



NORYL™ Resin HNA055
Asia Pacific: COMMERCIAL

>PPE+PS-HI< Autoclavable engineering thermoplastic. Biocompatible per ISO10993 (color dependent).

TYPICAL PROPERTIES ¹	TYPICAL VALUE	Unit	Standard
MECHANICAL			
Tensile Stress, yld, Type I, 50 mm/min	690	kgf/cm ²	ASTM D 638
Tensile Stress, brk, Type I, 50 mm/min	560	kgf/cm ²	ASTM D 638
Tensile Strain, yld, Type I, 50 mm/min	4.8	%	ASTM D 638
Tensile Strain, brk, Type I, 50 mm/min	16.3	%	ASTM D 638
Tensile Modulus, 5 mm/min	33100	kgf/cm ²	ASTM D 638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	1020	kgf/cm ²	ASTM D 790
Flexural Modulus, 1.3 mm/min, 50 mm span	25900	kgf/cm ²	ASTM D 790
Tensile Stress, yield, 50 mm/min	61	MPa	ISO 527
Tensile Stress, break, 50 mm/min	57	MPa	ISO 527
Tensile Strain, yield, 50 mm/min	3.8	%	ISO 527
Tensile Strain, break, 50 mm/min	12.6	%	ISO 527
Tensile Modulus, 1 mm/min	2400	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	107	MPa	ISO 178
Flexural Modulus, 2 mm/min	2490	MPa	ISO 178
IMPACT			
Izod Impact, notched, 23°C	29	cm-kgf/cm	ASTM D 256
Izod Impact, notched, -30°C	14	cm-kgf/cm	ASTM D 256
Instrumented Impact Total Energy, 23°C	550	cm-kgf	ASTM D 3763
Izod Impact, notched 80*10*4 +23°C	24	kJ/m ²	ISO 180/1A
Izod Impact, notched 80*10*4 -30°C	14	kJ/m ²	ISO 180/1A
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	27	kJ/m ²	ISO 179/1eA
THERMAL			
Vicat Softening Temp, Rate B/50	168	°C	ASTM D 1525

(1) Typical values only. Variations within normal tolerances are possible for various colors. All values are measured after at least 48 hours storage at 23°C/50% relative humidity. All properties, except the melt volume and melt flow rates, are measured on injection molded samples. All samples tested under ISO test standards are prepared according to ISO 294.

(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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TYPICAL PROPERTIES ¹	TYPICAL VALUE	Unit	Standard
THERMAL			
HDT, 1.82 MPa, 3.2mm, unannealed	147	°C	ASTM D 648
CTE, -40°C to 40°C, flow	8.66E-05	1/°C	ASTM E 831
CTE, -40°C to 40°C, xflow	9.25E-05	1/°C	ASTM E 831
CTE, -40°C to 40°C, flow	8.66E-05	1/°C	ISO 11359-2
CTE, -40°C to 40°C, xflow	9.25E-05	1/°C	ISO 11359-2
Vicat Softening Temp, Rate B/50	168	°C	ISO 306
Vicat Softening Temp, Rate B/120	169	°C	ISO 306
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	147	°C	ISO 75/Af
PHYSICAL			
Specific Gravity	1.08	-	ASTM D 792
Mold Shrinkage, flow, 3.2 mm (5)	0.6 - 0.8	%	SABIC Method
Melt Flow Rate, 300°C/5.0 kgf	6.2	g/10 min	ASTM D 1238
Density	1.08	g/cm ³	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 300°C/5.0 kg	5	cm ³ /10 min	ISO 1133

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PROCESSING PARAMETERS	TYPICAL VALUE	Unit
Injection Molding		
Drying Temperature	105 - 110	°C
Drying Time	3 - 4	hrs
Drying Time (Cumulative)	8	hrs
Maximum Moisture Content	0.02	%
Melt Temperature	295 - 315	°C
Nozzle Temperature	295 - 315	°C
Front - Zone 3 Temperature	280 - 315	°C
Middle - Zone 2 Temperature	270 - 310	°C
Rear - Zone 1 Temperature	260 - 305	°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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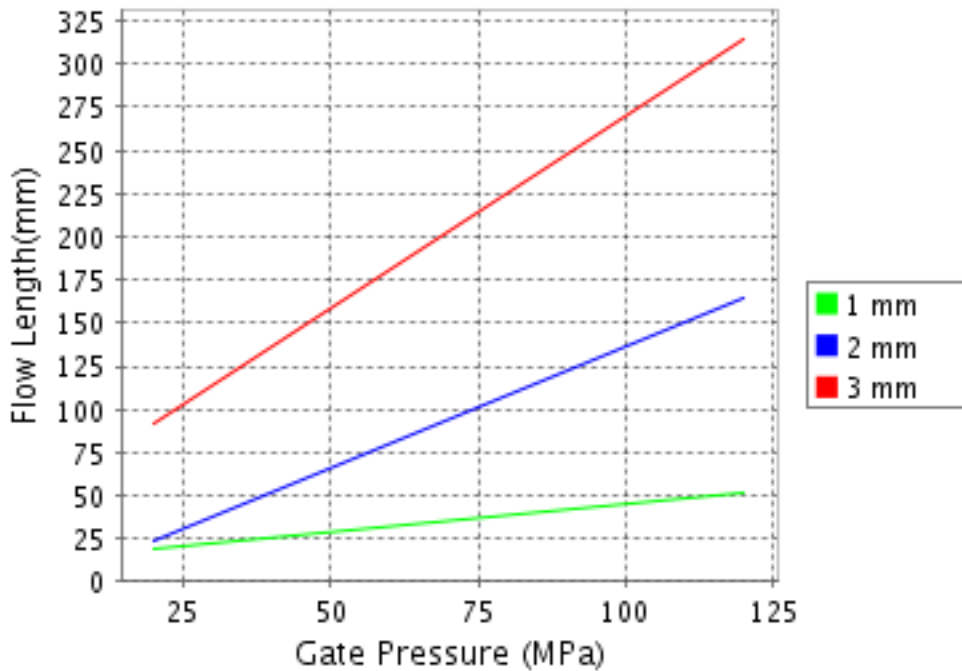
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CALCULATED FLOW LENGTH INDICATION
Moldflow® Radial Flow Analysis
NORYL® HNA055
Melt Temperature : 305°C
Mold Temperature : 90°C



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