NORYL™ RESIN N190X

REGION AMERICAS

DESCRIPTION

NORYL N190X 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 3mm and V0 at 1.5mm along with a UL746C Outdoor Suitability rating of F1. NORYL N190X resin offers strong electrical performance, low moisture absorption, dimensional stability, and hydrolytic stability. This material is an excellent candidate for indoor and outdoor electrical enclosure, wall plate / switch, connector, and solar / photovoltaic junction box applications.

GENERAL INFORMATION	
Features	Flame Retardant, Hydrolytic Stability, Low Warpage, Amorphous, Low Shrinkage, Low Moisture Absorption, Low Specific Gravity, Non Cl/Br flame retardant, Non halogenated flame retardant, Dimensional stability
Fillers	Unreinforced
Polymer Types	Polyphenylene Ether + PS (PPE+PS)
Processing Techniques	Injection Molding

INDUSTRY	SUB INDUSTRY
Automotive	Automotive Under the Hood
Electrical and Electronics	Energy Management, Electronic Components
Industrial	Electrical, Defense

TYPICAL PROPERTY VALUES

Revision 20260421

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL [1]			
Tensile Stress, yld, Type I, 50 mm/min	60	MPa	ASTM D638
Tensile Stress, brk, Type I, 50 mm/min	47	MPa	ASTM D638
Tensile Strain, yld, Type I, 50 mm/min	3.6	%	ASTM D638
Tensile Strain, brk, Type I, 50 mm/min	9	%	ASTM D638
Tensile Modulus, 50 mm/min	2580	MPa	ASTM D638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	98	MPa	ASTM D790
Flexural Stress, yld, 2.6 mm/min, 100 mm span	91	MPa	ASTM D790
Flexural Modulus, 1.3 mm/min, 50 mm span	2500	MPa	ASTM D790
Flexural Modulus, 2.6 mm/min, 100 mm span	2300	MPa	ASTM D790
Hardness, Rockwell R	120	-	ASTM D785
Taber Abrasion, CS-17, 1 kg	76	mg/1000cy	ASTM D1044
Tensile Stress, yield, 50 mm/min	58	MPa	ISO 527
Tensile Stress, break, 50 mm/min	50	MPa	ISO 527
Tensile Strain, yield, 50 mm/min	3.2	%	ISO 527
Tensile Strain, break, 50 mm/min	9.2	%	ISO 527
Tensile Modulus, 1 mm/min	2600	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	87	MPa	ISO 178
Flexural Modulus, 2 mm/min	2350	MPa	ISO 178
IMPACT [1]			

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PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Izod Impact, unnotched, 23°C	720	J/m	ASTM D4812
Izod Impact, notched, 23°C	293	J/m	ASTM D256
Izod Impact, notched, -30°C	100	J/m	ASTM D256
Instrumented Dart Impact Total Energy, 23°C	50	J	ASTM D3763
Izod Impact, notched 80*10*4 +23°C	20	kJ/m²	ISO 180/1A
Charpy Impact, notched, 23°C	20	kJ/m²	ISO 179/2C
THERMAL [1]			
Vicat Softening Temp, Rate B/50	104	°C	ASTM D1525
HDT, 0.45 MPa, 3.2 mm, unannealed	95	°C	ASTM D648
HDT, 1.82 MPa, 3.2mm, unannealed	78	°C	ASTM D648
HDT, 1.82 MPa, 6.4 mm, unannealed	86	°C	ASTM D648
CTE, -40°C to 40°C, flow	7.7E-05	1/°C	ASTM E831
CTE, -40°C to 40°C, xflow	8.1E-05	1/°C	ASTM E831
Thermal Conductivity	0.24	W/m·°C	ASTM C177
Vicat Softening Temp, Rate B/120	107	°C	ISO 306
HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm	95	°C	ISO 75/Bf
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	82	°C	ISO 75/Af
Relative Temp Index, Elec [2]	95	°C	UL 746B
Relative Temp Index, Mech w/impact [2]	80	°C	UL 746B
Relative Temp Index, Mech w/o impact [2]	95	°C	UL 746B
PHYSICAL [1]			
Specific Gravity	1.13	-	ASTM D792
Water Absorption, (23°C/24hrs)	0.08	%	ASTM D570
Mold Shrinkage, flow, 3.2 mm [3]	0.5 – 0.7	%	SABIC method
Melt Flow Rate			
280°C/5.0 kgf	20	g/10 min	ASTM D1238
Melt Volume Rate			
280°C/5.0 kg	23	cm³/10 min	ISO 1133
ELECTRICAL [1]			
Volume Resistivity	1.8E+16	Ω.cm	ASTM D257
Dielectric Strength, in oil, 3.2 mm	19.2	kV/mm	ASTM D149
Relative Permittivity, 100 Hz	2.74	-	ASTM D150
Relative Permittivity, 100 kHz	2.6	-	ASTM D150
Dissipation Factor			
100 Hz	0.013	-	ASTM D150
100 kHz	0.0055	-	ASTM D150
High Voltage Arc Track Rate {PLC}	4	PLC Code	UL 746A
Comparative Tracking Index (UL) {PLC}	2	PLC Code	UL 746A
High Amp Arc Ignition (HAI), PLC 0	≥6	mm	UL 746A
High Amp Arc Ignition (HAI), PLC 2	≥1.5	mm	UL 746A
Hot-Wire Ignition (HWI), PLC 1	≥6	mm	UL 746A
Hot-Wire Ignition (HWI), PLC 2	≥1.5	mm	UL 746A
Arc Resistance, Tungsten {PLC}	7	PLC Code	ASTM D495
FLAME CHARACTERISTICS [2]			
UL Yellow Card Link	E121562-100110155	-	-

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PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
UL Recognized, 94-5VA Flame Class Rating	≥3	mm	UL 94
UL Recognized, 94HB Flame Class Rating	≥1	mm	UL 94
UL Recognized, 94V-0 Flame Class Rating	≥1.5	mm	UL 94
Glow Wire Flammability Index, 1.0 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	800	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 2.0 mm	775	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 3.0 mm	775	°C	IEC 60695-2-13
UV-light, water exposure/immersion	F1	-	UL 746C
Oxygen Index (LOI)	39	%	ASTM D2863
INJECTION MOLDING [4]			
Drying Temperature	75 – 80	°C	
Drying Time	3 – 4	Hrs	
Drying Time (Cumulative)	8	Hrs	
Maximum Moisture Content	0.02	%	
Melt Temperature	250 – 275	°C	
Nozzle Temperature	250 – 275	°C	
Front - Zone 3 Temperature	240 – 275	°C	
Middle - Zone 2 Temperature	225 – 270	°C	
Rear - Zone 1 Temperature	215 – 265	°C	
Mold Temperature	55 – 75	°C	
Back Pressure	0.3 – 0.7	MPa	
Screw Speed	20 – 100	rpm	
Shot to Cylinder Size	30 – 70	%	
Vent Depth	0.038 – 0.051	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) 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.

MORE INFORMATION

For curve data and CAE cards, please visit and register at https://materialfinder.sabic-specialties.com

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