

LEXAN* HP4 Resin

General Information

Product Description

Medium flow polycarbonate. For medical devices and pharmaceutical applications. Healthcare management of change, biocompatible (ISO10993 or USP Class VI). EtO and steam sterilizable. Contains mold release.

General

Material Status	• Commercial: Active		
Availability	• North America		
Additive	• Mold Release		
Features	• Biocompatible • Ethylene Oxide Sterilizable	• Medium Flow • Steam Sterilizable	
Uses	• Medical/Healthcare Applications	• Pharmaceuticals	
Agency Ratings	• ISO 10993	• USP Class VI	
Processing Method	• Injection Molding		
Multi-Point Data	• Elastic Modulus vs Temperature (ASTM D4065) • Flexural DMA (ASTM D4065)	• Specific Heat vs. Temperature (ASTM D3417) • Tensile Creep (ASTM D2990)	• Tensile Stress vs. Strain (ASTM D638)

ASTM & ISO Properties ¹

Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.20	g/cm ³	ASTM D792
Specific Volume	0.830	cm ³ /g	ASTM D792
Density	1.19	g/cm ³	ASTM D792
Melt Mass-Flow Rate (MFR) (300°C/1.2 kg)	11	g/10 min	ASTM D1238
Melt Volume-Flow Rate (MVR) (300°C/1.2 kg)	10.0	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	2370	MPa	ASTM D638
Tensile Modulus	2350	MPa	ISO 527-2/1
Tensile Strength ³ (Yield)	62.0	MPa	ASTM D638
Tensile Stress (Yield)	63.0	MPa	ISO 527-2/50
Tensile Strength ³ (Break)	68.0	MPa	ASTM D638
Tensile Stress (Break)	70.0	MPa	ISO 527-2/50
Tensile Elongation ³ (Yield)	7.0	%	ASTM D638
Tensile Strain (Yield)	6.0	%	ISO 527-2/50

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Mechanical	Nominal Value	Unit	Test Method
Tensile Elongation ³ (Break)	130	%	ASTM D638
Tensile Strain (Break)	110	%	ISO 527-2/50
Flexural Modulus ⁴ (50.0 mm Span)	2340	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)	97.0	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 (23°C)	35	kJ/m ²	ISO 179/2C
Notched Izod Impact			ASTM D256
Colors	800	J/m	
Natural, Tints	800	J/m	
23°C	800	J/m	
Notched Izod Impact Strength ⁷			ISO 180/1A
-30°C	10	kJ/m ²	
23°C	12	kJ/m ²	
Unnotched Izod Impact (23°C)	3200	J/m	ASTM D4812
Instrumented Dart Impact (23°C, Energy at Peak Load)	63.0	J	ASTM D3763
Gardner Impact (23°C)	169	J	ASTM D3029
Tensile Impact Strength ⁸	577	kJ/m ²	ASTM D1822
Hardness	Nominal Value	Unit	Test Method
Rockwell Hardness			ASTM D785
M-Scale	70		
R-Scale	118		
Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load			ASTM D648
0.45 MPa, Unannealed, 6.40 mm	137	°C	
Heat Deflection Temperature ⁹			ISO 75-2/Be
0.45 MPa, Unannealed, 100 mm Span	136	°C	
Deflection Temperature Under Load			ASTM D648
1.8 MPa, Unannealed, 6.40 mm	132	°C	
Heat Deflection Temperature ⁹			ISO 75-2/Ae
1.8 MPa, Unannealed, 100 mm Span	125	°C	
Vicat Softening Temperature	154	°C	ASTM D1525 ¹⁰
Vicat Softening Temperature			
--	153	°C	ISO 306/A50
--	141	°C	ISO 306/B50
--	142	°C	ISO 306/B120
Ball Pressure Test (125°C)	Pass		IEC 60695-10-2
CLTE - Flow (-40 to 95°C)	0.000068	cm/cm/°C	ASTM E831

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Thermal	Nominal Value	Unit	Test Method
CLTE - Flow (23 to 80°C)	0.000070	cm/cm/°C	ISO 11359-2
Specific Heat	1250	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	ohms	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
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		
Electric Strength (3.20 mm, in Oil)	17	kV/mm	IEC 60243-1
Flammability	Nominal Value	Unit	Test Method
Flame Rating - UL (1.47 mm)	HB		UL 94
Oxygen Index	25	%	ASTM D2863
Oxygen Index	25	%	ISO 4589-2
UL	Nominal Value	Unit	Test Method
RTI Str	130	°C	UL 746
RTI Imp	130	°C	UL 746
RTI Elec	130	°C	UL 746
Comparative Tracking Index (CTI) (PLC)	PLC 2		UL 746
High Voltage Arc Tracking Rate (HVTR) (PLC)	PLC 2		UL 746
Hot-wire Ignition (HWI) (PLC)	PLC 2		UL 746
High Amp Arc Ignition (HAI) (PLC)	PLC 1		UL 746
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

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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	%
Rear Temperature	271 to 293	°C
Middle Temperature	282 to 304	°C
Front Temperature	293 to 316	°C
Nozzle Temperature	288 to 310	°C
Processing (Melt) Temp	293 to 316	°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

⁸ Type S

⁹ 120*10*4 mm

¹⁰ Rate B (120°C/h), Loading 2 (50 N)