

# NHP5054

REGION EUROPE

## DESCRIPTION

NORYL NHP5054 resin is a 20% glass fiber 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 V0 at 0.75mm for thin-wall molding capability. NORYL NHP5054 is based on a unique co-polymer technology and exhibits good dimensional stability, high heat resistance, strong electrical performance, and very low specific gravity. It is an excellent candidate for electrical vehicle (EV) battery housings, automotive under-the-hood enclosures and components where thin-wall FR, modulus retention, and high heat resistance are required.

| GENERAL INFORMATION   |  |
|-----------------------|--|
| Features              | Flame Retardant, Good Processability, 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, High temperature resistance, No PFAS intentionally added |
| Fillers               | Glass Fiber  |
| Polymer Types         | Polyphenylene Ether + PS (PPE+PS)  |
| Processing Techniques | Injection Molding  |

| INDUSTRY                   | SUB INDUSTRY  |
|----------------------------|---|
| Automotive                 | Automotive EV   |
| Electrical and Electronics | Energy Management, Electronic Components, Mobile Phone - Computer - Tablets |
| Industrial                 | Electrical  |

## TYPICAL PROPERTY VALUES

Revision 20230607

| PROPERTIES                                       | TYPICAL VALUES | UNITS             | TEST METHODS |
|--|----------------|-------------------|--------------|
| <b>MECHANICAL</b> <sup>(1) (2) (3) (4) (5)</sup> |                |                   |              |
| Tensile Strain, brk, Type I, 5 mm/min            | 2.5            | %                 | ASTM D638    |
| Tensile Stress, yld, Type I, 5 mm/min            | 120            | MPa               | ASTM D638    |
| Flexural Stress, yld, 2.6 mm/min, 100 mm span    | 150            | MPa               | ASTM D790    |
| Flexural Modulus, 2.6 mm/min, 100 mm span        | 6000           | MPa               | ASTM D790    |
| Tensile Strain, break, 5 mm/min                  | 2.4            | %                 | ISO 527      |
| Tensile Stress, break, 5 mm/min                  | 110            | MPa               | ISO 527      |
| Tensile Modulus, 1 mm/min                        | 7300           | MPa               | ISO 527      |
| Flexural Stress, yield, 2 mm/min                 | 145            | MPa               | ISO 178      |
| Flexural Modulus, 2 mm/min                       | 6000           | MPa               | ISO 178      |
| Ball Indentation Hardness, H358/30               | 215            | MPa               | ISO 2039-1   |
| <b>IMPACT</b> <sup>(1) (2) (3) (4) (5)</sup>     |                |                   |              |
| Izod Impact, notched, 23°C                       | 100            | J/m               | ASTM D256    |
| Charpy 23°C, Unnotch Edgew 80*10*4 sp=62mm       | 35             | kJ/m <sup>2</sup> | ISO 179/1eU  |
| Charpy -30°C, Unnotch Edgew 80*10*4 sp=62mm      | 36             | kJ/m <sup>2</sup> | ISO 179/1eU  |
| Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm       | 9              | kJ/m <sup>2</sup> | ISO 179/1eA  |
| Charpy -30°C, V-notch Edgew 80*10*4 sp=62mm      | 8              | kJ/m <sup>2</sup> | ISO 179/1eA  |
| <b>THERMAL</b> <sup>(1) (2) (3) (4) (5)</sup>    |                |                   |              |
| HDT, 1.82 MPa, 6.4 mm, unannealed                | 120            | °C                | ASTM D648    |

| PROPERTIES  | TYPICAL VALUES                    | UNITS                   | TEST METHODS   |
|---|-----------------------------------|-------------------------|----------------|
| Vicat Softening Temp, Rate B/50                           | 128                               | °C                      | ISO 306        |
| Vicat Softening Temp, Rate B/120                          | 130                               | °C                      | ISO 306        |
| HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm                    | 122                               | °C                      | ISO 75/Bf      |
| HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm                     | 115                               | °C                      | ISO 75/Af      |
| CTE, -40°C to 40°C, flow                                  | 2.1E-5                            | 1/°C                    | ISO 11359-2    |
| CTE, -40°C to 40°C, xflow                                 | 5.7E-5                            | 1/°C                    | ISO 11359-2    |
| CTE, 23°C to 80°C, flow                                   | 3.2E-5                            | 1/°C                    | ISO 11359-2    |
| CTE, 23°C to 80°C, xflow                                  | 10.3E-5                           | 1/°C                    | ISO 11359-2    |
| Relative Temp Index, Elec <sup>(6)</sup>                  | 125                               | °C                      | UL 746B        |
| Relative Temp Index, Mech w/impact <sup>(6)</sup>         | 115                               | °C                      | UL 746B        |
| Relative Temp Index, Mech w/o impact <sup>(6)</sup>       | 125                               | °C                      | UL 746B        |
| <b>PHYSICAL <sup>(1) (2) (3) (4) (5)</sup></b>            |                                   |                         |                |
| Specific Gravity  | 1.3                               | -                       | ASTM D792      |
| Melt Flow Rate, 250°C/10.0 kgf                            | 8                                 | g/10 min                | ASTM D1238     |
| Melt Volume Rate, MVR at 280°C/10.0 kg                    | 22                                | cm <sup>3</sup> /10 min | ISO 1133       |
| Mold Shrinkage on Tensile Bar, flow <sup>(7)</sup>        | 0.27                              | %                       | SABIC method   |
| Density   | 1.27                              | g/cm <sup>3</sup>       | ISO 1183       |
| Moisture Absorption (23°C / 50% RH)                       | 0.24                              | %                       | ISO 62         |
| <b>FLAME CHARACTERISTICS <sup>(6) (8)</sup></b>           |                                   |                         |                |
| UL Yellow Card Link                                       | <a href="#">E207780-101793092</a> | -                       | -              |
| UL Recognized, 94V-0 Flame Class Rating                   | ≥0.75                             | mm                      | UL 94          |
| Glow Wire Flammability Index, 3.0 mm <sup>(9)</sup>       | 960                               | °C                      | IEC 60695-2-12 |
| Glow Wire Ignitability Temperature, 1.0 mm <sup>(9)</sup> | 775                               | °C                      | IEC 60695-2-13 |
| Glow Wire Ignitability Temperature, 2.0 mm <sup>(9)</sup> | 800                               | °C                      | IEC 60695-2-13 |
| <b>INJECTION MOLDING <sup>(10)</sup></b>                  |                                   |                         |                |
| Drying Temperature  | 105 – 110                         | °C                      |                |
| Drying Time   | 3 – 4                             | Hrs                     |                |
| Drying Time (Cumulative)                                  | 8                                 | Hrs                     |                |
| Maximum Moisture Content                                  | 0.02                              | %                       |                |
| Melt Temperature  | 280 – 310                         | °C                      |                |
| Nozzle Temperature  | 280 – 310                         | °C                      |                |
| Front - Zone 3 Temperature                                | 270 – 310                         | °C                      |                |
| Middle - Zone 2 Temperature                               | 260 – 305                         | °C                      |                |
| Rear - Zone 1 Temperature                                 | 250 – 300                         | °C                      |                |
| Mold Temperature  | 75 – 105                          | °C                      |                |
| Back Pressure   | 0.3 – 0.7                         | MPa                     |                |
| Screw Speed   | 20 – 100                          | rpm                     |                |
| Shot to Cylinder Size                                     | 30 – 70                           | %                       |                |

- (1) Typical values only. Variations within normal tolerances are possible for various colours. All values are measured at least after 48 hours storage at 23°C/50% relative humidity.
- (2) All properties, except the melt volume rate are measured on injection moulded samples.
- (3) All samples are prepared according to ISO 294.
- (4) Only typical data for material selection purpose. Not to be used for part or tool design.
- (5) 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.
- (6) 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.
- (7) 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.
- (8) This rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.
- (9) Internal measurement SABIC
- (10) 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.

## ADDITIONAL PRODUCT NOTES

No PFAS intentionally added: The grade listed in this document does not contain PFAS intentionally added during Seller's manufacturing process and is not expected to contain unintentional PFAS impurities. Each user is responsible for evaluating the presence of unintentional PFAS impurities.

## MORE INFORMATION

For curve data and CAE cards, please visit and register at <https://materialfinder.sabic-specialties.com>

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