

Makrolon® LED2045

Polycarbonate

Covestro - Polycarbonates

Message:

MVR (250 °C/2.16 kg) 17 cm³/10 min; light guides; PC with highest transmission; low viscosity; easy release; injection molding - melt temperature 260 - 300 °C; available in color code 000000 only

General Information			
UL YellowCard	E41613-233171		
Features	Good Mold Release		
	High Clarity		
	Low Viscosity		
Uses	Lighting Applications		
RoHS Compliance	RoHS Compliant		
Processing Method	Injection Molding		
Physical	Nominal Value	Unit	Test Method
Density (23°C)	1.19	g/cm ³	ISO 1183
Apparent Density ¹	0.66	g/cm ³	ISO 60
Melt Volume-Flow Rate (MVR)			ISO 1133
250°C/2.16 kg	17.0	cm ³ /10min	
300°C/1.2 kg	61.0	cm ³ /10min	
Molding Shrinkage ²			ISO 294-4
Across Flow : 2.00 mm	0.65	%	
Flow : 2.00 mm	0.60	%	
Water Absorption			ISO 62
Saturation, 23°C	0.30	%	
Equilibrium, 23°C, 50% RH	0.12	%	
Hardness	Nominal Value	Unit	Test Method
Ball Indentation Hardness	115	MPa	ISO 2039-1
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus (23°C)	2350	MPa	ISO 527-2/1
Tensile Stress			ISO 527-2/50
Yield, 23°C	63.0	MPa	
Break, 23°C	55.0	MPa	
Tensile Strain			ISO 527-2/50
Yield, 23°C	6.0	%	
Break, 23°C	100	%	
Nominal Tensile Strain at Break (23°C)	> 50	%	ISO 527-2/50
Flexural Modulus ³ (23°C)	2350	MPa	ISO 178

Flexural Stress ⁴			ISO 178
3.5% Strain,23°C	72.0	MPa	
23°C	97.0	MPa	
Flexural Strain at Flexural Strength ⁵ (23°C)	7.3	%	ISO 178
Burning Rate - US-FMVSS (> 1.00 mm)	passed		ISO 3795
Flash Ignition Temperature	480	°C	ASTM D1929
Self Ignition Temperature	550	°C	ASTM D1929
ISO Shortname	ISO 7391-PC,MRT,(,,)-24-9		
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength ⁶			ISO 7391
-30°C, Complete Break	12	kJ/m ²	
23°C, Partial Break	50	kJ/m ²	
Charpy Unnotched Impact Strength			ISO 179/1eU
-60°C	No Break		
-30°C	No Break		
23°C	No Break		
Notched Izod Impact Strength ⁷			ISO 7391
-30°C, Complete Break	12	kJ/m ²	
23°C, Partial Break	50	kJ/m ²	
Multi-Axial Instrumented Impact Energy			ISO 6603-2
-30°C	55.0	J	
23°C	50.0	J	
Multi-Axial Instrumented Impact Peak Force			ISO 6603-2
-30°C	5700	N	
23°C	4700	N	
Thermal	Nominal Value	Unit	Test Method
Heat Deflection Temperature			
0.45 MPa, Unannealed	137	°C	ISO 75-2/B
1.8 MPa, Unannealed	124	°C	ISO 75-2/A
Glass Transition Temperature ⁸	144	°C	ISO 11357-2
Vicat Softening Temperature			
--	145	°C	ISO 306/B50
--	146	°C	ISO 306/B120
Ball Pressure Test (136°C)	Pass		IEC 60695-10-2
CLTE			ISO 11359-2
Flow : 23 to 55°C	6.5E-5	cm/cm/°C	
Transverse : 23 to 55°C	6.5E-5	cm/cm/°C	
Thermal Conductivity ⁹ (23°C)	0.20	W/m/K	ISO 8302
RTI Elec (0.710 mm)	125	°C	UL 746
RTI Imp (0.710 mm)	115	°C	UL 746
RTI Str (0.710 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)	34	kV/mm	IEC 60243-1
Relative Permittivity			IEC 60250
23°C, 100 Hz	3.10		
23°C, 1 MHz	3.00		
Dissipation Factor			IEC 60250
23°C, 100 Hz	5.0E-4		
23°C, 1 MHz	9.0E-3		
Comparative Tracking Index			IEC 60112
Solution A	225	V	
Solution B	125	V	
Flammability	Nominal Value	Unit	Test Method
Flame Rating (0.710 mm, NC)	V-2		UL 94
Oxygen Index ¹⁰	27	%	ISO 4589-2
Optical	Nominal Value	Unit	Test Method
Refractive Index ¹¹	1.584		ISO 489
Transmittance			ISO 13468-2
1000 μm	90.0	%	
2000 μm	90.0	%	
3000 μm	> 89.0	%	
4000 μm	> 89.0	%	
4000 μm, 400 nm	> 87.5	%	
Haze (3000 μm)	< 0.50	%	ISO 14782
NOTE			
1.	Pellets		
2.	60x60x2 mm, 500 bar		
3.	2.0 mm/min		
4.	2.0 mm/min		
5.	2 mm/min		
6.	Based on ISO 179-1eA, 3 mm		
7.	Based on ISO 180-A, 3 mm		
8.	10°C/min		
9.	Cross-flow		
10.	Procedure A		
11.	Method A		

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