

NORYL™ 731F resin

Polyphenylene Ether + PS
SABIC Innovative Plastics

PROSPECTOR®

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Technical Data

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
Literature ¹	• Technical Datasheet
UL Yellow Card ²	• E121562-221150
Search for UL Yellow Card	• SABIC Innovative Plastics • NORYL™
Availability	• North America
Features	• Good Dimensional Stability • Hydrolytically Stable • Low to No Water Absorption
Uses	• Housings • Pump Parts • Potable Water Applications • Valves/Valve Parts
Agency Ratings	• FDA Unspecified Rating • NSF STD-61
Processing Method	• Injection Molding

Physical	Nominal Value (English)	Nominal Value (SI)	Test Method
Specific Gravity			
--	1.06	1.06 g/cm ³	ASTM D792
--	1.06 g/cm ³	1.06 g/cm ³	ISO 1183
Melt Mass-Flow Rate (MFR) (280°C/5.0 kg)	9.2 g/10 min	9.2 g/10 min	ASTM D1238
Melt Volume-Flow Rate (MVR) (280°C/5.0 kg)	0.549 in ³ /10min	9.00 cm ³ /10min	ISO 1133
Molding Shrinkage			Internal Method
Flow : 0.126 in (3.20 mm)	5.0E-3 to 7.0E-3 in/in	0.50 to 0.70 %	
Across Flow : 0.126 in (3.20 mm)	5.0E-3 to 7.0E-3 in/in	0.50 to 0.70 %	
Water Absorption			
24 hr	0.060 %	0.060 %	ASTM D570
Saturation, 73°F (23°C)	0.23 %	0.23 %	ISO 62
Equilibrium, 73°F (23°C), 50% RH	0.060 %	0.060 %	ISO 62

Mechanical	Nominal Value (English)	Nominal Value (SI)	Test Method
Tensile Modulus			
-- ⁴	415000 psi	2860 MPa	ASTM D638
--	392000 psi	2700 MPa	ISO 527-2/1
Tensile Strength			
Yield ⁵	8500 psi	58.6 MPa	ASTM D638
Yield	8270 psi	57.0 MPa	ISO 527-2/50
Break ⁵	7200 psi	49.6 MPa	ASTM D638
Break	7400 psi	51.0 MPa	ISO 527-2/50
Tensile Elongation			
Yield ⁵	7.2 %	7.2 %	ASTM D638
Yield	3.5 %	3.5 %	ISO 527-2/50
Break ⁵	28 %	28 %	ASTM D638
Break	17 %	17 %	ISO 527-2/50
Flexural Modulus			
1.97 in (50.0 mm) Span ⁶	384000 psi	2650 MPa	ASTM D790
3.94 in (100 mm) Span ⁷	351000 psi	2420 MPa	ASTM D790
-- ⁸	370000 psi	2550 MPa	ISO 178



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Mechanical	Nominal Value (English)	Nominal Value (SI)	Test Method
Flexural Stress			
-- 8, 9	13800 psi	95.0 MPa	ISO 178
Yield, 1.97 in (50.0 mm) Span ⁶	13100 psi	90.3 MPa	ASTM D790
Yield, 3.94 in (100 mm) Span ⁷	13000 psi	89.6 MPa	ASTM D790
Impact	Nominal Value (English)	Nominal Value (SI)	Test Method
Charpy Notched Impact Strength ¹⁰ (73°F (23°C))	8.1 ft·lb/in ²	17 kJ/m ²	ISO 179/1eA
Notched Izod Impact			
-40°F (-40°C)	2.5 ft·lb/in	130 J/m	ASTM D256
73°F (23°C)	4.0 ft·lb/in	210 J/m	ASTM D256
-22°F (-30°C) ¹¹	2.4 ft·lb/in ²	5.0 kJ/m ²	ISO 180/1A
73°F (23°C) ¹¹	8.1 ft·lb/in ²	17 kJ/m ²	ISO 180/1A
Instrumented Dart Impact			ASTM D3763
73°F (23°C), Total Energy	432 in·lb	48.8 J	
Gardner Impact			ASTM D3029
-40°F (-40°C)	48.0 in·lb	5.42 J	
-22°F (-30°C)	228 in·lb	25.8 J	
Hardness	Nominal Value (English)	Nominal Value (SI)	Test Method
Rockwell Hardness (R-Scale)	119	119	ASTM D785
Thermal	Nominal Value (English)	Nominal Value (SI)	Test Method
Deflection Temperature Under Load			
66 psi (0.45 MPa), Unannealed, 0.126 in (3.20 mm)	269 °F	132 °C	ASTM D648
66 psi (0.45 MPa), Unannealed, 0.252 in (6.40 mm)	279 °F	137 °C	ASTM D648
264 psi (1.8 MPa), Unannealed, 0.126 in (3.20 mm)	244 °F	118 °C	ASTM D648
264 psi (1.8 MPa), Unannealed, 0.252 in (6.40 mm)	260 °F	127 °C	ASTM D648
264 psi (1.8 MPa), Unannealed, 2.52 in (64.0 mm) Span ¹²	248 °F	120 °C	ISO 75-2/Af
Vicat Softening Temperature			
--	300 °F	149 °C	ASTM D1525 ¹³
--	284 °F	140 °C	ISO 306/B50
--	289 °F	143 °C	ISO 306/B120
CLTE			ASTM E831 ISO 11359-2
Flow : -40 to 104°F (-40 to 40°C)	5.1E-5 in/in/°F	9.2E-5 cm/cm/°C	
Transverse : -40 to 104°F (-40 to 40°C)	5.3E-5 in/in/°F	9.5E-5 cm/cm/°C	
RTI Elec	221 °F	105 °C	UL 746
RTI Imp	194 °F	90.0 °C	UL 746
RTI Str	221 °F	105 °C	UL 746
Electrical	Nominal Value (English)	Nominal Value (SI)	Test Method
Dielectric Strength			ASTM D149
0.126 in (3.20 mm), in Oil	550 V/mil	22 kV/mm	
Dielectric Constant			ASTM D150
50 Hz	2.65	2.65	
60 Hz	2.65	2.65	
Dissipation Factor			ASTM D150
50 Hz	4.0E-4	4.0E-4	
60 Hz	4.0E-4	4.0E-4	
Arc Resistance ¹⁴	PLC 7	PLC 7	ASTM D495
Comparative Tracking Index (CTI)	PLC 3	PLC 3	UL 746
High Amp Arc Ignition (HAI)	PLC 0	PLC 0	UL 746
High Voltage Arc Tracking Rate (HVTR)	PLC 4	PLC 4	UL 746



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Electrical	Nominal Value (English)	Nominal Value (SI)	Test Method
Hot-wire Ignition (HWI)	PLC 2	PLC 2	UL 746
Flammability	Nominal Value (English)	Nominal Value (SI)	Test Method
Flame Rating (0.06 in (1.5 mm))	HB	HB	UL 94
Oxygen Index	22 %	22 %	ASTM D2863
Injection	Nominal Value (English)	Nominal Value (SI)	
Drying Temperature	220 to 230 °F	104 to 110 °C	
Drying Time	3.0 to 4.0 hr	3.0 to 4.0 hr	
Drying Time, Maximum	8.0 hr	8.0 hr	
Suggested Max Moisture	0.020 %	0.020 %	
Suggested Shot Size	30 to 70 %	30 to 70 %	
Rear Temperature	480 to 570 °F	249 to 299 °C	
Middle Temperature	500 to 580 °F	260 to 304 °C	
Front Temperature	520 to 590 °F	271 to 310 °C	
Nozzle Temperature	540 to 590 °F	282 to 310 °C	
Processing (Melt) Temp	540 to 590 °F	282 to 310 °C	
Mold Temperature	170 to 220 °F	77 to 104 °C	
Back Pressure	50.0 to 100 psi	0.345 to 0.689 MPa	
Screw Speed	20 to 100 rpm	20 to 100 rpm	

Notes

¹ These links provide you with access to supplier literature. We work hard to keep them up to date; however you may find the most current literature from the supplier.

² A UL Yellow Card contains UL-verified flammability and electrical characteristics. UL Prospector continually works to link Yellow Cards to individual plastic materials in Prospector, however this list may not include all of the appropriate links. It is important that you verify the association between these Yellow Cards and the plastic material found in Prospector. For a complete listing of Yellow Cards, visit the UL Yellow Card Search.

³ Typical properties: these are not to be construed as specifications.

⁴ 2.0 in/min (50 mm/min)

⁵ Type I, 2.0 in/min (50 mm/min)

⁶ 0.051 in/min (1.3 mm/min)

⁷ 0.10 in/min (2.6 mm/min)

⁸ 0.079 in/min (2.0 mm/min)

⁹ Yield

¹⁰ 80*10*4 sp=62mm

¹¹ 80*10*4

¹² 80*10*4 mm

¹³ Rate B (120°C/h), Loading 2 (50 N)

¹⁴ Tungsten Electrode



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Where to Buy

Supplier

SABIC Innovative Plastics

Pittsfield, MA USA

Telephone: 800-845-0600

Web: <http://www.sabic-ip.com/>

Distributor

Nexeo Solutions

Telephone: 800-531-7106

Web: <http://www.nexeosolutions.com/>

Availability: North America

Reseller

A Reseller is not a distributor authorized by the Supplier.

Guangzhou Huaxiu Plastics Co., Ltd.

Telephone: +86-20-82582555

Web: <http://www.va-so.com>

Availability: China

