



**NORYL™ Resin 731**  
**Americas: COMMERCIAL**

PPE+PS blend. Unfilled. 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.

TYPICAL PROPERTIES <sup>1</sup>	TYPICAL VALUE	Unit	Standard
<b>MECHANICAL</b>			
Tensile Stress, yld, Type I, 50 mm/min	590	kgf/cm <sup>2</sup>	ASTM D 638
Tensile Stress, brk, Type I, 50 mm/min	500	kgf/cm <sup>2</sup>	ASTM D 638
Tensile Strain, yld, Type I, 50 mm/min	7.2	%	ASTM D 638
Tensile Strain, brk, Type I, 50 mm/min	28.1	%	ASTM D 638
Tensile Modulus, 50 mm/min	29100	kgf/cm <sup>2</sup>	ASTM D 638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	920	kgf/cm <sup>2</sup>	ASTM D 790
Flexural Stress, yld, 2.6 mm/min, 100 mm span	910	kgf/cm <sup>2</sup>	ASTM D 790
Flexural Modulus, 1.3 mm/min, 50 mm span	26900	kgf/cm <sup>2</sup>	ASTM D 790
Flexural Modulus, 2.6 mm/min, 100 mm span	24600	kgf/cm <sup>2</sup>	ASTM D 790
Hardness, Rockwell R	119	-	ASTM D 785
Tensile Stress, yield, 50 mm/min	57	MPa	ISO 527
Tensile Stress, break, 50 mm/min	51	MPa	ISO 527
Tensile Strain, yield, 50 mm/min	3.5	%	ISO 527
Tensile Strain, break, 50 mm/min	17	%	ISO 527
Tensile Modulus, 1 mm/min	2700	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	95	MPa	ISO 178
Flexural Modulus, 2 mm/min	2550	MPa	ISO 178
<b>IMPACT</b>			
Izod Impact, notched, 23°C	21	cm-kgf/cm	ASTM D 256
Izod Impact, notched, -40°C	13	cm-kgf/cm	ASTM D 256
Gardner, -30°C	262	cm-kgf	ASTM D 3029
Gardner, -40°C	55	cm-kgf	ASTM D 3029

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(2) Only typical data for selection purposes. Not to be used for part or tool design.  
 (3) This rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.

(4) Internal measurements according to UL standards.  
 (5) Measurements made from laboratory test coupon. Actual shrinkage may vary outside of range due to differences in processing conditions, equipment, part geometry and tool design. It is recommended that mold shrinkage studies be performed with surrogate or legacy tooling prior to cutting tools for new molded article.  
 (6) Needs hard coat to consistently pass 60 sec Vertical Burn.

Source GMD, last updated:

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<b>IMPACT</b>			
Instrumented Impact Total Energy, 23°C	497	cm-kgf	ASTM D 3763
Izod Impact, notched 80*10*4 +23°C	17	kJ/m <sup>2</sup>	ISO 180/1A
Izod Impact, notched 80*10*4 -30°C	5	kJ/m <sup>2</sup>	ISO 180/1A
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	17	kJ/m <sup>2</sup>	ISO 179/1eA
<b>THERMAL</b>			
Vicat Softening Temp, Rate B/50	148	°C	ASTM D 1525
HDT, 0.45 MPa, 3.2 mm, unannealed	131	°C	ASTM D 648
HDT, 1.82 MPa, 3.2mm, unannealed	117	°C	ASTM D 648
HDT, 0.45 MPa, 6.4 mm, unannealed	137	°C	ASTM D 648
HDT, 1.82 MPa, 6.4 mm, unannealed	126	°C	ASTM D 648
CTE, -40°C to 40°C, flow	9.18E-05	1/°C	ASTM E 831
CTE, -40°C to 40°C, xflow	9.54E-05	1/°C	ASTM E 831
CTE, -40°C to 40°C, flow	9.18E-05	1/°C	ISO 11359-2
CTE, -40°C to 40°C, xflow	9.54E-05	1/°C	ISO 11359-2
Vicat Softening Temp, Rate B/50	140	°C	ISO 306
Vicat Softening Temp, Rate B/120	143	°C	ISO 306
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	120	°C	ISO 75/Af
Relative Temp Index, Elec	105	°C	UL 746B
Relative Temp Index, Mech w/impact	90	°C	UL 746B
Relative Temp Index, Mech w/o impact	105	°C	UL 746B
<b>PHYSICAL</b>			
Specific Gravity	1.06	-	ASTM D 792
Water Absorption, 24 hours	0.06	%	ASTM D 570
Mold Shrinkage, flow, 3.2 mm (5)	0.5 - 0.7	%	SABIC Method
Mold Shrinkage, xflow, 3.2 mm (5)	0.5 - 0.7	%	SABIC Method

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TYPICAL PROPERTIES <sup>1</sup>	TYPICAL VALUE	Unit	Standard
<b>PHYSICAL</b>			
Melt Flow Rate, 280°C/5.0 kgf	9.2	g/10 min	ASTM D 1238
Density	1.06	g/cm <sup>3</sup>	ISO 1183
Water Absorption, (23°C/sat)	0.23	%	ISO 62
Moisture Absorption (23°C / 50% RH)	0.06	%	ISO 62
Melt Volume Rate, MVR at 280°C/5.0 kg	9	cm <sup>3</sup> /10 min	ISO 1133
<b>ELECTRICAL</b>			
Dielectric Strength, in oil, 3.2 mm	21.6	kV/mm	ASTM D 149
Relative Permittivity, 50/60 Hz	2.65	-	ASTM D 150
Dissipation Factor, 50/60 Hz	0.0004	-	ASTM D 150
Arc Resistance, Tungsten {PLC}	7	PLC Code	ASTM D 495
Hot Wire Ignition {PLC}	2	PLC Code	UL 746A
High Voltage Arc Track Rate {PLC}	4	PLC Code	UL 746A
High Ampere Arc Ign, surface {PLC}	0	PLC Code	UL 746A
Comparative Tracking Index (UL) {PLC}	3	PLC Code	UL 746A
<b>FLAME CHARACTERISTICS</b>			
UL Recognized, 94HB Flame Class Rating (3)	1.47	mm	UL 94
Oxygen Index (LOI)	22	%	ASTM D 2863

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PROCESSING PARAMETERS	TYPICAL VALUE	Unit
<b>Injection Molding</b>		
Drying Temperature	105 - 110	°C
Drying Time	3 - 4	hrs
Drying Time (Cumulative)	8	hrs
Maximum Moisture Content	0.02	%
Melt Temperature	280 - 310	°C
Nozzle Temperature	280 - 310	°C
Front - Zone 3 Temperature	270 - 310	°C
Middle - Zone 2 Temperature	260 - 305	°C
Rear - Zone 1 Temperature	250 - 300	°C
Mold Temperature	75 - 105	°C
Back Pressure	0.3 - 0.7	MPa
Screw Speed	20 - 100	rpm
Shot to Cylinder Size	30 - 70	%

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