# NORYL™ Resin SE1GFN1

REGION ASIA

## DESCRIPTION

NORYL SE1GFN1 resin is a 10% glass fiber reinforced blend of polyphenylene ether (PPE) + polystyrene (PS). This injection moldable grade contains non-brominated, non-chlorinated flame retardant and carries a UL94 flame rating of V1 at 1.5mm along with UL746C Outdoor Suitability rating of F1 and RTI 110C. NORYL SE1GFN1 exhibits high heat resistance, good dielectric strength, dimensional stability, hydrolytic stability, and very low moisture absorption. This material is an excellent candidate for appliance internals, indoor and outdoor electrical enclosures / housings / connectors.

| GENERAL INFORMATION | |
|---|---|
| **Features** | Flame Retardant, Hydrolytic Stability, Low Warpage, Amorphous, Low Shrinkage, Low Moisture Absorption, Low Specific Gravity, Non Cl/Br flame retardant, Non halogenated flame retardant, Dimensional stability, High stiffness/Strength, No PFAS intentionally added |
| **Fillers** | Glass Fiber (Total fluorine >50ppm only from inorganic fluorine) |
| **Polymer Types** | Polyphenylene Ether + PS (PPE+PS) |
| **Processing Techniques** | Injection Molding |

| INDUSTRY | SUB INDUSTRY |
|---|---|
| Automotive | Automotive EV Batteries |
| Building and Construction | Water Management |
| Consumer | Home Appliances, Commercial Appliance |
| Electrical and Electronics | Energy Management, Mobile Phone - Computer - Tablets |
| Industrial | Electrical |

## TYPICAL PROPERTY VALUES

Revision 20260907

| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|---|---|---|---|
| **MECHANICAL** [1] | | | |
| **Tensile Stress, brk, Type I, 5 mm/min** | 74 | MPa | ASTM D638 |
| **Tensile Strain, brk, Type I, 5 mm/min** | 3 | % | ASTM D638 |
| **Flexural Stress, brk, 1.3 mm/min, 50 mm span** | 119 | MPa | ASTM D790 |
| **Flexural Modulus, 1.3 mm/min, 50 mm span** | 3990 | MPa | ASTM D790 |
| **Hardness, Rockwell L** | 104 | - | ASTM D785 |
| **IMPACT** [1] | | | |
| **Izod impact, notched** | | | |
| 23°C | 96 | J/m | ASTM D256 |
| -40°C | 69 | J/m | ASTM D256 |
| **THERMAL** [1] | | | |
| **Vicat Softening Temp, Rate B/50** | 147 | °C | ASTM D1525 |
| **HDT, 1.82 MPa, 6.4 mm, unannealed** | 131 | °C | ASTM D648 |
| **Relative Temp Index, Elec** [2] | 110 | °C | UL 746B |
| **Relative Temp Index, Mech w/impact** [2] | 105 | °C | UL 746B |
| **Relative Temp Index, Mech w/o impact** [2] | 110 | °C | UL 746B |
| **PHYSICAL** [1] | | | |

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| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|---|---|---|---|
| Specific Gravity | 1.16 | - | ASTM D792 |
| Water Absorption, (23°C/24hrs) | 0.07 | % | ASTM D570 |
| Water Absorption, (23°C/Saturated) | 0.22 | % | ASTM D570 |
| Mold Shrinkage, flow, 3.2 mm (3) | 0.3 – 0.5 | % | SABIC method |
| ELECTRICAL (1) | | | |
| Volume Resistivity | 1.E+15 | Ω.cm | ASTM D257 |
| Relative Permittivity, 50/60 Hz | 3 | - | ASTM D150 |
| Relative Permittivity, 1 MHz | 3 | - | ASTM D150 |
| Dissipation Factor, 50/60 Hz | 0.0017 | - | ASTM D150 |
| Dissipation Factor, 1 MHz | 0.0016 | - | ASTM D150 |
| High Voltage Arc Track Rate {PLC} | 4 | PLC Code | UL 746A |
| Comparative Tracking Index (UL) {PLC} | 2 | PLC Code | UL 746A |
| High Amp Arc Ignition (HAI), PLC 2 | ≥0.71 | mm | UL 746A |
| Hot-Wire Ignition (HWI), PLC 1 | ≥0.71 | mm | UL 746A |
| FLAME CHARACTERISTICS (2) | | | |
| UL Yellow Card Link | E207780-228589 | - | - |
| UL Yellow Card Link 2 | E45587-101825569 | - | - |
| UL Recognized, 94-5VA Flame Class Rating | ≥2.5 | mm | UL 94 |
| UL Recognized, 94V-1 Flame Class Rating | ≥0.44 | mm | UL 94 |
| Oxygen Index (LOI) | 33.9 | % | ASTM D2863 |
| INJECTION MOLDING (4) | | | |
| Drying Temperature | 105 – 110 | °C | |
| Drying Time | 3 – 4 | Hrs | |
| Drying Time (Cumulative) | 8 | Hrs | |
| Maximum Moisture Content | 0.02 | % | |
| Melt Temperature | 280 – 310 | °C | |
| Nozzle Temperature | 280 – 310 | °C | |
| Front - Zone 3 Temperature | 270 – 310 | °C | |
| Middle - Zone 2 Temperature | 260 – 305 | °C | |
| Rear - Zone 1 Temperature | 250 – 300 | °C | |
| Mold Temperature | 75 – 105 | °C | |
| Back Pressure | 0.3 – 0.7 | MPa | |
| Screw Speed | 20 – 100 | rpm | |
| Shot to Cylinder Size | 30 – 70 | % | |

(1) The information stated on Technical Datasheets should be used as indicative only for material selection purposes and not be utilized as specification or used for part or tool design.
(2) UL Ratings shown on the technical datasheet might not cover the full range of thicknesses, colors and regions. For details, please see the UL Yellow Card.
(3) 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.
(4) Injection Molding parameters are only mentioned as general guidelines. These may not apply or may need adjustment in specific situations such as low shot sizes, large part molding, thin wall molding and gas-assist molding.

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