
| Equilibrium, 23°C, 50% RH                  | 0.50          | %                      | ISO 62              |
| Mechanical                                 | Nominal Value | Unit                   | Test Method         |
| Tensile Modulus                            |               |                        |                     |
| -- <sup>1</sup>                            | 2900          | MPa                    | ASTM D638           |
| --                                         | 2900          | MPa                    | ISO 527-2/1         |
| Tensile Strength                           |               |                        |                     |
| Yield <sup>2</sup>                         | 58.0          | MPa                    | ASTM D638           |
| Yield                                      | 58.0          | MPa                    | ISO 527-2/50        |
| Fracture <sup>3</sup>                      | 52.0          | MPa                    | ASTM D638           |
| Fracture                                   | 52.0          | MPa                    | ISO 527-2/50        |
| Tensile Elongation                         |               |                        |                     |
| Yield <sup>4</sup>                         | 7.0           | %                      | ASTM D638           |
| Yield                                      | 7.0           | %                      | ISO 527-2/50        |
| Fracture <sup>5</sup>                      | 12            | %                      | ASTM D638           |

|                                                    |               |                   |                          |
|----------------------------------------------------|---------------|-------------------|--------------------------|
| Fracture                                           | 12            | %                 | ISO 527-2/50             |
| Flexural Modulus                                   |               |                   |                          |
| 50.0mm span <sup>6</sup>                           | 2600          | MPa               | ASTM D790                |
| -- <sup>7</sup>                                    | 2600          | MPa               | ISO 178                  |
| Flexural Stress                                    |               |                   |                          |
| --                                                 | 95.0          | MPa               | ISO 178                  |
| Yield, 50.0mm span <sup>8</sup>                    | 95.0          | MPa               | ASTM D790                |
| Impact                                             | Nominal Value | Unit              | Test Method              |
| Charpy Notched Impact Strength <sup>9</sup> (23°C) | 12            | kJ/m <sup>2</sup> | ISO 179/1eA              |
| Notched Izod Impact                                |               |                   |                          |
| -30°C                                              | 70            | J/m               | ASTM D256                |
| 23°C                                               | 100           | J/m               | ASTM D256                |
| -30°C <sup>10</sup>                                | 7.0           | kJ/m <sup>2</sup> | ISO 180/1A               |
| 23°C <sup>11</sup>                                 | 10            | kJ/m <sup>2</sup> | ISO 180/1A               |
| Instrumented Dart Impact (23°C, Total Energy)      | 60.0          | J                 | ASTM D3763               |
| Thermal                                            | Nominal Value | Unit              | Test Method              |
| Deflection Temperature Under Load                  |               |                   |                          |
| 0.45 MPa, unannealed, 3.20mm                       | 195           | °C                | ASTM D648                |
| 0.45 MPa, unannealed, 64.0mm span <sup>12</sup>    | 191           | °C                | ISO 75-2/Bf              |
| Vicat Softening Temperature                        |               |                   |                          |
| --                                                 | 198           | °C                | ASTM D1525 <sup>13</sup> |
| --                                                 | 197           | °C                | ISO 306/B50              |
| --                                                 | 195           | °C                | ISO 306/B120             |
| Ball Pressure Test (125°C)                         | Pass          |                   | IEC 60695-10-2           |
| Linear thermal expansion coefficient               |               |                   |                          |
| Flow: -40 to 40°C                                  | 7.8E-5        | cm/cm/°C          | ASTM E831                |
| Flow: 23 to 60°C                                   | 8.3E-5        | cm/cm/°C          | ISO 11359-2              |
| Lateral: -40 to 40°C                               | 8.0E-5        | cm/cm/°C          | ASTM E831                |
| Lateral: 23 to 60°C                                | 8.5E-5        | cm/cm/°C          | ISO 11359-2              |
| Specific Heat                                      | 1400          | J/kg/°C           | ASTM C351                |
| Thermal Conductivity                               | 0.20          | W/m/K             | ASTM C177                |
| Electrical                                         | Nominal Value | Unit              | Test Method              |
| Volume Resistivity                                 | 4.0E+3        | ohms · cm         | ASTM D257                |
| Flammability                                       | Nominal Value | Unit              | Test Method              |
| Flame Rating                                       |               |                   | UL 94                    |
| 1.50 mm, Testing by SABIC                          | V-1           |                   | UL 94                    |

V-0

5VB

2.00 mm, Testing by SABIC

5VA

UL 94

|                                          |     |    |                |
|------------------------------------------|-----|----|----------------|
| Glow Wire Flammability Index (2.00 mm)   | 960 | °C | IEC 60695-2-12 |
| Glow Wire Ignition Temperature (1.00 mm) | 800 | °C | IEC 60695-2-13 |

| Injection               | Nominal Value | Unit |
|-------------------------|---------------|------|
| Drying Temperature      | 93.3 - 107    | °C   |
| Drying Time             | 3.0 - 4.0     | hr   |
| Drying Time, Maximum    | 8.0           | hr   |
| Suggested Max Moisture  | 0.070         | %    |
| Suggested Shot Size     | 30 - 50       | %    |
| Rear Temperature        | 260 - 299     | °C   |
| Middle Temperature      | 266 - 299     | °C   |
| Front Temperature       | 271 - 299     | °C   |
| Nozzle Temperature      | 277 - 299     | °C   |
| Processing (Melt) Temp  | 277 - 299     | °C   |
| Mold Temperature        | 65.6 - 93.3   | °C   |
| Back Pressure           | 0.345 - 1.38  | MPa  |
| Screw Speed             | 20 - 100      | rpm  |
| Vent Depth              | 0.013 - 0.038 | mm   |
| Extrusion               | Nominal Value | Unit |
| Drying Temperature      | 105 - 110     | °C   |
| Drying Time             | 8.0           | hr   |
| Suggested Max Moisture  | 0.030         | %    |
| Cylinder Zone 1 Temp.   | 245 - 260     | °C   |
| Cylinder Zone 2 Temp.   | 245 - 260     | °C   |
| Cylinder Zone 3 Temp.   | 245 - 260     | °C   |
| Cylinder Zone 4 Temp.   | 245 - 260     | °C   |
| Adapter Temperature     | 245 - 260     | °C   |
| Melt Temperature        | 245 - 260     | °C   |
| Die Temperature         | 245 - 260     | °C   |
| Calibration Temp, First | 35.0 - 75.0   | °C   |

#### Extrusion instructions

Drying Time (Cumulative): 24 hrsWater Bath Temperature: 35 - 50 °C

#### NOTE

- 5.0 mm/min
- Type 1, 50mm/min

|     |                           |
|-----|---------------------------|
| 3.  | Type 1, 50mm/min          |
| 4.  | Type 1, 50mm/min          |
| 5.  | Type 1, 50mm/min          |
| 6.  | 1.3 mm/min                |
| 7.  | 2.0 mm/min                |
| 8.  | 1.3 mm/min                |
| 9.  | 80*10*4 sp=62mm           |
| 10. | 80*10*4                   |
| 11. | 80*10*4                   |
| 12. | 80*10*4 mm                |
| 13. | 标准 B (120°C/h), 载荷2 (50N) |

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