NORYL™ Resin NH5120RC3

DESCRIPTION

NORYL NH5120RC3 resin is an unfilled Post Consumer recycle (PCR) based injection moldable modified polyphenylene ether resin comprising at least 30% PCR styrenic series resin content. This injection moldable grade contains non-brominated, non-chlorinated flame retardant and carries a UL94 flame rating of V1 at 1.5mm. NORYL NH5120RC3 resin offers a good balance of heat, flow, hydrolytic stability, low creep and dimensional stability along with mechanical property retention in tough outdoor environments. This material is an excellent candidate for outdoor housings / enclosures, HVAC components, and photovoltaic / solar junction box applications. Black only offering.

GENERAL INFORMATION	
Applications	Electronic Components, Enclosures, Monitoring and Imaging, Wiring Devices
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, No PFAS intentionally added (PCR contains <50ppm total organic fluorine content)
Fillers	Unreinforced
Polymer Types	Polyphenylene Ether + PS (PPE+PS)
Processing Techniques	Injection Molding

INDUSTRY	SUB INDUSTRY
Consumer	Home Appliances, Commercial Appliance
Electrical and Electronics	Energy Management, Electronic Components, Mobile Phone - Computer - Tablets
Hygiene and Healthcare	Patient Testing
Industrial	Electrical

TYPICAL PROPERTY VALUES

Revision 20240201

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL [1]			
Tensile Modulus, 1 mm/min	2500	MPa	ISO 527
Tensile Stress, yield, 50 mm/min	58	MPa	ISO 527
Tensile Stress, break, 50 mm/min	48	MPa	ISO 527
Tensile Nominal Strain, break, 50 mm/min	7	%	ISO 527
Flexural Modulus, 2 mm/min	2400	MPa	ISO 178
Flexural Stress, break, 2 mm/min	95	MPa	ISO 178
Tensile Modulus, 50 mm/min	2500	MPa	ASTM D638
Tensile Stress, yld, Type I, 50 mm/min	62	MPa	ASTM D638
Tensile Stress, brk, Type I, 50 mm/min	62	MPa	ASTM D638
Tensile Nominal Strain, brk, Type I, 50 mm/min	5	%	ASTM D638
Flexural Modulus, 1.3 mm/min, 50 mm span	2500	MPa	ASTM D790
Flexural Stress, yld, 1.3 mm/min, 50 mm span	98	MPa	ASTM D790
IMPACT [1]			
Izod Impact, notched 80*10*4 +23°C	8	kJ/m²	ISO 180/1A
Izod Impact, notched 80*10*4 -30°C	5	kJ/m²	ISO 180/1A
Izod Impact, unnotched 80*10*4 +23°C	90	kJ/m²	ISO 180/1U
Izod Impact, unnotched 80*10*4 -30°C	69	kJ/m²	ISO 180/1U

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Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	8	kJ/m²	ISO 179/1eA
Charpy -30°C, V-notch Edgew 80*10*4 sp=62mm	5	kJ/m²	ISO 179/1eA
Izod Impact, notched, 23°C	82	J/m	ASTM D256
Izod Impact, notched, -30°C	57	J/m	ASTM D256
Instrumented Dart Impact Total Energy, 23°C	9	J	ASTM D3763
Instrumented Dart Impact Energy @ peak, 23°C	10	J	ASTM D3763
Instrumented Dart Impact Peak Force, 23°C	2500	N	ASTM D3763
THERMAL [1]			
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	114	°C	ISO 75/Af
HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm	125	°C	ISO 75/Bf
Vicat Softening Temp, Rate B/50	134	°C	ISO 306
Vicat Softening Temp, Rate B/120	136	°C	ISO 306
HDT, 1.82 MPa, 3.2mm, unannealed	114	°C	ASTM D648
HDT, 0.45 MPa, 3.2 mm, unannealed	128	°C	ASTM D648
Vicat Softening Temp, Rate B/50	134	°C	ASTM D1525
Vicat Softening Temp, Rate B/120	136	°C	ASTM D1525
CTE, -40°C to 40°C, xflow	7.0E-05	1/°C	ASTM E831
CTE, -40°C to 40°C, flow	7.3E-05	1/°C	ASTM E831
Ball Pressure Test, approximate maximum	125	°C	IEC 60695-10-2
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]			
Density	1.08	g/cm³	ISO 1183
Moisture Absorption (23°C / 50% RH)	0.05	%	ISO 62
Water Absorption, (23°C/saturated)	0.23	%	ISO 62-1
Mold Shrinkage, flow, 3.2 mm	0.26	%	SABIC method
Melt Volume Rate, MVR at 280°C/5.0 kg	13	cm³/10 min	ISO 1133
Melt Flow Rate, 280°C/5.0 kgf	13	g/10 min	ASTM D1238
Specific Gravity	1.08	-	ASTM D792
ELECTRICAL [1]			
Comparative Tracking Index	200	V	IEC 60112
Dielectric Strength, in air, 1.6 mm	26.7	kV/mm	IEC 60243-1
Volume Resistivity	3.2E+14	Ω.cm	IEC 60093
Comparative Tracking Index (UL) {PLC}	2	PLC Code	UL 746A
Hot-Wire Ignition (HWI), PLC 2	≥1.5	mm	UL 746A
High Amp Arc Ignition (HAI), PLC 0	≥1.5	mm	UL 746A
High Voltage Arc Track Rate {PLC}	4	PLC Code	UL 746A
Arc Resistance, Tungsten {PLC}	0	PLC Code	ASTM D495
Dielectric Strength, in air, 1.6 mm	26.7	kV/mm	ASTM D149
Volume Resistivity	3.2E+14	Ω.cm	ASTM D257
FLAME CHARACTERISTICS [2]			
UL Yellow Card Link	E45329-104607282	-	-
UL Recognized, 94V-1 Flame Class Rating	≥1.5	mm	UL 94
Glow Wire Ignitability Temperature, 1.0 mm	750	°C	IEC 60695-2-13

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PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Glow Wire Ignitability Temperature, 1.5 mm	750	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 2.0 mm	725	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 3.0 mm	750	°C	IEC 60695-2-13
Glow Wire Flammability Index, 1.0 mm	960	°C	IEC 60695-2-12
Glow Wire Flammability Index, 1.5 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
INJECTION MOLDING (3)			
Drying Temperature	105 – 110	°C	
Drying Time	3 – 4	Hrs	
Drying Time (Cumulative)	8	Hrs	
Maximum Moisture Content	0.02	%	
Melt Temperature	280 – 310	°C	
Nozzle Temperature	280 – 310	°C	
Front - Zone 3 Temperature	270 – 310	°C	
Middle - Zone 2 Temperature	260 – 305	°C	
Rear - Zone 1 Temperature	250 – 300	°C	
Mold Temperature	75 – 105	°C	
Back Pressure	0.3 – 0.7	MPa	
Screw Speed	20 – 100	rpm	
Shot to Cylinder Size	30 – 70	%	

(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.

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