NORYL™ Resin NHP9023

REGION ASIA

DESCRIPTION

NORYL NHP9023 resin is a 15% glass fiber 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 V0 1.5mm and V1 at 0.75mm for thin-wall molding capability. NORYL NHP9023 is based on a unique co-polymer technology and exhibits good dimensional stability, high heat resistance, strong electrical performance, and very low specific gravity. It is an excellent candidate for copier fuser units, business equipment internal components, and electrical applications where thin-wall FR, modulus retention, and high heat resistance are required.

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 stiffness/Strength, High temperature resistance, Impact resistant, No PFAS intentionally added
Fillers	Glass Fiber (Total fluorine >50ppm only from inorganic fluorine)
Polymer Types	Polyphenylene Ether + PS (PPE+PS)
Processing Techniques	Injection Molding

INDUSTRY	SUB INDUSTRY
Consumer	Commercial Appliance
Electrical and Electronics	Electronic Components, Mobile Phone - Computer - Tablets
Industrial	Electrical

TYPICAL PROPERTY VALUES

Revision 20241015

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL [1] [2] [3] [4]			
Tensile Stress, brk, Type I, 5 mm/min	112	MPa	ASTM D638
Tensile Strain, brk, Type I, 5 mm/min	2.9	%	ASTM D638
Tensile Modulus, 5 mm/min	5400	MPa	ASTM D638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	163	MPa	ASTM D790
Flexural Modulus, 1.3 mm/min, 50 mm span	5200	MPa	ASTM D790
Hardness, Rockwell R	121	-	ASTM D785
Tensile Stress, break, 5 mm/min	112	MPa	ISO 527
Tensile Strain, break, 5 mm/min	2.7	%	ISO 527
Tensile Modulus, 1 mm/min	5600	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	163	MPa	ISO 178
Flexural Modulus, 2 mm/min	5200	MPa	ISO 178
IMPACT [1] [2] [3] [4]			
Izod Impact, unnotched, 23°C	500	J/m	ASTM D4812
Izod Impact, unnotched, -30°C	500	J/m	ASTM D4812
Izod Impact, notched, 23°C	72	J/m	ASTM D256
Izod Impact, notched, -30°C	61	J/m	ASTM D256
Instrumented Dart Impact Total Energy, 23°C	10	J	ASTM D3763

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PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Izod Impact, unnotched 80*10*4 +23°C	27	kJ/m²	ISO 180/1U
Izod Impact, unnotched 80*10*4 -30°C	28	kJ/m²	ISO 180/1U
Izod Impact, notched 80*10*4 +23°C	7	kJ/m²	ISO 180/1A
Izod Impact, notched 80*10*4 -30°C	6	kJ/m²	ISO 180/1A
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	7	kJ/m²	ISO 179/1eA
THERMAL [1] [2] [3] [4]			
HDT, 1.82 MPa, 3.2mm, unannealed	153	°C	ASTM D648
HDT, 1.82 MPa, 6.4 mm, unannealed	154	°C	ASTM D648
CTE, 23°C to 80°C, flow	3.5E-05	1/°C	ISO 11359-2
CTE, 23°C to 80°C, xflow	6.4E-05	1/°C	ISO 11359-2
Vicat Softening Temp, Rate B/50	161	°C	ISO 306
Vicat Softening Temp, Rate B/120	163	°C	ISO 306
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	155	°C	ISO 75/Af
Relative Temp Index, Elec	65	°C	UL 746B
Relative Temp Index, Mech w/impact	65	°C	UL 746B
Relative Temp Index, Mech w/o impact	65	°C	UL 746B
PHYSICAL [1] [2] [3] [4]			
Specific Gravity	1.21	-	ASTM D792
Mold Shrinkage, flow, 3.2 mm [5]	0.5	%	SABIC method
Melt Flow Rate, 300°C/5.0 kgf	20	g/10 min	ASTM D1238
Density	1.21	g/cm³	ISO 1183
Water Absorption, (23°C/saturated)	0.2	%	ISO 62-1
Moisture Absorption (23°C / 50% RH)	0.05	%	ISO 62
ELECTRICAL [4]			
Comparative Tracking Index (UL) {PLC}	3	PLC Code	UL 746A
FLAME CHARACTERISTICS [6]			
UL Yellow Card Link	E207780-102131113	-	-
UL Recognized, 94V-1 Flame Class Rating	≥0.75	mm	UL 94
UL Recognized, 94V-0 Flame Class Rating	≥1.5	mm	UL 94
INJECTION MOLDING [7]			
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	%	

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(1) Typical values only. Variations within normal tolerances are possible for various colours. All values are measured at least after 48 hours storage at 23°C/50% relative humidity.
(2) All properties, except the melt volume rate are measured on injection moulded samples. All samples are prepared according to ISO 294.
(3) Only typical data for material selection purpose.Not to be used for part or tool design.
(4) 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.
(5) 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.
(6) 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.
(7) 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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