

Makrolon® Rx1805

Polycarbonate

Covestro - Polycarbonates

PROSPECTOR®

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Technical Data

Product Description

MVR (300°C/1.2 kg) 6.0 cm³/10 min; medical devices; high lipid resistance; suitable for sterilization with high-energy radiation; biocompatible according to many ISO 10993-1 test requirements; high viscosity; injection molding - melt temperature 280 - 320°C; transparent parts for medical devices

General

Material Status	• Commercial: Active
Literature ¹	• Technical Datasheet (Chinese (Traditional)) • Technical Datasheet (Chinese) • Technical Datasheet (English) • Technical Datasheet (German) • Technical Datasheet (Japanese)
Search for UL Yellow Card	• Covestro - Polycarbonates • Makrolon®
Availability	• Africa & Middle East • Asia Pacific • Europe • Latin America • North America
Features	• Biocompatible • High Viscosity • Radiation Sterilizable
Uses	• Medical Devices • Medical/Healthcare Applications
Agency Ratings	• ISO 10993-Part 1
RoHS Compliance	• RoHS Compliant
Appearance	• Clear/Transparent
Processing Method	• Injection Molding
Multi-Point Data	• Specific Volume vs Temperature (ISO 11403-2) • Viscosity vs. Shear Rate (ISO 11403-2)

Physical	Nominal Value (English)	Nominal Value (SI)	Test Method
Density (73°F (23°C))	1.20 g/cm ³	1.20 g/cm ³	ISO 1183
Apparent (Bulk) Density ³	0.66 g/cm ³	0.66 g/cm ³	ISO 60
Melt Mass-Flow Rate (MFR) (300°C/1.2 kg)	6.5 g/10 min	6.5 g/10 min	ISO 1133
Melt Volume-Flow Rate (MVR) (300°C/1.2 kg)	0.366 in ³ /10min	6.00 cm ³ /10min	ISO 1133
Molding Shrinkage			
Across Flow	0.60 to 0.80 %	0.60 to 0.80 %	ISO 2577
Flow	0.60 to 0.80 %	0.60 to 0.80 %	ISO 2577
Across Flow : 536°F (280°C), 0.0787 in (2.00 mm) ⁴	0.70 %	0.70 %	ISO 294-4
Flow : 0.0787 in (2.00 mm) ⁴	0.70 %	0.70 %	ISO 294-4
Water Absorption			ISO 62
Saturation, 73°F (23°C)	0.30 %	0.30 %	
Equilibrium, 73°F (23°C), 50% RH	0.12 %	0.12 %	

Mechanical	Nominal Value (English)	Nominal Value (SI)	Test Method
Tensile Modulus (73°F (23°C))	348000 psi	2400 MPa	ISO 527-2/1
Tensile Stress			ISO 527-2/50
Yield, 73°F (23°C)	9720 psi	67.0 MPa	
Break, 73°F (23°C)	10900 psi	75.0 MPa	
Tensile Strain			ISO 527-2/50
Yield, 73°F (23°C)	6.3 %	6.3 %	
Break, 73°F (23°C)	130 %	130 %	
Nominal Tensile Strain at Break			ISO 527-2/50
73°F (23°C)	> 50 %	> 50 %	
Flexural Modulus ⁵ (73°F (23°C))	348000 psi	2400 MPa	ISO 178



Mechanical	Nominal Value (English)	Nominal Value (SI)	Test Method
Flexural Stress ⁵			ISO 178
73°F (23°C)	14200 psi	98.0 MPa	
3.5% Strain, 73°F (23°C)	10600 psi	73.0 MPa	
Flexural Strain at Flexural Strength ⁶			ISO 178
73°F (23°C)	7.1 %	7.1 %	
Impact	Nominal Value (English)	Nominal Value (SI)	Test Method
Charpy Notched Impact Strength ⁷			ISO 179/1eA
-22°F (-30°C), Complete Break	7.6 ft·lb/in ²	16 kJ/m ²	
73°F (23°C), Partial Break	38 ft·lb/in ²	80 kJ/m ²	
Charpy Unnotched Impact Strength			ISO 179/1eU
-76°F (-60°C)	No Break	No Break	
-22°F (-30°C)	No Break	No Break	
73°F (23°C)	No Break	No Break	
Notched Izod Impact Strength ⁷			ISO 180/A
-22°F (-30°C), Complete Break	7.1 ft·lb/in ²	15 kJ/m ²	
73°F (23°C), Partial Break	33 ft·lb/in ²	70 kJ/m ²	
Multi-Axial Instrumented Impact Energy			ISO 6603-2
-22°F (-30°C)	51.6 ft·lb	70.0 J	
73°F (23°C)	47.9 ft·lb	65.0 J	
Multi-Axial Instrumented Impact Peak Force			ISO 6603-2
-22°F (-30°C)	1480 lbf	6600 N	
73°F (23°C)	1280 lbf	5700 N	
Hardness	Nominal Value (English)	Nominal Value (SI)	Test Method
Ball Indentation Hardness	16500 psi	114 MPa	ISO 2039-1
Thermal	Nominal Value (English)	Nominal Value (SI)	Test Method
Heat Deflection Temperature			
66 psi (0.45 MPa), Unannealed	280 °F	138 °C	ISO 75-2/B
264 psi (1.8 MPa), Unannealed	259 °F	126 °C	ISO 75-2/A
Glass Transition Temperature ⁸	293 °F	145 °C	ISO 11357-2
Vicat Softening Temperature			
--	291 °F	144 °C	ISO 306/B50
--	293 °F	145 °C	ISO 306/B120
Ball Pressure Test (275°F (135°C))	Pass	Pass	IEC 60695-10-2
CLTE			ISO 11359-2
Flow : 73 to 131°F (23 to 55°C)	3.6E-5 in/in/°F	6.5E-5 cm/cm/°C	
Transverse : 73 to 131°F (23 to 55°C)	3.6E-5 in/in/°F	6.5E-5 cm/cm/°C	
Thermal Conductivity ⁹ (73°F (23°C))	1.4 Btu·in/hr/ft ² /°F	0.20 W/m/K	ISO 8302
Flammability	Nominal Value (English)	Nominal Value (SI)	Test Method
Oxygen Index ¹⁰	27 %	27 %	ISO 4589-2
Flash Ignition Temperature	896 °F	480 °C	ASTM D1929
Self Ignition Temperature	1022 °F	550 °C	ASTM D1929
Additional Information	Nominal Value (English)	Nominal Value (SI)	
ISO Shortname	ISO 7391-PC,M, (,,)-09-9	ISO 7391-PC,M, (,,)-09-9	
Injection	Nominal Value (English)	Nominal Value (SI)	
Drying Temperature - Dry Air Dryer	248 °F	120 °C	
Drying Time - Dry Air Dryer	4.0 hr	4.0 hr	
Suggested Max Moisture	< 0.020 %	< 0.020 %	
Suggested Shot Size	30 to 70 %	30 to 70 %	
Rear Temperature	482 to 518 °F	250 to 270 °C	
Middle Temperature	518 to 554 °F	270 to 290 °C	



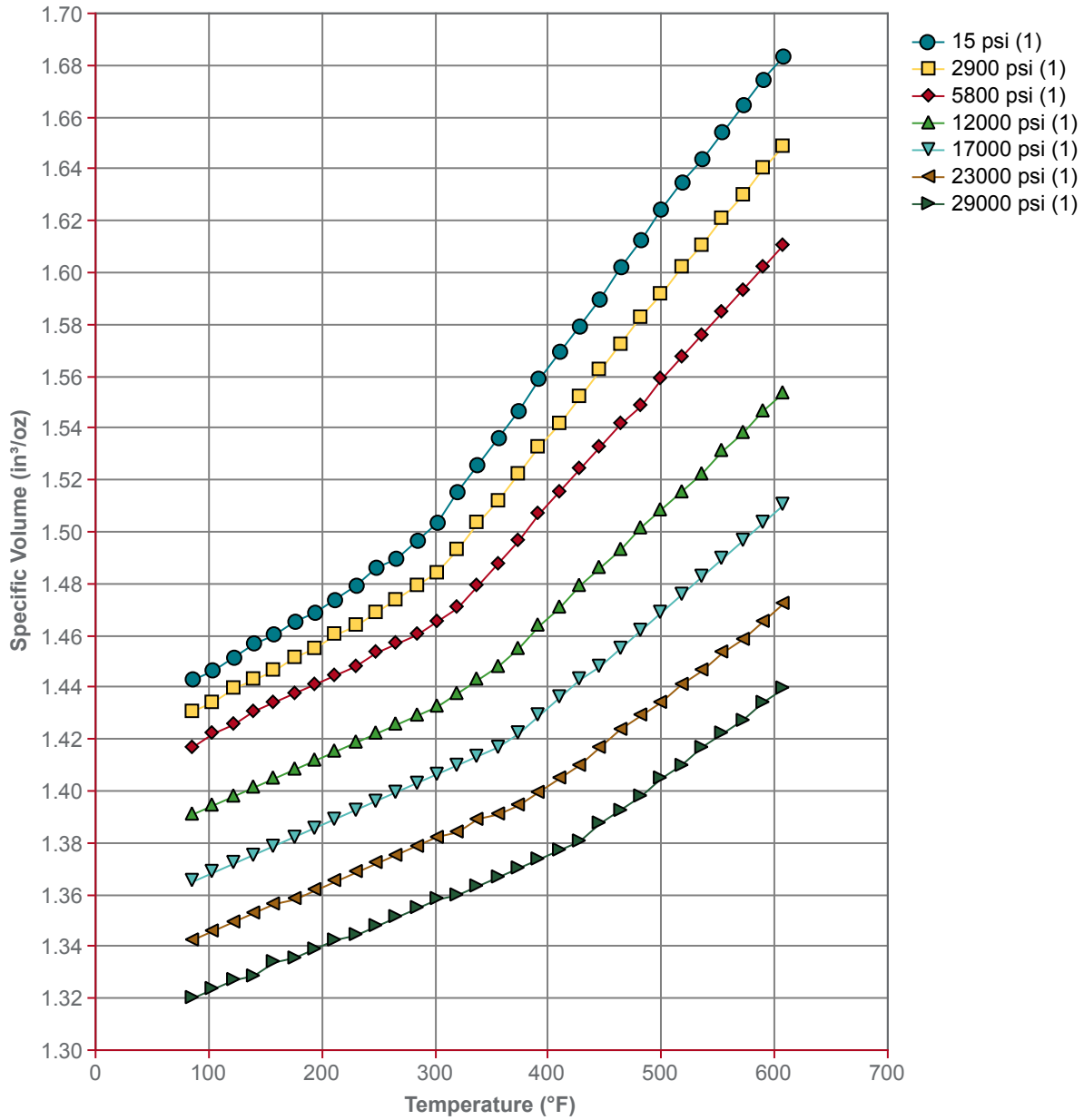
Injection	Nominal Value (English)	Nominal Value (SI)
Front Temperature	545 to 581 °F	285 to 305 °C
Nozzle Temperature	518 to 581 °F	270 to 305 °C
Processing (Melt) Temp	536 to 608 °F	280 to 320 °C
Mold Temperature	158 to 230 °F	70 to 110 °C
Back Pressure	1450 to 2900 psi	10.0 to 20.0 MPa
Vent Depth	9.8E-4 to 3.0E-3 in	0.025 to 0.075 mm

Injection Notes

Hold Pressure (% of Injection Pressure): 50 - 75%
Peripheral Screw Speed: 0.05 - 0.2 m/s
Standard Melt Temperature: 300°C



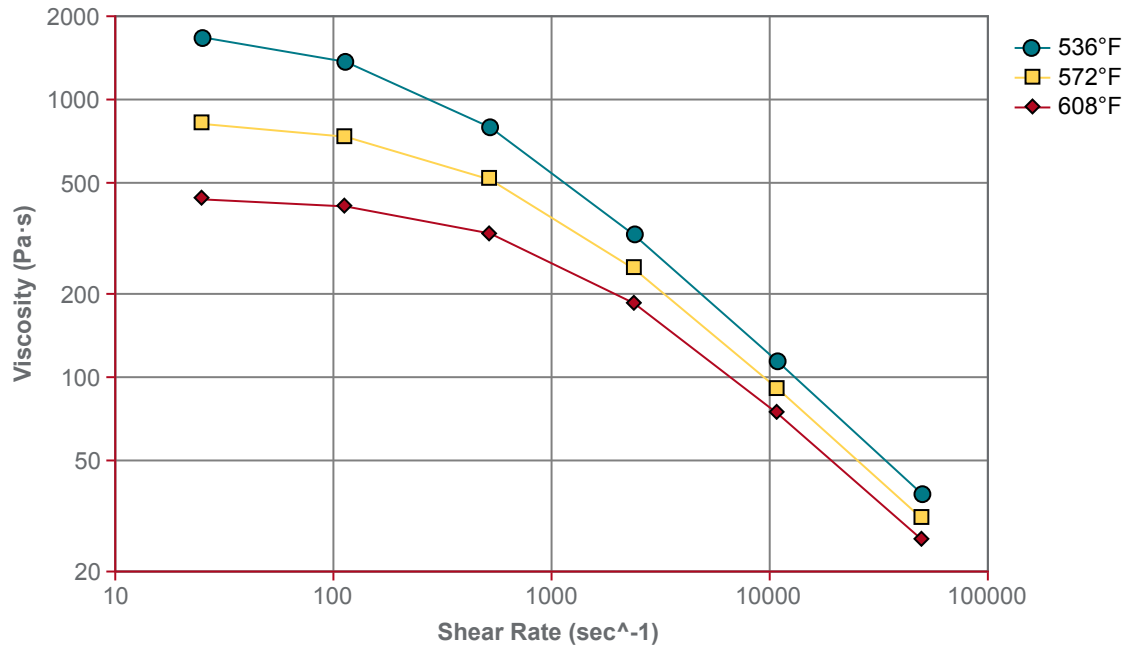
Specific Volume vs Temperature (ISO 11403-2)



Data Notes
 (1) - Tested using Generic PC



Viscosity vs. Shear Rate (ISO 11403-2)



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 Typical properties: these are not to be construed as specifications.
- ³ Pellets
- ⁴ 60x60x2mm, 500 bar
- ⁵ 0.079 in/min (2.0 mm/min)
- ⁶ 2 mm/min
- ⁷ 3 mm
- ⁸ 10°C/min
- ⁹ Across Flow
- ¹⁰ Procedure A

