# Makrolon® 2407

Polycarbonate

**Bayer MaterialScience - Polycarbonates**

UL IDES | Prospector

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## Technical Data

### Product Description

MVR (300 °C/1.2 kg) 19 cm³/10 min; General purpose; Low viscosity; UV stabilized; Easy release; Injection molding - Melt temperature 280 - 320 °C; Available in transparent, translucent and opaque colors

### General

| | | | |
|---|---|---|---|
| Material Status | • Commercial: Active | | |
| Literature [1] | • Technical Datasheet (Chinese (Traditional))<br>• Technical Datasheet (Chinese)<br>• Technical Datasheet (English)<br>• Technical Datasheet (German) | | |
| UL Yellow Card [2] | • E41613-233136 | | |
| Search for UL Yellow Card | • Bayer MaterialScience - Polycarbonates<br>• Makrolon® | | |
| Availability | • Africa & Middle East<br>• Asia Pacific | • Europe<br>• Latin America | • North America |
| Additive | • UV Stabilizer | | |
| Features | • General Purpose | • Good Mold Release | • Low Viscosity |
| Uses | • General Purpose | | |
| RoHS Compliance | • RoHS Compliant | | |
| Appearance | • Clear/Transparent<br>• Colors Available | • Opaque<br>• Translucent | |
| Forms | • Pellets | | |
| Processing Method | • Injection Molding | | |
| Multi-Point Data | • Creep Modulus vs. Time (ISO 11403-1)<br>• Isochronous Stress vs. Strain (ISO 11403-1)<br>• Isothermal Stress vs. Strain (ISO 11403-1) | • Secant Modulus vs. Strain (ISO 11403-1)<br>• Shear Modulus vs. Temperature (ISO 11403-1)<br>• Specific Volume vs Temperature (ISO 11403-2) | • Viscosity vs. Shear Rate (ISO 11403-2) |

| Physical | Nominal Value | Unit | Test Method |
|---|---|---|---|
| Density | 1.20 | g/cm³ | ISO 1183 |
| Apparent Density [4] | 0.66 | g/cm³ | 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) | 19.0 | cm³/10min | ISO 1133 |
| Molding Shrinkage | | | |
| Across Flow | 0.50 to 0.70 | % | ISO 2577 |
| Flow | 0.50 to 0.70 | % | ISO 2577 |
| Across Flow : 2.00 mm [5] | 0.70 | % | ISO 294-4 |
| Flow : 2.00 mm [5] | 0.65 | % | ISO 294-4 |
| Water Absorption | | | ISO 62 |
| Saturation, 23°C | 0.30 | % | |
| Equilibrium, 23°C, 50% RH | 0.12 | % | |

| Mechanical | Nominal Value | Unit | Test Method |
|---|---|---|---|
| Tensile Modulus (23°C) | 2400 | MPa | ISO 527-2/1 |
| Tensile Stress | | | ISO 527-2/50 |
| Yield, 23°C | 66.0 | MPa | |
| Break, 23°C | 65.0 | MPa | |
| Tensile Strain | | | ISO 527-2/50 |
| Yield, 23°C | 6.0 | % | |
| Break, 23°C | 120 | % | |
| Nominal Tensile Strain at Break (23°C) | > 50 | % | ISO 527-2/50 |



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| Mechanical | Nominal Value | Unit | Test Method |
|---|---|---|---|
| Tensile Creep Modulus | | | ISO 899-1 |
| 1 hr | 2200 | MPa | |
| 1000 hr | 1900 | MPa | |
| Flexural Modulus [6] (23°C) | 2350 | MPa | ISO 178 |
| Flexural Strength [6] | | | ISO 178 |
| 23°C | 98.0 | MPa | |
| 3.5% Strain, 23°C | 74.0 | MPa | |
| Flexural Strain at Flexural Strength [7] (23°C) | 7.0 | % | ISO 178 |

| Films | Nominal Value | Unit | Test Method |
|---|---|---|---|
| Water Vapor Transmission Rate | | | ISO 15106-1 |
| 23°C, 100 µm, 85% RH | 15 | g/m²/24 hr | |
| Carbon Dioxide Permeability | | | ISO 2556 |
| 23°C, 25.4 µm | 18900 | cm³/m²/bar/24 hr | |
| 23°C, 100.0 µm | 4800 | cm³/m²/bar/24 hr | |
| Nitrogen Permeability | | | ISO 2556 |
| 23°C, 25.4 µm | 630 | cm³/m²/bar/24 hr | |
| 23°C, 100.0 µm | 160 | cm³/m²/bar/24 hr | |
| Oxygen Permeability | | | ISO 2556 |
| 23°C, 25.4 µm | 3200 | cm³/m²/bar/24 hr | |
| 23°C, 100.0 µm | 800 | cm³/m²/bar/24 hr | |

| Impact | Nominal Value | Unit | Test Method |
|---|---|---|---|
| Charpy Notched Impact Strength [8] | | | ISO 179/1eA |
| -30°C, Complete Break | 14 | kJ/m² | |
| 23°C, Partial Break | 65 | kJ/m² | |
| Charpy Unnotched Impact Strength | | | ISO 179/1eU |
| -60°C | No Break | | |
| -30°C | No Break | | |
| 23°C | No Break | | |
| Notched Izod Impact Strength [9] | | | ISO 180/A |
| -30°C, Complete Break | 12 | kJ/m² | |
| 23°C, Partial Break | 75 | kJ/m² | |
| Multi-Axial Instrumented Impact Energy | | | ISO 6603-2 |
| -30°C | 65.0 | J | |
| 23°C | 55.0 | J | |
| Multi-Axial Instrumented Impact Peak Force | | | ISO 6603-2 |
| -30°C | 6000 | N | |
| 23°C | 5100 | N | |

| Hardness | Nominal Value | Unit | Test Method |
|---|---|---|---|
| Ball Indentation Hardness | 116 | MPa | ISO 2039-1 |

| Thermal | Nominal Value | Unit | Test Method |
|---|---|---|---|
| Heat Deflection Temperature | | | |
| 0.45 MPa, Unannealed | 136 | °C | ISO 75-2/B |
| 1.8 MPa, Unannealed | 124 | °C | ISO 75-2/A |
| Glass Transition Temperature [10] | 143 | °C | ISO 11357-2 |
| Vicat Softening Temperature | | | |
| -- | 143 | °C | ISO 306/B50 |
| -- | 145 | °C | ISO 306/B120 |
| Ball Pressure Test (135°C) | Pass | | IEC 60695-10-2 |
| CLTE | | | ISO 11359-2 |
| Flow : 23 to 55°C | 0.000065 | cm/cm/°C | |
| Transverse : 23 to 55°C | 0.000065 | cm/cm/°C | |
| Thermal Conductivity [11] (23°C) | 0.20 | W/m/K | ISO 8302 |
| RTI Elec (1.50 mm) | 125 | °C | UL 746 |



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| Thermal | Nominal Value | Unit | Test Method |
|---|---|---|---|
| RTI Imp (1.50 mm) | 115 | °C | UL 746 |
| RTI Str (1.50 mm) | 125 | °C | UL 746 |
| **Electrical** | **Nominal Value** | **Unit** | **Test Method** |
| Surface Resistivity | 1.0E+16 | ohm | IEC 60093 |
| Volume Resistivity (23°C) | 1.0E+16 | ohm·cm | IEC 60093 |
| Electric Strength (23°C, 1.00 mm) | 34 | kV/mm | IEC 60243-1 |
| Relative Permittivity | | | IEC 60250 |
| 23°C, 100 Hz | 3.10 | | |
| 23°C, 1 MHz | 3.00 | | |
| Dissipation Factor | | | IEC 60250 |
| 23°C, 100 Hz | 0.00050 | | |
| 23°C, 1 MHz | 0.0090 | | |
| Comparative Tracking Index | | | IEC 60112 |
| Solution A | 250 | V | |
| Solution B | 125 | V | |
| **Flammability** | **Nominal Value** | **Unit** | **Test Method** |
| Flame Rating | | | UL 94 |
| 2.70 mm | HB | | |
| 0.750 mm | V-2 | | |
| Glow Wire Flammability Index | | | IEC 60695-2-12 |
| 0.750 mm | 850 | °C | |
| 1.50 mm | 875 | °C | |
| 3.00 mm | 930 | °C | |
| Glow Wire Ignition Temperature | | | IEC 60695-2-13 |
| 0.750 mm | 875 | °C | |
| 1.00 mm | 875 | °C | |
| 1.50 mm | 875 | °C | |
| 3.00 mm | 875 | °C | |
| Oxygen Index [12] | 27 | % | ISO 4589-2 |
| Application of Flame from Small Burner [13] | | | DIN 53438-1, -3 |
| 2.00 mm | K1, F1 | | |
| Burning Rate [14] (< 1.00 mm) | Passed | | ISO 3795 |
| Flash Ignition Temperature | 480 | °C | ASTM D1929 |
| Needle Flame Test | | | IEC 60695-11-5 |
| Method F : 1.50 mm | 1.0 | min | |
| Method F : 2.00 mm | 2.0 | min | |
| Method F : 3.00 mm | 2.0 | min | |
| Method K : 1.50 mm | 0.1 | min | |
| Method K : 2.00 mm | 0.1 | min | |
| Method K : 3.00 mm | 0.2 | min | |
| Self Ignition Temperature | 550 | °C | ASTM D1929 |
| **Optical** | **Nominal Value** | **Unit** | **Test Method** |
| Refractive Index [15] | 1.584 | | ISO 489 |
| Transmittance | | | ISO 13468-2 |
| 1000 µm | 89.0 | % | |
| 2000 µm | 89.0 | % | |
| 3000 µm | 88.0 | % | |
| 4000 µm | 87.0 | % | |
| Haze (3000 µm) | < 0.80 | % | ISO 14782 |
| **Additional Information** | **Nominal Value** | **Unit** | **Test Method** |
| Electrolytical Corrosion | A1 | | IEC 60426 |
| ISO Shortname | PC,MLR,(,,)-18-9 | | ISO 7391 |



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| Injection | Nominal Value | Unit |
|---|---|---|
| Processing (Melt) Temp | 280 to 320 | °C |

## Notes

[1] These links provide you with access to supplier literature. We work hard to keep them up to date; however you may find the most current literature from the supplier.

[2] A UL Yellow Card contains UL-verified flammability and electrical characteristics. UL IDES continually works to link Yellow Cards to individual plastic materials in Prospector, however this list may not include all of the appropriate links. It is important that you verify the association between these Yellow Cards and the plastic material found in Prospector. For a complete listing of Yellow Cards, visit the UL Yellow Card Search.

[3] Typical properties: these are not to be construed as specifications.

[4] Pellets

[5] 60x60x2 mm, 500 bar

[6] 2.0 mm/min

[7] 2 mm/min

[8] 3 mm

[9] 3.2 mm

[10] 10°C/min

[11] Cross-flow, 50% RH

[12] Procedure A

[13] Method K and F

[14] US-FMVSS

[15] Method A



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## Where to Buy

### Supplier

**Bayer MaterialScience - Polycarbonates**
Leverkusen, Germany
Telephone: +49-214-30-1
Web: http://plastics.bayer.com/

### Distributor

**Amco Polymers LLC**
Telephone: 800-262-6685
Web: http://www.amcopolymers.com/
Availability: North America

**Bay State Polymer**
Telephone: 800-277-7797
Web: http://www.baystatepolymer.com/
Availability: North America

**M. Holland Canada Company**
Telephone: 905-665-1168
Web: http://www.mholland.com/
Availability: Canada

**M. Holland Company**
Telephone: 855-497-1403
Web: http://www.mholland.com/
Availability: Mexico, United States

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