

Makrolon® DP1-1821

 Covestro - Polycarbonates - *Polycarbonate*
General Information
Product Description

 MVR (300°C/1.2 kg) 6.0 cm³/10 min; lenses, optical; high viscosity; UV stabilized; easy release; high purity; injection molding - melt temperature 280 - 320°C; available in clear tints only

General

Material Status	• Commercial: Active		
Availability	• Africa & Middle East	• Europe	• North America
	• Asia Pacific	• Latin America	
Additive	• UV Stabilizer		
Features	• Good Mold Release	• High Viscosity	
	• High Purity	• UV Stabilized	
Uses	• Lenses	• Optical Applications	
RoHS Compliance	• RoHS Compliant		
Appearance	• Clear/Transparent		
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	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 ²	0.75	%	ISO 294-4
Flow : 0.0787 in ²	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)	130	%	ISO 527-2/50
Nominal Tensile Strain at Break (73°F)	> 50	%	ISO 527-2/50
Flexural Modulus ³ (73°F)	348000	psi	ISO 178
Flexural Stress ³			ISO 178
73°F	14200	psi	
3.5% Strain, 73°F	10700	psi	
Flexural Strain at Flexural Strength ⁴ (73°F)	7.0	%	ISO 178
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength ⁵			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 ⁵		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	16500 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)	257 °F	ISO 75-2/A
Glass Transition Temperature ⁶	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 ⁷ (73°F)	1.4 Btu·in/hr/ft ² /°F	ISO 8302
Flammability	Nominal Value Unit	Test Method
Oxygen Index ⁸	27 %	ISO 4589-2
Flash Ignition Temperature	896 °F	ASTM D1929
Self Ignition Temperature	1022 °F	ASTM D1929
Optical	Nominal Value Unit	Test Method
Refractive Index ⁹	1.586	ISO 489
Light Transmittance		ISO 13468-2
39.37 mil	89.0 %	
78.74 mil	89.0 %	
118.1 mil	88.0 %	

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%
Peripheral Screw Speed: 0.05 - 0.2 m/s
Standard Melt Temperature: 300°C

Notes

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

² 60x60x2mm, 500 bar

³ 0.070 in/min



⁷ Across Flow

⁸ Procedure A

⁹ Method A

