# LNP™ ELCRIN™ ML4412B

## DESCRIPTION

ELCRIN ML4412B resin is a 20% glass fiber reinforced Polycarbonate Copolymer, medium flow, impact modified, injection moldable grade with partial component synthesized from Bio source. ELCRIN ML4412B is available in opaque colors only and is an excellent candidate for a broad range of applications that require a combination of stiffness, ductility and good chemical resistance.

| GENERAL INFORMATION | |
|---|---|
| **Features** | Good Processability, High stiffness/Strength |
| **Fillers** | Glass Fiber |
| **Polymer Types** | Polycarbonate (PC) |
| **Processing Techniques** | Injection Molding |

| INDUSTRY | SUB INDUSTRY |
|---|---|
| Consumer | Personal Accessory, Home Appliances |
| Electrical and Electronics | Mobile Phone - Computer - Tablets |
| Industrial | Electrical |

## TYPICAL PROPERTY VALUES

Revision 20231109

| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|---|---|---|---|
| MECHANICAL [1] | | | |
| **Tensile Stress, brk, Type I, 50 mm/min** | 100 | MPa | ASTM D638 |
| **Tensile Strain, brk, Type I, 50 mm/min** | 3 | % | ASTM D638 |
| **Tensile Modulus, 50 mm/min** | 6300 | MPa | ASTM D638 |
| **Flexural Strength, 1.3 mm/min, 50 mm span** | 160 | MPa | ASTM D790 |
| **Flexural Modulus, 1.3 mm/min, 50 mm span** | 5800 | MPa | ASTM D790 |
| **Tensile Stress, break, 50 mm/min** | 110 | MPa | ISO 527 |
| **Tensile Strain, break, 50 mm/min** | 3 | % | ISO 527 |
| **Tensile Modulus, 1 mm/min** | 6500 | MPa | ISO 527 |
| **Flexural Strength, 2 mm/min** | 165 | MPa | ISO 178 |
| **Flexural Modulus, 2 mm/min** | 5700 | MPa | ISO 178 |
| IMPACT [1] | | | |
| **Izod Impact, notched, 23°C** | 140 | J/m | ASTM D256 |
| **Izod Impact, unnotched, 23°C** | 700 | J/m | ASTM D4812 |
| **Izod Impact, notched 80*10*3 +23°C** | 17 | kJ/m² | ISO 180/1A |
| **Izod Impact, notched 80*10*3 -30°C** | 12 | kJ/m² | ISO 180/1A |
| **Charpy 23°C, V-notch Edgew 80*10*3 sp=62mm** | 17 | kJ/m² | ISO 179/1eA |
| **Charpy -30°C, V-notch Edgew 80*10*3 sp=62mm** | 12 | kJ/m² | ISO 179/1eA |
| **Instrumented Dart Impact Total Energy, 23°C** | 25 | J | ASTM D3763 |
| THERMAL [1] | | | |
| **HDT, 0.45 MPa, 3.2 mm, unannealed** | 135 | °C | ASTM D648 |
| **HDT, 1.82 MPa, 3.2mm, unannealed** | 132 | °C | ASTM D648 |

| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|---|---|---|---|
| HDT/Be, 0.45MPa Edgew 120*10*4 sp=100mm | 137 | °C | ISO 75/Be |
| HDT/Ae, 1.8 MPa Edgew 120*10*4 sp=100mm | 133 | °C | ISO 75/Ae |
| CTE, -40°C to 40°C, flow | 2.6E-05 | 1/°C | ASTM E831 |
| CTE, -40°C to 40°C, xflow | 6.8E-05 | 1/°C | ASTM E831 |
| Vicat Softening Temp, Rate B/120 | 142 | °C | ISO 306 |
| Relative Temp Index, Elec [2] | 80 | °C | UL 746B |
| Relative Temp Index, Mech w/impact [2] | 80 | °C | UL 746B |
| Relative Temp Index, Mech w/o impact [2] | 80 | °C | UL 746B |
| PHYSICAL [1] | | | |
| Specific Gravity | 1.33 | - | ASTM D792 |
| Density | 1.33 | g/cm³ | ISO 1183 |
| Moisture Absorption (23°C / 50% RH) | 0.03 | % | ISO 62 |
| Water Absorption, (23°C/saturated) | 0.1 | % | ISO 62-1 |
| Melt Flow Rate, 300°C/1.2 kgf | 11 | g/10 min | ASTM D1238 |
| Melt Volume Rate, MVR at 300°C/1.2 kg | 10 | cm³/10 min | ISO 1133 |
| Mold Shrinkage, flow, 3.2 mm [3] | 0.2 – 0.3 | % | SABIC method |
| Mold Shrinkage, xflow, 3.2 mm [3] | 0.4 – 0.5 | % | SABIC method |
| ELECTRICAL [1] | | | |
| Dielectric Constant (Dk), 1.1 GHz | 3.11 | - | ASTM ES 7-83 |
| Dissipation Factor (Df), 1.1 GHz | 0.0064 | - | ASTM ES 7-83 |
| Dielectric Constant, 1.9 GHz | 3.13 | - | SABIC method |
| Dissipation Factor, 1.9 GHz | 0.006 | - | SABIC method |
| Dielectric Constant, 5 GHz | 3.14 | - | SABIC method |
| Dissipation Factor, 5 GHz | 0.0051 | - | SABIC method |
| Dielectric Constant, 10 GHz | 3.16 | - | SABIC method |
| Dissipation Factor, 10 GHz | 0.0063 | - | SABIC method |
| FLAME CHARACTERISTICS [2] | | | |
| UL Yellow Card Link | E207780-104298581 | - | - |
| UL Recognized, 94HB Flame Class Rating | ≥0.4 | mm | UL 94 |
| INJECTION MOLDING [4] | | | |
| Drying Temperature | 110 | °C | |
| Drying Time | 3 – 6 | Hrs | |
| Maximum Moisture Content | 0.02 | % | |
| Melt Temperature | 285 – 310 | °C | |
| Nozzle Temperature | 285 – 305 | °C | |
| Front - Zone 3 Temperature | 280 – 300 | °C | |
| Middle - Zone 2 Temperature | 270 – 290 | °C | |
| Rear - Zone 1 Temperature | 260 – 280 | °C | |
| Mold Temperature | 80 – 110 | °C | |
| Back Pressure | 0.1 – 0.3 | MPa | |
| Screw Speed | 50 – 90 | rpm | |

(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 and colors. 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.

(4) 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.

## DISCLAIMER