# FLEX NORYL™ RESIN WCA105

REGION AMERICAS

## DESCRIPTION

FLEX NORYL WCA105 resin is a flexible, non-reinforced extrudable blend of Polyphenylene Ether (PPE) + Thermoplastic Elastomer (TPE). This material contains non-halogenated flame retardant and performance capable of meeting UL VW-1 requirements, 105C end use temperature rating, and heat deformation performance as defined by UL 1581. FLEX NORYL WCA105 resin is intended for evaluation in wire insulation applications in dark colors. It has a Shore D Hardness reading of 56 and exhibits superior thermal stability, very low water absorption, good electric properties, and low specific gravity. Processing is typically conducted on standard extrusion equipment, and UL 1581 testing is conducted on 2.0mm wire with 0.12mm X 20 stranded copper conductor.

| GENERAL INFORMATION | |
|---|---|
| **Features** | Flame Retardant, Good Processability, Hydrolytic Stability, Low Warpage, Thin Wall, Flexible, Low Moisture Absorption, Low Specific Gravity, Non Cl/Br flame retardant, Non halogenated flame retardant, Creep resistant, Dimensional stability, Impact resistant, No PFAS intentionally added |
| **Fillers** | Unreinforced |
| **Polymer Types** | Polyphenylene Ether + TPE (PPE+TPE) |
| **Processing Techniques** | Wire Coating Extrusion |

| INDUSTRY | SUB INDUSTRY |
|---|---|
| Electrical and Electronics | Mobile Phone - Computer - Tablets |
| Industrial | Electrical |

## TYPICAL PROPERTY VALUES

Revision 20260717

| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|---|---|---|---|
| **MECHANICAL** [1] | | | |
| **Tensile Stress, brk, Type I, 50 mm/min** | 23 | MPa | ASTM D638 |
| **Tensile Strain, brk, Type I, 50 mm/min** | 85 | % | ASTM D638 |
| **Flexural Modulus** | | | |
| 12.5 mm/min, 100 mm span | 650 | MPa | ASTM D790 |
| 12.5 mm/min | 720 | MPa | ISO 178 |
| **Tensile Stress, break, 50 mm/min** | 23 | MPa | ISO 527 |
| **Tensile Strain, break, 50 mm/min** | 90 | % | ISO 527 |
| **Hardness, Shore D** | 56 | - | ISO 868 |
| **Tear strength** | 25 | N/mm | ISO 6383 |
| **IMPACT** [1] | | | |
| **Brittleness Temperature** | <-40 | °C | ASTM D746 |
| **THERMAL** [1] | | | |
| **HDT, 0.45 MPa, 6.4 mm, unannealed** | 85 | °C | ASTM D648 |
| **Vicat Softening Temp, Rate A/50** | 102 | °C | ISO 306 |
| **PHYSICAL** [1] | | | |
| **Specific Gravity** | 1.03 | - | ASTM D792 |
| **Water Absorption, (23°C/48hrs)** | 0.1 | % | ASTM D570 |
| **Melt Flow Rate, 250°C/10.0 kgf** | 5.1 | g/10 min | ASTM D1238 |

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| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|---|---|---|---|
| ELECTRICAL [1] | | | |
| Volume Resistivity | 3.9E+16 | Ω.cm | IEC 60093 |
| Dielectric strength in oil, 2.0mm | 26 | kV/mm | IEC 60243-1 |
| Relative Permittivity, 1 MHz | 2.5 | - | IEC 60250 |
| Dissipation Factor, 50/60 Hz | 0.024 | - | IEC 60250 |
| Dissipation Factor, 1 MHz | 0.0038 | - | IEC 60250 |
| Comparative Tracking Index | 600 | V | IEC 60112 |
| Relative Permittivity, 50/60 Hz | 2.6 | - | IEC 60250 |
| FLAME CHARACTERISTICS | | | |
| Smoke Density on 0.5mm plaque, Non-flame, Ds, max | 75 | - | ASTM E662 |
| Smoke Density on 0.5mm plaque, Flame, Ds, max | 150 | - | ASTM E662 |
| Glow Wire Flammability Index 960°C, passes at | 3 | mm | IEC 60695-2-12 |
| Glow Wire Ignitability Temperature, 3.0 mm | 750 | °C | IEC 60695-2-13 |
| Oxygen Index (LOI) | 25 | % | ISO 4589 |
| WIRE AND CABLE - UL 1581 TESTED ON 2.0MM WIRE WITH 0.12MMX20 STRANDED COPPER | | | |
| Tensile strength @ break | 33 | MPa | UL 1581 |
| Tensile elongation @ break | 197 | % | UL 1581 |
| Tensile strength @ break after 7days @136°C | 36 | MPa | UL 1581 |
| Tensile elongation @ break after 7days @136°C | 156 | % | UL 1581 |
| UL temperature rating | 105 | °C | UL 1581 |
| Heat Deformation at 121°C/250g | 26 | % | UL 1581 |
| VW-1 | Pass | - | UL 1581 |
| WIRE COATING EXTRUSION | | | |
| 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 | |

(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.

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