



## NORYL™ Resin FP3060

### Europe-Africa-Middle East: COMMERCIAL

NORYL FP3060 is an unfilled, injection moldable modified polyphenylene ether resin. Designed for good dimensional stability and high flow , this resin also uses non-chlorinated, non-brominated FR additives to achieve a V1 UL94 rating at 1.5 mm and V0@ 2.5mm with a specific density of 1.1 g/cm<sup>3</sup>. NORYL FP3060 may be an excellent material candidate for Flat Panel TV enclosure applications requiring good rheological properties, heat resistance, hydrolysis resistance, low density and thin wall flame resistance.

| TYPICAL PROPERTIES <sup>1</sup>              | TYPICAL VALUE | Unit                | Standard    |
|----------------------------------------------|---------------|---------------------|-------------|
| <b>MECHANICAL</b>                            |               |                     |             |
| Tensile Stress, yld, Type I, 50 mm/min       | 550           | kgf/cm <sup>2</sup> | ASTM D 638  |
| Tensile Stress, brk, Type I, 50 mm/min       | 560           | kgf/cm <sup>2</sup> | ASTM D 638  |
| Tensile Strain, yld, Type I, 50 mm/min       | 3             | %                   | ASTM D 638  |
| Tensile Strain, brk, Type I, 50 mm/min       | 12            | %                   | ASTM D 638  |
| Tensile Modulus, 50 mm/min                   | 22400         | kgf/cm <sup>2</sup> | ASTM D 638  |
| Flexural Stress, yld, 1.3 mm/min, 50 mm span | 850           | kgf/cm <sup>2</sup> | ASTM D 790  |
| Flexural Modulus, 1.3 mm/min, 50 mm span     | 24400         | kgf/cm <sup>2</sup> | ASTM D 790  |
| Tensile Stress, yield, 50 mm/min             | 55            | MPa                 | ISO 527     |
| Tensile Stress, break, 50 mm/min             | 42            | MPa                 | ISO 527     |
| Tensile Strain, yield, 50 mm/min             | 3             | %                   | ISO 527     |
| Tensile Strain, break, 50 mm/min             | 11            | %                   | ISO 527     |
| Tensile Modulus, 1 mm/min                    | 2420          | MPa                 | ISO 527     |
| Flexural Stress, yield, 2 mm/min             | 82            | MPa                 | ISO 178     |
| Flexural Modulus, 2 mm/min                   | 2530          | MPa                 | ISO 178     |
| <b>IMPACT</b>                                |               |                     |             |
| Izod Impact, notched, 23°C                   | 7             | cm-kgf/cm           | ASTM D 256  |
| Izod Impact, notched 80*10*4 +23°C           | 6             | 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   | 6             | kJ/m <sup>2</sup>   | ISO 179/1eA |
| <b>THERMAL</b>                               |               |                     |             |
| Vicat Softening Temp, Rate B/50              | 105           | °C                  | ASTM D 1525 |
| HDT, 1.82 MPa, 3.2mm, unannealed             | 80            | °C                  | ASTM D 648  |
| CTE, -40°C to 40°C, flow                     | 8.3E-05       | 1/°C                | ASTM E 831  |



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| <b>THERMAL</b>                                |               |                         |                   |
| CTE, -40°C to 40°C, xflow                     | 8.E-05        | 1/°C                    | ASTM E 831        |
| CTE, -40°C to 40°C, flow                      | 8.3E-05       | 1/°C                    | ISO 11359-2       |
| CTE, -40°C to 40°C, xflow                     | 8.E-05        | 1/°C                    | ISO 11359-2       |
| Vicat Softening Temp, Rate B/50               | 91            | °C                      | ISO 306           |
| Vicat Softening Temp, Rate B/120              | 93            | °C                      | ISO 306           |
| HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm         | 74            | °C                      | ISO 75/Af         |
| <b>PHYSICAL</b>                               |               |                         |                   |
| Specific Gravity                              | 1.1           | -                       | ASTM D 792        |
| Melt Flow Rate, 200°C/3.8 kgf                 | 42            | g/10 min                | ASTM D 1238       |
| Density                                       | 1.1           | g/cm <sup>3</sup>       | ISO 1183          |
| Water Absorption, (23°C/sat)                  | 0.13          | %                       | ISO 62            |
| Moisture Absorption (23°C / 50% RH)           | 0.02          | %                       | ISO 62            |
| Melt Volume Rate, MVR at 280°C/1.2 kg         | 20            | cm <sup>3</sup> /10 min | ISO 1133          |
| Melt Volume Rate, MVR at 280°C/2.16 kg        | 41            | cm <sup>3</sup> /10 min | ISO 1133          |
| <b>FLAME CHARACTERISTICS</b>                  |               |                         |                   |
| UL Compliant, 94V-1 Flame Class Rating (3)(4) | 1.5           | mm                      | UL 94 by SABIC-IP |
| UL Compliant, 94V-0 Flame Class Rating (3)(4) | 2.5           | mm                      | UL 94 by SABIC-IP |



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| PROCESSING PARAMETERS       | TYPICAL VALUE | Unit |
|-----------------------------|---------------|------|
| <b>Injection Molding</b>    |               |      |
| Drying Temperature          | 65 - 75       | °C   |
| Drying Time                 | 2 - 3         | hrs  |
| Melt Temperature            | 250 - 285     | °C   |
| Nozzle Temperature          | 240 - 270     | °C   |
| Front - Zone 3 Temperature  | 250 - 285     | °C   |
| Middle - Zone 2 Temperature | 230 - 260     | °C   |
| Rear - Zone 1 Temperature   | 200 - 220     | °C   |
| Hopper Temperature          | 60 - 80       | °C   |
| Mold Temperature            | 40 - 65       | °C   |