# LNP™ ELCRES™ CRX1414

## DESCRIPTION

LNP ELCRES CRX1414 is an amorphous Polycarbonate (PC) copolymer resin that offers medium flow, high ductility in combination with excellent chemical resistance. This grade is available for custom coloring and may be an excellent candidate for a wide variety of applications that need improved chemical resistance. This grade has passed the limited biocompatibility tests of ISO 10993-5 and ISO 10993-10.

| GENERAL INFORMATION | |
|---|---|
| **Features** | Chemical Resistance, Healthcare/Formula lock, Impact resistant, Low temperature impact, No PFAS intentionally added |
| **Fillers** | Unreinforced |
| **Brands** | LNP™ ELCRES™ |
| **Polymer Types** | Polycarbonate (PC) |
| **Processing Techniques** | Injection Molding |

| INDUSTRY | SUB INDUSTRY |
|---|---|
| Hygiene and Healthcare | Personal and Professional Hygiene, Pharmaceutical Packaging and Drug Delivery, Surgical devices, General Healthcare, Patient Testing |

## TYPICAL PROPERTY VALUES

Revision 20241024

| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|---|---|---|---|
| MECHANICAL [1] | | | |
| **Tensile Stress, yld, Type I, 50 mm/min** | 55 | MPa | ASTM D638 |
| **Tensile Stress, brk, Type I, 50 mm/min** | 63 | MPa | ASTM D638 |
| **Tensile Strain, yld, Type I, 50 mm/min** | 6 | % | ASTM D638 |
| **Tensile Strain, brk, Type I, 50 mm/min** | >100 | % | ASTM D638 |
| **Tensile Modulus, 50 mm/min** | 2020 | MPa | ASTM D638 |
| **Flexural Modulus, 1.3 mm/min, 50 mm span** | 2170 | MPa | ASTM D790 |
| **Flexural Strength, 1.3 mm/min, 50 mm span** | 90 | MPa | ASTM D790 |
| **Tensile Stress, yield, 50 mm/min** | 52 | MPa | ISO 527 |
| **Tensile Stress, break, 50 mm/min** | 61 | MPa | ISO 527 |
| **Tensile Strain, yield, 50 mm/min** | 6 | % | ISO 527 |
| **Tensile Strain, break, 50 mm/min** | >100 | % | ISO 527 |
| **Tensile Modulus, 1 mm/min** | 1900 | MPa | ISO 527 |
| **Flexural Strength, 2 mm/min** | 83 | MPa | ISO 178 |
| **Flexural Modulus, 2 mm/min** | 2062 | MPa | ISO 178 |
| IMPACT [1] | | | |
| **Izod Impact, notched, 23°C** | 875 | J/m | ASTM D256 |
| **Izod Impact, notched, -30°C** | 777 | J/m | ASTM D256 |
| **Izod Impact, notched, -60°C** | 727 | J/m | ASTM D256 |
| **Izod Impact, notched, -70°C** | 657 | J/m | ASTM D256 |
| **Izod Impact, unnotched, 23°C** | NB | J/m | ASTM D4812 |
| **Izod Impact, unnotched, -70°C** | NB | J/m | ASTM D4812 |

| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|---|---|---|---|
| Instrumented Dart Impact Ductility, 23°C [2] | 100 | % | ASTM D3763 |
| Instrumented Dart Impact Total Energy, 23°C [2] | 62 | J | ASTM D3763 |
| Izod Impact, notched 80*10*3 +23°C | 63 | kJ/m² | ISO 180/1A |
| Izod Impact, notched 80*10*3 -70°C | 40 | kJ/m² | ISO 180/1A |
| Izod Impact, unnotched 80*10*3 +23°C | NB | kJ/m² | ISO 180/1U |
| Izod Impact, unnotched 80*10*3 -70°C | NB | kJ/m² | ISO 180/1U |
| Charpy 23°C, V-notch Edgew 80*10*3 sp=62mm | 70 | kJ/m² | ISO 179/1eA |
| Charpy 23°C, Unnotch Edgew 80*10*3 sp=62mm | NB | kJ/m² | ISO 179/1eU |
| Charpy -70°C, Unnotch Edgew 80*10*3 sp=62mm | NB | kJ/m² | ISO 179/1eU |
| THERMAL [1] | | | |
| HDT, 1.82 MPa, 3.2mm, unannealed | 125 | °C | ASTM D648 |
| HDT, 0.45 MPa, 3.2 mm, unannealed | 138 | °C | ASTM D648 |
| Vicat Softening Temp, Rate B/50 | 143 | °C | ASTM D1525 |
| Vicat Softening Temp, Rate B/120 | 146 | °C | ASTM D1525 |
| CTE, -40°C to 40°C, flow | 7E-05 | 1/°C | ASTM E831 |
| CTE, -40°C to 40°C, xflow | 7E-05 | 1/°C | ASTM E831 |
| HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm | 123 | °C | ISO 75/Af |
| HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm | 136 | °C | ISO 75/Bf |
| Vicat Softening Temp, Rate B/50 | 142 | °C | ISO 306 |
| Vicat Softening Temp, Rate B/120 | 144 | °C | ISO 306 |
| CTE, -40°C to 40°C, flow | 7E-05 | 1/°C | ISO 11359-2 |
| CTE, -40°C to 40°C, xflow | 7E-05 | 1/°C | ISO 11359-2 |
| Relative Temp Index, Elec [3] | 130 | °C | UL 746B |
| Relative Temp Index, Mech w/impact [3] | 120 | °C | UL 746B |
| Relative Temp Index, Mech w/o impact [3] | 130 | °C | UL 746B |
| PHYSICAL [1] | | | |
| Specific Gravity | 1.2 | - | ASTM D792 |
| Melt Volume Rate, MVR at 300°C/1.2 kg | 9.5 | cm³/10 min | ASTM D1238 |
| Melt Flow Rate, 300°C/1.2 kgf | 10 | g/10 min | ASTM D1238 |
| Density | 1.19 | g/cm³ | ISO 1183 |
| Moisture Absorption, (23°C/50% RH/24hrs) | 0.07 | % | ISO 62-4 |
| Water Absorption, (23°C/24hrs) | 0.2 | % | ISO 62-1 |
| Melt Volume Rate, MVR at 300°C/1.2 kg | 9 | cm³/10 min | ISO 1133 |
| Mold Shrinkage, flow [4] | 0.4 – 0.9 | % | SABIC method |
| Mold Shrinkage, xflow [4] | 0.4 – 0.9 | % | SABIC method |
| ELECTRICAL [1] | | | |
| Dielectric Constant | | | |
| 100 MHz | 2.82 | - | SABIC method |
| 2.47 GHz | 2.78 | - | SABIC method |
| Dissipation Factor | | | |
| 100 MHz | 0.0066 | - | SABIC method |
| 2.47 GHz | 0.0053 | - | SABIC method |
| Surface Resistivity | >1.E+13 | Ω | ASTM D257 |
| Volume Resistivity | >1.E+15 | Ω.cm | ASTM D257 |
| Dielectric Strength, in oil, 1.6 mm | 28.5 | kV/mm | ASTM D149 |

| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|---|---|---|---|
| FLAME CHARACTERISTICS [3] | | | |
| UL Yellow Card Link | E207780-104510209 | - | - |
| UL Recognized, 94HB Flame Class Rating | ≥0.75 | mm | UL 94 |
| INJECTION MOLDING [5] | | | |
| Drying Temperature | 120 | °C | |
| Drying Time | 3 – 4 | Hrs | |
| Drying Time (Cumulative) | 12 | Hrs | |
| Maximum Moisture Content | 0.02 | % | |
| Melt Temperature | 290 – 340 | °C | |
| Rear - Zone 1 Temperature | 270 – 320 | °C | |
| Middle - Zone 2 Temperature | 280 – 330 | °C | |
| Front - Zone 3 Temperature | 290 – 340 | °C | |
| Nozzle Temperature | 290 – 340 | °C | |
| Mold Temperature | 80 – 110 | °C | |
| Back Pressure | 0.3 – 0.7 | MPa | |
| Screw Speed | 50 – 100 | rpm | |
| Shot to Cylinder Size | 40 – 80 | % | |
| Vent Depth | 0.025 – 0.076 | mm | |

(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) at 3.3 m/s dart speed
(3) 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.
(4) 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.
(5) 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