

Makrolon® 2858

Polycarbonate

Covestro - Polycarbonates

PROSPECTOR®

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Technical Data

Product Description

MVR (300°C/1.2 kg) 9.0 cm³/10 min; medical devices; suitable for ETO and steam sterilization at 121°C; biocompatible according to many ISO 10993-1 test requirements; medium viscosity; easy release; injection molding - melt temperature 280 - 320°C; available in transparent and opaque colors

General

Material Status	• Commercial: Active		
Literature ¹	• Technical Datasheet (Chinese (Traditional)) • Technical Datasheet (Chinese) • Technical Datasheet (English) • Technical Datasheet (German) • Technical Datasheet (Japanese)		
UL Yellow Card ²	• E41613-233141		
Search for UL Yellow Card	• Covestro - Polycarbonates • Makrolon®		
Availability	• Africa & Middle East • Asia Pacific	• Europe • Latin America	• North America
Features	• Biocompatible • Ethylene Oxide Sterilizable	• Good Mold Release • Medium Viscosity	• Steam Sterilizable
Uses	• Medical Devices	• Medical/Healthcare Applications	
Agency Ratings	• ISO 10993-Part 1		
RoHS Compliance	• RoHS Compliant		
Appearance	• Clear/Transparent	• Colors Available	• Opaque
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 Unit	Test Method
Density (23°C)	1.20 g/cm³	ISO 1183
Apparent (Bulk) Density ⁴	0.66 g/cm³	ISO 60
Melt Mass-Flow Rate (MFR) (300°C/1.2 kg)	10 g/10 min	ISO 1133
Melt Volume-Flow Rate (MVR) (300°C/1.2 kg)	9.0 cm³/10min	ISO 1133
Molding Shrinkage		
Across Flow	0.60 to 0.80 %	ISO 2577
Flow	0.60 to 0.80 %	ISO 2577
Across Flow : 280°C, 2.00 mm ⁵	0.75 %	ISO 294-4
Flow : 2.00 mm ⁵	0.70 %	ISO 294-4
Water Absorption		ISO 62
Saturation, 23°C	0.30 %	
Equilibrium, 23°C, 50% RH	0.12 %	
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	66.0 MPa	
Break, 23°C	70.0 MPa	
Tensile Strain		ISO 527-2/50
Yield, 23°C	6.1 %	
Break, 23°C	130 %	
Nominal Tensile Strain at Break (23°C)	> 50 %	ISO 527-2/50



Mechanical	Nominal Value Unit	Test Method
Tensile Creep Modulus		ISO 899-1
1 hr	2200 MPa	
1000 hr	1900 MPa	
Flexural Modulus ⁶ (23°C)	2400 MPa	ISO 178
Flexural Stress ⁶		ISO 178
23°C	97.0 MPa	
3.5% Strain, 23°C	73.0 MPa	
Flexural Strain at Flexural Strength ⁷ (23°C)	7.1 %	ISO 178
Films	Nominal Value Unit	Test Method
Gas Permeation		ISO 2556
Carbon Dioxide : 100.0 µm	3800 cm³/m²/bar/24 hr	
Nitrogen : 100.0 µm	120 cm³/m²/bar/24 hr	
Oxygen : 100.0 µm	650 cm³/m²/bar/24 hr	
Impact	Nominal Value Unit	Test Method
Charpy Notched Impact Strength ⁸		ISO 179/1eA
-30°C, Complete Break	16 kJ/m²	
23°C, Partial Break	75 kJ/m²	
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 180/A
-30°C, Complete Break	15 kJ/m²	
23°C, Partial Break	70 kJ/m²	
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	6300 N	
23°C	5400 N	
Hardness	Nominal Value Unit	Test Method
Ball Indentation Hardness	115 MPa	ISO 2039-1
Thermal	Nominal Value Unit	Test Method
Heat Deflection Temperature		
0.45 MPa, Unannealed	137 °C	ISO 75-2/B
1.8 MPa, Unannealed	125 °C	ISO 75-2/A
Glass Transition Temperature ⁹	145 °C	ISO 11357-2
Vicat Softening Temperature		
--	146 °C	ISO 306/B120
--	145 °C	ISO 306/B50
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 ¹⁰ (23°C)	0.20 W/m/K	ISO 8302



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 (Solution A)	250 V	IEC 60112

Flammability	Nominal Value Unit	Test Method
Glow Wire Flammability Index		IEC 60695-2-12
1.5 mm	850 °C	
3.0 mm	930 °C	
Glow Wire Ignition Temperature		IEC 60695-2-13
0.75 mm	875 °C	
1.5 mm	875 °C	
3.0 mm	900 °C	
Oxygen Index ¹¹	28 %	ISO 4589-2
Flash Ignition Temperature	480 °C	ASTM D1929
Self Ignition Temperature	550 °C	ASTM D1929

Optical	Nominal Value Unit	Test Method
Refractive Index ¹²	1.586	ISO 489
Transmittance		ISO 13468-2
1000 µm	89.0 %	
2000 µm	89.0 %	
3000 µm	88.0 %	
4000 µm	87.0 %	
Haze (3000 µm)	< 0.800 %	ISO 14782

Additional Information	Nominal Value Unit
ISO Shortname	ISO 7391-PC,MR,(,,-)09-9

Injection	Nominal Value Unit
Drying Temperature - Dry Air Dryer	120 °C
Drying Time - Dry Air Dryer	4.0 hr
Suggested Max Moisture	< 0.020 %
Suggested Shot Size	30 to 70 %
Rear Temperature	250 to 270 °C
Middle Temperature	270 to 290 °C
Front Temperature	285 to 305 °C
Nozzle Temperature	270 to 305 °C
Processing (Melt) Temp	280 to 320 °C
Mold Temperature	70 to 110 °C
Back Pressure	10.0 to 20.0 MPa
Vent Depth	0.025 to 0.075 mm

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

Notes

- ¹ 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.
- ² A UL Yellow Card contains UL-verified flammability and electrical characteristics. UL Prospector continually works to link Yellow Cards to individual plastic materials in Prospector, however this list may not include all of the appropriate links. It is important that you verify the association between these Yellow Cards and the plastic material found in Prospector. For a complete listing of Yellow Cards, visit the UL Yellow Card Search.
- ³ Typical properties: these are not to be construed as specifications.
- ⁴ Pellets
- ⁵ 60x60x2mm, 500 bar
- ⁶ 2.0 mm/min
- ⁷ 2 mm/min
- ⁸ 3 mm
- ⁹ 10°C/min
- ¹⁰ Across Flow
- ¹¹ Procedure A
- ¹² Method A



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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Amco Polymers

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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: 440-930-3004

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Availability: Global