

NORYL™ RESIN NH6020

REGION EUROPE

DESCRIPTION

NORYL NH6020 resin is a non-reinforced blend of polyphenylene ether (PPE) + polystyrene (PS) designed for high heat resistance and thin-wall FR performance. This injection moldable grade contains non-brominated, non-chlorinated flame retardant and carries a UL94 flame rating of 5VA at 2.5mm and V0 at 0.75mm along with UL746C Outdoor Suitability rating of F1 and RTI of 110C. NORYL NH6020 resin passes VDE/DIN 475 part 815 testing, Ball Pressure Test (BPT) at 125C, GWFI 960C at 1, 2, 3mm, GWIT 825C at 1mm, and CTI >600V making this an excellent candidate for unattended appliance components where EN/IEC 60335 applies.

| GENERAL INFORMATION | |
|-----------------------|--|
| Features | Flame Retardant, Good Processability, Heat Stabilized, 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 temperature resistance, Impact resistant, No PFAS intentionally added |
| Fillers | Unreinforced |
| Polymer Types | Polyphenylene Ether + PS (PPE+PS) |
| Processing Techniques | Injection Molding |

| INDUSTRY | SUB INDUSTRY |
|----------------------------|--|
| Consumer | Home Appliances, Commercial Appliance |
| Electrical and Electronics | Electronic Components, Mobile Phone - Computer - Tablets |
| Industrial | Electrical |

TYPICAL PROPERTY VALUES

Revision 20230607

| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|--|----------------|-------|--------------|
| MECHANICAL ⁽¹⁾ | | | |
| Tensile Stress, yld, Type I, 50 mm/min | 78 | MPa | ASTM D638 |
| Tensile Stress, brk, Type I, 50 mm/min | 67 | MPa | ASTM D638 |
| Tensile Strain, yld, Type I, 50 mm/min | 4.6 | % | ASTM D638 |
| Tensile Strain, brk, Type I, 50 mm/min | 6.1 | % | ASTM D638 |
| Tensile Modulus, 5 mm/min | 2740 | MPa | ASTM D638 |
| Flexural Stress, yld, 1.3 mm/min, 50 mm span | 121 | MPa | ASTM D790 |
| Flexural Modulus, 1.3 mm/min, 50 mm span | 3020 | MPa | ASTM D790 |
| Tensile Stress, yield, 50 mm/min | 77 | MPa | ISO 527 |
| Tensile Stress, break, 50 mm/min | 56 | MPa | ISO 527 |
| Tensile Strain, yield, 50 mm/min | 4.6 | % | ISO 527 |
| Tensile Strain, break, 50 mm/min | 4.7 | % | ISO 527 |
| Tensile Modulus, 1 mm/min | 2740 | MPa | ISO 527 |
| Flexural Stress, yield, 2 mm/min | 114 | MPa | ISO 178 |
| Flexural Modulus, 2 mm/min | 2680 | MPa | ISO 178 |
| IMPACT ⁽¹⁾ | | | |
| Izod Impact, notched, 23°C | 49 | J/m | ASTM D256 |
| Izod Impact, notched, -30°C | 36 | J/m | ASTM D256 |

| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|---|-------------------------|-------------------------|----------------|
| Instrumented Dart Impact Total Energy, 23°C | 18 | J | ASTM D3763 |
| Izod Impact, notched 80*10*4 +23°C | 8 | kJ/m ² | ISO 180/1A |
| Izod Impact, notched 80*10*4 -30°C | 5 | kJ/m ² | ISO 180/1A |
| Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm | 9 | kJ/m ² | ISO 179/1eA |
| THERMAL ⁽¹⁾ | | | |
| Vicat Softening Temp, Rate B/50 | 150 | °C | ASTM D1525 |
| HDT, 1.82 MPa, 3.2mm, unannealed | 125 | °C | ASTM D648 |
| CTE, -40°C to 40°C, flow | 7.75E-05 | 1/°C | ASTM E831 |
| CTE, -40°C to 40°C, xflow | 7.E-05 | 1/°C | ASTM E831 |
| CTE, -40°C to 40°C, flow | 7.5E-05 | 1/°C | ISO 11359-2 |
| CTE, -40°C to 40°C, xflow | 7.75E-05 | 1/°C | ISO 11359-2 |
| Ball Pressure Test, 125°C +/- 2°C | 125 | - | IEC 60695-10-2 |
| Vicat Softening Temp, Rate B/50 | 141 | °C | ISO 306 |
| Vicat Softening Temp, Rate B/120 | 151 | °C | ISO 306 |
| HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm | 124 | °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 | 1.14 | - | ASTM D792 |
| Mold Shrinkage, flow, 3.2 mm ⁽³⁾ | 0.5 – 0.7 | % | SABIC method |
| Melt Flow Rate, 280°C/5.0 kgf | 13.5 | g/10 min | ASTM D1238 |
| Density | 1.14 | g/cm ³ | ISO 1183 |
| Water Absorption, (23°C/saturated) | 0.18 | % | ISO 62-1 |
| Moisture Absorption (23°C / 50% RH) | 0.06 | % | ISO 62 |
| Melt Volume Rate, MVR at 280°C/5.0 kg | 11 | cm ³ /10 min | ISO 1133 |
| ELECTRICAL ⁽¹⁾ | | | |
| Volume Resistivity | 2.5E+16 – 4.2E+16 | Ω.cm | IEC 60093 |
| Dielectric Strength, in oil, 1.6 mm | 27 | kV/mm | IEC 60243-1 |
| Dissipation Factor, 1 MHz | 0.0029 | - | IEC 60250 |
| Comparative Tracking Index ⁽⁴⁾ | 600 | V | IEC 60112 |
| Relative Permittivity, 50/60 Hz | 2.7 | - | IEC 60250 |
| High Amp Arc Ignition (HAI), PLC 2 | ≥1 | mm | UL 746A |
| High Amp Arc Ignition (HAI), PLC 3 | ≥0.75 | mm | UL 746A |
| Hot-Wire Ignition (HWI), PLC 1 | ≥1.5 | mm | UL 746A |
| Hot-Wire Ignition (HWI), PLC 2 | ≥0.75 | mm | UL 746A |
| FLAME CHARACTERISTICS ⁽²⁾ | | | |
| UL Yellow Card Link | <u>E45329-100104907</u> | - | - |
| UL Yellow Card Link 2 | <u>E45329-100158888</u> | - | - |
| UL Recognized, 94-5VA Flame Class Rating | ≥2.5 | mm | UL 94 |
| UL Recognized, 94V-0 Flame Class Rating | ≥0.75 | mm | UL 94 |
| Glow Wire Flammability Index, 1.0 mm | 960 | °C | IEC 60695-2-12 |
| Glow Wire Flammability Index, 2.0 mm | 960 | °C | IEC 60695-2-12 |
| Glow Wire Flammability Index, 3.0 mm | 960 | °C | IEC 60695-2-12 |
| Glow Wire Ignitability Temperature, 1.0 mm | 825 | °C | IEC 60695-2-13 |

| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|--|----------------|-------|----------------|
| Glow Wire Ignitability Temperature, 2.0 mm | 800 | °C | IEC 60695-2-13 |
| Glow Wire Ignitability Temperature, 3.0 mm | 800 | °C | IEC 60695-2-13 |
| UV-light, water exposure/immersion | F1 | - | UL 746C |
| Oxygen Index (LOI) | 37 | % | ISO 4589 |
| INJECTION MOLDING ⁽⁵⁾ | | | |
| Drying Temperature | 110 – 120 | °C | |
| Drying Time | 2 – 3 | Hrs | |
| Melt Temperature | 300 – 320 | °C | |
| Nozzle Temperature | 280 – 300 | °C | |
| Front - Zone 3 Temperature | 300 – 320 | °C | |
| Middle - Zone 2 Temperature | 280 – 300 | °C | |
| Rear - Zone 1 Temperature | 260 – 280 | °C | |
| Hopper Temperature | 80 – 100 | °C | |
| Mold Temperature | 100 – 130 | °C | |

- (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) Value shown here is based on internal measurement.
- (5) 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.

ADDITIONAL PRODUCT NOTES

No PFAS intentionally added: The grade listed in this document does not contain PFAS intentionally added during Seller's manufacturing process and is not expected to contain unintentional PFAS impurities. Each user is responsible for evaluating the presence of unintentional PFAS impurities.

MORE INFORMATION

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

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