

NORYL™ RESIN NHP8000VT3

DESCRIPTION

NORYL NHP8000VT3 resin is a non-reinforced blend of polyphenylene ether (PPE) + polystyrene (PS) designed for high heat resistance, ultra-thin-wall FR and High tracking resistance performance. This extrusion and injection moldable grade contains non-brominated, non-chlorinated flame retardant and carries CTI 600V / PLC 0 and UL94 flame rating of V0 at 0.25mm. NORYL NHP8000VT3 is based on a unique co-polymer technology and exhibits high impact, high heat resistance, dimensional stability, hydrolytic stability, strong electrical performance, low moisture absorption and low specific gravity. This grade is targeted for electrical vehicle (EV) battery pack insulation sheet/film, bus bar insulation layer and other high voltage electric components.

GENERAL INFORMATION	
Features	Flame Retardant, Good Processability, Heat Stabilized, Hydrolytic Stability, Low Warpage, Amorphous, Low Shrinkage, Low Moisture Absorption, Low Specific Gravity, Non Cl/Br flame retardant, Non halogenated flame retardant, Dimensional stability, High temperature resistance, Impact resistant
Fillers	Unreinforced
Brands	NORYL™
Polymer Types	Polyphenylene Ether + PS (PPE+PS)
Processing Techniques	Injection Molding, Extrusion, Thermoforming

INDUSTRY	SUB INDUSTRY
Automotive	Automotive EV
Hydrocarbon and Energy	Energy Storage

TYPICAL PROPERTY VALUES

Revision 20231109

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL ⁽¹⁾			
Tensile Stress, yld, Type I, 5 mm/min	66.8	MPa	ASTM D638
Tensile Strain, yld, Type I, 5 mm/min	4.2	%	ASTM D638
Tensile Strain, brk, Type I, 5 mm/min	10.8	%	ASTM D638
Tensile Modulus, 5 mm/min	2491	MPa	ASTM D638
Flexural Strength, 1.3 mm/min, 50 mm span	108	MPa	ASTM D790
Flexural Modulus, 1.3 mm/min, 50 mm span	2600	MPa	ASTM D790
IMPACT ⁽¹⁾			
Izod Impact, notched, 23°C	211	J/m	ASTM D256
Izod Impact, notched, -40°C	84	J/m	ASTM D256
Izod Impact, unnotched, 23°C	NB	J/m	ASTM D4812
Izod Impact, unnotched, -40°C	1830	J/m	ASTM D4812
THERMAL ⁽¹⁾			
HDT, 0.45 MPa, 3.2 mm, unannealed	150	°C	ASTM D648
HDT, 1.82 MPa, 3.2mm, unannealed	133	°C	ASTM D648
Vicat Softening Temp, Rate A/50	166	°C	ASTM D1525
Vicat Softening Temp, Rate B/50	155	°C	ASTM D1525
Ball Pressure Test, 125°C +/- 2°C	PASSES	-	IEC 60695-10-2
Ball Pressure Test, approximate maximum	140	°C	IEC 60695-10-2
PHYSICAL ⁽¹⁾			

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Density	1.1	g/cm ³	ISO 1183
Water Absorption, (23°C/24hrs)	0.04	%	ISO 62-1
Melt Flow Rate, 300°C/5.0 kgf	11.7	g/10 min	ASTM D1238
Mold Shrinkage, flow	0.73	%	SABIC method
Mold Shrinkage, xflow	0.79	%	SABIC method
ELECTRICAL ⁽¹⁾			
Surface Resistivity	7.50E+16	Ω	ASTM D257
Volume Resistivity	6.20E+15	Ω.cm	ASTM D257
Comparative Tracking Index (UL) {PLC} ⁽²⁾	0	PLC Code	UL 746A
FLAME CHARACTERISTICS ⁽²⁾			
UL Yellow Card Link	E207780-104546521	-	-
UL Recognized, 94V-0 Flame Class Rating	≥0.25	mm	UL 94
INJECTION MOLDING ⁽³⁾			
Drying Temperature	100 – 120	°C	
Drying Time	3 – 5	Hrs	
Melt Temperature	280 – 330	°C	
Nozzle Temperature	250 – 330	°C	
Front - Zone 3 Temperature	280 – 330	°C	
Middle - Zone 2 Temperature	280 – 330	°C	
Rear - Zone 1 Temperature	280 – 330	°C	
Mold Temperature	70 – 120	°C	
Back Pressure	0.3 – 0.8	MPa	
Screw Speed	20 – 100	rpm	
EXTRUSION ⁽⁴⁾			
Drying Temperature	110	°C	
Drying Time	3 – 4	Hrs	
Barrel - Zone 1 Temperature	210	°C	
Barrel - Zone 2 Temperature	275	°C	
Barrel - Zone 3 Temperature	280	°C	
Barrel - Zone 4 Temperature	280	°C	
Die Temperature	285	°C	
Roll Stack Temperature - Bottom	20 – 30	°C	
Roll Stack Temperature - Middle	120 – 130	°C	
Roll Stack Temperature - Top	120 – 140	°C	

(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) 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.

(4) Extrusion parameters are only mentioned as general guidelines.

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