



## NORYL PPX™ Resin PPX615

### Americas: OBSOLETE

Good chemical resistance. Designed for a balance of stiffness and practical impact strength.

TYPICAL PROPERTIES <sup>1</sup>	TYPICAL VALUE	Unit	Standard
<b>MECHANICAL</b>			
Tensile Stress, yld, Type I, 5 mm/min	600	kgf/cm <sup>2</sup>	ASTM D 638
Tensile Stress, brk, Type I, 5 mm/min	590	kgf/cm <sup>2</sup>	ASTM D 638
Tensile Strain, yld, Type I, 5 mm/min	4.3	%	ASTM D 638
Tensile Strain, brk, Type I, 5 mm/min	5	%	ASTM D 638
Tensile Modulus, 5 mm/min	35500	kgf/cm <sup>2</sup>	ASTM D 638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	930	kgf/cm <sup>2</sup>	ASTM D 790
Flexural Modulus, 1.3 mm/min, 50 mm span	31200	kgf/cm <sup>2</sup>	ASTM D 790
Tensile Stress, yield, 5 mm/min	60	MPa	ISO 527
Tensile Stress, break, 5 mm/min	59	MPa	ISO 527
Tensile Strain, yield, 5 mm/min	4.2	%	ISO 527
Tensile Strain, break, 5 mm/min	5	%	ISO 527
Tensile Modulus, 1 mm/min	4040	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	92	MPa	ISO 178
Flexural Modulus, 2 mm/min	3530	MPa	ISO 178
<b>IMPACT</b>			
Izod Impact, unnotched, 23°C	59	cm-kgf/cm	ASTM D 4812
Izod Impact, notched, 23°C	10	cm-kgf/cm	ASTM D 256
Izod Impact, notched, -30°C	6	cm-kgf/cm	ASTM D 256
Instrumented Impact Total Energy, 23°C	152	cm-kgf	ASTM D 3763
Izod Impact, unnotched 80*10 <sup>4</sup> +23°C	42	kJ/m <sup>2</sup>	ISO 180/1U
Izod Impact, unnotched 80*10 <sup>4</sup> -30°C	38	kJ/m <sup>2</sup>	ISO 180/1U
Izod Impact, notched 80*10 <sup>4</sup> +23°C	12	kJ/m <sup>2</sup>	ISO 180/1A

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(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>			
Izod Impact, notched 80*10*4 -30°C	7	kJ/m <sup>2</sup>	ISO 180/1A
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	12	kJ/m <sup>2</sup>	ISO 179/1eA
Charpy -30°C, V-notch Edgew 80*10*4 sp=62mm	12	kJ/m <sup>2</sup>	ISO 179/1eA
Charpy 23°C, Unnotch Edgew 80*10*4 sp=62mm	51	kJ/m <sup>2</sup>	ISO 179/1eU
Charpy -30°C, Unnotch Edgew 80*10*4 sp=62mm	41	kJ/m <sup>2</sup>	ISO 179/1eU
<b>THERMAL</b>			
Vicat Softening Temp, Rate B/50	123	°C	ASTM D 1525
HDT, 0.45 MPa, 3.2 mm, unannealed	150	°C	ASTM D 648
HDT, 1.82 MPa, 3.2mm, unannealed	127	°C	ASTM D 648
CTE, -40°C to 40°C, flow	4.9E-05	1/°C	ASTM E 831
CTE, -40°C to 40°C, xflow	9.8E-05	1/°C	ASTM E 831
CTE, -40°C to 40°C, flow	4.9E-05	1/°C	ISO 11359-2
CTE, -40°C to 40°C, xflow	9.8E-05	1/°C	ISO 11359-2
Ball Pressure Test, 75°C +/- 2°C	-N/A-	-	IEC 60695-10-2
Vicat Softening Temp, Rate B/50	123	°C	ISO 306
Vicat Softening Temp, Rate B/120	124	°C	ISO 306
HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm	148	°C	ISO 75/Bf
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	122	°C	ISO 75/Af
<b>PHYSICAL</b>			
Specific Gravity	1.08	-	ASTM D 792
Mold Shrinkage on Tensile Bar, flow (2) (5)	0.3 - 0.4	%	SABIC Method
Mold Shrinkage, flow, 3.2 mm (5)	0.3 - 0.4	%	SABIC Method
Mold Shrinkage, xflow, 3.2 mm (5)	0.3 - 0.8	%	SABIC Method
Melt Flow Rate, 260°C/5.0 kgf	4.4	g/10 min	ASTM D 1238
Density	1.08	g/cm <sup>3</sup>	ISO 1183

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 (6) Needs hard coat to consistently pass 60 sec Vertical Burn.

Source GMD, last updated:

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TYPICAL PROPERTIES <sup>1</sup>	TYPICAL VALUE	Unit	Standard
<b>PHYSICAL</b>			
Water Absorption, (23°C/sat)	0.04	%	ISO 62
Moisture Absorption (23°C / 50% RH)	0.03	%	ISO 62
Melt Volume Rate, MVR at 260°C/5.0 kg	5	cm <sup>3</sup> /10 min	ISO 1133
<b>FLAME CHARACTERISTICS</b>			
UL Recognized, 94HB Flame Class Rating (3)	1.5	mm	UL 94

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PROCESSING PARAMETERS	TYPICAL VALUE	Unit
<b>Injection Molding</b>		
Drying Temperature	65 - 75	°C
Drying Time	2 - 4	hrs
Drying Time (Cumulative)	8	hrs
Maximum Moisture Content	0.02	%
Melt Temperature	260 - 300	°C
Nozzle Temperature	260 - 300	°C
Front - Zone 3 Temperature	255 - 295	°C
Middle - Zone 2 Temperature	250 - 290	°C
Rear - Zone 1 Temperature	245 - 290	°C
Mold Temperature	40 - 65	°C
Back Pressure	0.3 - 0.7	MPa
Screw Speed	20 - 100	rpm
Shot to Cylinder Size	30 - 70	%
Vent Depth	0.051 - 0.076	mm

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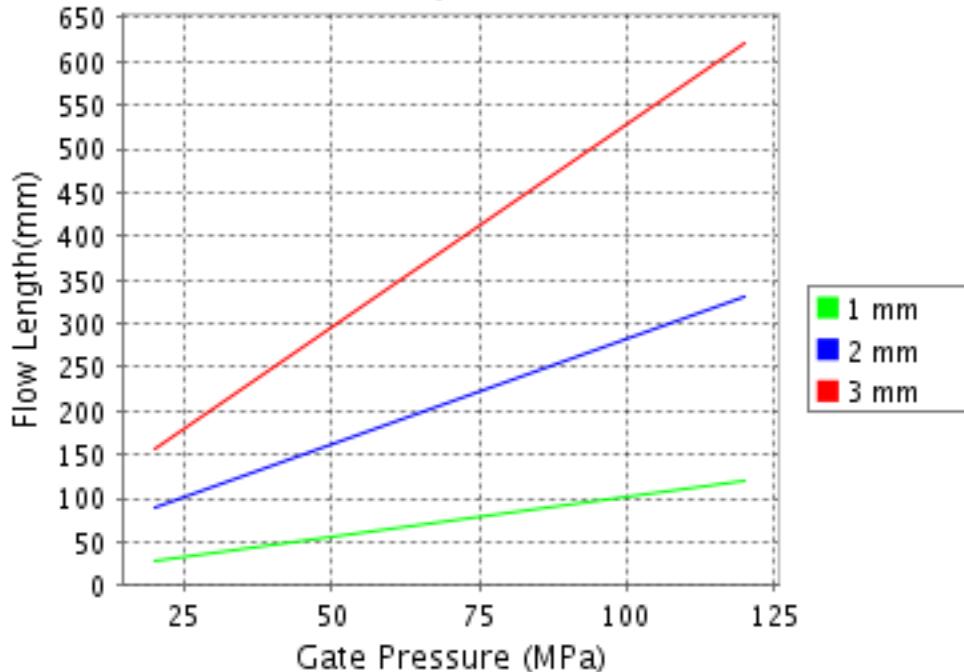
### CALCULATED FLOW LENGTH INDICATION

Moldflow® Radial Flow Analysis

**NORYL PPX® PPX615**

**Melt Temperature : 280°C**

**Mold Temperature : 55°C**



**Note: Technical support is recommended if Gate Pressure is greater than 80 MPa. Contact your local representative.**

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