# NORYL™ Resin FNH2160

REGION AMERICAS

## DESCRIPTION

NORYL FNH2160 resin is a foamable blend of polyphenylene ether (PPE) + polystyrene (PS) and offers 20% weight reduction at 6.35mm (0.250") wall. This material contains non-brominated, non-chlorinated flame retardant with a UL94 flame rating of 5VA at 3.9 mm and V1 at 3mm. NORYL FNH2160 resin offers fast cycle time, improved processing, and exhibits good dimensional stability and low moisture absorption. The unique combination of properties in this structural foam material allows for designing optimum wall thickness in computer and business machine applications, electrical enclosures/housings, medical equipment, and hospital bed rails and components.

| 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, High stiffness/Strength |
| **Fillers** | Unreinforced |
| **Polymer Types** | Polyphenylene Ether + PS (PPE+PS) |
| **Processing Techniques** | Structural Foam Molding |

| INDUSTRY | SUB INDUSTRY |
|---|---|
| Electrical and Electronics | Mobile Phone - Computer - Tablets |
| Hygiene and Healthcare | General Healthcare, Patient Testing |

## TYPICAL PROPERTY VALUES

Revision 20260904

| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|---|---|---|---|
| **MECHANICAL** [1] | | | |
| **Tensile Modulus, 50 mm/min** | 2680 | MPa | ASTM D638 |
| **Tensile Stress, yield, 50 mm/min** | 55 | MPa | ASTM D638 |
| **Tensile Strain, yield, 50 mm/min** | 3.04 | % | ASTM D638 |
| **Tensile Stress, yield, 6.35 mm** | 36 | MPa | ASTM D638 |
| **Tensile Stress, break, 6.35 mm** | 34 | MPa | ASTM D638 |
| **Tensile Strain, break, 6.35 mm** | 12 | % | ASTM D638 |
| **Flexural Stress, yield, 6.4 mm** | 70 | MPa | ASTM D790 |
| **Flexural Modulus, 6.4 mm** | 2250 | MPa | ASTM D790 |
| **FOAM - MECHANICAL 6.4 mm Wt Reduction** | 20 | % | - |
| **IMPACT** [1] | | | |
| **Izod Impact, Unnotched** | | | |
| 23°C, 6.4mm | 362 | J/m | ASTM D4812 |
| **Instrumented Dart Impact Energy @ peak, 23°C** | 29 | J | ASTM D3763 |
| **FOAM - IMPACT 6.4 mm Wt Reduction** | 20 | % | - |
| **THERMAL** [1] | | | |
| **FOAM - THERMAL 6.4mm Wt Reduction** | 20 | % | - |
| **HDT, 0.45 MPa, 6.4 mm, unannealed** | 93 | °C | ASTM D648 |
| **HDT, 1.82 MPa, 6.4 mm, unannealed** | 82 | °C | ASTM D648 |
| **Relative Temp Index, Elec** [2] | 65 | °C | UL 746B |

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| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|---|---|---|---|
| Relative Temp Index, Mech w/impact [2] | 65 | °C | UL 746B |
| Relative Temp Index, Mech w/o impact [2] | 65 | °C | UL 746B |
| PHYSICAL [1] | | | |
| FOAM - PHYSICAL 6.4mm Wt Reduction | 20 | % | - |
| Specific Gravity | 1.12 | - | ASTM D792 |
| Specific Gravity, foam molded | 0.88 | - | ASTM D792 |
| Water Absorption, (23°C/24hrs) | 0.07 | % | ASTM D570 |
| Mold Shrinkage, flow, 6.4 mm [3] | 0.5 – 0.8 | % | SABIC method |
| Melt Volume Rate, MVR at 280°C/5.0 kg | 36 | cm³/10 min | ISO 1133 |
| FLAME CHARACTERISTICS [2] | | | |
| UL Yellow Card Link | E121562-101920328 | - | - |
| FOAM - Flame Class Minimum Density | 0.85 | g/cm³ | - |
| UL Recognized, 94-5VA Flame Class Rating | ≥3.9 | mm | UL 94 |
| UL Recognized, 94V-0 Flame Class Rating | ≥6 | mm | UL 94 |
| UL Recognized, 94V-1 Flame Class Rating | ≥3 | mm | UL 94 |
| STRUCTURAL FOAM MOLDING | | | |
| Blowing Agent, Physical System | Nitrogen Gas | - | |
| Concentration Range (Blowing Agent) | 1 – 3 | % | |
| Recommended Concentration (Blowing Agent) | 2 | % | |
| Drying Temperature (Resin) | 70 – 80 | °C | |
| Drying Time (Resin) | 2 – 4 | Hrs | |
| Drying Time (Resin, Cumulative) | 8 | Hrs | |
| Melt Temperature | 270 – 310 | °C | |
| Nozzle Temperature | 270 – 305 | °C | |
| Front Temperature | 270 – 305 | °C | |
| Middle Temperature | 270 – 305 | °C | |
| Rear Temperature | 230 – 260 | °C | |
| Mold Temperature | 25 – 55 | °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) Measurements made from laboratory test coupon. Actual shrinkage may vary outside of range due to differences in processing conditions, equipment, part geometry and tool design. It is recommended that mold shrinkage studies be performed with surrogate or legacy tooling prior to cutting tools for new molded article.

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