

Makrolon® 9417

Polycarbonate

Covestro - Polycarbonates

Message:

MVR (300 °C/1.2 kg) 6.0 cm³/10 min; 10 % glass fiber reinforced; flame retardant; UL 94V-0/1.5 mm and 5VA/3.0 mm; high viscosity; UV stabilized; easy release; injection molding - melt temperature 310 - 330 °C; available in opaque colors only

General Information			
UL YellowCard	E41613-100500840	E41613-583704	
Filler / Reinforcement	Glass Fiber,10% Filler by Weight		
Additive	Flame Retardant		
	UV Stabilizer		
Features	Flame Retardant		
	Good Mold Release		
	High Viscosity		
RoHS Compliance	RoHS Compliant		
Appearance	Colors Available		
	Opaque		
Processing Method	Injection Molding		
Physical	Nominal Value	Unit	Test Method
Density (23°C)	1.27	g/cm³	ISO 1183
Apparent Density ¹	0.64	g/cm³	ISO 60
Melt Mass-Flow Rate (MFR) (300°C/1.2 kg)	7.0	g/10 min	ISO 1133
Melt Volume-Flow Rate (MVR) (300°C/1.2 kg)	6.00	cm³/10min	ISO 1133
Molding Shrinkage			
Across Flow	0.40 to 0.60	%	ISO 2577
Flow	0.40 to 0.60	%	ISO 2577
Across Flow : 2.00 mm ²	0.45	%	ISO 294-4
Flow : 2.00 mm ³	0.60	%	ISO 294-4
Water Absorption			ISO 62
Saturation, 23°C	0.26	%	
Equilibrium, 23°C, 50% RH	0.10	%	
Hardness	Nominal Value	Unit	Test Method
Ball Indentation Hardness	128	MPa	ISO 2039-1
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus (23°C)	3800	MPa	ISO 527-2/1
Tensile Stress			ISO 527-2/5

Yield, 23°C	64.0	MPa	
Break, 23°C	45.0	MPa	
Tensile Strain			ISO 527-2/5
Yield, 23°C	4.6	%	
Break, 23°C	15	%	
Tensile Creep Modulus			ISO 899-1
1 hr	3600	MPa	
1000 hr	2900	MPa	
Flexural Modulus ⁴ (23°C)	3600	MPa	ISO 178
Flexural Stress ⁵			ISO 178
3.5% Strain, 23°C	95.0	MPa	
23°C	105	MPa	
Flexural Strain at Flexural Strength ⁶ (23°C)	5.8	%	ISO 178
Application of Flame from Small Burner - Method K and F (2.00 mm)	K1, F1		DIN 53438-1, -3
Burning Rate - US-FMVSS (> 1.00 mm)	passed		ISO 3795
Flash Ignition Temperature	470	°C	ASTM D1929
Self Ignition Temperature	550	°C	ASTM D1929
Electrolytical Corrosion (23°C)	A1		IEC 60426
ISO Shortname	ISO 7391-PC,MFLR,(,,)-09-9,GF10		
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength ⁷ (23°C, Complete Break)	10	kJ/m ²	ISO 7391
Charpy Unnotched Impact Strength			ISO 179/1eU
-60°C, Complete Break	100	kJ/m ²	
-30°C, Complete Break	120	kJ/m ²	
23°C, Complete Break	150	kJ/m ²	
Notched Izod Impact Strength ⁸ (23°C, Complete Break)	10	kJ/m ²	ISO 7391
Multi-Axial Instrumented Impact Energy			ISO 6603-2
-30°C	15.0	J	
23°C	25.0	J	
Multi-Axial Instrumented Impact Peak Force			ISO 6603-2
-30°C	3700	N	
23°C	4000	N	
Thermal	Nominal Value	Unit	Test Method
Heat Deflection Temperature			
0.45 MPa, Unannealed	141	°C	ISO 75-2/B
1.8 MPa, Unannealed	135	°C	ISO 75-2/A
Vicat Softening Temperature			
--	143	°C	ISO 306/B50
--	144	°C	ISO 306/B120

Ball Pressure Test (136°C)	Pass		IEC 60695-10-2
CLTE			ISO 11359-2
Flow : 23 to 55°C	4.0E-5	cm/cm/°C	
Transverse : 23 to 55°C	6.5E-5	cm/cm/°C	
Thermal Conductivity ⁹ (23°C)	0.22	W/m/K	ISO 8302
RTI Elec (1.50 mm)	125	°C	UL 746
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	ohms	IEC 60093
Volume Resistivity (23°C)	1.0E+16	ohms·cm	IEC 60093
Electric Strength (23°C, 1.00 mm)	36	kV/mm	IEC 60243-1
Relative Permittivity			IEC 60250
23°C, 100 Hz	3.20		
23°C, 1 MHz	3.20		
Dissipation Factor			IEC 60250
23°C, 100 Hz	1.0E-3		
23°C, 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
1.50 mm	V-0		
3.00 mm, NC, BK, GY	5VA		
6.00 mm	5VA		
Glow Wire Flammability Index			IEC 60695-2-12
0.750 mm	960	°C	
1.50 mm	960	°C	
3.00 mm	960	°C	
Glow Wire Ignition Temperature			IEC 60695-2-13
1.00 mm	825	°C	
1.50 mm	900	°C	
3.00 mm	900	°C	
Oxygen Index ¹⁰	35	%	ISO 4589-2
NOTE			
1.	Pellets		
2.	60x60x2 mm, 500 bar		
3.	60x60x2 mm, 500 bar		
4.	2.0 mm/min		
5.	2.0 mm/min		
6.	2 mm/min		

7.	Based on ISO 179-1eA, 3 mm
8.	Based on ISO 180-A, 3 mm
9.	Cross-flow
10.	Procedure A

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Susheng Import & Export Trading Co.,Ltd.

Tel: +86 21 5895 8519

Phone: +86 13424755533

Email: sales@su-jiao.com

No. 215, Lianhe North Road, Fengxian District, Shanghai, China

