

Technical Information



CALIBRE™ MEGARAD™ 2081-15

Polycarbonate Resin

Overview

CALIBRE™ MEGARAD 2081-15 Polycarbonate resin is an injection molding grade designed to reduce the color shift associated with exposure to high energy radiation such as gamma or e-beam sterilization. CALIBRE MEGARAD 2081-15 resin can reduce the sterilization color shift by 50% compared to general purpose polycarbonate resins. CALIBRE 2081-15 resin has undergone biocompatibility testing based on ISO 10993 (Biological Evaluation of Medical Devices) and is suitable for use in approved medical applications. It is available in several purple tint levels depending on the desired appearance.

Main Characteristics:

- Stabilized for gamma and e-beam sterilization
- 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
Melt Mass-Flow Rate (MFR) (300°C/1.2 kg)	15 g/10 min	15 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	0.12 %	0.12 %	
Mechanical	Nominal Value (English)	Nominal Value (SI)	Test Method
Tensile Modulus			
-- ¹	320000 psi	2210 MPa	ASTM D638
--	334000 psi	2300 MPa	ISO 527-1/1
Tensile Strength			
Yield ²	8990 psi	62.0 MPa	ASTM D638
Yield	8990 psi	62.0 MPa	ISO 527-2/50
Break ²	9860 psi	68.0 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	130 %	130 %	ASTM D638
Break	130 %	130 %	ISO 527-2/50
Flexural Modulus			
--	350000 psi	2410 MPa	ASTM D790
-- ^{3, 4}	348000 psi	2400 MPa	ISO 178
Flexural Strength			
--	14000 psi	96.5 MPa	ASTM D790
-- ^{3, 4}	14100 psi	97.0 MPa	ISO 178

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)	36 ft-lb/in ²	75 kJ/m ²	ISO 180/1A
Instrumented Dart Impact ⁵			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 (R-Scale)	118	118	ASTM D785
Thermal	Nominal Value (English)	Nominal Value (SI)	Test Method
Deflection Temperature Under Load			
66 psi (0.45 MPa), Annealed	282 °F	139 °C	ASTM D648
264 psi (1.8 MPa), Unannealed	252 °F	122 °C	ASTM D648
264 psi (1.8 MPa), Unannealed	248 °F	120 °C	ISO 75-2/A
264 psi (1.8 MPa), Annealed	277 °F	136 °C	ASTM D648
Vicat Softening Temperature			
--	289 °F	143 °C	ASTM D1525 ⁶
--	280 °F	138 °C	ISO 306/B50
CLTE - Flow (-40 to 176°F (-40 to 80°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
Light Transmittance	71.0 to 85.0 %	71.0 to 85.0 %	ASTM D1003
Haze	< 2.00 %	< 2.00 %	ASTM D1003
Injection	Nominal Value (English)	Nominal Value (SI)	
Drying Temperature	248 °F	120 °C	
Drying Time	4.0 hr	4.0 hr	
Processing (Melt) Temp	527 to 563 °F	275 to 295 °C	
Mold Temperature	158 to 194 °F	70 to 90 °C	

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 0.079 in/min (2.0 mm/min)

⁴ 3-points

⁵ 11.1 ft/sec (3.39 m/sec)

⁶ Rate B (120°C/h), Loading 1 (10 N)

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