

NORYL™ 731 resin

Polyphenylene Ether + PS

SABIC Innovative Plastics

Message:

PPE+PS blend. Unfilled. NSF listed for potable water use in several colors (Standard 61). FDA compliant in several colors (restrictions apply). UL94 HB rated. Low water absorption. Hydrolytic stability. Dimensional stability. Suitable for fluid engineering applications: valve components, water pump housings, etc. This grade will no longer be supported with biocompatibility information and should not be used for medical applications which require biocompatibility. Alternative grade HN731A.

General Information			
UL YellowCard	E121562-221150		
Features	Good Dimensional Stability		
	Hydrolytically Stable		
	Low to No Water Absorption		
Uses	Pump Parts		
	Valves/Valve Parts		
Agency Ratings	FDA Unspecified Rating		
	NSF 61		
Processing Method	Injection Molding		
Multi-Point Data	Coefficient of Thermal Expansion vs. Temperature (ASTM E831)		
	Elastic Modulus vs Temperature (ASTM D4065)		
	Flexural DMA (ASTM D4065)		
	Pressure-Volume-Temperature (PVT - Zoller Method)		
	Shear DMA (ASTM D4065)		
	Specific Heat vs. Temperature (ASTM D3417)		
	Tensile Creep (ASTM D2990)		
	Tensile Fatigue		
	Tensile Stress vs. Strain (ASTM D638)		
	Thermal Conductivity vs. Temperature (ASTM E1530)		
Physical	Nominal Value		Unit
	Test Method		
	Specific Gravity	1.06	g/cm ³
	Melt Mass-Flow Rate (MFR) (280°C/5.0 kg)	9.2	g/10 min
	Melt Volume-Flow Rate (MVR) (280°C/5.0 kg)	9.00	cm ³ /10min
Molding Shrinkage			Internal Method
Flow : 3.20 mm		0.50 to 0.70	%

Across Flow : 3.20 mm	0.50 to 0.70	%	
Water Absorption			
24 hr	0.060	%	ASTM D570
Saturation, 23°C	0.23	%	ISO 62
Equilibrium, 23°C, 50% RH	0.060	%	ISO 62
Hardness	Nominal Value	Unit	Test Method
Rockwell Hardness (R-Scale)	119		ASTM D785
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus			
-- ¹	2860	MPa	ASTM D638
--	2700	MPa	ISO 527-2/1
Tensile Strength			
Yield ²	58.6	MPa	ASTM D638
Yield	57.0	MPa	ISO 527-2/50
Break ³	49.6	MPa	ASTM D638
Break	51.0	MPa	ISO 527-2/50
Tensile Elongation			
Yield ⁴	7.2	%	ASTM D638
Yield	3.5	%	ISO 527-2/50
Break ⁵	28	%	ASTM D638
Break	17	%	ISO 527-2/50
Flexural Modulus			
50.0 mm Span ⁶	2650	MPa	ASTM D790
100 mm Span ⁷	2420	MPa	ASTM D790
-- ⁸	2550	MPa	ISO 178
Flexural Stress			
--	95.0	MPa	ISO 178
Yield, 50.0 mm Span ⁹	90.3	MPa	ASTM D790
Yield, 100 mm Span ¹⁰	89.6	MPa	ASTM D790
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength ¹¹ (23°C)	17	kJ/m ²	ISO 179/1eA
Notched Izod Impact			
-40°C	130	J/m	ASTM D256
23°C	210	J/m	ASTM D256
-30°C ¹²	5.0	kJ/m ²	ISO 180/1A
23°C ¹³	17	kJ/m ²	ISO 180/1A
Instrumented Dart Impact (23°C, Total Energy)	48.8	J	ASTM D3763
Gardner Impact			ASTM D3029
-40°C	5.42	J	
-30°C	25.8	J	
Thermal	Nominal Value	Unit	Test Method

Deflection Temperature Under Load			
0.45 MPa, Unannealed, 3.20 mm	132	°C	ASTM D648
0.45 MPa, Unannealed, 6.40 mm	137	°C	ASTM D648
1.8 MPa, Unannealed, 3.20 mm	118	°C	ASTM D648
1.8 MPa, Unannealed, 6.40 mm	127	°C	ASTM D648
1.8 MPa, Unannealed, 64.0 mm Span ¹⁴	120	°C	ISO 75-2/Af
Vicat Softening Temperature			
--	149	°C	ASTM D1525 ¹⁵
--	140	°C	ISO 306/B50
--	143	°C	ISO 306/B120
CLTE			ASTM E831, ISO 11359-2
Flow : -40 to 40°C	9.2E-5	cm/cm/°C	
Transverse : -40 to 40°C	9.5E-5	cm/cm/°C	
RTI Elec	105	°C	UL 746
RTI Imp	90.0	°C	UL 746
RTI Str	105	°C	UL 746
Electrical	Nominal Value	Unit	Test Method
Dielectric Strength (3.20 mm, in Oil)	22	kV/mm	ASTM D149
Dielectric Constant			ASTM D150
50 Hz	2.65		
60 Hz	2.65		
Dissipation Factor			ASTM D150
50 Hz	4.0E-4		
60 Hz	4.0E-4		
Arc Resistance ¹⁶	PLC 7		ASTM D495
Comparative Tracking Index (CTI)	PLC 3		UL 746
High Amp Arc Ignition (HAI)	PLC 0		UL 746
High Voltage Arc Tracking Rate (HVTR)	PLC 4		UL 746
Hot-wire Ignition (HWI)	PLC 2		UL 746
Flammability	Nominal Value	Unit	Test Method
Flame Rating (1.47 mm)	HB		UL 94
Oxygen Index	22	%	ASTM D2863
Injection	Nominal Value	Unit	
Drying Temperature	104 to 110	°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	249 to 299	°C	
Middle Temperature	260 to 304	°C	
Front Temperature	271 to 310	°C	
Nozzle Temperature	282 to 310	°C	

Processing (Melt) Temp	282 to 310	°C
Mold Temperature	76.7 to 104	°C
Back Pressure	0.345 to 0.689	MPa
Screw Speed	20 to 100	rpm

NOTE

1.	50 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.	2.6 mm/min
8.	2.0 mm/min
9.	1.3 mm/min
10.	2.6 mm/min
11.	80*10*4 sp=62mm
12.	80*10*4
13.	80*10*4
14.	80*10*4 mm
15.	Rate B (120°C/h), Loading 2 (50 N)
16.	Tungsten Electrode

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