

# Makrolon® 6455

Polycarbonate

Bayer MaterialScience - Polycarbonates



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## Technical Data

### Product Description

MVR (300 °C/1.2 kg) 12 cm<sup>3</sup>/10 min; chlorine- and bromine-free flame retardancy; UL 94V-0/3.0 mm; medium viscosity; easy release; injection molding - melt temperature 280 - 320 °C; available in transparent, translucent and opaque colors

### General

Material Status	• Commercial: Active
Literature <sup>1</sup>	• <a href="#">Technical Datasheet (Chinese (Traditional))</a> • <a href="#">Technical Datasheet (Chinese)</a> • <a href="#">Technical Datasheet (English)</a> • <a href="#">Technical Datasheet (German)</a>
Search for UL Yellow Card	• <a href="#">Bayer MaterialScience - Polycarbonates</a> • <a href="#">Makrolon®</a>
Availability	• Africa & Middle East • Asia Pacific • Central America • Europe • Latin America • North America • South America
Additive	• Flame Retardant
Features	• Bromine Free • Chlorine Free • Flame Retardant • Good Mold Release • Medium Viscosity
Agency Ratings	• EU 2000/53/EC • EU 2002/96/EC • EU 2003/11/EC
RoHS Compliance	• RoHS Compliant
Appearance	• Clear/Transparent • Colors Available • Opaque • Translucent
Processing Method	• Injection Molding

Physical	Nominal Value (English)	Nominal Value (SI)	Test Method
Density	1.20 g/cm <sup>3</sup>	1.20 g/cm <sup>3</sup>	ISO 1183
Apparent Density	0.64 g/cm <sup>3</sup>	0.64 g/cm <sup>3</sup>	ISO 60
Melt Mass-Flow Rate (MFR) (300°C/1.2 kg)	13 g/10 min	13 g/10 min	ISO 1133
Melt Volume-Flow Rate (MVR) (300°C/1.2 kg)	0.732 in <sup>3</sup> /10min	12.0 cm <sup>3</sup> /10min	ISO 1133
Molding Shrinkage			
Across Flow	0.60 to 0.80 %	0.60 to 0.80 %	ISO 2577
Flow	0.60 to 0.80 %	0.60 to 0.80 %	ISO 2577
Across Flow: 0.0787 in (2.00 mm) <sup>3</sup>	0.70 %	0.70 %	ISO 294-4
Flow: 0.0787 in (2.00 mm) <sup>3</sup>	0.65 %	0.65 %	ISO 294-4
Water Absorption			ISO 62
Saturation, 73°F (23°C)	0.30 %	0.30 %	
Equilibrium, 73°F (23°C), 50% RH	0.12 %	0.12 %	
Mechanical	Nominal Value (English)	Nominal Value (SI)	Test Method
Tensile Modulus (73°F (23°C))	348000 psi	2400 MPa	ISO 527-2/1
Tensile Stress			ISO 527-2/50
Yield, 73°F (23°C)	9570 psi	66.0 MPa	
Break, 73°F (23°C)	9430 psi	65.0 MPa	
Tensile Strain			ISO 527-2/50
Yield, 73°F (23°C)	6.1 %	6.1 %	
Break, 73°F (23°C)	120 %	120 %	
Nominal Tensile Strain at Break			ISO 527-2/50
73°F (23°C)	> 50 %	> 50 %	
Flexural Modulus <sup>4</sup> (73°F (23°C))	348000 psi	2400 MPa	ISO 178
Flexural Strength <sup>4</sup>			ISO 178
3.5% Strain, 73°F (23°C)	10700 psi	74.0 MPa	
73°F (23°C)	14200 psi	98.0 MPa	

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Mechanical	Nominal Value (English)	Nominal Value (SI)	Test Method
Flexural Strain at Flexural Strength <sup>5</sup> 73°F (23°C)	7.1 %	7.1 %	ISO 178
Films	Nominal Value (English)	Nominal Value (SI)	Test Method
Water Vapor Transmission Rate 73°F (23°C), 3.9 mil (100 µm), 85% RH	0.97 g/100 in <sup>2</sup> /24 hr	15 g/m <sup>2</sup> /24 hr	ISO 15106-1
Impact	Nominal Value (English)	Nominal Value (SI)	Test Method
Charpy Notched Impact Strength -22°F (-30°C), Complete Break <sup>6</sup> 73°F (23°C), Partial Break <sup>7</sup>	6.7 ft·lb/in <sup>2</sup> 33 ft·lb/in <sup>2</sup>	14 kJ/m <sup>2</sup> 70 kJ/m <sup>2</sup>	ISO 179/1eA
Charpy Unnotched Impact Strength -22°F (-30°C) 73°F (23°C)	No Break No Break	No Break No Break	ISO 179/1eU
Notched Izod Impact Strength <sup>8</sup> -22°F (-30°C), Complete Break 73°F (23°C), Partial Break	5.7 ft·lb/in <sup>2</sup> 38 ft·lb/in <sup>2</sup>	12 kJ/m <sup>2</sup> 80 kJ/m <sup>2</sup>	ISO 180/A
Multi-Axial Instrumented Impact Energy -22°F (-30°C) 73°F (23°C)	47.9 ft·lb 44.3 ft·lb	65.0 J 60.0 J	ISO 6603-2
Multi-Axial Instrumented Impact Peak Force -22°F (-30°C) 73°F (23°C)	1420 lbf 1210 lbf	6300 N 5400 N	ISO 6603-2
Thermal	Nominal Value (English)	Nominal Value (SI)	Test Method
Heat Deflection Temperature 66 psi (0.45 MPa), Unannealed 264 psi (1.8 MPa), Unannealed	277 °F 255 °F	136 °C 124 °C	ISO 75-2/B ISO 75-2/A
Glass Transition Temperature <sup>9</sup>	293 °F	145 °C	ISO 11357-2
Vicat Softening Temperature -- --	289 °F 291 °F	143 °C 144 °C	ISO 306/B50 ISO 306/B120
Ball Pressure Test (277°F (136°C))	Pass	Pass	IEC 60695-10-2
CLTE			ISO 11359-2
Flow: 73 to 131°F (23 to 55°C) Transverse: 73 to 131°F (23 to 55°C)	0.000036 in/in/°F 0.000036 in/in/°F	0.000065 cm/cm/°C 0.000065 cm/cm/°C	
Thermal Conductivity <sup>10</sup> (73°F (23°C))	1.4 Btu·in/hr/ft <sup>2</sup> /°F	0.20 W/m/K	ISO 8302
RTI Elec (0.0591 in (1.50 mm))	257 °F	125 °C	UL 746
RTI Imp (0.0591 in (1.50 mm))	239 °F	115 °C	UL 746
RTI Str (0.0591 in (1.50 mm))	257 °F	125 °C	UL 746
Electrical	Nominal Value (English)	Nominal Value (SI)	Test Method
Surface Resistivity	1.0E+16 ohm	1.0E+16 ohm	IEC 60093
Volume Resistivity (73°F (23°C))	1.0E+16 ohm·cm	1.0E+16 ohm·cm	IEC 60093
Electric Strength (0.0394 in (1.00 mm))	860 V/mil	34 kV/mm	IEC 60243-1
Relative Permittivity			IEC 60250
73°F (23°C), 100 Hz 73°F (23°C), 1 MHz	3.10 3.00	3.10 3.00	
Dissipation Factor			IEC 60250
73°F (23°C), 100 Hz 73°F (23°C), 1 MHz	0.00080 0.0090	0.00080 0.0090	
Comparative Tracking Index			IEC 60112
Solution A Solution B	225 V 125 V	225 V 125 V	

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Flammability	Nominal Value (English)	Nominal Value (SI)	Test Method
Flame Rating			UL 94
0.0591 in (1.50 mm)	V-2	V-2	
0.118 in (3.00 mm)	V-0	V-0	
Glow Wire Flammability Index			IEC 60695-2-12
0.0394 in (1.00 mm)	1610 °F	875 °C	
0.0591 in (1.50 mm)	1760 °F	960 °C	
0.0787 in (2.00 mm)	1760 °F	960 °C	
0.118 in (3.00 mm)	1760 °F	960 °C	
0.157 in (4.00 mm)	1760 °F	960 °C	
Oxygen Index <sup>11</sup>	35 %	35 %	ISO 4589-2
Burning Rate (> 39.4 mil (> 1.00 mm))	Passed	Passed	ISO 3795
Flash Ignition Temperature	860 °F	460 °C	ASTM D1929
Self Ignition Temperature	986 °F	530 °C	ASTM D1929
Optical	Nominal Value (English)	Nominal Value (SI)	Test Method
Refractive Index <sup>12</sup>	1.586	1.586	ISO 489
Transmittance			ISO 13468-2
39.4 mil (1000 µm)	89.0 %	89.0 %	
78.7 mil (2000 µm)	89.0 %	89.0 %	
118 mil (3000 µm)	88.0 %	88.0 %	
157 mil (4000 µm)	87.0 %	87.0 %	
Additional Information	Nominal Value (English)	Nominal Value (SI)	Test Method
Electrolytical Corrosion	A1	A1	IEC 60426
ISO Shortname	PC,MFR,(,)-18-9	PC,MFR,(,)-18-9	ISO 7391
Injection	Nominal Value (English)	Nominal Value (SI)	
Processing (Melt) Temp	536 to 608 °F	280 to 320 °C	

## Notes

<sup>1</sup> These links provide you with access to supplier literature. We work hard to keep them up to date; however you may find the most current literature from the supplier.

<sup>2</sup> Typical properties: these are not to be construed as specifications.

<sup>3</sup> 60x60x2 mm, 500 bar

<sup>4</sup> 0.079 in/min (2.0 mm/min)

<sup>5</sup> 2 mm/min

<sup>6</sup> 3 mm

<sup>7</sup> 3mm

<sup>8</sup> 3.2mm

<sup>9</sup> 10°C/min

<sup>10</sup> Cross-flow, 50% RH

<sup>11</sup> Procedure A

<sup>12</sup> Method A

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## Where to Buy

### Supplier

#### **Bayer MaterialScience - Polycarbonates**

Leverkusen, Germany  
**Telephone:** +49-214-30-1  
**Web:** <http://plastics.bayer.com/>

### Distributor

#### **Amco Polymers LLC**

**Telephone:** 800-262-6685  
**Web:** <http://www.amco.ws/>  
**Availability:** North America

#### **Bay State Polymer**

**Telephone:** 800-277-7797  
**Web:** <http://www.baystatepolymer.com/>  
**Availability:** North America

#### **M. Holland Canada Company**

**Telephone:** 905-665-1168  
**Web:** <http://www.mholland.com/>  
**Availability:** Canada

#### **M. Holland Company**

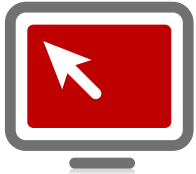
**Telephone:** 855-497-1403  
**Web:** <http://www.mholland.com/>  
**Availability:** Mexico, United States

#### **PolyOne Distribution**

*PolyOne Distribution is a global distribution company. Contact PolyOne Distribution for availability of individual products by country.*  
**Telephone:** 800-894-4266  
**Web:** <http://polyonedistribution.com/>  
**Availability:** Global



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