



NORYL™ Resin NH4050
Americas: COMMERCIAL

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 PROPERTIES ¹	TYPICAL VALUE	Unit	Standard
MECHANICAL			
Tensile Stress, yld, Type I, 50 mm/min	680	kgf/cm ²	ASTM D 638
Tensile Stress, brk, Type I, 50 mm/min	530	kgf/cm ²	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	27200	kgf/cm ²	ASTM D 638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	1100	kgf/cm ²	ASTM D 790
Flexural Modulus, 1.3 mm/min, 50 mm span	28800	kgf/cm ²	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	16	cm-kgf/cm	ASTM D 256
Instrumented Impact Total Energy, 23°C	494	cm-kgf	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



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TYPICAL PROPERTIES ¹	TYPICAL VALUE	Unit	Standard
THERMAL			
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
PHYSICAL			
Specific Gravity	1.11	-	ASTM D 792
Mold Shrinkage, flow, 3.2 mm (5)	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



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PROCESSING PARAMETERS	TYPICAL VALUE	Unit
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