

CALIBRE™ MEGARAD™ 2081-12

Polycarbonate Resin

Overview

CALIBRE™ MEGARAD 2081-12 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 2081-12 resin can reduce the color shift by 50% compared to general purpose polycarbonate resins. CALIBRE 2081-12 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 and USP
- 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)	12 g/10 min	12 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	329000 psi	2270 MPa	ASTM D638
--	334000 psi	2300 MPa	ISO 527-2/1
Tensile Strength			
Yield ²	9330 psi	64.3 MPa	ASTM D638
Yield	9460 psi	65.2 MPa	ISO 527-2/50
Break ²	10000 psi	69.1 MPa	ASTM D638
Break	10100 psi	69.6 MPa	ISO 527-2/50
Tensile Elongation			
Yield ²	6.3 %	6.3 %	ASTM D638
Yield	6.1 %	6.1 %	ISO 527-2/50
Break ²	150 %	150 %	ASTM D638
Break	150 %	150 %	ISO 527-2/50
Flexural Modulus			
-- ³	319000 psi	2200 MPa	ASTM D790
-- ^{4, 5}	334000 psi	2300 MPa	ISO 178
Flexural Strength			
-- ³	14500 psi	100 MPa	ASTM D790
-- ^{4, 5}	13900 psi	95.8 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))	12 ft-lb/in ²	25 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)	31 ft-lb/in ²	65 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	769 in-lb	86.9 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	273 °F	134 °C	ASTM D648
264 psi (1.8 MPa), Unannealed	250 °F	121 °C	ASTM D648
264 psi (1.8 MPa), Unannealed	253 °F	123 °C	ISO 75-2/A
264 psi (1.8 MPa), Annealed	257 °F	125 °C	ASTM D648
Vicat Softening Temperature	286 °F	141 °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)

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