NORYL™ RESIN SE1X

REGION ASIA

DESCRIPTION

NORYL™ SE1X resin is a non-reinforced blend of polyphenylene ether (PPE) + high impact polystyrene (HIPS). This injection moldable grade contains non-brominated, non-chlorinated flame retardant and carries a UL94 flame rating of V0/V1 at 1.5mm along with a UL746C Outdoor Suitability rating of F1. NORYL SE1X resin offers strong electrical performance, low moisture absorption, dimensional stability, and hydrolytic stability. This material is an excellent candidate for indoor and outdoor electrical enclosures , heating ventilation / air conditioning (HVAC) applications, and solar / photovoltaic (PV) junction box applications. *for enhanced processing version, please see NORYL NH5120 resin grade.

TYPICAL PROPERTY VALUES

Revision 20190717

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL			
Tensile Stress, yld, Type I, 50 mm/min	65	MPa	ASTM D 638
Tensile Stress, brk, Type I, 50 mm/min	53	MPa	ASTM D 638
Tensile Strain, yld, Type I, 50 mm/min	4	%	ASTM D 638
Tensile Strain, brk, Type I, 50 mm/min	15	%	ASTM D 638
Flexural Stress, yld, 2.6 mm/min, 100 mm span	100	MPa	ASTM D 790
Flexural Modulus, 2.6 mm/min, 100 mm span	2400	MPa	ASTM D 790
IMPACT			
Izod Impact, notched, 23°C	180	J/m	ASTM D 256
Izod Impact, notched, -30°C	106	J/m	ASTM D 256
Instrumented Impact Energy @ peak, 23°C	51	J	ASTM D 3763
Instrumented Impact Energy @ peak, -30	32	J	ASTM D 3763
THERMAL			
HDT, 0.45 MPa, 6.4 mm, unannealed	126	°C	ASTM D 648
HDT, 1.82 MPa, 6.4 mm, unannealed	118	°C	ASTM D 648
Relative Temp Index, Elec [(1)]	110	°C	UL 746B
Relative Temp Index, Mech w/impact [(1)]	105	°C	UL 746B
Relative Temp Index, Mech w/o impact [(1)]	110	°C	UL 746B
PHYSICAL			
Specific Gravity	1.1	-	ASTM D 792
Water Absorption, 24 hours	0.06	%	ASTM D 570
Mold Shrinkage, flow, 3.2 mm	0.5 – 0.7	%	SABIC method
Mold Shrinkage on Tensile Bar, xflow	0.5 – 0.7	%	SABIC method
ELECTRICAL			
Volume Resistivity	2.3E+16	Ohm-cm	ASTM D 257
Surface Resistivity	>1.E+15	Ohm	ASTM D 257
Dielectric Strength, in oil, 3.2 mm	18.1	kV/mm	ASTM D 149
Relative Permittivity, 50/60 Hz	2.52	-	ASTM D 150
Relative Permittivity, 1 MHz	2.46	-	ASTM D 150
Dissipation Factor, 50/60 Hz	0.0034	-	ASTM D 150
Dissipation Factor, 1 MHz	0.0021	-	ASTM D 150
Arc Resistance, Tungsten {PLC}	6	PLC Code	ASTM D 495

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PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
High Voltage Arc Track Rate {PLC}	4	PLC Code	UL 746A
Comparative Tracking Index (UL) {PLC}	1	PLC Code	UL 746A
High Amp Arc Ignition (HAI), PLC 0	≥1.5	mm	UL 746A
Hot-Wire Ignition (HWI), PLC 0	≥1.5	mm	UL 746A
FLAME CHARACTERISTICS [1]			
UL Yellow Card Link	E207780-100107147	-	-
UL Yellow Card Link 2	E45587-100107136	-	-
UL Recognized, 94V-0 Flame Class Rating	≥6	mm	UL 94
UL Recognized, 94V-1 Flame Class Rating	≥1.5	mm	UL 94
Glow Wire Flammability Index, 1.0 mm	900	°C	IEC 60695-2-12
Glow Wire Flammability Index, 1.5 mm	900	°C	IEC 60695-2-12
Glow Wire Flammability Index, 2.0 mm	960	°C	IEC 60695-2-12
Glow Wire Flammability Index, 3.0 mm	960	°C	IEC 60695-2-12
Glow Wire Ignitability Temperature, 1.0 mm	700	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 1.5 mm	700	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 2.0 mm	725	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 3.0 mm	725	°C	IEC 60695-2-13
Radiant Panel Listing	RP100	-	UL Tested
UV-light, water exposure/immersion	F1	-	UL 746C
INJECTION MOLDING			
Drying Temperature	105 – 110	°C	
Drying Time	3 – 4	hrs	
Drying Time (Cumulative)	8	hrs	
Maximum Moisture Content	0.02	%	
Melt Temperature	280 – 310	°C	
Nozzle Temperature	280 – 310	°C	
Front - Zone 3 Temperature	270 – 310	°C	
Middle - Zone 2 Temperature	260 – 305	°C	
Rear - Zone 1 Temperature	250 – 300	°C	
Mold Temperature	75 – 105	°C	
Back Pressure	0.3 – 0.7	MPa	
Screw Speed	20 – 100	rpm	
Shot to Cylinder Size	30 – 70	%	

(1) 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.

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