

# NORYL™ NH4030B resin

Polyphenylene Ether + PS

SABIC Innovative Plastics

## Message:

NH4030B is a modified PPE-HIPS blend that presents an excellent balance of non halogenated flame retardance, lower smoke production upon burning and low specific gravity for light weight parts. NORYL NH4030B is available in custom colors and may be an excellent material candidate for applications requiring light weight parts and may be processed by injection molding or extrusion techniques.

| General Information |                           |
|---------------------|---------------------------|
| Additive            | Flame retardancy          |
| Features            | Low density               |
|                     | Low smoke                 |
|                     | Halogen-free              |
|                     | Flame retardancy          |
| Appearance          | Available colors          |
| Processing Method   | Sheet extrusion molding   |
|                     | Profile extrusion molding |
|                     | Injection molding         |

| Physical                           | Nominal Value | Unit                   | Test Method         |
|------------------------------------|---------------|------------------------|---------------------|
| Specific Gravity                   | 1.11          | g/cm <sup>3</sup>      | ASTM D792, ISO 1183 |
| Melt Mass-Flow Rate (MFR)          |               |                        | ASTM D1238          |
| 280°C/5.0 kg                       | 18            | g/10 min               | ASTM D1238          |
| 300°C/5.0 kg                       | 43            | g/10 min               | ASTM D1238          |
| Melt Volume-Flow Rate (MVR)        |               |                        | ISO 1133            |
| 280°C/5.0 kg                       | 17.6          | cm <sup>3</sup> /10min | ISO 1133            |
| 300°C/5.0 kg                       | 41.0          | cm <sup>3</sup> /10min | ISO 1133            |
| Molding Shrinkage - Flow (3.20 mm) | 0.50 - 0.80   | %                      | Internal method     |
| Water Absorption                   |               |                        | ISO 62              |
| Saturated, 23°C                    | 0.27          | %                      | ISO 62              |
| Equilibrium, 23°C, 50% RH          | 0.045         | %                      | ISO 62              |
| Mechanical                         | Nominal Value | Unit                   | Test Method         |
| Tensile Modulus                    |               |                        |                     |
| -- <sup>1</sup>                    | 2450          | MPa                    | ASTM D638           |
| --                                 | 2430          | MPa                    | ISO 527-2/1         |
| Tensile Strength                   |               |                        |                     |
| Yield <sup>2</sup>                 | 56.2          | MPa                    | ASTM D638           |
| Yield                              | 54.0          | MPa                    | ISO 527-2/50        |
| Fracture <sup>3</sup>              | 46.8          | MPa                    | ASTM D638           |
| Fracture                           | 47.8          | MPa                    | ISO 527-2/50        |

|                                                    |               |                   |                                          |
|----------------------------------------------------|---------------|-------------------|------------------------------------------|
| Tensile Elongation                                 |               |                   |                                          |
| Yield <sup>4</sup>                                 | 4.3           | %                 | ASTM D638                                |
| Yield                                              | 4.0           | %                 | ISO 527-2/50                             |
| Fracture <sup>5</sup>                              | 28            | %                 | ASTM D638                                |
| Fracture                                           | 28            | %                 | ISO 527-2, ISO 527-2/50                  |
| Flexural Modulus                                   |               |                   |                                          |
| 50.0mm span <sup>6</sup>                           | 2400          | MPa               | ASTM D790                                |
| -- <sup>7</sup>                                    | 2390          | MPa               | ISO 178                                  |
| Flexural Stress                                    |               |                   |                                          |
| --                                                 | 90.0          | MPa               | ISO 178                                  |
| Yield, 50.0mm span <sup>8</sup>                    | 90.0          | MPa               | ASTM D790                                |
| Impact                                             | Nominal Value | Unit              | Test Method                              |
| Charpy Notched Impact Strength <sup>9</sup> (23°C) | 19            | kJ/m <sup>2</sup> | ISO 179/1eA                              |
| Notched Izod Impact                                |               |                   |                                          |
| -30°C                                              | 120           | J/m               | ASTM D256                                |
| 23°C                                               | 200           | J/m               | ASTM D256                                |
| -30°C <sup>10</sup>                                | 11            | kJ/m <sup>2</sup> | ISO 180/1A                               |
| 23°C <sup>11</sup>                                 | 16            | kJ/m <sup>2</sup> | ISO 180/1A                               |
| Instrumented Dart Impact (23°C, Total Energy)      | 46.0          | J                 | ASTM D3763                               |
| Thermal                                            | Nominal Value | Unit              | Test Method                              |
| Deflection Temperature Under Load                  |               |                   |                                          |
| 1.8 MPa, unannealed, 3.20mm                        | 106           | °C                | ASTM D648                                |
| 1.8 MPa, unannealed, 6.40mm                        | 113           | °C                | ASTM D648                                |
| 1.8 MPa, unannealed, 64.0mm span <sup>12</sup>     | 107           | °C                | ISO 75-2/Af                              |
| Vicat Softening Temperature                        |               |                   |                                          |
| --                                                 | 127           | °C                | ASTM D1525, ISO 306/B50 10 <sup>13</sup> |
| --                                                 | 129           | °C                | ISO 306/B120                             |
| Linear thermal expansion coefficient               |               |                   |                                          |
| Flow: -40 to 40°C                                  | 8.4E-5        | cm/cm/°C          | ASTM E831, ISO 11359-2                   |
| Lateral: -40 to 40°C                               | 8.5E-5        | cm/cm/°C          | ASTM E831, ISO 11359-2                   |
| Flammability                                       | Nominal Value | Unit              | Test Method                              |
| Draeger Tube Toxicity <sup>14</sup>                |               |                   |                                          |
| Flaming : 1.52 mm                                  | Pass          |                   |                                          |
| Non-Flaming : 1.52 mm                              | Pass          |                   |                                          |
| Flame Spread Index (1.52 mm)                       | 15.0          |                   | ASTM E162                                |
| NBS Smoke Density                                  |               |                   |                                          |
| Flaming, 20 min : 3.20 mm                          | 126           |                   | ASTM E662                                |
| Flaming, 4 min : 1.52 mm                           | 29.0          |                   | ASTM E662                                |
| Flaming, 4 min : 3.20 mm                           | 35.0          |                   | ASTM E662                                |
| Non-Flaming, 4 min : 1.52 mm                       | 7.00          |                   | ASTM E662                                |
| Vertical Burn Test                                 |               |                   |                                          |
|                                                    |               |                   | FAR 25.853                               |

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|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----|------------|
| Test a (60 s, 1.52 mm), passes at                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 0.0                                      | hr  | FAR 25.853 |
| Test b (12 s, 1.52 mm), passes at                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 4.00                                     | sec | FAR 25.853 |
| Extrusion instructions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                          |     |            |
| Profile Extrusion Parameters:<br>Adapter Temperature: 215 - 250 °C<br>Barrel - Zone 1 Temperature: 215 - 250 °C<br>Barrel - Zone 2 Temperature: 215 - 250 °C<br>Barrel - Zone 3 Temperature: 215 - 250 °C<br>Barrel - Zone 4 Temperature: 215 - 250 °C<br>Calibrator Temperature: 30 - 60 °C<br>Die Temperature: 215 - 250 °C<br>Drying Temperature: 95 - 105 °C<br>Drying Time: 2 - 4 hrs<br>Drying Time (Cumulative): 12 hrs<br>Hopper Temperature: 80 - 120 °C<br>Maximum Moisture Content: 0.07 %<br>Melt Temperature: 215 - 250 °C<br>Water Bath Temperature: 30 - 50 °C<br>Sheet Extrusion Parameters:<br>Adapter Temperature: 215 - 250 °C<br>Barrel - Zone 1 Temperature: 215 - 250 °C<br>Barrel - Zone 2 Temperature: 215 - 250 °C<br>Barrel - Zone 3 Temperature: 215 - 250 °C<br>Barrel - Zone 4 Temperature: 215 - 250 °C<br>Die Temperature: 215 - 250 °C<br>Drying Temperature: 95 - 105 °C<br>Drying Time: 2 - 4 hrs<br>Drying Time (Cumulative): 12 hrs<br>Maximum Moisture Content: 0.07 %<br>Melt Temperature: 215 - 250 °C<br>Roll Stack Temp - Bottom: 90 - 150 °C<br>Roll Stack Temp - Middle: 90 - 150 °C<br>Roll Stack Temp - Top: 90 - 150 °C |                                          |     |            |
| NOTE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                          |     |            |
| 1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 5.0 mm/min                               |     |            |
| 2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Type 1, 50mm/min                         |     |            |
| 3.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Type 1, 50mm/min                         |     |            |
| 4.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Type 1, 50mm/min                         |     |            |
| 5.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Type 1, 50mm/min                         |     |            |
| 6.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1.3 mm/min                               |     |            |
| 7.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2.0 mm/min                               |     |            |
| 8.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1.3 mm/min                               |     |            |
| 9.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 80*10*4 sp=62mm                          |     |            |
| 10.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 80*10*4                                  |     |            |
| 11.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 80*10*4                                  |     |            |
| 12.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 80*10*4 mm                               |     |            |
| 13.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 标准 B (120°C/h), 载荷2 (50N)                |     |            |
| 14.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Tested according to AITM 3.0005, ABD0031 |     |            |

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