

# NORYL™ RESIN LTA6020

REGION EUROPE

## DESCRIPTION

NORYL LTA6020 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 5VA at 2.5mm, 5VB at 2mm, and V0 at 1.5mm along with a UL746C Outdoor Suitability rating of F1. NORYL LTA6020 exhibits good dimensional stability over a wide temperature range, high heat performance, low moisture uptake, and offers long-term aging / retention of mechanical properties. It is an excellent candidate for solar / photovoltaic (PV) junction boxes and outdoor electrical enclosures.

### 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

Building and Construction  
Electrical and Electronics  
Industrial

### SUB INDUSTRY

Building Component  
Energy Management, Electronic Components  
Electrical

## TYPICAL PROPERTY VALUES

Revision 20231109

| PROPERTIES                                    | TYPICAL VALUES | UNITS             | TEST METHODS |
|-----------------------------------------------|----------------|-------------------|--------------|
| <b>MECHANICAL <sup>(1)</sup></b>              |                |                   |              |
| Tensile Stress, yld, Type I, 50 mm/min        | 72             | MPa               | ASTM D638    |
| Tensile Strain, yld, Type I, 50 mm/min        | 6              | %                 | ASTM D638    |
| Flexural Stress, yld, 2.6 mm/min, 100 mm span | 105            | MPa               | ASTM D790    |
| Flexural Modulus, 2.6 mm/min, 100 mm span     | 2580           | MPa               | ASTM D790    |
| Tensile Stress, yield, 50 mm/min              | 71             | MPa               | ISO 527      |
| Tensile Stress, break, 50 mm/min              | 57             | MPa               | ISO 527      |
| Tensile Strain, yield, 50 mm/min              | 4              | %                 | ISO 527      |
| Tensile Strain, break, 50 mm/min              | 8              | %                 | ISO 527      |
| Tensile Modulus, 1 mm/min                     | 2680           | MPa               | ISO 527      |
| Flexural Stress, yield, 2 mm/min              | 105            | MPa               | ISO 178      |
| Flexural Modulus, 2 mm/min                    | 2600           | MPa               | ISO 178      |
| <b>IMPACT <sup>(1)</sup></b>                  |                |                   |              |
| Charpy Impact, unnotched, 23°C                | 18             | kJ/m <sup>2</sup> | ISO 179/2C   |
| Izod Impact, notched, 23°C                    | 220            | J/m               | ASTM D256    |
| Izod Impact, notched 80°10°4 +23°C            | 16             | kJ/m <sup>2</sup> | ISO 180/1A   |
| Izod Impact, notched 80°10°4 0°C              | 12             | kJ/m <sup>2</sup> | ISO 180/1A   |
| Izod Impact, notched 80°10°4 -10°C            | 11             | kJ/m <sup>2</sup> | ISO 180/1A   |
| Izod Impact, notched 80°10°4 -20°C            | 10             | kJ/m <sup>2</sup> | ISO 180/1A   |

| PROPERTIES                                          | TYPICAL VALUES                   | UNITS                   | TEST METHODS   |
|-----------------------------------------------------|----------------------------------|-------------------------|----------------|
| Izod Impact, notched 80*10*4 -30°C                  | 8                                | kJ/m <sup>2</sup>       | ISO 180/1A     |
| Izod Impact, notched 80*10*4 -40°C                  | 8                                | kJ/m <sup>2</sup>       | ISO 180/1A     |
| <b>THERMAL <sup>(1)</sup></b>                       |                                  |                         |                |
| HDT, 1.82 MPa, 6.4 mm, unannealed                   | 126                              | °C                      | ASTM D648      |
| CTE, -40°C to 40°C, flow                            | 8.E-05                           | 1/°C                    | ISO 11359-2    |
| CTE, -40°C to 40°C, xflow                           | 8.E-05                           | 1/°C                    | ISO 11359-2    |
| Ball Pressure Test, 125°C +/- 2°C                   | 125                              | -                       | IEC 60695-10-2 |
| Ball Pressure Test, approximate maximum             | 135                              | °C                      | IEC 60695-10-2 |
| Vicat Softening Temp, Rate A/120                    | 155                              | °C                      | ISO 306        |
| Vicat Softening Temp, Rate B/120                    | 144                              | °C                      | ISO 306        |
| HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm              | 136                              | °C                      | ISO 75/Bf      |
| HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm               | 123                              | °C                      | ISO 75/Af      |
| Relative Temp Index, Elec <sup>(2)</sup>            | 125                              | °C                      | UL 746B        |
| Relative Temp Index, Mech w/impact <sup>(2)</sup>   | 125                              | °C                      | UL 746B        |
| Relative Temp Index, Mech w/o impact <sup>(2)</sup> | 125                              | °C                      | UL 746B        |
| <b>PHYSICAL <sup>(1)</sup></b>                      |                                  |                         |                |
| Mold Shrinkage, flow                                | 0.5 – 0.7                        | %                       | SABIC method   |
| Specific Gravity                                    | 1.13                             | -                       | ASTM D792      |
| Melt Flow Rate, 250°C/10.0 kgf                      | 4                                | g/10 min                | ASTM D1238     |
| Density                                             | 1.13                             | g/cm <sup>3</sup>       | ISO 1183       |
| Melt Volume Rate, MVR at 280°C/5.0 kg               | 8                                | cm <sup>3</sup> /10 min | ISO 1133       |
| Melt Volume Rate, MVR at 300°C/5.0 kg               | 20                               | cm <sup>3</sup> /10 min | ISO 1133       |
| <b>ELECTRICAL <sup>(1)</sup></b>                    |                                  |                         |                |
| Comparative Tracking Index (UL) {PLC}               | 2                                | PLC Code                | UL 746A        |
| High Amp Arc Ignition (HAI), PLC 1                  | ≥1                               | mm                      | UL 746A        |
| Hot-Wire Ignition (HWI), PLC 0                      | ≥1                               | mm                      | UL 746A        |
| High Voltage Arc Track Rate {PLC}                   | 4                                | PLC Code                | UL 746A        |
| <b>FLAME CHARACTERISTICS <sup>(2)</sup></b>         |                                  |                         |                |
| UL Yellow Card Link                                 | <a href="#">E45329-100960629</a> | -                       | -              |
| UL Recognized, 94-SVA Flame Class Rating            | ≥2.5                             | mm                      | UL 94          |
| UL Recognized, 94-SVB Flame Class Rating            | ≥2                               | mm                      | UL 94          |
| UL Recognized, 94V-0 Flame Class Rating             | ≥1.5                             | mm                      | UL 94          |
| UL Recognized, 94V-1 Flame Class Rating             | ≥1                               | mm                      | UL 94          |
| Glow Wire Flammability Index, 1.0 mm                | 960                              | °C                      | IEC 60695-2-12 |
| 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 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, 1.5 mm          | 825                              | °C                      | IEC 60695-2-13 |
| Glow Wire Ignitability Temperature, 2.0 mm          | 825                              | °C                      | IEC 60695-2-13 |
| Glow Wire Ignitability Temperature, 3.0 mm          | 825                              | °C                      | IEC 60695-2-13 |
| UV-light, water exposure/immersion                  | F1                               | -                       | UL 746C        |
| <b>INJECTION MOLDING <sup>(3)</sup></b>             |                                  |                         |                |
| Drying Temperature                                  | 105                              | °C                      |                |

| PROPERTIES                  | TYPICAL VALUES | UNITS | TEST METHODS |
|-----------------------------|----------------|-------|--------------|
| Drying Time                 | 3 – 4          | Hrs   |              |
| Maximum Moisture Content    | 0.02           | %     |              |
| Melt Temperature            | 280 – 300      | °C    |              |
| Nozzle Temperature          | 270 – 300      | °C    |              |
| Front - Zone 3 Temperature  | 270 – 290      | °C    |              |
| Middle - Zone 2 Temperature | 280 – 300      | °C    |              |
| Rear - Zone 1 Temperature   | 260 – 280      | °C    |              |
| Hopper Temperature          | 60 – 80        | °C    |              |
| Mold Temperature            | 80 – 100       | °C    |              |
| PROFILE EXTRUSION           |                |       |              |
| Drying Temperature          | 100 – 110      | °C    |              |
| Drying Time                 | 3 – 4          | Hrs   |              |
| Melt Temperature            | 240 – 270      | °C    |              |
| Barrel - Zone 1 Temperature | 200 – 230      | °C    |              |
| Barrel - Zone 2 Temperature | 220 – 250      | °C    |              |
| Barrel - Zone 3 Temperature | 240 – 270      | °C    |              |
| Barrel - Zone 4 Temperature | 240 – 270      | °C    |              |
| Hopper Temperature          | 40 – 60        | °C    |              |
| Die Temperature             | 240 – 270      | °C    |              |
| Calibrator Temperature      | 50 – 80        | °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) 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.

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