



CALIBRE™ MEGARAD™ 2081-15

Trinseo - Polycarbonate Resin

Tuesday, November 5, 2019

General Information

Product Description

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

General

Material Status	• Commercial: Active
Availability	• Europe • Latin America • North America
Additive	• Mold Release
Features	• Biocompatible
Uses	• Electrical/Electronic Applications • General Purpose • Medical/Healthcare Applications
Agency Ratings	• ISO 10993 ¹
Appearance	• Clear/Transparent
Forms	• Pellets
Processing Method	• Injection Molding

ASTM & ISO Properties ²

Physical	Nominal Value	Unit	Test Method
Density / Specific Gravity	1.20		ASTM D792
Density	1.20	g/cm ³	ISO 1183/A
Density	0.0434	lb/in ³	ISO 1183 ³
Melt Mass-Flow Rate (300°C/1.2 kg)	15	g/10 min	ASTM D1238
Melt Mass-Flow Rate (MFR) (300°C/1.2 kg)	15	g/10 min	ISO 1133
Melt volume-flow rate (300°C/1.2 kg)	12	cm ³ /10min	ISO 1133 ³
Molding Shrinkage - Flow	5.0E-3 to 7.0E-3	in/in	ASTM D955
Molding Shrinkage - Flow	0.50 to 0.70	%	ISO 294-4
Water Absorption (24 hr, 73°F)	0.15	%	ASTM D570
Water Absorption (24 hr, 73°F)	0.15	%	ISO 62
Water Absorption (Equilibrium, 73°F, 50% RH)	0.32	%	ASTM D570
Water Absorption (Equilibrium, 73°F, 50% RH)	0.32	%	ISO 62
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus ⁴	320000	psi	ASTM D638
Tensile Modulus	334000	psi	ISO 527-2/1
Tensile modulus	334000	psi	ISO 527-2 ³

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Mechanical	Nominal Value	Unit	Test Method
Tensile Strength ⁵ (Yield)	9000	psi	ASTM D638
Tensile Stress (Yield)	8990	psi	ISO 527-2/50
Tensile Stress (Yield)	8990	psi	ISO 527-2 ³
Tensile Strength ⁵ (Break)	9900	psi	ASTM D638
Tensile Stress (Break)	9860	psi	ISO 527-2/50
Tensile Elongation ⁵ (Yield)	6.0	%	ASTM D638
Tensile Strain (Yield)	6.0	%	ISO 527-2/50
Tensile Strain (Yield)	6.0	%	ISO 527-2 ³
Tensile Elongation ⁵ (Break)	150	%	ASTM D638
Tensile Strain (Break)	150	%	ISO 527-2/50
Nominal strain at break	> 50	%	ISO 527-2 ³
Flexural Modulus ⁶	350000	psi	ASTM D790
Flexural Modulus ^{7, 8}	348000	psi	ISO 178
Flexural Strength ⁶	14000	psi	ASTM D790
Flexural Stress ^{7, 8}	14200	psi	ISO 178
Taber Abrasion Resistance	45	%	ASTM D1044
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength (73°F)	12	ft-lb/in ²	ISO 179/1eA
Charpy notched impact strength (73°F)	38.1	ft-lb/in ²	ISO 179/1eA ³
Charpy notched impact strength (-22°F)	5.71	ft-lb/in ²	ISO 179/1eA ³
Charpy impact strength (73°F)	No Break		ISO 179/1eU ³
Charpy impact strength (-22°F)	No Break		ISO 179/1eU ³
Notched Izod Impact (73°F)	14	ft-lb/in	ASTM D256
Notched Izod Impact Strength (73°F)	36	ft-lb/in ²	ISO 180/A
Unnotched Izod Impact (73°F)	No Break		ASTM D256
Unnotched Izod Impact Strength (73°F)	No Break		ISO 180
Instrumented Dart Impact ⁹ (73°F, Total Energy)	720	in-lb	ASTM D3763
Tensile Impact Strength	180	ft-lb/in ²	ASTM D1822
Hardness	Nominal Value	Unit	Test Method
Rockwell Hardness (R-Scale)	118		ASTM D785
Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load (66 psi, Annealed)	282	°F	ASTM D648
Deflection Temperature Under Load (66 psi)	279	°F	ISO 75-2 ³
Deflection Temperature Under Load 264 psi, Unannealed	252	°F	ASTM D648
Heat Deflection Temperature (264 psi, Unannealed)	248	°F	ISO 75-2/A
Deflection Temperature Under Load (264 psi, Annealed)	277	°F	ASTM D648
Deflection Temperature Under Load (264 psi)	253	°F	ISO 75-2 ³
Vicat Softening Temperature	298	°F	ASTM D1525 ¹⁰
Vicat Softening Temperature	289	°F	ISO 306/B50
Vicat Softening Temperature (50°C/h, B (50N))	289	°F	ISO 306 ³
CLTE - Flow (-40 to 180°F)	3.8E-5	in/in/°F	ASTM D696
CLTE - Flow	3.9E-5	in/in/°F	ISO 11359-2 ³
Electrical	Nominal Value	Unit	Test Method
Volume Resistivity	2.0E+17	ohms·cm	ASTM D257
Volume resistivity	> 3.9E+14	ohms·in	IEC 60093 ³

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Electrical	Nominal Value	Unit	Test Method
Dielectric Strength	420	V/mil	ASTM D149
Electric strength	430	V/mil	IEC 60243-1 ³
Dielectric Constant			ASTM D150
60 Hz	3.00		
1 MHz	3.00		
Relative Permittivity (100 Hz)	3.00		IEC 60250 ³
Relative Permittivity (1 MHz)	3.00		IEC 60250 ³
Dissipation Factor			ASTM D150
50 Hz	1.0E-3		
1 MHz	2.0E-3		
Dissipation Factor (100 Hz)	1.0E-3		IEC 60250 ³
Dissipation Factor (1 MHz)	2.0E-3		IEC 60250 ³
Flammability	Nominal Value	Unit	Test Method
Burning Behav. at 1.6mm nom. thickn. (0.06 in, UL)	HB		ISO 1210 ³
Burning Behav. at thickness h (0.126 in, UL)	HB		ISO 1210 ³
Optical	Nominal Value	Unit	Test Method
Refractive Index	1.586		ASTM D542
Refractive Index	1.586		ISO 489
Transmittance	89.0	%	ASTM D1003
Haze	1.00	%	ASTM D1003

Notes

¹ Biocompatibility testing following ISO Guidelines 10993 has been completed on select classic resins in this series. Please consult Styron for details. ISO guidelines include a sensitization test.

² Typical properties: these are not to be construed as specifications.

³ Tested in accordance with ISO 10350. 23°C/50%r.h. unless otherwise noted.

⁴ 0.039 in/min

⁵ 2.0 in/min

⁶ Method I (3 point load), 0.079 in/min

⁷ 0.079 in/min

⁸ 3-points

⁹ 11.1 ft/sec

¹⁰ Rate A (50°C/h), Loading 2 (50 N)