

NORYL™ 731 resin

Wednesday, December 30, 2015

General Information

Product Description

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

Material Status	• Commercial: Active
Availability	• North America
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	<ul style="list-style-type: none"> • 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) • Viscosity vs. Shear Rate (ASTM D3835)

ASTM & ISO Properties¹

Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.06		ASTM D792
Density	1.06	g/cm ³	ISO 1183
Melt Mass-Flow Rate (MFR) (280°C/5.0 kg)	9.2	g/10 min	ASTM D1238
Melt Volume-Flow Rate (MVR) (280°C/5.0 kg)	0.549	in ³ /10min	ISO 1133
Molding Shrinkage - Flow (0.126 in)	5.0E-3 to 7.0E-3	in/in	Internal Method
Molding Shrinkage - Across Flow (0.126 in)	5.0E-3 to 7.0E-3	in/in	Internal Method
Water Absorption (24 hr)	0.060	%	ASTM D570
Water Absorption (Saturation, 73°F)	0.23	%	ISO 62
Water Absorption (Equilibrium, 73°F, 50% RH)	0.060	%	ISO 62
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus ²	415000	psi	ASTM D638
Tensile Modulus	392000	psi	ISO 527-2/1
Tensile Strength ³ (Yield)	8500	psi	ASTM D638

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SABIC Innovative Plastics - Polyphenylene Ether + PS

Mechanical	Nominal Value	Unit	Test Method
Tensile Stress (Yield)	8270	psi	ISO 527-2/50
Tensile Strength ³ (Break)	7200	psi	ASTM D638
Tensile Stress (Break)	7400	psi	ISO 527-2/50
Tensile Elongation ³ (Yield)	7.2	%	ASTM D638
Tensile Strain (Yield)	3.5	%	ISO 527-2/50
Tensile Elongation ³ (Break)	28	%	ASTM D638
Tensile Strain (Break)	17	%	ISO 527-2/50
Flexural Modulus			ASTM D790
1.97 in Span ⁴	384000	psi	
3.94 in Span ⁵	351000	psi	
Flexural Modulus ⁶	370000	psi	ISO 178
Flexural Stress ^{6,7}	13800	psi	ISO 178
Flexural Strength			ASTM D790
Yield, 1.97 in Span ⁴	13100	psi	
Yield, 3.94 in Span ⁵	13000	psi	
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength ⁸ (73°F)	8.1	ft-lb/in ²	ISO 179/1eA
Notched Izod Impact			ASTM D256
-40°F	2.5	ft-lb/in	
73°F	4.0	ft-lb/in	
Notched Izod Impact Strength ⁹			ISO 180/1A
-22°F	2.4	ft-lb/in ²	
73°F	8.1	ft-lb/in ²	
Instrumented Dart Impact (73°F, Total Energy)	432	in-lb	ASTM D3763
Gardner Impact			ASTM D3029
-40°F	48.0	in-lb	
-22°F	228	in-lb	
Hardness	Nominal Value	Unit	Test Method
Rockwell Hardness (R-Scale)	119		ASTM D785
Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load			ASTM D648
66 psi, Unannealed, 0.126 in	269	°F	
66 psi, Unannealed, 0.252 in	279	°F	
Deflection Temperature Under Load			ASTM D648
264 psi, Unannealed, 0.126 in	244	°F	
264 psi, Unannealed, 0.252 in	260	°F	
Heat Deflection Temperature ¹⁰			ISO 75-2/af
264 psi, Unannealed, 2.52 in Span	248	°F	
Vicat Softening Temperature	300	°F	ASTM D1525 ¹¹
Vicat Softening Temperature			
--	284	°F	ISO 306/B50
--	289	°F	ISO 306/B120

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Thermal	Nominal Value	Unit	Test Method
CLTE - Flow (-40 to 104°F)	5.1E-5	in/in/°F	ASTM E831
CLTE - Flow (-40 to 104°F)	5.1E-5	in/in/°F	ISO 11359-2
CLTE - Transverse (-40 to 104°F)	5.3E-5	in/in/°F	ASTM E831
CLTE - Transverse (-40 to 104°F)	5.3E-5	in/in/°F	ISO 11359-2
RTI Elec	221	°F	UL 746
RTI Imp	194	°F	UL 746
RTI Str	221	°F	UL 746

Electrical	Nominal Value	Unit	Test Method
Dielectric Strength (0.126 in, in Oil)	550	V/mil	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 ¹²	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 (0.0580 in)	HB		UL 94
Oxygen Index	22	%	ASTM D2863

Processing Information

Injection	Nominal Value	Unit
Drying Temperature	220 to 230	°F
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	480 to 570	°F
Middle Temperature	500 to 580	°F
Front Temperature	520 to 590	°F
Nozzle Temperature	540 to 590	°F
Processing (Melt) Temp	540 to 590	°F
Mold Temperature	170 to 220	°F
Back Pressure	50.0 to 100	psi
Screw Speed	20 to 100	rpm

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Notes

¹ Typical properties: these are not to be construed as specifications.

² 2.0 in/min

³ Type I, 2.0 in/min

⁴ 0.051 in/min

⁵ 0.10 in/min

⁶ 0.079 in/min

⁷ Yield

⁸ 80*10*4 sp=62mm

⁹ 80*10*4

¹⁰ 80*10*4 mm

¹¹ Rate B (120°C/h), Loading 2 (50 N)

¹² Tungsten Electrode

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