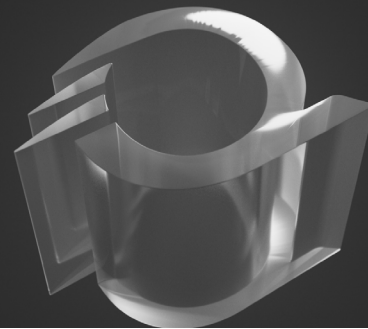




Makrolon® 6717

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

Physical Properties

MEASUREMENT	CONDITION	Value
Density (73°F)	ISO 1183	1.20g/cm ³
Apparent (Bulk) Density ³	ISO 60	0.66g/cm ³
Melt Mass-Flow Rate (MFR) (300°C/1.2 kg)	ISO 1133	3.0g/10 min
Melt Volume-Flow Rate (MVR) (300°C/1.2 kg)	ISO 1133	3.0cm ³ /10min
Molding Shrinkage		
Across Flow	ISO 2577	0.60 to 0.80%
Flow	ISO 2577	0.60 to 0.80%
Across Flow : 536°F, 0.0787 in ⁴	ISO 294-4	0.75%
Flow : 0.0787 in ⁴	ISO 294-4	0.70%
Water Absorption		
Saturation, 73°F	ISO 62	0.30%
Equilibrium, 73°F, 50% RH		0.12%

Hardness Properties

MEASUREMENT	CONDITION	Value
Ball Indentation Hardness	ISO 2039-1	16700psi

Mechanical Properties

MEASUREMENT	CONDITION	Value
Tensile Modulus (73°F)	ISO 527-1/1	348000psi
Tensile Stress		
Yield, 73°F	ISO 527-2/50	9720psi
Break, 73°F		9430psi

Features

- Flame Retardant
- Good Mold Release
- High Viscosity
- UV Stabilized

Processing Method

- Injection Molding
- Extrusion

Colors

- Clear/Transparent
- Colors Available
- Opaque
- Translucent

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Mechanical Properties (continued)

MEASUREMENT	CONDITION	Value
Tensile Strain Yield, 73°F Break, 73°F	ISO 527-2/50	6.4% 110%
Nominal Tensile Strain at Break (73°F)	ISO 527-2/50	> 50%
Flexural Modulus ⁵ (73°F)	ISO 178	348000psi
Flexural Stress ⁵ 73°F 3.5% Strain, 73°F	ISO 178	14200psi 10900psi
Flexural Strain at Flexural Strength ⁶ (73°F)	ISO 178	7.1%

Films

MEASUREMENT	CONDITION	Value
Water Vapor Transmission Rate (73°F, 85% RH, 3.9 mil)	ISO 15106-1	0.97g/100 in ² /24 hr
Carbon Dioxide Permeability (73°F, 1.0 mil)	ISO 2556	16900cm ³ /m ² /bar/24 hr
Gas Permeation Carbon Dioxide : 3.9 mil Nitrogen : 1.0 mil Nitrogen : 3.9 mil Oxygen : 1.0 mil Oxygen : 3.9 mil	ISO 2556	3800cm ³ /m ² /bar/24 hr 510cm ³ /m ² /bar/24 hr 120cm ³ /m ² /bar/24 hr 2760cm ³ /m ² /bar/24 hr 650cm ³ /m ² /bar/24 hr

Impact Properties

MEASUREMENT	CONDITION	Value
Charpy Notched Impact Strength ⁷ -22°F, Complete Break 73°F, Partial Break	ISO 179/1eA	6.7ft·lb/in ² 33ft·lb/in ²
Charpy Unnotched Impact Strength -76°F -22°F 73°F	ISO 179/1eU	No Break No Break No Break

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Impact Properties

MEASUREMENT	CONDITION	Value
Notched Izod Impact Strength ⁷ -22°F, Complete Break 73°F, Partial Break	ISO 180/A	7.1ft·lb/in ² 29ft·lb/in ²
Multi-Axial Instrumented Impact Energy -22°F 73°F	ISO 6603-2	47.9ft·lb 44.3ft·lb
Multi-Axial Instrumented Impact Peak Force -22°F 73°F	ISO 6603-2	1440lbf 1240lbf

Thermal Properties

MEASUREMENT	CONDITION	Value
Deflection Temperature Under Load 66 psi, Unannealed 264 psi, Unannealed	ISO 75-2/B ISO 75-2/A	282°F 261°F
Glass Transition Temperature ⁸	ISO 11357-2	295°F
Vicat Softening Temperature -- --	ISO 306/B120 ISO 306/B50	297°F 295°F
Ball Pressure Test (277°F)	IEC 60695-10-2	Pass
CLTE Flow : 73 to 131°F Transverse : 73 to 131°F	ISO 11359-2	3.9E-5in/in/°F 3.9E-5in/in/°F
Thermal Conductivity ⁹ (73°F)	ISO 8302	1.4 Btu·in/hr/ft ² /°F
RTI Elec (0.08 in)	UL 746B	257°F
RTI Imp (0.08 in)	UL 746B	239°F
RTI Str (0.08 in)	UL 746B	257°F

Electrical Properties

MEASUREMENT	CONDITION	Value
Surface Resistivity	IEC 60093	1.0E+16 ohms
Volume Resistivity (73°F)	IEC 60093	1.0E+16 ohms·cm

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Electrical Properties

MEASUREMENT	CONDITION	Value
Electric Strength (73°F, 0.0394 in)	IEC 60243-1	860 V/mil
Relative Permittivity 73°F, 100 Hz 73°F, 1 MHz	IEC 60250	3.10 3.00
Dissipation Factor 73°F, 100 Hz 73°F, 1 MHz	IEC 60250	1.0E-3 9.0E-3
Comparative Tracking Index Solution A Solution B	IEC 60112	225 V 125 V

Flammability Properties

MEASUREMENT	CONDITION	Value
Flame Rating (0.08 in)	UL 94	V-0
Glow Wire Flammability Index 0.030 in 0.06 in 0.12 in	IEC 60695-2-12	1760°F 1760°F 1760°F
Glow Wire Ignition Temperature 0.030 in 0.06 in 0.12 in	IEC 60695-2-13	1610°F 1650°F 1650°F
Oxygen Index ¹⁰	ISO 4589-2	43%
Application of Flame from Small Burner ¹¹ (78.7 mil)	DIN 53438-1, -3	K1, F1
Burning Rate ¹² (> 39.4 mil)	ISO 3795	passed
Flash Ignition Temperature	ASTM D1929	842°F
Needle Flame Test 59.1 mil ¹³ 59.1 mil ¹⁴ 78.7 mil ¹³ 78.7 mil ¹⁴ 0.12 in ¹³ 0.12 in ¹⁴	IEC 60695-11-5	IEC 60695-11-5
Self Ignition Temperature	ASTM D1929	950°F

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Flammability Properties (continued)

MEASUREMENT	CONDITION	Value
Smoke Density		
with flame, CO ¹⁵	AITM 3.0005	200ppm
with flame, Ds 4 min	ASTM E662	< 200
with flame, HCL ¹⁵	AITM 3.0005	< 1.0 ppm
with flame, HCN ¹⁵	AITM 3.0005	not detectable ppm
with flame, HF ¹⁵	AITM 3.0005	< 5.0 ppm
with flame, NO-NO2 ¹⁵	AITM 3.0005	< 5.0 ppm
with flame, SO2-H2O ¹⁵	AITM 3.0005	< 20 ppm
Vertical Bunsen Burner Test		
39.4 mil ¹⁶	FAR 25.853(a)	passed
39.4 mil ¹⁷	FAR 25.853(b)	passed
0.12 in ¹⁷	FAR 25.853(b)	passed
0.12 in ¹⁶	FAR 25.853(a)	passed

Optical Properties

MEASUREMENT	CONDITION	Value
Refractive Index ¹⁸	ISO 489	1.586
Light Transmittance		
39.37 mil	ISO 13468-2	87.0%
78.74 mil		86.0%
118.1 mil		85.0%
157.5 mil		84.0%

Injection Properties

MEASUREMENT	Value
Drying Temperature - Dry Air Dryer	248°F
Drying Time - Dry Air Dryer	2.0 to 3.0hr
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

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Injection Properties (continued)

MEASUREMENT	Value
Mold Temperature	176 to 248°F
Back Pressure	725 to 2180psi
Vent Depth	9.8E-4 to 3.0E-3in
Standard Melt Temperature	300°C
Hold Pressure (% of Injection Pressure)	50 - 75%
Peripheral Screw Speed	0.05 - 0.2 m/s

Notes

³Pellets

⁴60x60x2mm, 500 bar

⁵0.079 in/min

⁶2.0 mm/min

⁷3 mm

⁸10°C/min

⁹Across Flow

¹⁰Procedure A

¹¹Method K and F

¹²US-FMVSS

¹³Method K

¹⁴Method F

¹⁵BSS 7239

¹⁶60 sec

¹⁷12 sec

¹⁸Method A

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