



**NORYL™ Resin WCV065**  
**Americas: COMMERCIAL**

Flexible, non-halogenated FR, PPE+Polyolefin resin designed for evaluation in Automotive ISO6722 Class A-C applications.

| TYPICAL PROPERTIES <sup>1</sup>              | TYPICAL VALUE | Unit                | Standard    |
|--|---------------|---------------------|-------------|
| <b>MECHANICAL</b>                            |               |                     |             |
| Tensile Stress, yld, Type I, 50 mm/min       | 370           | kgf/cm <sup>2</sup> | ASTM D 638  |
| Tensile Stress, brk, Type I, 50 mm/min       | 370           | kgf/cm <sup>2</sup> | ASTM D 638  |
| Tensile Strain, yld, Type I, 50 mm/min       | 37            | %                   | ASTM D 638  |
| Tensile Strain, brk, Type I, 50 mm/min       | 45            | %                   | ASTM D 638  |
| Flexural Stress, yld, 1.3 mm/min, 50 mm span | 410           | kgf/cm <sup>2</sup> | ASTM D 790  |
| Flexural Modulus, 1.3 mm/min, 50 mm span     | 11700         | kgf/cm <sup>2</sup> | ASTM D 790  |
| Hardness, Shore D, 30S reading               | 65            | -                   | ASTM D 2240 |
| Tensile Stress, yield, 50 mm/min             | 39            | MPa                 | ISO 527     |
| Tensile Stress, break, 50 mm/min             | 37            | MPa                 | ISO 527     |
| Tensile Strain, yield, 50 mm/min             | 17            | %                   | ISO 527     |
| Tensile Strain, break, 50 mm/min             | 38            | %                   | ISO 527     |
| Tensile Modulus, 1 mm/min                    | 1450          | MPa                 | ISO 527     |
| Flexural Stress, yield, 2 mm/min             | 44            | MPa                 | ISO 178     |
| Flexural Modulus, 2 mm/min                   | 1260          | MPa                 | ISO 178     |
| <b>IMPACT</b>                                |               |                     |             |
| Izod Impact, notched, 23°C                   | 56            | cm-kgf/cm           | ASTM D 256  |
| Instrumented Impact Total Energy, 23°C       | 336           | cm-kgf              | ASTM D 3763 |
| Instrumented Impact Total Energy, -30°C      | 428           | cm-kgf              | ASTM D 3763 |
| Izod Impact, notched 80*10*4 +23°C           | 41            | kJ/m <sup>2</sup>   | ISO 180/1A  |
| Izod Impact, notched 80*10*4 -30°C           | 9             | kJ/m <sup>2</sup>   | ISO 180/1A  |
| Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm   | 43            | kJ/m <sup>2</sup>   | ISO 179/1eA |
| <b>THERMAL</b>                               |               |                     |             |
| Vicat Softening Temp, Rate B/50              | 71            | °C                  | ASTM D 1525 |

(1) Typical values only. Variations within normal tolerances are possible for various colors. All values are measured after at least 48 hours storage at 23°C/50% relative humidity. All properties, except the melt volume and melt flow rates, are measured on injection molded samples. All samples tested under ISO test standards are prepared according to ISO 294.

(2) Only typical data for selection purposes. Not to be used for part or tool design.

(3) This rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.

(4) Internal measurements according to UL standards.

(5) 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.

(6) Needs hard coat to consistently pass 60 sec Vertical Burn.

Source GMD, last updated:

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|---------------------------------------|---------------|-------------------------|-------------|
| <b>THERMAL</b>                        |               |                         |             |
| HDT, 0.45 MPa, 3.2 mm, unannealed     | 115           | °C                      | ASTM D 648  |
| HDT, 1.82 MPa, 3.2mm, unannealed      | 84            | °C                      | ASTM D 648  |
| CTE, -40°C to 40°C, flow              | 8.2E-05       | 1/°C                    | ASTM E 831  |
| CTE, -40°C to 40°C, xflow             | 1.31E-04      | 1/°C                    | ASTM E 831  |
| Vicat Softening Temp, Rate B/50       | 71            | °C                      | ISO 306     |
| Vicat Softening Temp, Rate B/120      | 76            | °C                      | ISO 306     |
| HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm | 93            | °C                      | ISO 75/Af   |
| <b>PHYSICAL</b>                       |               |                         |             |
| Specific Gravity                      | 1.04          | -                       | ASTM D 792  |
| Melt Flow Rate, 280°C/5.0 kgf         | 20.2          | g/10 min                | ASTM D 1238 |
| Melt Volume Rate, MVR at 280°C/5.0 kg | 20            | cm <sup>3</sup> /10 min | ISO 1133    |
| <b>ELECTRICAL</b>                     |               |                         |             |
| Relative Permittivity, 1 MHz          | 2.5           | -                       | IEC 60250   |
| Dissipation Factor, 1 MHz             | 0.002         | -                       | IEC 60250   |

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| PROCESSING PARAMETERS                | TYPICAL VALUE | Unit |
|--------------------------------------|---------------|------|
| <b>Wire Coating Extrusion</b>        |               |      |
| Drying Temperature                   | 60 - 80       | °C   |
| Drying Time                          | 4 - 6         | hrs  |
| Drying Time (Cumulative)             | 12            | hrs  |
| Maximum Moisture Content             | 0.02          | %    |
| Extruder Length/Diameter Ratio (L/D) | 22:1 to 26:1  | -    |
| Screw Speed                          | 15 - 40       | rpm  |
| Feed Zone Temperature                | 210 - 260     | °C   |
| Middle Zone Temperatures             | 230 - 285     | °C   |
| Head Zone Temperature                | 250 - 285     | °C   |
| Neck Temperature                     | 250 - 285     | °C   |
| Cross-head Temperature               | 250 - 285     | °C   |
| Die Temperature                      | 250 - 285     | °C   |
| Melt Temperature                     | 250 - 285     | °C   |
| Conductor Pre-heat Temperature       | 80 - 150      | °C   |
| Screen Pack                          | 150 - 100     | -    |
| Cooling Water Air Gap                | 100 - 200     | mm   |
| Water Bath Temperature               | 15 - 80       | °C   |

• NOTE: Recommended Drying Parameters are based on usage of Dehumidify Drying / Drying Oven.

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