LNP™ ELCRES™ EXL7414L

DESCRIPTION

ELCRES EXL7414L polycarbonate (PC) siloxane copolymer resin is a medium flow, non-chlorinated, non-brominated flame retardant opaque grade. This resin offers excellent low temperature ductility (-40C), extremely thin wall flame retardant capability with UL94 V0 at 0.6mm, and in combination with excellent processability and release with opportunities for shorter cycle times compared to standard PC. ELCRES EXL7414L resin is a product available in wide range of opaque colors and excellent candidate for a wide variety of applications, such as the battery cover of fast-charging mobile phones that need to be compliant with IEC62368-1.

GENERAL INFORMATION	
Features	Flame Retardant, Good Processability, Non Cl/Br flame retardant, Non halogenated flame retardant, Enhanced mold release, Impact resistant, Low temperature impact
Fillers	Unreinforced
Polymer Types	Polycarbonate (PC)
Processing Techniques	Injection Molding

INDUSTRY	SUB INDUSTRY
Automotive	Aerospace, Recreational/Specialty Vehicles
Building and Construction	Building Component
Consumer	Personal Accessory, Home Appliances
Electrical and Electronics	Mobile Phone - Computer - Tablets, Lighting
Hygiene and Healthcare	General Healthcare
Industrial	Electrical, Defense

TYPICAL PROPERTY VALUES

Revision 20231109

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL [1]			
Tensile Stress, yld, Type I, 50 mm/min	53	MPa	ASTM D638
Tensile Stress, brk, Type I, 50 mm/min	57	MPa	ASTM D638
Tensile Strain, yld, Type I, 50 mm/min	5.3	%	ASTM D638
Tensile Strain, brk, Type I, 50 mm/min	90	%	ASTM D638
Tensile Modulus, 50 mm/min	2150	MPa	ASTM D638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	87	MPa	ASTM D790
Flexural Modulus, 1.3 mm/min, 50 mm span	2220	MPa	ASTM D790
Tensile Stress, yield, 50 mm/min	54	MPa	ISO 527
Tensile Stress, break, 50 mm/min	47	MPa	ISO 527
Tensile Strain, yield, 50 mm/min	5.3	%	ISO 527
Tensile Strain, break, 50 mm/min	80	%	ISO 527
Tensile Modulus, 1 mm/min	2180	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	81	MPa	ISO 178
Flexural Modulus, 2 mm/min	2200	MPa	ISO 178
Hardness, Rockwell L	84	-	ASTM D785
Hardness, Rockwell R	117	-	ASTM D785

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
IMPACT [1]			
Izod Impact, notched, 23°C	890	J/m	ASTM D256
Izod Impact, notched, 0°C	830	J/m	ASTM D256
Izod Impact, notched, -30°C	690	J/m	ASTM D256
Izod Impact, notched, -40°C	600	J/m	ASTM D256
Instrumented Dart Impact Total Energy, 23°C	72	J	ASTM D3763
Instrumented Dart Impact Total Energy, -30°C	67	J	ASTM D3763
Izod Impact, notched 80*10*3 +23°C	74	kJ/m²	ISO 180/1A
Izod Impact, notched 80*10*3 -30°C	70	kJ/m²	ISO 180/1A
Charpy 23°C, V-notch Edgew 80*10*3 sp=62mm	79	kJ/m²	ISO 179/1eA
Charpy -30°C, V-notch Edgew 80*10*3 sp=62mm	67	kJ/m²	ISO 179/1eA
THERMAL [1]			
HDT, 0.45 MPa, 3.2 mm, unannealed	116	°C	ASTM D648
HDT, 1.82 MPa, 3.2mm, unannealed	104	°C	ASTM D648
CTE, -40°C to 40°C, flow	8.0E-05	1/°C	ASTM E831
CTE, -40°C to 40°C, xflow	9.0E-05	1/°C	ASTM E831
CTE, 23°C to 80°C, flow	9.0E-05	1/°C	ISO 11359-2
CTE, 23°C to 80°C, xflow	1.0E-04	1/°C	ISO 11359-2
Vicat Softening Temp, Rate B/50	123	°C	ISO 306
Vicat Softening Temp, Rate B/120	124	°C	ISO 306
HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm	117	°C	ISO 75/Bf
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	106	°C	ISO 75/Af
PHYSICAL [1]			
Specific Gravity	1.20	-	ASTM D792
Mold Shrinkage, flow, 3.2 mm [2]	0.4 – 0.8	%	SABIC method
Mold Shrinkage, xflow, 3.2 mm [2]	0.4 – 0.8	%	SABIC method
Melt Flow Rate, 300°C/1.2 kgf	11	g/10 min	ASTM D1238
Density	1.20	g/cm³	ISO 1183
Melt Volume Rate, MVR at 300°C/1.2 kg	10	cm³/10 min	ISO 1133
ELECTRICAL [1]			
Volume Resistivity	>1.E+16	Ω.cm	ASTM D257
Surface Resistivity	>1.E+16	Ω	ASTM D257
Dielectric Constant, 1.1 GHz	2.86	-	SABIC method
Dielectric Constant, 1.9 GHz	2.81	-	SABIC method
Dielectric Constant, 5 GHz	2.81	-	SABIC method
Dielectric Constant, 10 GHz	2.84	-	SABIC method
Dissipation Factor, 1.1 GHz	0.065	-	SABIC method
Dissipation Factor, 1.9 GHz	0.006	-	SABIC method
Dissipation Factor, 5 GHz	0.006	-	SABIC method
Dissipation Factor, 10 GHz	0.006	-	SABIC method
FLAME CHARACTERISTICS [3]			
Oxygen Index (LOI)	37	%	ISO 4589
UL Yellow Card Link	E207780-104519430	-	-
UL Recognized, 94V-0 Flame Class Rating	≥0.6	mm	UL 94
UL Recognized, 94-5VB Flame Class Rating	≥3.0	mm	UL 94

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Glow Wire Flammability Index 960°C, passes at	1	mm	IEC 60695-2-12
Glow Wire Ignitability Temperature, 1.0 mm	850	°C	IEC 60695-2-13
INJECTION MOLDING [4]			
Drying Temperature	110	°C	
Drying Time	3 – 4	Hrs	
Drying Time (Cumulative)	48	Hrs	
Maximum Moisture Content	0.02	%	
Melt Temperature	295 – 315	°C	
Nozzle Temperature	290 – 310	°C	
Front - Zone 3 Temperature	295 – 315	°C	
Middle - Zone 2 Temperature	280 – 305	°C	
Rear - Zone 1 Temperature	270 – 295	°C	
Mold Temperature	70 – 95	°C	
Back Pressure	0.3 – 0.7	MPa	
Screw Speed	40 – 70	rpm	
Shot to Cylinder Size	40 – 60	%	
Vent Depth	0.025 – 0.076	mm	

(1) The information stated on Technical Datasheets should be used as indicative only for material selection purposes and not be utilized as specification or used for part or tool design.

(2) Measurements made from laboratory test coupon. Actual shrinkage may vary outside of range due to differences in processing conditions, equipment, part geometry and tool design. It is recommended that mold shrinkage studies be performed with surrogate or legacy tooling prior to cutting tools for new molded article.

(3) UL Ratings shown on the technical datasheet might not cover the full range of thicknesses and colors. For details, please see the UL Yellow Card.

(4) Injection Molding parameters are only mentioned as general guidelines. These may not apply or may need adjustment in specific situations such as low shot sizes, large part molding, thin wall molding and gas-assist molding.

DISCLAIMER