

Makrolon® AX2477

 Covestro - Polycarbonates - *Polycarbonate*

General Information

Product Description

 MVR (300 °C/1.2 kg) 19 cm³/10 min; low viscosity; UV stabilized; easy release; injection molding - melt temperature 280 - 320 °C; developed for high-gloss surfaces with highest requirements; for the use in combination with hard coatings

General

| | | | |
|-------------------|------------------------------------------|------------------------------------|-----------------|
| Material Status | • Commercial: Active | | |
| Availability | • Africa & Middle East • Asia Pacific | • Europe • Latin America | • North America |
| Additive | • UV Stabilizer | | |
| Features | • Good Mold Release • High Gloss | • Low Viscosity • UV Stabilized | |
| Uses | • Coating Applications | | |
| Processing Method | • Injection Molding | | |

 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) | 20 | g/10 min | ISO 1133 |
| Melt Volume-Flow Rate (MVR) (300°C/1.2 kg) | 19 | cm ³ /10min | ISO 1133 |
| Molding Shrinkage | | | |
| Across Flow | 0.50 to 0.70 | % | ISO 2577 |
| Flow | 0.50 to 0.70 | % | ISO 2577 |
| Across Flow : 536°F, 0.0787 in ³ | 0.70 | % | ISO 294-4 |
| Flow : 0.0787 in ³ | 0.65 | % | 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) | 9430 | psi | ISO 527-2/50 |
| Tensile Strain (Yield, 73°F) | 6.0 | % | 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) | 341000 | 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) | 18900 | cm ³ /m ² /bar/24 hr | ISO 2556 |
| Gas Permeation | | | ISO 2556 |
| Carbon Dioxide : 3.9 mil | 4800 | cm ³ /m ² /bar/24 hr | |
| Nitrogen : 1.0 mil | 630 | cm ³ /m ² /bar/24 hr | |
| Nitrogen : 3.9 mil | 160 | cm ³ /m ² /bar/24 hr | |



| | | | |
|---------------------------------------------------------|----------------------|-------------------------------------------------|--------------------|
| Oxygen : 1.0 mil | | 3150 cm ³ /m ² /bar/24 hr | |
| Oxygen : 3.9 mil | | 800 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 | | 31 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 | | 5.7 ft·lb/in ² | |
| 73°F, Partial Break | | 36 ft·lb/in ² | |
| Multi-Axial Instrumented Impact Energy | | | ISO 6603-2 |
| -22°F | | 47.9 ft·lb | |
| 73°F | | 40.6 ft·lb | |
| Multi-Axial Instrumented Impact Peak Force | | | ISO 6603-2 |
| -22°F | | 1350 lbf | |
| 73°F | | 1150 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) | | 277 °F | ISO 75-2/B |
| Deflection Temperature Under Load (264 psi, Unannealed) | | 255 °F | ISO 75-2/A |
| Glass Transition Temperature ⁷ | | 289 °F | ISO 11357-2 |
| Vicat Softening Temperature | | | |
| -- | | 293 °F | ISO 306/B120 |
| -- | | 289 °F | ISO 306/B50 |
| Ball Pressure Test (275°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 | | 9.0E-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 |
| 0.11 in | | HB | |
| 0.030 in | | V-2 | |
| Glow Wire Flammability Index | | | IEC 60695-2-12 |
| 0.030 in | | 1560 °F | |
| 0.06 in | | 1610 °F | |
| 0.06 in | | 1710 °F | |
| Ignition Temperature | | | IEC |
| | | 1610 °F | |
| | | 1610 °F | |



| | | |
|-----------------------------------------------------------------|---------|-----------------|
| 0.06 in | 1610 °F | |
| 0.12 in | 1610 °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 |
| Needle Flame Test | | IEC 60695-11-5 |
| 59.1 mil ¹² | 60 sec | |
| 59.1 mil ¹³ | 5 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 |

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 | 482 to 500 | °F |
| Middle Temperature | 518 to 536 | °F |
| Front Temperature | 536 to 554 | °F |
| Nozzle Temperature | 554 to 572 | °F |
| Processing (Melt) Temp | 536 to 608 | °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%
Standard Melt Temperature: 300°C
Peripheral Screw Speed: 0.05 - 0.2 m/s

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 through-plane
- ⁹ Procedure A
- ¹⁰ Method K and F
- ¹¹ US-FMVSS
- ¹² Method F
- ¹³ Method K

