# NORYL™ RESIN NH6020

REGION ASIA

## DESCRIPTION

NORYL™ NH6020 resin is a non-reinforced blend of polyphenylene ether (PPE) + high impact polystyrene (HIPS) 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.

## TYPICAL PROPERTY VALUES

Revision 20190925

| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|---|---|---|---|
| MECHANICAL | | | |
| Tensile Stress, yld, Type I, 50 mm/min | 78 | MPa | ASTM D 638 |
| Tensile Stress, brk, Type I, 50 mm/min | 67 | MPa | ASTM D 638 |
| Tensile Strain, yld, Type I, 50 mm/min | 4.6 | % | ASTM D 638 |
| Tensile Strain, brk, Type I, 50 mm/min | 6.1 | % | ASTM D 638 |
| Tensile Modulus, 5 mm/min | 2740 | MPa | ASTM D 638 |
| Flexural Stress, yld, 1.3 mm/min, 50 mm span | 121 | MPa | ASTM D 790 |
| Flexural Modulus, 1.3 mm/min, 50 mm span | 3020 | MPa | ASTM D 790 |
| 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 | 4.2 | % | 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 | | | |
| Izod Impact, notched, 23°C | 49 | J/m | ASTM D 256 |
| Izod Impact, notched, -30°C | 36 | J/m | ASTM D 256 |
| Instrumented Impact Total Energy, 23°C | 18 | J | ASTM D 3763 |
| Izod Impact, notched 80*10*4 +23°C | 8 | kJ/m² | ISO 180/1A |
| Izod Impact, notched 80*10*4 -30°C | 5 | kJ/m² | ISO 180/1A |
| Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm | 9 | kJ/m² | ISO 179/1eA |
| THERMAL | | | |
| Vicat Softening Temp, Rate B/50 | 150 | °C | ASTM D 1525 |
| HDT, 1.82 MPa, 3.2mm, unannealed | 125 | °C | ASTM D 648 |
| CTE, -40°C to 40°C, flow | 7.75E-05 | 1/°C | ASTM E 831 |
| CTE, -40°C to 40°C, xflow | 7.E-05 | 1/°C | ASTM E 831 |
| 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 |

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| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|---|---|---|---|
| Relative Temp Index, Elec [1] | 110 | °C | UL 746B |
| Relative Temp Index, Mech w/impact [1] | 105 | °C | UL 746B |
| Relative Temp Index, Mech w/o impact [1] | 110 | °C | UL 746B |
| PHYSICAL | | | |
| Specific Gravity | 1.14 | - | ASTM D 792 |
| Mold Shrinkage, flow, 3.2 mm | 0.5 – 0.7 | % | SABIC method |
| Melt Flow Rate, 280°C/5.0 kgf | 13.5 | g/10 min | ASTM D 1238 |
| Density | 1.14 | g/cm³ | ISO 1183 |
| Water Absorption, (23°C/sat) | 0.18 | % | ISO 62 |
| Moisture Absorption (23°C / 50% RH) | 0.06 | % | ISO 62 |
| Melt Volume Rate, MVR at 280°C/5.0 kg | 11 | cm³/10 min | ISO 1133 |
| ELECTRICAL | | | |
| Volume Resistivity | 25000000000000000 – 41500000000000000 | Ohm-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 [2] | 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 [1] | | | |
| UL Yellow Card Link | E207780-103728770 | - | - |
| UL Yellow Card Link 2 | E207780-103728771 | - | - |
| 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 |
| 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 |
| INJECTION MOLDING | | | |
| 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 | |

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(1) UL Ratings shown on the technical datasheet might not cover the full range of thicknesses and colors. For details, please see the UL Yellow Card.

(2) Value shown here is based on internal measurement.

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