

Makrolon® 6717

Polycarbonate

Covestro - Polycarbonates

Message:

MVR (300 °C/1.2 kg) 3.0 cm³/10 min; flame retardant; UL 94V-0/2.0 mm; high viscosity; branched; UV stabilized; easy release; injection molding - melt temperature 280 - 320 °C; extrusion; available in transparent, translucent and opaque colors

General Information			
UL YellowCard	E41613-233173		
Additive	Flame Retardant		
	UV Stabilizer		
Features	Flame Retardant		
	Good Mold Release		
	High Viscosity		
RoHS Compliance	RoHS Compliant		
Appearance	Clear/Transparent		
	Colors Available		
	Opaque		
	Translucent		
Processing Method	Extrusion		
	Injection Molding		
Physical	Nominal Value	Unit	Test Method
Density (23°C)	1.20	g/cm ³	ISO 1183
Apparent Density ¹	0.66	g/cm ³	ISO 60
Melt Mass-Flow Rate (MFR) (300°C/1.2 kg)	3.0	g/10 min	ISO 1133
Melt Volume-Flow Rate (MVR) (300°C/1.2 kg)	3.00	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 : 2.00 mm ²	0.75	%	ISO 294-4
Flow : 2.00 mm ³	0.70	%	ISO 294-4
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)	2400	MPa	ISO 527-2/1
Tensile Stress			ISO 527-2/50
Yield, 23°C	67.0	MPa	
Break, 23°C	65.0	MPa	
Tensile Strain			ISO 527-2/50
Yield, 23°C	6.4	%	
Break, 23°C	110	%	
Nominal Tensile Strain at Break (23°C)	> 50	%	ISO 527-2/50
Flexural Modulus ⁴ (23°C)	2400	MPa	ISO 178
Flexural Stress ⁵			ISO 178
3.5% Strain, 23°C	75.0	MPa	
23°C	98.0	MPa	
Flexural Strain at Flexural Strength (23°C) ⁶	7.1	%	ISO 178
Gas Permeation			ISO 2556
Carbon Dioxide : 23°C, 25.4 µm	16900	cm ³ /m ² /bar/24 hr	
Carbon Dioxide : 23°C, 100.0 µm	3800	cm ³ /m ² /bar/24 hr	
Nitrogen : 23°C, 25.4 µm	510	cm ³ /m ² /bar/24 hr	
Nitrogen : 23°C, 100.0 µm	120	cm ³ /m ² /bar/24 hr	
Oxygen : 23°C, 25.4 µm	2760	cm ³ /m ² /bar/24 hr	
Oxygen : 23°C, 100.0 µm	650	cm ³ /m ² /bar/24 hr	
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	450	°C	ASTM D1929
Needle Flame Test			IEC 60695-11-5
Method F : 1.50 mm	2.0	min	
Method F : 2.00 mm	2.0	min	
Method F : 3.00 mm	2.0	min	
Method K : 1.50 mm	2.0	min	
Method K : 2.00 mm	2.0	min	
Method K : 3.00 mm	2.0	min	
Self Ignition Temperature	510	°C	ASTM D1929
Smoke Density - with flame, Ds 4 min	< 200		ASTM E662
Smoke Toxicity			AITM 3.0005
with flame, CO	200	ppm	
with flame, HCL	< 1	ppm	
with flame, HCN	not detectable		
with flame, HF	< 5	ppm	
with flame, NO-NO2	< 5	ppm	
with flame, SO2-H2O	< 20	ppm	
Vertical Bunsen Burner Test			

12 sec : 1.00 mm	passed		FAR 28.853(b)
12 sec : 3.00 mm	passed		FAR 28.853(b)
60sec : 1.00 mm	passed		FAR 28.853(a)
60sec : 3.00 mm	passed		FAR 28.853(a)
ISO Shortname	ISO 7391-PC,MFLR,(,,)-05-9		
Films	Nominal Value	Unit	Test Method
Water Vapor Transmission Rate (23°C, 85% RH, 100 µm)	15	g/m ² /24 hr	ISO 15106-1
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength ⁷			ISO 7391
-30°C, Complete Break	14	kJ/m ²	
23°C, Partial Break	70	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 ⁸			ISO 7391
-30°C, Complete Break	15	kJ/m ²	
23°C, Partial Break	60	kJ/m ²	
Multi-Axial Instrumented Impact Energy			ISO 6603-2
-30°C	65.0	J	
23°C	60.0	J	
Multi-Axial Instrumented Impact Peak Force			ISO 6603-2
-30°C	6400	N	
23°C	5500	N	
Thermal	Nominal Value	Unit	Test Method
Heat Deflection Temperature			
0.45 MPa, Unannealed	139	°C	ISO 75-2/B
1.8 MPa, Unannealed	127	°C	ISO 75-2/A
Glass Transition Temperature ⁹	146	°C	ISO 11357-2
Vicat Softening Temperature			
--	146	°C	ISO 306/B50
--	147	°C	ISO 306/B120
Ball Pressure Test (139°C)	Pass		IEC 60695-10-2
CLTE			ISO 11359-2
Flow : 23 to 55°C	7.0E-5	cm/cm/°C	
Transverse : 23 to 55°C	7.0E-5	cm/cm/°C	
Thermal Conductivity ¹⁰ (23°C)	0.20	W/m/K	ISO 8302
RTI Elec (2.00 mm)	125	°C	UL 746
RTI Imp (2.00 mm)	115	°C	UL 746
RTI Str (2.00 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	1.0E-3		
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 (2.00 mm)	V-0		UL 94
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
0.750 mm	875	°C	
1.50 mm	900	°C	
3.00 mm	900	°C	
Oxygen Index ¹¹	43	%	ISO 4589-2
Optical	Nominal Value	Unit	Test Method
Refractive Index ¹²	1.586		ISO 489
Transmittance			ISO 13468-2
1000 µm	87.0	%	
2000 µm	86.0	%	
3000 µm	85.0	%	
4000 µm	84.0	%	
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.	10°C/min		
10.	Cross-flow		
11.	Procedure A		

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