# NORYL™ RESIN PX9406K

REGION ASIA

## DESCRIPTION

NORYL PX9406K resin is a non-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 5VB at 2mm, 5VA at 2.5mm and V0 at 1.5mm. NORYL PX9406 offers strong electrical performance at thin wall, high heat resistance, low warpage, low moisture absorption, and dimensional stability. This material is targeted for consumer electronics 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 |
| **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 20231109

| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|---|---|---|---|
| MECHANICAL [1] | | | |
| **Tensile Stress, yld, Type I, 50 mm/min** | 66 | MPa | ASTM D638 |
| **Tensile Stress, brk, Type I, 50 mm/min** | 50 | MPa | ASTM D638 |
| **Tensile Strain, yld, Type I, 50 mm/min** | 5.7 | % | ASTM D638 |
| **Tensile Strain, brk, Type I, 50 mm/min** | 45 | % | ASTM D638 |
| **Tensile Modulus, 50 mm/min** | 2700 | MPa | ASTM D638 |
| **Flexural Stress, yield, 6.4 mm** | 101 | MPa | ASTM D790 |
| **Flexural Stress, yld, 1.3 mm/min, 50 mm span** | 100 | MPa | ASTM D790 |
| **Flexural Modulus, 1.3 mm/min, 50 mm span** | 2650 | MPa | ASTM D790 |
| **Flexural Modulus, 6.4 mm** | 2650 | MPa | ASTM D790 |
| **Tensile Stress, yield, 50 mm/min** | 67 | MPa | ISO 527 |
| **Tensile Stress, break, 50 mm/min** | 52 | MPa | ISO 527 |
| **Tensile Strain, yield, 50 mm/min** | 5 | % | ISO 527 |
| **Tensile Strain, break, 50 mm/min** | 55 | % | ISO 527 |
| **Tensile Modulus, 1 mm/min** | 2550 | MPa | ISO 527 |
| **Flexural Stress, yield, 2 mm/min** | 104 | MPa | ISO 178 |
| **Flexural Modulus, 2 mm/min** | 2420 | MPa | ISO 178 |
| IMPACT [1] | | | |
| **Izod Impact, notched, 23°C** | 170 | J/m | ASTM D256 |
| **Izod Impact, notched, -30°C** | 100 | J/m | ASTM D256 |

| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|---|---|---|---|
| Instrumented Dart Impact Total Energy, 23°C | 55 | J | ASTM D3763 |
| Izod Impact, notched 80*10*4 +23°C | 12 | 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 | 13 | kJ/m² | ISO 179/1eA |
| Charpy -30°C, V-notch Edgew 80*10*4 sp=62mm | 5 | kJ/m² | ISO 179/1eA |
| THERMAL [1] | | | |
| HDT, 0.45 MPa, 3.2 mm, unannealed | 128 | °C | ASTM D648 |
| HDT, 1.82 MPa, 3.2mm, unannealed | 113 | °C | ASTM D648 |
| HDT, 0.45 MPa, 6.4 mm, unannealed | 130 | °C | ASTM D648 |
| HDT, 1.82 MPa, 6.4 mm, unannealed | 121 | °C | ASTM D648 |
| Ball Pressure Test, 125°C +/- 2°C | PASSES | - | IEC 60695-10-2 |
| Vicat Softening Temp, Rate A/120 | 144 | °C | ISO 306 |
| Vicat Softening Temp, Rate B/120 | 134 | °C | ISO 306 |
| HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm | 111 | °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 | 1.1 | - | ASTM D792 |
| Density | 1.1 | g/cm³ | ISO 1183 |
| Melt Volume Rate, MVR at 250°C/10.0 kg | 7 | cm³/10 min | ISO 1133 |
| Melt Volume Rate, MVR at 280°C/5.0 kg | 11 | cm³/10 min | ISO 1133 |
| Melt Viscosity, 250°C, 1500 sec-1 | 525 | Pa-s | ISO 11443 |
| Melt Viscosity, 260°C, 1500 sec-1 | 390 | Pa-s | ISO 11443 |
| Melt Viscosity, 280°C, 1500 sec-1 | 250 | Pa-s | ISO 11443 |
| ELECTRICAL [1] | | | |
| Volume Resistivity | 1.4E+17 | Ω.cm | ASTM D257 |
| Dielectric Strength, in air, 3.2 mm | 49 | kV/mm | ASTM D149 |
| High Voltage Arc Track Rate {PLC} | 3 | PLC Code | UL 746A |
| Comparative Tracking Index [3] | 250 | V | IEC 60112 |
| Comparative Tracking Index (UL) {PLC} | 2 | PLC Code | UL 746A |
| High Amp Arc Ignition (HAI), PLC 0 | ≥1.5 | mm | UL 746A |
| Hot-Wire Ignition (HWI), PLC 0 | ≥1.5 | mm | UL 746A |
| Arc Resistance, Tungsten {PLC} | 6 | PLC Code | ASTM D495 |
| FLAME CHARACTERISTICS [2] | | | |
| UL Yellow Card Link | E207780-101401128 | - | - |
| UL Recognized, 94V-0 Flame Class Rating | ≥1.5 | mm | UL 94 |
| UL Recognized, 94-5VA Flame Class Rating | ≥2.5 | mm | UL 94 |
| UL Recognized, 94-5VB Flame Class Rating | ≥2 | mm | UL 94 |
| Glow Wire Flammability Index, 1.5 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, 1.5 mm | 800 | °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 |

| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|---|---|---|---|
| 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 | 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) Value shown here is based on internal measurement.

(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.

## DISCLAIMER