

Makrolon® 3107

Covestro - Polycarbonates - Polycarbonate

General Information

Product Description

 MVR (300°C/1.2 kg) 6.0 cm³/10 min; general purpose; high viscosity; UV stabilized; easy release; injection molding - melt temperature 290 - 330°C; available in transparent, translucent and opaque colors

General

| | | | |
|-------------------|----------------------------|------------------|-----------------|
| Material Status | • Commercial: Active | | |
| Availability | • Africa & Middle East | • Europe | • North America |
| | • Asia Pacific | • Latin America | |
| Additive | • UV Stabilizer | | |
| Features | • General Purpose | • High Viscosity | |
| | • Good Mold Release | • UV Stabilized | |
| Uses | • General Purpose | | |
| RoHS Compliance | • RoHS Compliant | | |
| Appearance | • Clear/Transparent | • Opaque | |
| | • Colors Available | • Translucent | |
| Processing Method | • Injection Molding | | |
| ISO Designation | • ISO 7391-PC,MLR,(,)-09-9 | | |

 Properties ¹

| Physical | Nominal Value | Unit | Test Method |
|--|---------------|--|--------------|
| Density (73°F) | 1.20 | g/cm ³ | ISO 1183 |
| Apparent (Bulk) Density ² | 0.66 | g/cm ³ | ISO 60 |
| Melt Mass-Flow Rate (MFR) (300°C/1.2 kg) | 6.5 | g/10 min | ISO 1133 |
| Melt Volume-Flow Rate (MVR) (300°C/1.2 kg) | 6.0 | cm ³ /10min | ISO 1133 |
| Molding Shrinkage | | | |
| Across Flow | 0.60 to 0.80 | % | ISO 2577 |
| Flow | 0.60 to 0.80 | % | ISO 2577 |
| Across Flow : 536°F, 0.0787 in ³ | 0.75 | % | ISO 294-4 |
| Flow : 0.0787 in ³ | 0.70 | % | ISO 294-4 |
| Water Absorption (Saturation, 73°F) | 0.30 | % | ISO 62 |
| Water Absorption (Equilibrium, 73°F, 50% RH) | 0.12 | % | ISO 62 |
| Mechanical | Nominal Value | Unit | Test Method |
| Tensile Modulus (73°F) | 348000 | psi | ISO 527-1/1 |
| Tensile Stress (Yield, 73°F) | 9570 | psi | ISO 527-2/50 |
| Tensile Stress (Break, 73°F) | 10200 | psi | ISO 527-2/50 |
| Tensile Strain (Yield, 73°F) | 6.1 | % | ISO 527-2/50 |
| Tensile Strain (Break, 73°F) | 120 | % | ISO 527-2/50 |
| Nominal Tensile Strain at Break (73°F) | > 50 | % | ISO 527-2/50 |
| Tensile Creep Modulus (1 hr) | 319000 | psi | ISO 899-1 |
| Tensile Creep Modulus (1000 hr) | 276000 | psi | ISO 899-1 |
| Flexural Modulus ⁴ (73°F) | 348000 | psi | ISO 178 |
| Flexural Stress ⁴ | | | ISO 178 |
| 73°F | 14200 | psi | |
| 3.5% Strain, 73°F | 10700 | psi | |
| Flexural Strain at Flexural Strength ⁵ (73°F) | 7.0 | % | ISO 178 |
| Films | Nominal Value | Unit | Test Method |
| Water Vapor Transmission Rate (73°F, 85% RH, 3.9 mil) | 0.97 | g/100 in ² /24 hr | ISO 15106-1 |
| Carbon Dioxide Permeability (73°F, 1.0 mil) | 16900 | cm ³ /m ² /bar/24 hr | ISO 2556 |



| | | | |
|---|----------------------|---|--------------------|
| Gas Permeation | | | ISO 2556 |
| Carbon Dioxide : 3.9 mil | | 3800 cm ³ /m ² /bar/24 hr | |
| Nitrogen : 1.0 mil | | 510 cm ³ /m ² /bar/24 hr | |
| Nitrogen : 3.9 mil | | 120 cm ³ /m ² /bar/24 hr | |
| Oxygen : 1.0 mil | | 2760 cm ³ /m ² /bar/24 hr | |
| Oxygen : 3.9 mil | | 650 cm ³ /m ² /bar/24 hr | |
| Impact | Nominal Value | Unit | Test Method |
| Charpy Notched Impact Strength ⁶ | | | ISO 179/1eA |
| -22°F, Complete Break | | 6.7 ft·lb/in ² | |
| 73°F, Partial Break | | 38 ft·lb/in ² | |
| Charpy Unnotched Impact Strength | | | ISO 179/1eU |
| -76°F | | No Break | |
| -22°F | | No Break | |
| 73°F | | No Break | |
| Notched Izod Impact Strength ⁶ | | | ISO 180/A |
| -22°F, Complete Break | | 9.5 ft·lb/in ² | |
| 73°F, Partial Break | | 33 ft·lb/in ² | |
| Multi-Axial Instrumented Impact Energy | | | ISO 6603-2 |
| -22°F | | 51.6 ft·lb | |
| 73°F | | 44.3 ft·lb | |
| Multi-Axial Instrumented Impact Peak Force | | | ISO 6603-2 |
| -22°F | | 1460 lbf | |
| 73°F | | 1260 lbf | |
| Hardness | Nominal Value | Unit | Test Method |
| Ball Indentation Hardness | | 16800 psi | ISO 2039-1 |
| Thermal | Nominal Value | Unit | Test Method |
| Deflection Temperature Under Load (66 psi, Unannealed) | | 279 °F | ISO 75-2/B |
| Deflection Temperature Under Load (264 psi, Unannealed) | | 257 °F | ISO 75-2/A |
| Glass Transition Temperature ⁷ | | 293 °F | ISO 11357-2 |
| Vicat Softening Temperature | | | |
| -- | | 297 °F | ISO 306/B120 |
| -- | | 291 °F | ISO 306/B50 |
| Ball Pressure Test (279°F) | | Pass | IEC 60695-10-2 |
| CLTE - Flow (73 to 131°F) | | 3.6E-5 in/in/°F | ISO 11359-2 |
| CLTE - Transverse (73 to 131°F) | | 3.6E-5 in/in/°F | ISO 11359-2 |
| Thermal Conductivity ⁸ (73°F) | | 1.4 Btu·in/hr/ft ² /°F | ISO 8302 |
| RTI Elec (0.06 in) | | 257 °F | UL 746B |
| RTI Imp (0.06 in) | | 239 °F | UL 746B |
| RTI Str (0.06 in) | | 257 °F | UL 746B |
| Electrical | Nominal Value | Unit | Test Method |
| Surface Resistivity | | 1.0E+16 ohms | IEC 60093 |
| Volume Resistivity (73°F) | | 1.0E+16 ohms·cm | IEC 60093 |
| Electric Strength (73°F, 0.0394 in) | | 860 V/mil | IEC 60243-1 |
| Relative Permittivity | | | IEC 60250 |
| 73°F, 100 Hz | | 3.10 | |
| 73°F, 1 MHz | | 3.00 | |
| Dissipation Factor | | | IEC 60250 |
| 73°F, 100 Hz | | 5.0E-4 | |
| 73°F, 1 MHz | | 9.5E-3 | |
| Comparative Tracking Index | | | IEC 60112 |
| Solution A | | 250 V | |
| Solution B | | 125 V | |
| Electrolytic Corrosion (73°F) | | A1 | IEC 60426 |
| Flammability | Nominal Value | Unit | Test Method |
| Flame Rating | | | UL 94 |
| 0.06 in | | HB | |
| | | V-2 | |
| Flammability Index | | | IEC |
| | | 1610 °F | |
| | | 1610 °F | |

| | | |
|---|---------------------------|--------------------|
| 0.12 in | 1760 °F | |
| Glow Wire Ignition Temperature | | IEC 60695-2-13 |
| 0.030 in | 1610 °F | |
| 0.06 in | 1610 °F | |
| 0.12 in | 1650 °F | |
| Oxygen Index ⁹ | 27 % | ISO 4589-2 |
| Application of Flame from Small Burner ¹⁰ (78.7 mil) | K1, F1 | DIN 53438-1, -3 |
| Burning Rate ¹¹ (> 39.4 mil) | passed | ISO 3795 |
| Flash Ignition Temperature | 896 °F | ASTM D1929 |
| Glow Wire Test | | EDF HN60 E.02 |
| 59.1 mil | 1562 °F | |
| 0.12 in | 1562 °F | |
| Needle Flame Test | | IEC 60695-11-5 |
| 59.1 mil ¹² | 60 sec | |
| 78.7 mil ¹³ | 5 sec | |
| 78.7 mil ¹² | 120 sec | |
| 0.12 in ¹³ | 10 sec | |
| 0.12 in ¹² | 120 sec | |
| Self Ignition Temperature | 1022 °F | ASTM D1929 |
| Optical | Nominal Value Unit | Test Method |
| Refractive Index ¹⁴ | 1.586 | ISO 489 |
| Light Transmittance | | ISO 13468-2 |
| 39.37 mil | 89.0 % | |
| 78.74 mil | 89.0 % | |
| 118.1 mil | 88.0 % | |
| 157.5 mil | 87.0 % | |
| Haze (118.1 mil) | < 0.800 % | ISO 14782 |

Processing Information

| Injection | Nominal Value Unit |
|------------------------------------|---------------------|
| Drying Temperature - Dry Air Dryer | 248 °F |
| Drying Time - Dry Air Dryer | 2.0 to 3.0 hr |
| Suggested Max Moisture | < 0.020 % |
| Suggested Shot Size | 30 to 70 % |
| Rear Temperature | 500 to 518 °F |
| Middle Temperature | 536 to 554 °F |
| Front Temperature | 554 to 572 °F |
| Nozzle Temperature | 572 to 590 °F |
| Processing (Melt) Temp | 554 to 626 °F |
| Mold Temperature | 176 to 248 °F |
| Back Pressure | 725 to 2180 psi |
| Vent Depth | 9.8E-4 to 3.0E-3 in |

Injection Notes

Hold Pressure (% of Injection Pressure): 50 - 75%
Peripheral Screw Speed: 0.05 - 0.2 m/s
Standard Melt Temperature: 310°C

Notes

¹ Typical properties: these are not to be construed as specifications.

² Pellets

³ 60x60x2mm, 500 bar

⁴ 0.079 in/min

⁵ 2.0 mm/min

⁶ 3 mm

⁷ 10°C/min

⁸ Across Flow



¹³ Method K

¹⁴ Method A

