



## NORYL™ Resin NH6020

### Europe-Africa-Middle East: COMMERCIAL

Noryl\* NH6020 is an unfilled, injection moldable modified polyphenylene ether resin. Designed for high heat resistance and thin wall FR performance, this resin delivers a UL94 V0 rating at 0.8 mm and is also non-halogenated according to VDE/DIN 472 part 815. Noryl NH6020 has a HDT > of 120 deg C, pass the BPT @ 125 deg C, pass the GWIT 775 deg C @ 1, 2 and 3 mm, has the CTI value > 250 V and may be an excellent material candidate for unattended appliances components, where IEC 60335 applies.

| TYPICAL PROPERTIES <sup>1</sup>              | TYPICAL VALUE | Unit                | Standard    |
|----------------------------------------------|---------------|---------------------|-------------|
| <b>MECHANICAL</b>                            |               |                     |             |
| Tensile Stress, yld, Type I, 50 mm/min       | 800           | kgf/cm <sup>2</sup> | ASTM D 638  |
| Tensile Stress, brk, Type I, 50 mm/min       | 680           | kgf/cm <sup>2</sup> | 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                    | 27900         | kgf/cm <sup>2</sup> | ASTM D 638  |
| Flexural Stress, yld, 1.3 mm/min, 50 mm span | 1230          | kgf/cm <sup>2</sup> | ASTM D 790  |
| Flexural Modulus, 1.3 mm/min, 50 mm span     | 30700         | kgf/cm <sup>2</sup> | 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     |
| <b>IMPACT</b>                                |               |                     |             |
| Izod Impact, notched, 23°C                   | 4             | cm-kgf/cm           | ASTM D 256  |
| Izod Impact, notched, -30°C                  | 3             | cm-kgf/cm           | ASTM D 256  |
| Instrumented Impact Total Energy, 23°C       | 187           | cm-kgf              | ASTM D 3763 |
| Izod Impact, notched 80*10*4 +23°C           | 8             | kJ/m <sup>2</sup>   | ISO 180/1A  |
| Izod Impact, notched 80*10*4 -30°C           | 5             | kJ/m <sup>2</sup>   | ISO 180/1A  |
| Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm   | 9             | kJ/m <sup>2</sup>   | ISO 179/1eA |
| <b>THERMAL</b>                               |               |                     |             |
| Vicat Softening Temp, Rate B/50              | 150           | °C                  | ASTM D 1525 |



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| <b>THERMAL</b>                        |                    |                         |                |
| 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+00             | 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      |
| Relative Temp Index, Elec             | 110                | °C                      | UL 746B        |
| Relative Temp Index, Mech w/impact    | 105                | °C                      | UL 746B        |
| Relative Temp Index, Mech w/o impact  | 110                | °C                      | UL 746B        |
| <b>PHYSICAL</b>                       |                    |                         |                |
| Specific Gravity                      | 1.14               | -                       | ASTM D 792     |
| Mold Shrinkage, flow, 3.2 mm (5)      | 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/cm <sup>3</sup>       | 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                 | cm <sup>3</sup> /10 min | ISO 1133       |
| <b>ELECTRICAL</b>                     |                    |                         |                |
| Hot Wire Ignition {PLC}               | 1                  | PLC Code                | UL 746A        |
| High Ampere Arc Ign, surface {PLC}    | 2                  | PLC Code                | UL 746A        |
| Volume Resistivity                    | 2.5E+16 - 4.15E+16 | Ohm-cm                  | IEC 60093      |
| Dielectric Strength, in oil, 1.6 mm   | 27                 | kV/mm                   | IEC 60243-1    |



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| <b>ELECTRICAL</b>                             |               |      |                   |
| Dissipation Factor, 1 MHz                     | 0.002         | -    | IEC 60250         |
| Comparative Tracking Index                    | 600           | V    | IEC 60112         |
| Relative Permittivity, 50/60 Hz               | 2.7           | -    | IEC 60250         |
| <b>FLAME CHARACTERISTICS</b>                  |               |      |                   |
| UL Compliant, 94V-0 Flame Class Rating (3)(4) | 0.75          | mm   | UL 94 by SABIC-IP |
| UL Compliant, 94-5VA Rating (3)(4)            | 2.5           | mm   | UL 94 by SABIC-IP |
| UL Compliant, 94-5VB Rating (3)(4)            | 2.5           | mm   | UL 94 by SABIC-IP |
| Glow Wire Flammability Index 960°C, passes at | 1             | mm   | 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    |
| Oxygen Index (LOI)                            | 37            | %    | ISO 4589          |



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| PROCESSING PARAMETERS       | TYPICAL VALUE | Unit |
|-----------------------------|---------------|------|
| <b>Injection Molding</b>    |               |      |
| 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   |