NORYL™ RESIN PX9406V

DESCRIPTION

NORYL PX9406V resin is a non-reinforced blend of polyphenylene ether (PPE) + polystyrene (PS) and exhibits an excellent balance of non-brominated, non-chlorinated flame retardance, high heat resistance, low moisture absorption, good flow, and low specific gravity for light weight parts. This injection moldable grade carries UL94 flame ratings of V0 at 1.5mm along with a UL746C Outdoor Suitability rating of f1. NORYL PX9406V resin is targeted for applications such as solar/PV junction boxes, optimizers, micro-invertors and electrical enclosures.

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, Mobile Phone - Computer - Tablets
Industrial	Electrical

TYPICAL PROPERTY VALUES

Revision 20231215

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL [1]			
Tensile Stress, yld, Type I, 50 mm/min	69	MPa	ASTM D638
Tensile Stress, brk, Type I, 50 mm/min	50	MPa	ASTM D638
Tensile Strain, yld, Type I, 50 mm/min	5.1	%	ASTM D638
Tensile Strain, brk, Type I, 50 mm/min	39	%	ASTM D638
Tensile Modulus, 5 mm/min	2270	MPa	ASTM D638
Flexural Strength, 1.3 mm/min, 50 mm span	102	MPa	ASTM D790
Flexural Modulus, 1.3 mm/min, 50 mm span	2500	MPa	ASTM D790
Tensile Stress, yield, 50 mm/min	69	MPa	ISO 527
Tensile Stress, break, 50 mm/min	59	MPa	ISO 527
Tensile Strain, yield, 50 mm/min	5.0	%	ISO 527
Tensile Strain, break, 50 mm/min	9.1	%	ISO 527
Tensile Modulus, 1 mm/min	2450	MPa	ISO 527
Flexural Strength, 2 mm/min	111	MPa	ISO 178
Flexural Modulus, 2 mm/min	2510	MPa	ISO 178
IMPACT [1]			
Izod Impact, notched, 23°C	221	J/m	ASTM D256
Izod Impact, notched, -30°C	87	J/m	ASTM D256
Izod Impact, notched 80*10*4 +23°C	20	kJ/m²	ISO 180/1A
Izod Impact, notched 80*10*4 -30°C	8	kJ/m²	ISO 180/1A
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	21	kJ/m²	ISO 179/1eA

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Instrumented Dart Impact Total Energy, 23°C	38	J	ASTM D3763
THERMAL [1]			
HDT, 1.82 MPa, 3.2mm, unannealed	139	°C	ASTM D648
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	140	°C	ISO 75/Af
Vicat Softening Temp, Rate B/50	160	°C	ASTM D1525
Vicat Softening Temp, Rate B/50	161	°C	ISO 306
Vicat Softening Temp, Rate B/120	152	°C	ISO 306
CTE, -40°C to 40°C, flow	8.16E-05	1/°C	ASTM E831
CTE, -40°C to 40°C, xflow	8.15E-05	1/°C	ASTM E831
CTE, -40°C to 40°C, flow	8.16E-05	1/°C	ISO 11359-2
CTE, -40°C to 40°C, xflow	8.15E-05	1/°C	ISO 11359-2
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	1.09	-	ASTM D792
Density	1.09	g/cm³	ISO 1183
Melt Flow Rate, 300°C/5.0 kgf	10.7	g/10 min	ASTM D1238
Melt Volume Rate, MVR at 300°C/5.0 kg	10	cm³/10 min	ISO 1133
Water Absorption, (23°C/saturated)	0.24	%	ISO 62-1
Moisture Absorption (23°C / 50% RH)	0.04	%	ISO 62
Mold Shrinkage, flow [3]	0.5 – 0.8	%	SABIC method
ELECTRICAL [2]			
Volume Resistivity [1]	1.0E+16	Ω.cm	ASTM D257
Comparative Tracking Index (UL) {PLC}	2	PLC Code	UL 746A
High Voltage Arc Track Rate {PLC}	4	PLC Code	UL 746A
Hot-Wire Ignition (HWI), PLC 2	1.5	mm	UL 746A
Hot-Wire Ignition (HWI), PLC 0	≥3.0	mm	UL 746A
High Amp Arc Ignition (HAI), PLC 1	≥1.5	mm	UL 746A
FLAME CHARACTERISTICS [2]			
UL Yellow Card Link	E207780-104657059	-	-
UL Recognized, 94V-0 Flame Class Rating	≥1.5	mm	UL 94
UL Recognized, 94-5VA Flame Class Rating	≥3.0	mm	UL 94
UV-light, water exposure/immersion	f1	-	UL 746C
Glow Wire Flammability Index, 1.5 mm	960	°C	IEC 60695-2-12
Glow Wire Flammability Index, 3.0 mm	960	°C	IEC 60695-2-12
Glow Wire Ignitability Temperature, 1.5 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	100 – 120	°C	
Drying Time	3 – 5	Hrs	
Melt Temperature	300 – 330	°C	
Nozzle Temperature	300 – 330	°C	
Front - Zone 3 Temperature	290 – 330	°C	
Middle - Zone 2 Temperature	280 – 330	°C	

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Rear - Zone 1 Temperature	270 – 330	°C	
Mold Temperature	80 – 120	°C	
Back Pressure	0.03 – 0.08	MPa	
Screw Speed	20 – 100	rpm	

(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 and colors. 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