

NORYL™ NH4050 resin

Polyphenylene Ether + PS

SABIC Innovative Plastics

Message:

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.

General Information			
UL YellowCard	E121562-101362812		
Additive	Flame Retardant		
Features	Bromine Free		
	Chlorine Free		
	Flame Retardant		
	Good Flow		
	Good Impact Resistance		
	Hydrolytically Stable		
	Medium Heat Resistance		
Uses	Batteries		
	Industrial Applications		
Appearance	Colors Available		
Processing Method	Injection Molding		
Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.11	g/cm ³	ASTM D792, ISO 1183
Melt Mass-Flow Rate (MFR) (280°C/5.0 kg)	25	g/10 min	ASTM D1238
Melt Volume-Flow Rate (MVR) (280°C/5.0 kg)	32.0	cm ³ /10min	ISO 1133
Molding Shrinkage - Flow (3.20 mm)	0.30 to 0.60	%	Internal Method
Water Absorption			ISO 62
Saturation, 23°C	0.10	%	
Equilibrium, 23°C, 50% RH	0.060	%	
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus			
-- ¹	2680	MPa	ASTM D638
--	2640	MPa	ISO 527-2/1
Tensile Strength			
Yield ²	67.0	MPa	ASTM D638
Yield	67.0	MPa	ISO 527-2/50
Break ³	52.0	MPa	ASTM D638

Break	51.0	MPa	ISO 527-2/50
Tensile Elongation			
Yield ⁴	4.4	%	ASTM D638
Yield	4.3	%	ISO 527-2/50
Break ⁵	19	%	ASTM D638
Break	10	%	ISO 527-2/50
Flexural Modulus			
50.0 mm Span ⁶	2830	MPa	ASTM D790
-- ⁷	2570	MPa	ISO 178
Flexural Stress			
--	108	MPa	ISO 178
Yield, 50.0 mm Span ⁸	108	MPa	ASTM D790
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength ⁹ (23°C)	16	kJ/m ²	ISO 179/1eA
Notched Izod Impact			
23°C	160	J/m	ASTM D256
-30°C ¹⁰	9.0	kJ/m ²	ISO 180/1A
23°C ¹¹	15	kJ/m ²	ISO 180/1A
Instrumented Dart Impact (23°C, Total Energy)	48.5	J	ASTM D3763
Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load			
1.8 MPa, Unannealed, 3.20 mm	94.0	°C	ASTM D648
1.8 MPa, Unannealed, 64.0 mm Span ¹²	101	°C	ISO 75-2/Af
Vicat Softening Temperature			
--	118	°C	ASTM D1525 ¹³
--	120	°C	ISO 306/B50, ISO 306/B120
CLTE			ASTM E831, ISO 11359-2
Flow : -40 to 40°C	8.0E-5	cm/cm/°C	
Transverse : -40 to 40°C	8.2E-5	cm/cm/°C	
Injection	Nominal Value	Unit	
Drying Temperature	93.3 to 98.9	°C	
Drying Time	3.0 to 4.0	hr	
Drying Time, Maximum	8.0	hr	
Suggested Max Moisture	0.020	%	
Suggested Shot Size	30 to 70	%	
Rear Temperature	227 to 277	°C	
Middle Temperature	238 to 282	°C	
Front Temperature	249 to 288	°C	
Nozzle Temperature	260 to 288	°C	
Processing (Melt) Temp	260 to 288	°C	
Mold Temperature	71.1 to 93.3	°C	

Back Pressure	0.345 to 0.689	MPa
Screw Speed	20 to 100	rpm
Vent Depth	0.038 to 0.051	mm

NOTE

1.	5.0 mm/min
2.	Type I, 50 mm/min
3.	Type I, 50 mm/min
4.	Type I, 50 mm/min
5.	Type I, 50 mm/min
6.	1.3 mm/min
7.	2.0 mm/min
8.	1.3 mm/min
9.	80*10*4 sp=62mm
10.	80*10*4
11.	80*10*4
12.	80*10*4 mm
13.	Rate B (120°C/h), Loading 2 (50 N)

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