

NORYL™ RESIN HN731A

REGION AMERICAS

DESCRIPTION

NORYL HN731A resin is a non-reinforced blend of polyphenylene ether (PPE) + polystyrene (PS). This injection moldable grade is US FDA and European Food Contact approved, biocompatible (ISO10993 or USP Class VI), RoHS compliant, and It is subject to SABIC's Healthcare management of change and formulation lock. NORYL HN731A resin exhibits good impact resistance, excellent hydrolytic stability, and chemical resistance. This light weight and colorable material is an excellent candidate for medical device and pharmaceutical applications such as drug-delivery inhalers.

GENERAL INFORMATION	
Features	Chemical Resistance, Hydrolytic Stability, Low Warpage, Amorphous, Low Shrinkage, Low Moisture Absorption, Low Specific Gravity, Biocompatibility-ISO10993, Food contact, Healthcare/Formula lock, Autoclave/Steam sterilizable, Dimensional stability, High stiffness/Strength, Sterilizable, No PFAS intentionally added
Fillers	Unreinforced
Polymer Types	Polyphenylene Ether + PS (PPE+PS)
Processing Techniques	Injection Molding

INDUSTRY	SUB INDUSTRY
Hygiene and Healthcare	Pharmaceutical Packaging and Drug Delivery, General Healthcare, Patient Testing

TYPICAL PROPERTY VALUES

Revision 20241016

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL ⁽¹⁾			
Tensile Stress, yld, Type I, 50 mm/min	58	MPa	ASTM D638
Tensile Stress, brk, Type I, 50 mm/min	49	MPa	ASTM D638
Tensile Strain, yld, Type I, 50 mm/min	7.2	%	ASTM D638
Tensile Strain, brk, Type I, 50 mm/min	28.1	%	ASTM D638
Tensile Modulus, 50 mm/min	2860	MPa	ASTM D638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	90	MPa	ASTM D790
Flexural Stress, yld, 2.6 mm/min, 100 mm span	89	MPa	ASTM D790
Flexural Modulus, 1.3 mm/min, 50 mm span	2640	MPa	ASTM D790
Flexural Modulus, 2.6 mm/min, 100 mm span	2420	MPa	ASTM D790
Hardness, Rockwell R	119	-	ASTM D785
Tensile Stress, yield, 50 mm/min	55	MPa	ISO 527
Tensile Stress, break, 50 mm/min	50	MPa	ISO 527
Tensile Strain, yield, 50 mm/min	5	%	ISO 527
Tensile Strain, break, 50 mm/min	30	%	ISO 527
Tensile Modulus, 1 mm/min	2300	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	75	MPa	ISO 178
Flexural Modulus, 2 mm/min	2200	MPa	ISO 178
IMPACT ⁽¹⁾			
Izod Impact, notched, 23°C	213	J/m	ASTM D256
Izod Impact, notched, -40°C	133	J/m	ASTM D256

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Gardner, -30°C	25	J	ASTM D3029
Gardner, -40°C	5	J	ASTM D3029
Instrumented Dart Impact Total Energy, 23°C	48	J	ASTM D3763
Izod Impact, notched 80*10*4 +23°C	15	kJ/m ²	ISO 180/1A
Izod Impact, notched 80*10*4 -30°C	5	kJ/m ²	ISO 180/1A
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	15	kJ/m ²	ISO 179/1eA
THERMAL ⁽¹⁾			
Vicat Softening Temp, Rate B/50	148	°C	ASTM D1525
HDT, 0.45 MPa, 3.2 mm, unannealed	131	°C	ASTM D648
HDT, 1.82 MPa, 3.2mm, unannealed	117	°C	ASTM D648
HDT, 0.45 MPa, 6.4 mm, unannealed	137	°C	ASTM D648
HDT, 1.82 MPa, 6.4 mm, unannealed	126	°C	ASTM D648
CTE, -40°C to 40°C, flow	9.18E-05	1/°C	ASTM E831
CTE, -40°C to 40°C, xflow	9.54E-05	1/°C	ASTM E831
CTE, -40°C to 40°C, flow	7.E-05	1/°C	ISO 11359-2
CTE, -40°C to 40°C, xflow	7.E-05	1/°C	ISO 11359-2
Vicat Softening Temp, Rate B/50	135	°C	ISO 306
Vicat Softening Temp, Rate B/120	140	°C	ISO 306
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	115	°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
PHYSICAL ⁽¹⁾			
Specific Gravity	1.06	-	ASTM D792
Water Absorption, (23°C/24hrs)	0.06	%	ASTM D570
Mold Shrinkage, flow, 3.2 mm ⁽²⁾	0.5 – 0.7	%	SABIC method
Mold Shrinkage, xflow, 3.2 mm ⁽²⁾	0.5 – 0.7	%	SABIC method
Melt Flow Rate, 280°C/5.0 kgf	9.2	g/10 min	ASTM D1238
Density	1.06	g/cm ³	ISO 1183
Water Absorption, (23°C/saturated)	0.23	%	ISO 62-1
Moisture Absorption (23°C / 50% RH)	0.06	%	ISO 62
Melt Volume Rate, MVR at 280°C/5.0 kg	8	cm ³ /10 min	ISO 1133
ELECTRICAL ⁽¹⁾			
Dielectric Strength, in oil, 3.2 mm	21.6	kV/mm	ASTM D149
Relative Permittivity, 50/60 Hz	2.65	-	ASTM D150
Dissipation Factor, 50/60 Hz	0.0004	-	ASTM D150
Arc Resistance, Tungsten {PLC}	7	PLC Code	ASTM D495
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
FLAME CHARACTERISTICS ⁽¹⁾			
UL Recognized, 94HB Flame Class Rating	1.47	mm	UL 94
Oxygen Index (LOI)	22	%	ASTM D2863
INJECTION MOLDING ⁽³⁾			

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
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	%	

- (1) The information stated on Technical Datasheets should be used as indicative only for material selection purposes and not be utilized as specification or used for part or tool design.
- (2) 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.
- (3) Injection Molding parameters are only mentioned as general guidelines. These may not apply or may need adjustment in specific situations such as low shot sizes, large part molding, thin wall molding and gas-assist molding.

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