NORYL™ RESIN N300X

REGION AMERICAS

DESCRIPTION

NORYL™ N300X 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 5VA at 2mm and V0 at 1.5mm. NORYL N300X resin offers strong electrical performance, low moisture absorption, dimensional stability, and hydrolytical stability. This material is an excellent candidate for indoor and outdoor electrical enclosure and solar / photovoltaic junction box applications.

TYPICAL PROPERTY VALUES

Revision 20190717

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL			
Tensile Stress, yld, Type I, 50 mm/min	74	MPa	ASTM D 638
Tensile Stress, brk, Type I, 50 mm/min	73	MPa	ASTM D 638
Tensile Strain, yld, Type I, 50 mm/min	5.3	%	ASTM D 638
Tensile Strain, brk, Type I, 50 mm/min	7.6	%	ASTM D 638
Tensile Modulus, 5 mm/min	2380	MPa	ASTM D 638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	110	MPa	ASTM D 790
Flexural Stress, yld, 2.6 mm/min, 100 mm span	110	MPa	ASTM D 790
Flexural Modulus, 1.3 mm/min, 50 mm span	2650	MPa	ASTM D 790
Flexural Modulus, 2.6 mm/min, 100 mm span	2500	MPa	ASTM D 790
Hardness, Rockwell R	119	-	ASTM D 785
Tensile Stress, yield	75	MPa	ISO 527
Tensile Stress, break	66	MPa	ISO 527
Tensile Strain, yield	5.2	%	ISO 527
Tensile Strain, break	13	%	ISO 527
Tensile Modulus, 1 mm/min	2220	MPa	ISO 527
Flexural Stress	112	MPa	ISO 178
Flexural Modulus	2520	MPa	ISO 178
IMPACT			
Izod Impact, notched, 23°C	190	J/m	ASTM D 256
Izod Impact, notched, -30°C	55	J/m	ASTM D 256
Instrumented Impact Total Energy, 23°C	54	J	ASTM D 3763
Izod Impact, notched 80*10*4 +23°C	15	kJ/m²	ISO 180/1A
THERMAL			
HDT, 0.45 MPa, 3.2 mm, unannealed	155	°C	ASTM D 648
HDT, 1.82 MPa, 3.2mm, unannealed	140	°C	ASTM D 648
HDT, 1.82 MPa, 6.4 mm, unannealed	145	°C	ASTM D 648
CTE, -40°C to 40°C, flow	8.E-05	1/°C	ASTM E 831
CTE, -40°C to 40°C, xflow	8.E-05	1/°C	ASTM E 831
Vicat Softening Temp, Rate B/50	162	°C	ISO 306
Vicat Softening Temp, Rate B/120	164	°C	ISO 306
HDT/Be, 0.45MPa Edgew 120*10*4 sp=100mm	156	°C	ISO 75/Be
HDT/Ae, 1.8 MPa Edgew 120*10*4 sp=100mm	140	°C	ISO 75/Ae

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Relative Temp Index, Elec [1]	105	°C	UL 746B
Relative Temp Index, Mech w/impact [1]	105	°C	UL 746B
Relative Temp Index, Mech w/o impact [1]	105	°C	UL 746B
PHYSICAL			
Specific Gravity	1.1	-	ASTM D 792
Water Absorption, equilibrium, 23C	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
Melt Flow Rate, 280°C/5.0 kgf	7.4	g/10 min	ASTM D 1238
Melt Volume Rate, MVR at 280°C/5.0 kg	7	cm³/10 min	ISO 1133
ELECTRICAL			
Volume Resistivity	1.E+17	Ohm-cm	ASTM D 257
Surface Resistivity	1.E+17	Ohm	ASTM D 257
Dielectric Strength, in oil, 3.2 mm	19.4	kV/mm	ASTM D 149
Relative Permittivity, 50/60 Hz	2.68	-	ASTM D 150
Relative Permittivity, 1 MHz	2.63	-	ASTM D 150
Dissipation Factor, 50/60 Hz	0.0031	-	ASTM D 150
Dissipation Factor, 1 MHz	0.009	-	ASTM D 150
High Voltage Arc Track Rate {PLC}	4	PLC Code	UL 746A
Comparative Tracking Index (UL) {PLC}	3	PLC Code	UL 746A
High Amp Arc Ignition (HAI), PLC 4	≥1.5	mm	UL 746A
Hot-Wire Ignition (HWI), PLC 0	≥3	mm	UL 746A
Hot-Wire Ignition (HWI), PLC 2	≥1.5	mm	UL 746A
Arc Resistance, Tungsten {PLC}	6	PLC Code	ASTM D 495
FLAME CHARACTERISTICS [1]			
UL Yellow Card Link	E121562-627664	-	-
UL Recognized, 94-5VA Flame Class Rating	≥2	mm	UL 94
UL Recognized, 94V-0 Flame Class Rating	≥1.5	mm	UL 94
Glow Wire Flammability Index, 1.5 mm	960	°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	825	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 1.5 mm	825	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 2.0 mm	825	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 3.0 mm	800	°C	IEC 60695-2-13
INJECTION MOLDING			
Drying Temperature	110 – 120	°C	
Drying Time	3 – 4	hrs	
Drying Time (Cumulative)	8	hrs	
Maximum Moisture Content	0.02	%	
Melt Temperature	300 – 325	°C	
Nozzle Temperature	300 – 325	°C	
Front - Zone 3 Temperature	290 – 325	°C	
Middle - Zone 2 Temperature	275 – 320	°C	
Rear - Zone 1 Temperature	265 – 315	°C	

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PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Mold Temperature	80 – 110	°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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