NORYL GTX™ Resin GTX4610

REGION AMERICAS

DESCRIPTION

NORYL GTX4610 resin is a 10% glass fiber reinforced alloy of Polyphenylene Ether (PPE) + Polyamide (PA). This high performance injection moldable grade has a UL 5VA flame rating, non-brominated / non-chlorinated FR package, UL746C Outdoor Suitability rating of F1, excellent chemical resistance, high heat resistance, and flow. NORYL GTX4610 resin is an excellent candidate for a wide variety of electrical applications including connectors, sockets, sensors, terminal blocks, and insulator components.

GENERAL INFORMATION	
Features	Flame Retardant, Chemical Resistance, Good Processability, Hydrolytic Stability, Low Warpage, Low Moisture Absorption, Low Specific Gravity, Non halogenated flame retardant, Dimensional stability, High stiffness/Strength, High temperature resistance, No PFAS intentionally added
Fillers	Glass Fiber (Total fluorine >50ppm only from inorganic fluorine)
Polymer Types	Polyphenylene Ether + PA (PPE+Nylon)
Processing Techniques	Injection Molding

INDUSTRY	SUB INDUSTRY
Automotive	Automotive Under the Hood
Building and Construction	Building Component
Electrical and Electronics	Electronic Components
Industrial	Electrical

TYPICAL PROPERTY VALUES

Revision 20241015

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL [1]			
Tensile Stress, yld, Type I, 5 mm/min	88	MPa	ASTM D638
Tensile Stress, brk, Type I, 5 mm/min	88	MPa	ASTM D638
Tensile Modulus, 5 mm/min	5000	MPa	ASTM D638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	145	MPa	ASTM D790
Flexural Modulus, 1.3 mm/min, 50 mm span	4600	MPa	ASTM D790
Tensile Stress, yield, 5 mm/min	88	MPa	ISO 527
Tensile Stress, break, 5 mm/min	88	MPa	ISO 527
Tensile Strain, yield, 5 mm/min	3	%	ISO 527
Tensile Strain, break, 5 mm/min	3	%	ISO 527
Tensile Modulus, 1 mm/min	5000	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	145	MPa	ISO 178
Flexural Modulus, 2 mm/min	4600	MPa	ISO 178
IMPACT [1]			
Izod Impact, notched, 23°C	80	J/m	ASTM D256
Izod Impact, notched, -30°C	65	J/m	ASTM D256
Instrumented Dart Impact Total Energy, 23°C	12	J	ASTM D3763
Izod Impact, notched 80*10*4 +23°C	5	kJ/m²	ISO 180/1A
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	5	kJ/m²	ISO 179/1eA

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PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
THERMAL [1]			
Vicat Softening Temp, Rate B/50	218	°C	ASTM D1525
HDT, 0.45 MPa, 3.2 mm, unannealed	220	°C	ASTM D648
CTE, -40°C to 40°C, flow	4.1E-05	1/°C	ASTM E831
CTE, -40°C to 40°C, xflow	7.4E-05	1/°C	ASTM E831
CTE, -40°C to 40°C, flow	4.1E-05	1/°C	ISO 11359-2
CTE, -40°C to 40°C, xflow	7.4E-05	1/°C	ISO 11359-2
Vicat Softening Temp, Rate B/50	218	°C	ISO 306
Vicat Softening Temp, Rate B/120	220	°C	ISO 306
HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm	224	°C	ISO 75/Bf
Relative Temp Index, Elec [2]	140	°C	UL 746B
Relative Temp Index, Mech w/impact [2]	100	°C	UL 746B
Relative Temp Index, Mech w/o impact [2]	140	°C	UL 746B
PHYSICAL [1]			
Specific Gravity	1.21	-	ASTM D792
Mold Shrinkage, flow, 3.2 mm [3]	0.88 – 0.94	%	SABIC method
Mold Shrinkage, xflow, 3.2 mm [3]	0.95 – 1.01	%	SABIC method
Melt Flow Rate, 300°C/5.0 kgf	18	g/10 min	ASTM D1238
Density	1.21	g/cm³	ISO 1183
Water Absorption, (23°C/saturated)	3.8	%	ISO 62-1
Moisture Absorption (23°C / 50% RH)	0.5	%	ISO 62
Melt Volume Rate, MVR at 300°C/5.0 kg	15	cm³/10 min	ISO 1133
ELECTRICAL [1]			
Volume Resistivity	1.E+16	Ω.cm	ASTM D257
Dielectric Strength, in air, 1.6 mm	23.2	kV/mm	ASTM D149
Dielectric Strength, in oil, 1.6 mm	24.4	kV/mm	ASTM D149
Comparative Tracking Index (UL) {PLC}	2	PLC Code	UL 746A
Comparative Tracking Index [4]	425	V	IEC 60112
High Amp Arc Ignition (HAI), PLC 0	0.8	mm	UL 746A
Hot-Wire Ignition (HWI), PLC 0	≥3	mm	UL 746A
High Voltage Arc Track Rate {PLC}	2	PLC Code	UL 746A
Arc Resistance, Tungsten {PLC}	6	PLC Code	ASTM D495
FLAME CHARACTERISTICS [2]			
UL Yellow Card Link	E121562-100033074	-	-
UL Yellow Card Link 2	E121562-100731737	-	-
UL Recognized, 94-5VA Flame Class Rating	≥2	mm	UL 94
UL Recognized, 94V-0 Flame Class Rating	≥1.5	mm	UL 94
UL Recognized, 94V-1 Flame Class Rating	≥0.8	mm	UL 94
Glow Wire Flammability Index, 1.0 mm	800	°C	IEC 60695-2-12
Glow Wire Flammability Index, 1.5 mm	800	°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	800	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 1.5 mm	800	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 2.0 mm	800	°C	IEC 60695-2-13

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PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Glow Wire Ignitability Temperature, 3.0 mm	800	°C	IEC 60695-2-13
UV-light, water exposure/immersion	F1	-	UL 746C
INJECTION MOLDING [5]			
Drying Temperature	95 – 105	°C	
Drying Time	3 – 4	Hrs	
Drying Time (Cumulative)	8	Hrs	
Maximum Moisture Content	0.07	%	
Minimum Moisture Content	0.02	%	
Melt Temperature	280 – 305	°C	
Nozzle Temperature	280 – 305	°C	
Front - Zone 3 Temperature	275 – 305	°C	
Middle - Zone 2 Temperature	270 – 305	°C	
Rear - Zone 1 Temperature	265 – 305	°C	
Mold Temperature	75 – 120	°C	
Back Pressure	0.3 – 1.4	MPa	
Screw Speed	20 – 100	rpm	
Shot to Cylinder Size	30 – 50	%	
Vent Depth	0.013 – 0.038	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) 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) Value shown here is based on internal measurement.

(5) 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.

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