

LEXAN* EXL1414 Resin

General Information

Product Description

Lexan* EXL1414 polycarbonate (PC) siloxane copolymer resin is a medium flow opaque injection molding (IM) grade. This resin offers extreme low temperature (-40 C) ductility in combination with excellent processability and release with opportunities for shorter IM cycle times compared to standard PC. Lexan EXL1414 resin is a product available in wide range of opaque colors and may be an excellent candidate for a wide variety of applications.

General

Material Status	• Commercial: Active		
Availability	• North America		
Features	• Copolymer • Ductile • Fast Molding Cycle	• General Purpose • Good Mold Release • Good Processability	• Medium Flow
Uses	• General Purpose		
Appearance	• Colors Available	• Opaque	
Processing Method	• Injection Molding		
Multi-Point Data	• Coefficient of Thermal Expansion vs. Temperature (ASTM E831) • Flexural DMA (ASTM D4065) • Pressure-Volume-Temperature (PVT - Zoller Method) • Shear DMA (ASTM D4065) • Specific Heat vs. Temperature (ASTM D3417) • Tensile Fatigue • Tensile Stress vs. Strain (ASTM D638) • Thermal Conductivity vs. Temperature (ASTM E1530) • Viscosity vs. Shear Rate (ASTM D3835)		

ASTM & ISO Properties ¹

Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.18	g/cm ³	ASTM D792
Density	1.19	g/cm ³	ISO 1183
Melt Mass-Flow Rate (MFR) (300°C/1.2 kg)	10	g/10 min	ASTM D1238
Melt Volume-Flow Rate (MVR) (300°C/1.2 kg)	9.00	cm ³ /10min	ISO 1133
Molding Shrinkage - Flow (3.20 mm)	0.40 to 0.80	%	Internal Method
Molding Shrinkage - Across Flow (3.20 mm)	0.40 to 0.80	%	Internal Method
Water Absorption (Saturation, 23°C)	0.35	%	ISO 62
Water Absorption (Equilibrium, 23°C, 50% RH)	0.15	%	ISO 62
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus ²	2020	MPa	ASTM D638
Tensile Modulus	2150	MPa	ISO 527-2/1
Tensile Strength ³ (Yield)	55.5	MPa	ASTM D638
Tensile Stress (Yield)	57.0	MPa	ISO 527-2/50
Tensile Strength ³ (Break)	50.3	MPa	ASTM D638

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Mechanical	Nominal Value	Unit	Test Method
Tensile Stress (Break)	60.0	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)	98	%	ASTM D638
Tensile Strain (Break)	120	%	ISO 527-2/50
Flexural Modulus ⁴ (50.0 mm Span)	2230	MPa	ASTM D790
Flexural Modulus ⁵	2250	MPa	ISO 178
Flexural Strength ^{5, 6}	85.0	MPa	ISO 178
Flexural Strength ⁴ (Yield, 50.0 mm Span)	92.4	MPa	ASTM D790
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength ⁷			ISO 179/1eA
-30°C	65	kJ/m²	
23°C	70	kJ/m²	
Charpy Unnotched Impact Strength ⁷			ISO 179/1eU
-30°C	No Break		
23°C	No Break		
Notched Izod Impact			ASTM D256
-30°C	770	J/m	
23°C	870	J/m	
Notched Izod Impact Strength ⁸			ISO 180/1A
-30°C	60	kJ/m²	
23°C	70	kJ/m²	
Unnotched Izod Impact Strength ⁸			ISO 180/1U
-30°C	No Break		
23°C	No Break		
Instrumented Dart Impact (23°C, Total Energy)	70.0	J	ASTM D3763
Hardness	Nominal Value	Unit	Test Method
Rockwell Hardness			ASTM D785
L-Scale	89		
R-Scale	121		
Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load			ASTM D648
0.45 MPa, Unannealed, 3.20 mm	139	°C	
Heat Deflection Temperature ⁹			ISO 75-2/Be
0.45 MPa, Unannealed, 100 mm Span	140	°C	
Deflection Temperature Under Load			ASTM D648
1.8 MPa, Unannealed, 3.20 mm	124	°C	
Heat Deflection Temperature ⁹			ISO 75-2/Ae
1.8 MPa, Unannealed, 100 mm Span	128	°C	
Vicat Softening Temperature	145	°C	ASTM D1525 ¹⁰

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Thermal	Nominal Value	Unit	Test Method
Vicat Softening Temperature			
--	145	°C	ISO 306/B50
--	146	°C	ISO 306/B120
Ball Pressure Test (125°C)	Pass		IEC 60695-10-2
CLTE - Flow (-40 to 40°C)	0.000070	cm/cm/°C	ASTM E831
CLTE - Flow (23 to 80°C)	0.000072	cm/cm/°C	ISO 11359-2
CLTE - Transverse (-40 to 40°C)	0.000075	cm/cm/°C	ASTM E831
CLTE - Transverse (23 to 80°C)	0.000072	cm/cm/°C	ISO 11359-2
Electrical	Nominal Value	Unit	Test Method
Surface Resistivity	> 1.0E+15	ohms	ASTM D257
Volume Resistivity	> 1.0E+15	ohm·cm	ASTM D257
Dielectric Strength (0.800 mm, in Oil)	16	kV/mm	ASTM D149
Dielectric Constant			ASTM D150
100 Hz	2.68		
1 MHz	2.64		
Dissipation Factor			ASTM D150
100 Hz	0.0012		
1 MHz	0.0093		
Flammability	Nominal Value	Unit	Test Method
Flame Rating - UL (0.400 mm)	HB		UL 94
Glow Wire Flammability Index			IEC 60695-2-12
0.800 mm	850	°C	
1.00 mm	960	°C	
Glow Wire Ignition Temperature			IEC 60695-2-13
1.00 mm	875	°C	
3.00 mm	875	°C	
UL	Nominal Value	Unit	Test Method
RTI Str	125	°C	UL 746
RTI Imp	120	°C	UL 746
RTI Elec	130	°C	UL 746

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	217 to 293	°C	
Middle Temperature	282 to 304	°C	
Front Temperature	293 to 316	°C	
Nozzle Temperature	288 to 310	°C	

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Injection	Nominal Value	Unit
Processing (Melt) Temp	293 to 316	°C
Mold Temperature	71.0 to 93.0	°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*3 sp=62mm
⁸ 80*10*3
⁹ 120*10*4 mm
¹⁰ Rate B (120°C/h), Loading 2 (50 N)