



NORYL GTX™ Resin GTX675

Americas: LIMITED USE

NORYL GTX GTX675 Resin is a blend of Polyphenylene Ether(PPE) + Polyamide(PA) resin that is mineral filled, conductive, and suitable for injection molding. The conductivity level is optimized to allow for primer-less electrostatic painting. The mineral content enables the material to be used in structural applications replacing metal or thermoset resins. The material is only available in black.

| TYPICAL PROPERTIES ¹ | TYPICAL VALUE | Unit | Standard |
|--|---------------|---------------------|-------------|
| MECHANICAL | | | |
| Tensile Stress, yld, Type I, 5 mm/min | 700 | kgf/cm ² | ASTM D 638 |
| Tensile Stress, brk, Type I, 5 mm/min | 690 | kgf/cm ² | ASTM D 638 |
| Tensile Strain, yld, Type I, 5 mm/min | 3 | % | ASTM D 638 |
| Tensile Strain, brk, Type I, 5 mm/min | 4 | % | ASTM D 638 |
| Tensile Modulus, 5 mm/min | 44200 | kgf/cm ² | ASTM D 638 |
| Flexural Stress, yld, 1.3 mm/min, 50 mm span | 1080 | kgf/cm ² | ASTM D 790 |
| Flexural Modulus, 1.3 mm/min, 50 mm span | 39900 | kgf/cm ² | ASTM D 790 |
| Tensile Stress, yield, 5 mm/min | 65 | MPa | ISO 527 |
| Tensile Stress, break, 5 mm/min | 64 | MPa | ISO 527 |
| Tensile Strain, yield, 5 mm/min | 3 | % | ISO 527 |
| Tensile Strain, break, 5 mm/min | 4 | % | ISO 527 |
| Tensile Modulus, 1 mm/min | 4320 | MPa | ISO 527 |
| Flexural Stress, yield, 2 mm/min | 108 | MPa | ISO 178 |
| Flexural Modulus, 2 mm/min | 4220 | MPa | ISO 178 |
| IMPACT | | | |
| Izod Impact, notched, 23°C | 3 | cm-kgf/cm | ASTM D 256 |
| Izod Impact, notched, -30°C | 3 | cm-kgf/cm | ASTM D 256 |
| Instrumented Impact Total Energy, 23°C | 71 | cm-kgf | ASTM D 3763 |
| Izod Impact, notched 80*10*4 +23°C | 4 | kJ/m ² | ISO 180/1A |
| Izod Impact, notched 80*10*4 -30°C | 3 | kJ/m ² | ISO 180/1A |
| Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm | 3 | kJ/m ² | ISO 179/1eA |
| THERMAL | | | |
| Vicat Softening Temp, Rate B/50 | 188 | °C | ASTM D 1525 |

(1) Typical values only. Variations within normal tolerances are possible for various colors. All values are measured after at least 48 hours storage at 23°C/50% relative humidity. All properties, except the melt volume and melt flow rates, are measured on injection molded samples. All samples tested under ISO test standards are prepared according to ISO 294.

(2) Only typical data for selection purposes. Not to be used for part or tool design.
(3) This rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.

(4) Internal measurements according to UL standards.

(5) Measurements made from laboratory test coupon. Actual shrinkage may vary outside of range due to differences in processing conditions, equipment, part geometry and tool design. It is recommended that mold shrinkage studies be performed with surrogate or legacy tooling prior to cutting tools for new molded article.

(6) Needs hard coat to consistently pass 60 sec Vertical Burn.

Source GMD, last updated:

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| TYPICAL PROPERTIES ¹ | TYPICAL VALUE | Unit | Standard |
|--|---------------|-------------------------|--------------|
| THERMAL | | | |
| HDT, 0.45 MPa, 3.2 mm, unannealed | 187 | °C | ASTM D 648 |
| CTE, -40°C to 40°C, flow | 4.2E-05 | 1/°C | ASTM E 831 |
| CTE, -40°C to 40°C, xflow | 4.5E-05 | 1/°C | ASTM E 831 |
| CTE, -40°C to 40°C, flow | 5.E-05 | 1/°C | ISO 11359-2 |
| CTE, -40°C to 40°C, xflow | 5.E-05 | 1/°C | ISO 11359-2 |
| Vicat Softening Temp, Rate B/50 | 188 | °C | ISO 306 |
| Vicat Softening Temp, Rate B/120 | 187 | °C | ISO 306 |
| HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm | 187 | °C | ISO 75/Bf |
| PHYSICAL | | | |
| Specific Gravity | 1.26 | - | ASTM D 792 |
| Mold Shrinkage, flow, 3.2 mm (5) | 0.8 - 1.2 | % | SABIC Method |
| Melt Flow Rate, 280°C/5.0 kgf | 13.6 | g/10 min | ASTM D 1238 |
| Density | 1.26 | g/cm ³ | ISO 1183 |
| Water Absorption, (23°C/sat) | 1.27 | % | ISO 62 |
| Moisture Absorption (23°C / 50% RH) | 0.5 | % | ISO 62 |
| Melt Volume Rate, MVR at 280°C/5.0 kg | 12 | cm ³ /10 min | ISO 1133 |

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- Do NOT mix NORYL GTX* resin with other grades of NORYL* resins.

| PROCESSING PARAMETERS | TYPICAL VALUE | Unit |
|-----------------------------|---------------|------|
| Injection Molding | | |
| Drying Temperature | 95 - 105 | °C |
| Drying Time | 3 - 4 | hrs |
| Drying Time (Cumulative) | 8 | hrs |
| Maximum Moisture Content | 0.07 | % |
| Minimum Moisture Content | 0.02 | % |
| Melt Temperature | 275 - 300 | °C |
| Nozzle Temperature | 275 - 300 | °C |
| Front - Zone 3 Temperature | 270 - 300 | °C |
| Middle - Zone 2 Temperature | 265 - 300 | °C |
| Rear - Zone 1 Temperature | 260 - 300 | °C |
| Mold Temperature | 65 - 95 | °C |
| Back Pressure | 0.3 - 1.4 | MPa |
| Screw Speed | 20 - 100 | rpm |
| Shot to Cylinder Size | 30 - 50 | % |
| Vent Depth | 0.013 - 0.038 | mm |

- Polystyrene and acrylic regrind are effective purging Materials. Use temperature range appropriate for particular purging resin.
- Regrind must also be dried. Maximum 25% regrind.
- Dry at recommended temperatures and times for optimum performance. Overdrying can cause loss of physical properties and/or create appearance defects. Do not exceed recommended basic drying time and temperature above or:
 - 4-8 hrs at 95°C (200°F), 10 hrs max
 - 6-12 hrs at 80°C (175°F), 16 hrs max
 - 8-16 hrs at 65°C (150°F), 24 hrs max
- AVOID air circulating tray ovens. Moisture levels in heated ambient air can exceed moisture level in the resin itself, causing moisture ABSORPTION not drying.
- Avoid melt temperature in excess of 300°C (575°F) and residence times over 6-8 minutes (may affect properties and/or appearance).
- Nozzle temperature controls assist in elimination of drool premature freeze-off.
- Shot sizes in excess of 50% barrel capacity can lead to difficulties in providing a consistent, homogenous plastic melt.

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