

NORYL™ RESIN NH5020

REGION EUROPE

DESCRIPTION

NORYL NH5020 resin is a non-reinforced blend of polyphenylene ether (PPE) + polystyrene (PS). This injection moldable grade contains non-brominated, non-chlorinated flame retardant and exhibits high heat resistance with thin-wall FR performance. NORYL NH5020 resin carries a UL94 flame rating of V0 at 0.75mm along with a UL746C Outdoor Suitability rating of F1. The material offers a good balance of affordable high heat, flow, hydrolytic stability, excellent creep resistance, dimensional stability and is a good candidate for photovoltaic / solar connectors, UPS Inverters / chargers, and outdoor enclosure applications.

| 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, No PFAS intentionally added |
| Fillers | Unreinforced |
| Polymer Types | Polyphenylene Ether + PS (PPE+PS) |
| Processing Techniques | Injection Molding |

| INDUSTRY | SUB INDUSTRY |
|----------------------------|---|
| Building and Construction | Building Component |
| Electrical and Electronics | Energy Management, Electronic Components, Mobile Phone - Computer - Tablets |
| Industrial | Electrical |

TYPICAL PROPERTY VALUES

Revision 20250130

| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|--|----------------|-------|--------------|
| MECHANICAL ⁽¹⁾ | | | |
| Tensile Stress, yld, Type I, 50 mm/min | 79 | MPa | ASTM D638 |
| Tensile Stress, brk, Type I, 50 mm/min | 62 | MPa | ASTM D638 |
| Tensile Strain, yld, Type I, 50 mm/min | 5 | % | ASTM D638 |
| Tensile Strain, brk, Type I, 50 mm/min | 15 | % | ASTM D638 |
| Tensile Modulus, 50 mm/min | 2720 | MPa | ASTM D638 |
| Flexural Stress, yld, 1.3 mm/min, 50 mm span | 122 | MPa | ASTM D790 |
| Flexural Modulus, 1.3 mm/min, 50 mm span | 3000 | MPa | ASTM D790 |
| Tensile Stress, yield, 50 mm/min | 80 | MPa | ISO 527 |
| Tensile Stress, break, 50 mm/min | 77 | MPa | ISO 527 |
| Tensile Strain, yield, 50 mm/min | 4.7 | % | ISO 527 |
| Tensile Strain, break, 50 mm/min | 5.6 | % | ISO 527 |
| Tensile Modulus, 1 mm/min | 3050 | MPa | ISO 527 |
| Flexural Stress, yield, 2 mm/min | 126 | MPa | ISO 178 |
| Flexural Modulus, 2 mm/min | 2980 | MPa | ISO 178 |
| IMPACT ⁽¹⁾ | | | |
| Izod Impact, notched, 23°C | 91 | J/m | ASTM D256 |
| Izod Impact, notched, -30°C | 59 | J/m | ASTM D256 |
| Instrumented Dart Impact Total Energy, 23°C | 19 | J | ASTM D3763 |

| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|---|----------------------------------|-------------------------|----------------|
| Izod Impact, notched 80*10*4 +23°C | 8 | kJ/m ² | ISO 180/1A |
| Izod Impact, notched 80*10*4 -30°C | 6 | kJ/m ² | ISO 180/1A |
| Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm | 7 | kJ/m ² | ISO 179/1eA |
| THERMAL ⁽¹⁾ | | | |
| Vicat Softening Temp, Rate B/50 | 137 | °C | ASTM D1525 |
| HDT, 0.45 MPa, 3.2 mm, unannealed | 122 | °C | ASTM D648 |
| HDT, 1.82 MPa, 3.2mm, unannealed | 117 | °C | ASTM D648 |
| HDT, 0.45 MPa, 6.4 mm, unannealed | 133 | °C | ASTM D648 |
| HDT, 1.82 MPa, 6.4 mm, unannealed | 122 | °C | ASTM D648 |
| CTE, -40°C to 40°C, flow | 6.12E-05 | 1/°C | ASTM E831 |
| CTE, -40°C to 40°C, xflow | 6.84E-05 | 1/°C | ASTM E831 |
| CTE, -40°C to 40°C, flow | 6.12E-05 | 1/°C | ISO 11359-2 |
| CTE, -40°C to 40°C, xflow | 6.84E-05 | 1/°C | ISO 11359-2 |
| Ball Pressure Test, 125°C +/- 2°C | Pass | - | IEC 60695-10-2 |
| Vicat Softening Temp, Rate B/50 | 138 | °C | ISO 306 |
| Vicat Softening Temp, Rate B/120 | 139 | °C | ISO 306 |
| HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm | 119 | °C | ISO 75/Af |
| 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⁾ | | | |
| Specific Gravity | 1.11 | - | ASTM D792 |
| Mold Shrinkage, flow, 3.2 mm ⁽³⁾ | 0.5 – 0.7 | % | SABIC method |
| Melt Flow Rate, 280°C/5.0 kgf | 9.8 | g/10 min | ASTM D1238 |
| Density | 1.11 | g/cm ³ | ISO 1183 |
| Water Absorption, (23°C/saturated) | 0.25 | % | ISO 62-1 |
| Moisture Absorption (23°C / 50% RH) | 0.05 | % | ISO 62 |
| Melt Volume Rate, MVR at 280°C/5.0 kg | 10 | cm ³ /10 min | ISO 1133 |
| ELECTRICAL ⁽¹⁾ | | | |
| Comparative Tracking Index (UL) {PLC} | 2 | PLC Code | UL 746A |
| Dielectric Strength, in oil, 3.2 mm | 49 | kV/mm | IEC 60243-1 |
| High Amp Arc Ignition (HAI), PLC 0 | ≥0.75 | mm | UL 746A |
| Hot-Wire Ignition (HWI), PLC 0 | ≥0.75 | mm | UL 746A |
| High Voltage Arc Track Rate {PLC} | 4 | PLC Code | UL 746A |
| Arc Resistance, Tungsten {PLC} | 6 | PLC Code | ASTM D495 |
| FLAME CHARACTERISTICS ⁽²⁾ | | | |
| UL Yellow Card Link | E45329-100041205 | - | - |
| UL Yellow Card Link 2 | E45329-100153208 | - | - |
| UL Recognized, 94-5VA Flame Class Rating | ≥2.5 | mm | UL 94 |
| UL Recognized, 94V-0 Flame Class Rating | ≥0.75 | mm | UL 94 |
| UL Recognized, 94V-2 Flame Class Rating | ≥0.4 | mm | UL 94 |
| Glow Wire Flammability Index, 3.0 mm | 960 | °C | IEC 60695-2-12 |
| Glow Wire Ignitability Temperature, 3.0 mm | 775 | °C | IEC 60695-2-13 |
| UV-light, water exposure/immersion | F1 | - | UL 746C |
| INJECTION MOLDING ⁽⁴⁾ | | | |

| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|-----------------------------|----------------|-------|--------------|
| Drying Temperature | 105 – 110 | °C | |
| Drying Time | 3 – 4 | Hrs | |
| Drying Time (Cumulative) | 8 | Hrs | |
| Maximum Moisture Content | 0.02 | % | |
| Melt Temperature | 275 – 305 | °C | |
| Nozzle Temperature | 275 – 305 | °C | |
| Front - Zone 3 Temperature | 265 – 305 | °C | |
| Middle - Zone 2 Temperature | 255 – 300 | °C | |
| Rear - Zone 1 Temperature | 245 – 295 | °C | |
| Mold Temperature | 70 – 100 | °C | |
| Back Pressure | 0.3 – 0.7 | MPa | |
| Screw Speed | 20 – 100 | rpm | |
| Shot to Cylinder Size | 30 – 70 | % | |
| Vent Depth | 0.038 – 0.051 | mm | |

- (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.

MORE INFORMATION

For curve data and CAE cards, please visit and register at <https://materialfinder.sabic-specialties.com>

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