



CALIBRE™ MEGARAD™ 2081-15

Trinseo - Polycarbonate Resin

Monday, April 8, 2024

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	• Asia Pacific • Europe • North America
Additive	• Mold Release
Features	• Biocompatible • Good Processability • Radiation Sterilizable
Uses	• Medical Devices • Medical/Healthcare Applications • Surgical Instruments
Agency Ratings	• ISO 10993 ¹
Appearance	• Clear/Transparent
Forms	• Pellets
Processing Method	• Injection Molding

ASTM & ISO Properties²

Physical	Nominal Value	Unit	Test Method
Density / Specific Gravity	1.20		ASTM D792
Density	1.20	g/cm ³	ISO 1183
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
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)	0.12	%	ASTM D570
Water Absorption (Equilibrium, 73°F, 50% RH)	0.12	%	ISO 62
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus ³	320000	psi	ASTM D638
Tensile Modulus	334000	psi	ISO 527-1/1
Tensile Strength ⁴ (Yield)	8990	psi	ASTM D638
Tensile Stress (Yield)	8990	psi	ISO 527-2/50
Tensile Strength ⁴ (Break)	9860	psi	ASTM D638

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Mechanical	Nominal Value	Unit	Test Method
Tensile Stress (Break)	9860	psi	ISO 527-2/50
Tensile Elongation ⁴ (Yield)	6.0	%	ASTM D638
Tensile Strain (Yield)	6.0	%	ISO 527-2/50
Tensile Elongation ⁴ (Break)	130	%	ASTM D638
Tensile Strain (Break)	130	%	ISO 527-2/50
Flexural Modulus	350000	psi	ASTM D790
Flexural Modulus ^{5, 6}	348000	psi	ISO 178
Flexural Strength	14000	psi	ASTM D790
Flexural Stress ^{5, 6}	14100	psi	ISO 178
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength (73°F)	12	ft-lb/in ²	ISO 179/1eA
Notched Izod Impact (73°F)	14	ft-lb/in	ASTM D256
Notched Izod Impact Strength (73°F)	36	ft-lb/in ²	ISO 180/1A
Instrumented Dart Impact ⁷ (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 264 psi, Unannealed	252	°F	ASTM D648
Deflection Temperature Under Load 264 psi, Unannealed	248	°F	ISO 75-2/A
Deflection Temperature Under Load (264 psi, Annealed)	277	°F	ASTM D648
Vicat Softening Temperature	289	°F	ASTM D1525 ⁸
Vicat Softening Temperature	280	°F	ISO 306/B50
CLTE - Flow (-40 to 176°F)	3.8E-5	in/in/°F	ASTM D696
Electrical	Nominal Value	Unit	Test Method
Volume Resistivity	2.0E+17	ohms-cm	ASTM D257
Dielectric Strength	420	V/mil	ASTM D149
Electric Strength	430	V/mil	IEC 60243-1
Dielectric Constant			ASTM D150
60 Hz	3.00		
1 MHz	3.00		
Dissipation Factor			ASTM D150
50 Hz	1.0E-3		
1 MHz	2.0E-3		
Optical	Nominal Value	Unit	Test Method
Refractive Index	1.586		ASTM D542
Refractive Index	1.586		ISO 489
Light Transmittance	71.0 to 85.0	%	ASTM D1003
Haze	< 2.00	%	ASTM D1003

Processing Information

Injection	Nominal Value	Unit
Drying Temperature	248	°F
Drying Time	4.0	hr

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Injection	Nominal Value	Unit
Processing (Melt) Temp	527 to 563	°F
Mold Temperature	158 to 194	°F

Notes

- ¹ Biocompatibility testing following ISO Guidelines 10993 has been completed on select classic resins in this series. Please consult Trinseo for details. ISO guidelines include a sensitization test.
- ² Typical properties: these are not to be construed as specifications.
- ³ 0.039 in/min
- ⁴ 2.0 in/min
- ⁵ 0.079 in/min
- ⁶ 3-points
- ⁷ 11.1 ft/sec
- ⁸ Rate B (120°C/h), Loading 1 (10 N)