Makrolon® 2458

Polycarbonate

Covestro - Polycarbonates

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Technical Data

Product Description

MVR (300°C/1.2 kg) 19 cm³/10 min; medical devices; suitable for ETO and steam sterilization at 121°C; biocompatible according to many ISO 10993-1 test requirements; low viscosity; easy release; injection molding - melt temperature 280 - 320°C; available in transparent and opaque colors

General

Material Status	• Commercial: Active		
Availability	• Africa & Middle East • Asia Pacific	• Europe • Latin America	• North America
Features	• Biocompatible • Ethylene Oxide Sterilizable	• Good Mold Release • Low Viscosity	• Steam Sterilizable
Uses	• Medical Devices	• Medical/Healthcare Applications	
Agency Ratings	• ISO 10993-Part 1		
RoHS Compliance	• RoHS Compliant		
Appearance	• Clear/Transparent	• Colors Available	
Processing Method	• Injection Molding		
Multi-Point Data	• Creep Modulus vs. Time (ISO 11403-1) • Isochronous Stress vs. Strain (ISO 11403-1) • Isothermal Stress vs. Strain (ISO 11403-1)	• Secant Modulus vs. Strain (ISO 11403-1) • Shear Modulus vs. Temperature (ISO 11403-1) • Specific Volume vs Temperature (ISO 11403-2)	• Viscosity vs. Shear Rate (ISO 11403-2)

Physical	Nominal Value (English)	Nominal Value (SI)	Test Method
Density (73°F (23°C))	1.20 g/cm³	1.20 g/cm³	ISO 1183
Apparent (Bulk) Density [2]	0.66 g/cm³	0.66 g/cm³	ISO 60
Melt Mass-Flow Rate (MFR) (300°C/1.2 kg)	20 g/10 min	20 g/10 min	ISO 1133
Melt Volume-Flow Rate (MVR) (300°C/1.2 kg)	1.16 in³/10min	19.0 cm³/10min	ISO 1133
Molding Shrinkage			
Across Flow	0.50 to 0.70 %	0.50 to 0.70 %	ISO 2577
Flow	0.50 to 0.70 %	0.50 to 0.70 %	ISO 2577
Across Flow : 536°F (280°C), 0.0787 in (2.00 mm) [3]	0.70 %	0.70 %	ISO 294-4
Flow : 0.0787 in (2.00 mm) [3]	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)	9430 psi	65.0 MPa	
Break, 73°F (23°C)	10200 psi	70.0 MPa	
Tensile Strain			ISO 527-2/50
Yield, 73°F (23°C)	6.1 %	6.1 %	
Break, 73°F (23°C)	130 %	130 %	
Nominal Tensile Strain at Break			ISO 527-2/50
73°F (23°C)	> 50 %	> 50 %	
Tensile Creep Modulus			ISO 899-1
1 hr	319000 psi	2200 MPa	
1000 hr	276000 psi	1900 MPa	
Flexural Modulus [4] (73°F (23°C))	341000 psi	2350 MPa	ISO 178

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Mechanical	Nominal Value (English)	Nominal Value (SI)	Test Method
Flexural Stress [4]			ISO 178
73°F (23°C)	14100 psi	97.0 MPa	
3.5% Strain, 73°F (23°C)	10600 psi	73.0 MPa	
Flexural Strain at Flexural Strength [5]			ISO 178
73°F (23°C)	7.1 %	7.1 %	
Impact	**Nominal Value (English)**	**Nominal Value (SI)**	**Test Method**
Charpy Notched Impact Strength [6]			ISO 179/1eA
-22°F (-30°C), Complete Break	6.7 ft·lb/in²	14 kJ/m²	
73°F (23°C), Partial Break	31 ft·lb/in²	65 kJ/m²	
Charpy Unnotched Impact Strength			ISO 179/1eU
-76°F (-60°C)	No Break	No Break	
-22°F (-30°C)	No Break	No Break	
73°F (23°C)	No Break	No Break	
Notched Izod Impact Strength [6]			ISO 180/A
-22°F (-30°C), Complete Break	7.1 ft·lb/in²	15 kJ/m²	
73°F (23°C), Partial Break	31 ft·lb/in²	65 kJ/m²	
Multi-Axial Instrumented Impact Energy			ISO 6603-2
-22°F (-30°C)	47.9 ft·lb	65.0 J	
73°F (23°C)	40.6 ft·lb	55.0 J	
Multi-Axial Instrumented Impact Peak Force			ISO 6603-2
-22°F (-30°C)	1350 lbf	6000 N	
73°F (23°C)	1150 lbf	5100 N	
Hardness	**Nominal Value (English)**	**Nominal Value (SI)**	**Test Method**
Ball Indentation Hardness	16700 psi	115 MPa	ISO 2039-1
Thermal	**Nominal Value (English)**	**Nominal Value (SI)**	**Test Method**
Heat Deflection Temperature			
66 psi (0.45 MPa), Unannealed	282 °F	139 °C	ISO 75-2/B
264 psi (1.8 MPa), Unannealed	257 °F	125 °C	ISO 75-2/A
Glass Transition Temperature [7]	295 °F	146 °C	ISO 11357-2
Vicat Softening Temperature			
--	293 °F	145 °C	ISO 306/B50
--	295 °F	146 °C	ISO 306/B120
Ball Pressure Test (280°F (138°C))	Pass	Pass	IEC 60695-10-2
CLTE			ISO 11359-2
Flow : 73 to 131°F (23 to 55°C)	3.6E-5 in/in/°F	6.5E-5 cm/cm/°C	
Transverse : 73 to 131°F (23 to 55°C)	3.6E-5 in/in/°F	6.5E-5 cm/cm/°C	
Thermal Conductivity [8] (73°F (23°C))	1.4 Btu·in/hr/ft²/°F	0.20 W/m/K	ISO 8302
Electrical	**Nominal Value (English)**	**Nominal Value (SI)**	**Test Method**
Surface Resistivity	1.0E+16 ohms	1.0E+16 ohms	IEC 60093
Volume Resistivity (73°F (23°C))	1.0E+16 ohms·cm	1.0E+16 ohms·cm	IEC 60093
Electric Strength			IEC 60243-1
73°F (23°C), 0.0394 in (1.00 mm)	860 V/mil	34 kV/mm	
Relative Permittivity			IEC 60250
73°F (23°C), 100 Hz	3.10	3.10	
73°F (23°C), 1 MHz	3.00	3.00	
Dissipation Factor			IEC 60250
73°F (23°C), 100 Hz	5.0E-4	5.0E-4	
73°F (23°C), 1 MHz	9.0E-3	9.0E-3	
Comparative Tracking Index (Solution A)	250 V	250 V	IEC 60112

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Flammability	Nominal Value (English)	Nominal Value (SI)	Test Method
Oxygen Index [9]	28 %	28 %	ISO 4589-2
Flash Ignition Temperature	896 °F	480 °C	ASTM D1929
Self Ignition Temperature	1022 °F	550 °C	ASTM D1929

Optical	Nominal Value (English)	Nominal Value (SI)	Test Method
Refractive Index [10]	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 %	
Haze (118 mil (3000 µm))	< 0.80 %	< 0.80 %	ISO 14782

Additional Information	Nominal Value (English)	Nominal Value (SI)
ISO Shortname	ISO 7391-PC,MR, (,,)-18-9	ISO 7391-PC,MR, (,,)-18-9

Injection	Nominal Value (English)	Nominal Value (SI)
Drying Temperature - Dry Air Dryer	248 °F	120 °C
Drying Time - Dry Air Dryer	4.0 hr	4.0 hr
Suggested Max Moisture	< 0.020 %	< 0.020 %
Suggested Shot Size	30 to 70 %	30 to 70 %
Rear Temperature	482 to 518 °F	250 to 270 °C
Middle Temperature	518 to 554 °F	270 to 290 °C
Front Temperature	545 to 581 °F	285 to 305 °C
Nozzle Temperature	518 to 581 °F	270 to 305 °C
Processing (Melt) Temp	536 to 608 °F	280 to 320 °C
Mold Temperature	158 to 230 °F	70 to 110 °C
Back Pressure	1450 to 2900 psi	10.0 to 20.0 MPa
Vent Depth	9.8E-4 to 3.0E-3 in	0.025 to 0.075 mm

Injection Notes

Peripheral Screw Speed: 0.05 - 0.2 m/s
Hold Pressure (% of Injection Pressure): 50 - 75%
Standard Melt Temperature: 300°C

Notes

[1] Typical properties: these are not to be construed as specifications.
[2] Pellets
[3] 60x60x2mm, 500 bar
[4] 0.079 in/min (2.0 mm/min)
[5] 2 mm/min
[6] 3 mm
[7] 10°C/min
[8] Across Flow
[9] Procedure A
[10] Method A

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Where to Buy

Supplier

Covestro - Polycarbonates
Leverkusen, Germany
Telephone: +49-214-6009-2000
Web: http://www.plastics.covestro.com/

Distributor

ALBIS Plastic
ALBIS Plastic is a global distribution and compounding company. Contact ALBIS Plastic for availability of individual products per country.
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Web: http://www.albis.com/
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Amco Polymers
Telephone: 800-262-6685
Web: http://www.amcopolymers.com/
Availability: North America

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

Reseller

A Reseller is not a distributor authorized by the Supplier.

Shanghai Jingyang New Material Technology Co., Ltd
Telephone: +86-021-80394788; Mr. Zhou: +86-15821998203
Web: http://www.basfppsu.com/
Availability: Asia Pacific, China

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