

NORYL™ RESIN NH4050

REGION AMERICAS

DESCRIPTION

NORYL NH4050 resin is a modified PPE + PS blend with an excellent balance of non-chlorinated non-brominated flame retardance, hydrolytic stability, impact and heat resistance, good flow, and low specific gravity for light-weight parts. This injection-molding resin is available in custom colors. NORYL NH4050 resin may be an excellent candidate for industrial battery applications.

TYPICAL PROPERTY VALUES

Revision 20181012

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL			
Tensile Stress, yld, Type I, 50 mm/min	67	MPa	ASTM D 638
Tensile Stress, brk, Type I, 50 mm/min	52	MPa	ASTM D 638
Tensile Strain, yld, Type I, 50 mm/min	4.4	%	ASTM D 638
Tensile Strain, brk, Type I, 50 mm/min	19	%	ASTM D 638
Tensile Modulus, 5 mm/min	2670	MPa	ASTM D 638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	108	MPa	ASTM D 790
Flexural Modulus, 1.3 mm/min, 50 mm span	2820	MPa	ASTM D 790
Tensile Stress, yield, 50 mm/min	67	MPa	ISO 527
Tensile Stress, break, 50 mm/min	51	MPa	ISO 527
Tensile Strain, yield, 50 mm/min	4.3	%	ISO 527
Tensile Strain, break, 50 mm/min	10	%	ISO 527
Tensile Modulus, 1 mm/min	2640	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	108	MPa	ISO 178
Flexural Modulus, 2 mm/min	2560	MPa	ISO 178
IMPACT			
Izod Impact, notched, 23°C	157	J/m	ASTM D 256
Instrumented Impact Total Energy, 23°C	48	J	ASTM D 3763
Izod Impact, notched 80°10°4 +23°C	14	kJ/m ²	ISO 180/1A
Izod Impact, notched 80°10°4 -30°C	9	kJ/m ²	ISO 180/1A
Charpy 23°C, V-notch Edgew 80°10°4 sp=62mm	16	kJ/m ²	ISO 179/1eA
THERMAL			
Vicat Softening Temp, Rate B/50	118	°C	ASTM D 1525
HDT, 1.82 MPa, 3.2mm, unannealed	94	°C	ASTM D 648
CTE, -40°C to 40°C, flow	8.E-05	1/°C	ASTM E 831
CTE, -40°C to 40°C, xflow	8.2E-05	1/°C	ASTM E 831
CTE, -40°C to 40°C, flow	8.E-05	1/°C	ISO 11359-2
CTE, -40°C to 40°C, xflow	8.2E-05	1/°C	ISO 11359-2
Vicat Softening Temp, Rate B/50	120	°C	ISO 306
Vicat Softening Temp, Rate B/120	120	°C	ISO 306
HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm	101	°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

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
PHYSICAL			
Specific Gravity	1.11	-	ASTM D 792
Mold Shrinkage, flow, 3.2 mm	0.3 – 0.6	%	SABIC method
Melt Flow Rate, 280°C/5.0 kgf	25.4	g/10 min	ASTM D 1238
Density	1.11	g/cm ³	ISO 1183
Water Absorption, (23°C/sat)	0.1	%	ISO 62
Moisture Absorption (23°C / 50% RH)	0.06	%	ISO 62
Melt Volume Rate, MVR at 280°C/5.0 kg	32	cm ³ /10 min	ISO 1133
FLAME CHARACTERISTICS			
UL Recognized, 94V-0 Flame Class Rating	1.5	mm	UL 94
INJECTION MOLDING			
Drying Temperature	95 – 100	°C	
Drying Time	3 – 4	hrs	
Drying Time (Cumulative)	8	hrs	
Maximum Moisture Content	0.02	%	
Melt Temperature	260 – 290	°C	
Nozzle Temperature	260 – 290	°C	
Front - Zone 3 Temperature	250 – 290	°C	
Middle - Zone 2 Temperature	240 – 280	°C	
Rear - Zone 1 Temperature	225 – 275	°C	
Mold Temperature	70 – 95	°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	

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