

Makrolon® 3158

 Covestro - Polycarbonates - *Polycarbonate*
General Information
Product Description

MVR (300°C/1.2 kg) 6.0 cm³/10 min; medical devices; suitable for ETO and steam sterilization at 121°C; biocompatible according to many ISO 10993-1 test requirements; high viscosity; easy release; injection molding - melt temperature 290 - 330°C; available in transparent and opaque colors

General

Material Status	• Commercial: Active		
Availability	• Africa & Middle East • Asia Pacific	• Europe • Latin America	• North America
Features	• Biocompatible • Ethylene Oxide Sterilizable	• Good Mold Release • High Viscosity	• Steam Sterilizable
Uses	• Medical Devices	• Medical/Healthcare Applications	
Agency Ratings	• ISO 10993-1	• USP Class VI	
RoHS Compliance	• RoHS Compliant		
Appearance	• Clear/Transparent	• Colors Available	• Opaque
Processing Method	• Injection Molding		
ISO Designation	• ISO 7391-PC,MR,(,,-)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)	6.2	%	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	14100	psi	
3.5% Strain, 73°F	10600	psi	
Flexural Strain at Flexural Strength ⁵ (73°F)	7.1	%	ISO 178
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength ⁶			ISO 179/1eA



-22°F, Complete Break	7.6 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	7.1 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	16400	psi	ISO 2039-1
Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load (66 psi, Unannealed)	280	°F	ISO 75-2/B
Deflection Temperature Under Load (264 psi, Unannealed)	259	°F	ISO 75-2/A
Glass Transition Temperature ⁷	295	°F	ISO 11357-2
Vicat Softening Temperature			
--	298	°F	ISO 306/B120
--	297	°F	ISO 306/B50
Ball Pressure Test (280°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
Flammability	Nominal Value	Unit	Test Method
Flash Ignition Temperature	896	°F	ASTM D1929
Self Ignition Temperature	1022	°F	ASTM D1929
Optical	Nominal Value	Unit	Test Method
Refractive Index ⁹	1.587		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

Peripheral Screw Speed: 0.05 - 0.2 m/s

Standard Melt Temperature: 310°C

Back Pressure (% of Injection Pressure): 50 - 75%

Notes

Properties: these are not to be construed as specifications.



³ 60x60x2mm, 500 bar

⁴ 0.079 in/min

⁵ 2.0 mm/min

⁶ 3 mm

⁷ 10°C/min

⁸ Across Flow

⁹ Method A

