



LEXAN™ HPS1R resin

General Information

Product Description

Med/high flow polycarbonate. For medical devices and pharmaceutical applications. Healthcare management of change, biocompatible (ISO10993 or USP Class VI). EtO, e-beam and gamma sterilizable. Contains a higher amount of mold release than HPS1.

General

Material Status	• Commercial: Active		
Availability	• North America		
Additive	• Mold Release		
Features	• Biocompatible	• Ethylene Oxide Sterilizable	• Radiation Sterilizable
	• E-beam Sterilizable	• High Flow	• Steam Sterilizable
Uses	• Medical/Healthcare Applications	• Pharmaceuticals	
Agency Ratings	• ISO 10993	• USP Class VI	
Processing Method	• Injection Molding		

ASTM and ISO Properties ¹

Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.20	g/cm ³	ASTM D792
Specific Volume	0.835	cm ³ /g	ASTM D792
Density	1.19	g/cm ³	ASTM D792
Density	1.20	g/cm ³	ISO 1183
Melt Mass-Flow Rate (MFR) (300°C/1.2 kg)	25	g/10 min	ASTM D1238
Melt Volume-Flow Rate (MVR) (300°C/1.2 kg)	23.0	cm ³ /10min	ISO 1133
Molding Shrinkage - Flow (3.20 mm)	0.50 to 0.70	%	Internal Method
Water Absorption (24 hr)	0.15	%	ASTM D570
Water Absorption			ASTM D570
Equilibrium, 23°C	0.35	%	
Equilibrium, 100°C	0.58	%	
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus ²	2380	MPa	ASTM D638
Tensile Modulus	2350	MPa	ISO 527-2/1
Tensile Strength ³ (Yield)	62.1	MPa	ASTM D638
Tensile Stress (Yield)	63.0	MPa	ISO 527-2/50
Tensile Strength ³ (Break)	65.5	MPa	ASTM D638
Tensile Stress (Break)	50.0	MPa	ISO 527-2/50
Tensile Elongation ³ (Yield)	6.0	%	ASTM D638
Tensile Strain (Yield)	6.0	%	ISO 527-2/50
Tensile Elongation ³ (Break)	120	%	ASTM D638

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Mechanical	Nominal Value	Unit	Test Method
Tensile Strain (Break)	70	%	ISO 527-2/50
Flexural Modulus ⁴ (50.0 mm Span)	2310	MPa	ASTM D790
Flexural Modulus ⁵	2300	MPa	ISO 178
Flexural Strength ^{5, 6}	90.0	MPa	ISO 178
Flexural Strength ⁴ (Yield, 50.0 mm Span)	93.1	MPa	ASTM D790
Taber Abrasion Resistance			ASTM D1044
1000 Cycles, 1000 g, CS-17 Wheel	10.0	mg	
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength ⁷			ISO 179/1eA
-30°C	10	kJ/m²	
23°C	12	kJ/m²	
Notched Izod Impact			ASTM D256
Colors	110 to 640	J/m	
Natural, Tints	640	J/m	
Notched Izod Impact Strength ⁸			ISO 180/1A
-30°C	10	kJ/m²	
23°C	12	kJ/m²	
Unnotched Izod Impact (23°C)	3200	J/m	ASTM D4812
Unnotched Izod Impact Strength ⁸			ISO 180/1U
-30°C	No Break		
23°C	No Break		
Instrumented Dart Impact (23°C, Energy at Peak Load)	54.2	J	ASTM D3763
Gardner Impact (23°C)	169	J	ASTM D3029
Tensile Impact Strength ⁹	378	kJ/m²	ASTM D1822
Hardness	Nominal Value	Unit	Test Method
Rockwell Hardness			ASTM D785
M-Scale	70		
R-Scale	118		
Ball Indentation Hardness (H 358/30)	95.0	MPa	ISO 2039-1
Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load			ASTM D648
0.45 MPa, Unannealed, 6.40 mm	138	°C	
Heat Deflection Temperature ¹⁰			ISO 75-2/Be
0.45 MPa, Unannealed, 100 mm Span	133	°C	
Deflection Temperature Under Load			ASTM D648
1.8 MPa, Unannealed, 6.40 mm	127	°C	
Heat Deflection Temperature ¹⁰			ISO 75-2/Ae
1.8 MPa, Unannealed, 100 mm Span	121	°C	
Vicat Softening Temperature			
--	139	°C	ISO 306/B50
--	140	°C	ISO 306/B120

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Thermal	Nominal Value	Unit	Test Method
Ball Pressure Test (125°C)	Pass		IEC 60695-10-2
CLTE - Flow (-40 to 95°C)	0.000068	cm/cm/°C	ASTM E831
CLTE - Flow (23 to 80°C)	0.000070	cm/cm/°C	ISO 11359-2
Specific Heat	1260	J/kg/°C	ASTM C351
Thermal Conductivity	0.19	W/m/K	ASTM C177
Thermal Conductivity	0.20	W/m/K	ISO 8302
Electrical	Nominal Value	Unit	Test Method
Surface Resistivity	> 1.0E+15	ohm	IEC 60093
Volume Resistivity	> 1.0E+17	ohm·cm	ASTM D257
Volume Resistivity	> 1.0E+15	ohm·cm	IEC 60093
Dielectric Strength (3.20 mm, in Air)	15	kV/mm	ASTM D149
Electric Strength (3.20 mm, in Oil)	17	kV/mm	IEC 60243-1
Dielectric Constant			ASTM D150
50 Hz	3.17		
60 Hz	3.17		
1 MHz	2.96		
Relative Permittivity			IEC 60250
50 Hz	2.70		
60 Hz	2.70		
1 MHz	2.70		
Dissipation Factor			ASTM D150
50 Hz	0.00090		
60 Hz	0.00090		
1 MHz	0.010		
Dissipation Factor			IEC 60250
50 Hz	0.0010		
60 Hz	0.0010		
1 MHz	0.010		
Flammability	Nominal Value	Unit	Test Method
Oxygen Index	25	%	ISO 4589-2
Optical	Nominal Value	Unit	Test Method
Refractive Index	1.586		ASTM D542
Transmittance (2540 μm)	88.0	%	ASTM D1003
Haze (2540 μm)	1.0	%	ASTM D1003
Processing Information			
Injection	Nominal Value	Unit	
Drying Temperature	121	°C	
Drying Time	3.0 to 4.0	hr	
Drying Time, Maximum	48	hr	
Suggested Max Moisture	0.020	%	
Suggested Shot Size	40 to 60	%	

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Injection	Nominal Value	Unit
Rear Temperature	249 to 271	°C
Middle Temperature	260 to 282	°C
Front Temperature	271 to 293	°C
Nozzle Temperature	266 to 288	°C
Processing (Melt) Temp	271 to 293	°C
Mold Temperature	71.1 to 93.3	°C
Back Pressure	0.345 to 0.689	MPa
Screw Speed	40 to 70	rpm
Vent Depth	0.025 to 0.076	mm

Notes

¹ Typical properties: these are not to be construed as specifications.

² 50 mm/min

³ Type I, 50 mm/min

⁴ 1.3 mm/min

⁵ 2.0 mm/min

⁶ Yield

⁷ 80*10*4 sp=62mm

⁸ 80*10*4

⁹ Type S

¹⁰ 120*10*4 mm