NORYL™ RESIN N300X

REGION AMERICAS

DESCRIPTION

NORYL N300X resin is a non-reinforced blend of polyphenylene ether (PPE) + polystyrene (PS). 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 targeted for indoor and outdoor electrical enclosure and solar/photovoltaic junction box applications.

GENERAL INFORMATION	
Features	Hydrolytic Stability, Low Warpage, Amorphous, Low Shrinkage, Low Moisture Absorption, Low Specific Gravity, Non Cl/Br flame retardant, Dimensional stability, No PFAS intentionally added
Fillers	Unreinforced
Polymer Types	Polyphenylene Ether + PS (PPE+PS)
Processing Techniques	Injection Molding

INDUSTRY	SUB INDUSTRY
Building and Construction	Building Component
Electrical and Electronics	Energy Management, Electronic Components
Industrial	Electrical

TYPICAL PROPERTY VALUES

Revision 20241015

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL [1]			
Tensile Stress, yld, Type I, 50 mm/min	74	MPa	ASTM D638
Tensile Stress, brk, Type I, 50 mm/min	73	MPa	ASTM D638
Tensile Strain, yld, Type I, 50 mm/min	5.3	%	ASTM D638
Tensile Strain, brk, Type I, 50 mm/min	7.6	%	ASTM D638
Tensile Modulus, 5 mm/min	2380	MPa	ASTM D638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	110	MPa	ASTM D790
Flexural Stress, yld, 2.6 mm/min, 100 mm span	110	MPa	ASTM D790
Flexural Modulus, 1.3 mm/min, 50 mm span	2650	MPa	ASTM D790
Flexural Modulus, 2.6 mm/min, 100 mm span	2500	MPa	ASTM D790
Hardness, Rockwell R	119	-	ASTM D785
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 [1]			
Izod Impact, notched, 23°C	190	J/m	ASTM D256

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Izod Impact, notched, -30°C	55	J/m	ASTM D256
Instrumented Dart Impact Total Energy, 23°C	54	J	ASTM D3763
Izod Impact, notched 80*10*4 +23°C	15	kJ/m²	ISO 180/1A
THERMAL [1]			
HDT, 0.45 MPa, 3.2 mm, unannealed	155	°C	ASTM D648
HDT, 1.82 MPa, 3.2mm, unannealed	140	°C	ASTM D648
HDT, 1.82 MPa, 6.4 mm, unannealed	145	°C	ASTM D648
CTE, -40°C to 40°C, flow	8.E-05	1/°C	ASTM E831
CTE, -40°C to 40°C, xflow	8.E-05	1/°C	ASTM E831
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
Relative Temp Index, Elec [2]	105	°C	UL 746B
Relative Temp Index, Mech w/impact [2]	105	°C	UL 746B
Relative Temp Index, Mech w/o impact [2]	105	°C	UL 746B
PHYSICAL [1]			
Specific Gravity	1.1	-	ASTM D792
Water Absorption, (23°C/Saturated)	0.06	%	ASTM D570
Melt Volume Rate, MVR at 300°C/5.0 kg	7.4	cm³/10 min	ISO 1133
Mold Shrinkage, flow, 3.2 mm [3]	0.5 – 0.7	%	SABIC method
Mold Shrinkage on Tensile Bar, xflow [3]	0.5 – 0.7	%	SABIC method
ELECTRICAL [1]			
Volume Resistivity	1.E+17	Ω.cm	ASTM D257
Surface Resistivity	1.E+17	Ω	ASTM D257
Dielectric Strength, in oil, 3.2 mm	19.4	kV/mm	ASTM D149
Relative Permittivity, 50/60 Hz	2.68	-	ASTM D150
Relative Permittivity, 1 MHz	2.63	-	ASTM D150
Dissipation Factor, 50/60 Hz	0.0031	-	ASTM D150
Dissipation Factor, 1 MHz	0.009	-	ASTM D150
High Voltage Arc Track Rate {PLC} [2]	4	PLC Code	UL 746A
Comparative Tracking Index (UL) {PLC} [2]	3	PLC Code	UL 746A
High Amp Arc Ignition (HAI), PLC 4 [2]	≥1.5	mm	UL 746A
Hot-Wire Ignition (HWI), PLC 0 [2]	≥3	mm	UL 746A
Hot-Wire Ignition (HWI), PLC 2 [2]	≥1.5	mm	UL 746A
Arc Resistance, Tungsten {PLC}	6	PLC Code	ASTM D495
FLAME CHARACTERISTICS [1]			
UL Yellow Card Link [2]	E121562-627664	-	-
UL Recognized, 94-5VA Flame Class Rating [2]	≥2	mm	UL 94
UL Recognized, 94V-0 Flame Class Rating [2]	≥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

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
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 [4]			
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	
Mold Temperature	80 – 110	°C	
Back Pressure	0.3 – 0.7	MPa	
Screw Speed	20 – 100	rpm	
Shot to Cylinder Size	30 – 70	%	

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

(3) 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.

(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