

Makrolon® GF9002

Covestro - Polycarbonates - Polycarbonate

General Information

Product Description

MVR (300°C/1.2 kg) 15 cm³/10 min; 10 % glass fiber reinforced; flame retardant; UL 94V-0/1.2 mm; low viscosity; easy release; injection molding - melt temperature 310 - 330°C; available in opaque colors only; electrical/electronic; housing parts with low wall thickness

General

Material Status	• Commercial: Active		
Availability	• Africa & Middle East	• Europe	• North America
	• Asia Pacific	• Latin America	
Filler / Reinforcement	• Glass Fiber, 10% Filler by Weight		
Additive	• Flame Retardant		
Features	• Flame Retardant	• Good Mold Release	• Low Viscosity
Uses	• Electrical/Electronic Applications	• Housings	• Thin-walled Parts
RoHS Compliance	• RoHS Compliant		
Appearance	• Colors Available	• Opaque	
Processing Method	• Injection Molding		
ISO Designation	• ISO 7391-PC,MFR,(,)-18-9,GF10		

Properties ¹

Physical	Nominal Value	Unit	Test Method
Density (73°F)	1.27	g/cm³	ISO 1183
Apparent (Bulk) Density ²	0.64	g/cm³	ISO 60
Melt Mass-Flow Rate (MFR) (300°C/1.2 kg)	17	g/10 min	ISO 1133
Melt Volume-Flow Rate (MVR) (300°C/1.2 kg)	15	cm³/10min	ISO 1133
Molding Shrinkage ³			ISO 294-4
Across Flow : 536°F, 0.0787 in	0.45	%	
Flow : 0.0787 in	0.50	%	
Water Absorption (Saturation, 73°F)	0.30	%	ISO 62
Water Absorption (Equilibrium, 73°F, 50% RH)	0.10	%	ISO 62
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus (73°F)	566000	psi	ISO 527-1/1
Tensile Stress (Yield, 73°F)	8700	psi	ISO 527-2/5
Tensile Stress (Break, 73°F)	6530	psi	ISO 527-2/5
Tensile Strain (Yield, 73°F)	4.5	%	ISO 527-2/5
Tensile Strain (Break, 73°F)	10	%	ISO 527-2/5
Flexural Modulus ⁴ (73°F)	537000	psi	ISO 178
Flexural Stress ⁴			ISO 178
73°F	15200	psi	
3.5% Strain, 73°F	13100	psi	
Flexural Strain at Flexural Strength ⁵ (73°F)	5.8	%	ISO 178
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength ⁶ (73°F, Complete Break)	3.8	ft·lb/in²	ISO 179/1eA
Charpy Unnotched Impact Strength			ISO 179/1eU
-22°F, Complete Break	> 19	ft·lb/in²	
73°F, Complete Break	> 48	ft·lb/in²	
Multi-Axial Instrumented Impact Energy (73°F)	11.8	ft·lb	ISO 6603-2
Multi-Axial Instrumented Impact Peak Force (73°F)	719	lbf	ISO 6603-2



Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load (264 psi, Unannealed)	270	°F	ISO 75-2/A
Vicat Softening Temperature			
--	288	°F	ISO 306/B120
--	286	°F	ISO 306/B50
CLTE - Flow (73 to 131°F)	2.2E-5	in/in/°F	ISO 11359-2
CLTE - Transverse (73 to 131°F)	3.3E-5	in/in/°F	ISO 11359-2
RTI Elec (0.030 in)	176	°F	UL 746B
RTI Imp (0.030 in)	176	°F	UL 746B
RTI Str (0.030 in)	176	°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)	910	V/mil	IEC 60243-1
Relative Permittivity			IEC 60250
73°F, 100 Hz	3.20		
73°F, 1 MHz	3.20		
Dissipation Factor			IEC 60250
73°F, 100 Hz	1.0E-3		
73°F, 1 MHz	9.0E-3		
Comparative Tracking Index			IEC 60112
Solution A	175	V	
Solution B	125	V	
Flammability	Nominal Value	Unit	Test Method
Flame Rating			UL 94
0.030 in	V-1		
0.05 in	V-0		
Glow Wire Flammability Index			IEC 60695-2-12
0.030 in	1760	°F	
0.06 in	1760	°F	
0.12 in	1760	°F	
Glow Wire Ignition Temperature			IEC 60695-2-13
0.06 in	1470	°F	
0.12 in	1610	°F	
Oxygen Index ⁷	37	%	ISO 4589-2
Burning Rate ⁸ (> 39.4 mil)	passed		ISO 3795

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.



n, 500 bar

n

n



⁶ 3.0 mm

⁷ Procedure A

⁸ US-FMVSS

