

CALIBRE™ MEGARAD™ 2081-10

Polycarbonate Resin

Overview

CALIBRE™ MEGARAD 2081-10 Polycarbonate resin provides end-users of radiation sterilized medical devices a color closer to the water-clear look of the natural resin. When exposed to high energy radiation (gamma or electron beam), CALIBRE MEGARAD 2081-10 resin can reduce the color shift by 50% compared to general purpose polycarbonate resins. CALIBRE 2081-10 resin has undergone biocompatibility testing based on ISO 10993 (Biological Evaluation of Medical Devices) and is suitable for use in approved medical applications.

Main Characteristics

- Stabilized for high energy radiation
- Tested under ISO 10993
- Transparent
- Contains mold release

Applications:

- Medical applications

Physical	Nominal Value (English)	Nominal Value (SI)	Test Method
Density	1.20 g/cm ³	1.20 g/cm ³	ASTM D792 ISO 1183/A
Melt Mass-Flow Rate (MFR) (300°C/1.2 kg)	10 g/10 min	10 g/10 min	ASTM D1238 ISO 1133
Molding Shrinkage - Flow	5.0E-3 to 7.0E-3 in/in	0.50 to 0.70 %	ASTM D955 ISO 294-4
Water Absorption			ASTM D570 ISO 62
24 hr, 73°F (23°C)	0.15 %	0.15 %	
Equilibrium, 73°F (23°C), 50% RH	0.32 %	0.32 %	
Mechanical	Nominal Value (English)	Nominal Value (SI)	Test Method
Tensile Modulus			
-- ¹	320000 psi	2210 MPa	ASTM D638
--	334000 psi	2300 MPa	ISO 527-2/1
Tensile Strength			
Yield ²	9000 psi	62.1 MPa	ASTM D638
Yield	8990 psi	62.0 MPa	ISO 527-2/50
Break ²	9900 psi	68.3 MPa	ASTM D638
Break	9860 psi	68.0 MPa	ISO 527-2/50
Tensile Elongation			
Yield ²	6.0 %	6.0 %	ASTM D638
Yield	6.0 %	6.0 %	ISO 527-2/50
Break ²	150 %	150 %	ASTM D638
Break	150 %	150 %	ISO 527-2/50
Flexural Modulus			
-- ³	350000 psi	2410 MPa	ASTM D790
-- ^{4, 5}	348000 psi	2400 MPa	ISO 178
Flexural Strength			
-- ³	14000 psi	96.5 MPa	ASTM D790
-- ^{4, 5}	14200 psi	98.0 MPa	ISO 178
Taber Abrasion Resistance	45 %	45 %	ASTM D1044

Impact	Nominal Value (English)	Nominal Value (SI)	Test Method
Charpy Notched Impact Strength (73°F (23°C))	17 ft-lb/in ²	35 kJ/m ²	ISO 179/1eA
Notched Izod Impact			
73°F (23°C)	14 ft-lb/in	750 J/m	ASTM D256
73°F (23°C)	37 ft-lb/in ²	78 kJ/m ²	ISO 180/A
Unnotched Izod Impact (73°F (23°C))	No Break	No Break	ASTM D256 ISO 180
Instrumented Dart Impact ⁶			ASTM D3763
73°F (23°C), Total Energy	720 in-lb	81.3 J	
Tensile Impact Strength	180 ft-lb/in ²	378 kJ/m ²	ASTM D1822
Hardness	Nominal Value (English)	Nominal Value (SI)	Test Method
Rockwell Hardness			ASTM D785
M-Scale	73	73	
R-Scale	118	118	
Thermal	Nominal Value (English)	Nominal Value (SI)	Test Method
Deflection Temperature Under Load			
66 psi (0.45 MPa), Annealed	284 °F	140 °C	ASTM D648
264 psi (1.8 MPa), Unannealed	252 °F	122 °C	ASTM D648
264 psi (1.8 MPa), Unannealed	250 °F	121 °C	ISO 75-2/A
264 psi (1.8 MPa), Annealed	279 °F	137 °C	ASTM D648
Vicat Softening Temperature			
--	298 °F	148 °C	ASTM D1525 ⁷
--	289 °F	143 °C	ISO 306/B50
CLTE - Flow (-40 to 180°F (-40 to 82°C))	3.8E-5 in/in/°F	6.8E-5 cm/cm/°C	ASTM D696
Electrical	Nominal Value (English)	Nominal Value (SI)	Test Method
Volume Resistivity	2.0E+17 ohms-cm	2.0E+17 ohms-cm	ASTM D257
Dielectric Strength			
--	420 V/mil	17 kV/mm	ASTM D149
--	430 V/mil	17 kV/mm	IEC 60243-1
Dielectric Constant			ASTM D150
60 Hz	3.00	3.00	
1 MHz	3.00	3.00	
Dissipation Factor			ASTM D150
50 Hz	1.0E-3	1.0E-3	
1 MHz	2.0E-3	2.0E-3	
Optical	Nominal Value (English)	Nominal Value (SI)	Test Method
Refractive Index	1.586	1.586	ASTM D542 ISO 489
Transmittance	85.0 %	85.0 %	ASTM D1003
Haze	1.00 %	1.00 %	ASTM D1003

Notes

These are typical properties only and are not to be construed as specifications. Users should confirm results by their own tests.

¹ 0.039 in/min (1.0 mm/min)

² 2.0 in/min (50 mm/min)

³ Method I (3 point load), 0.079 in/min (2.0 mm/min)

⁴ 0.079 in/min (2.0 mm/min)

⁵ 3-points

⁶ 11.1 ft/sec (3.39 m/sec)

⁷ Rate A (50°C/h), Loading 2 (50 N)



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