NORYL™ Resin GFN3F

REGION ASIA

DESCRIPTION

NORYL GFN3F resin is a 30% glass fiber reinforced blend of polyphenylene ether (PPE) + polystyrene (PS). This injection moldable grade exhibits very low moisture absorption, high strength, hydrolytic stability, Low warpage, low specific gravity, and dimensional stability. NORYL GFN3F carries a UL746C outdoor suitability rating of F2 along with FDA food contact compliance and NSF 61 listings in several colors. The properties of this material makes it an excellent candidate for water management applications such as water filter and meter components, pump housings / impellers, shower + faucet, and valves.*See NORYL GFN3 resin for NON FDA / NSF version.

GENERAL INFORMATION	
Features	Hydrolytic Stability, Low Warpage, Amorphous, Low Shrinkage, Low Corrosivity, Low Moisture Absorption, Low Specific Gravity, Food contact, Potable water safe, Dimensional stability, High stiffness/Strength, No PFAS intentionally added
Fillers	Glass Fiber (Total fluorine >50ppm only from inorganic fluorine)
Polymer Types	Polyphenylene Ether + PS (PPE+PS)
Processing Techniques	Injection Molding

INDUSTRY	SUB INDUSTRY
Building and Construction	Water Management
Hygiene and Healthcare	Personal and Professional Hygiene

TYPICAL PROPERTY VALUES

Revision 20241015

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL [1]			
Tensile Stress, brk, Type I, 50 mm/min	130	MPa	ASTM D638
Tensile Strain, brk, Type I, 50 mm/min	3	%	ASTM D638
Tensile Modulus, 5 mm/min	9150	MPa	ASTM D638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	180	MPa	ASTM D790
Flexural Modulus, 1.3 mm/min, 50 mm span	8000	MPa	ASTM D790
Tensile Stress, break, 50 mm/min	110	MPa	ISO 527
Tensile Strain, break, 50 mm/min	2.5	%	ISO 527
Tensile Modulus, 1 mm/min	8500	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	160	MPa	ISO 178
Flexural Modulus, 2 mm/min	6800	MPa	ISO 178
IMPACT [1]			
Izod Impact, unnotched, 23°C	588	J/m	ASTM D4812
Izod Impact, notched, 23°C	117	J/m	ASTM D256
Izod Impact, notched, -30°C	124	J/m	ASTM D256
Instrumented Dart Impact Total Energy, 23°C	20	J	ASTM D3763
Izod Impact, unnotched 80*10*4 +23°C	31	kJ/m²	ISO 180/1U
Izod Impact, notched 80*10*4 +23°C	12	kJ/m²	ISO 180/1A
Izod Impact, notched 80*10*4 -30°C	11	kJ/m²	ISO 180/1A
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	8	kJ/m²	ISO 179/1eA

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THERMAL [1]			
Vicat Softening Temp, Rate B/50	147	°C	ASTM D1525
HDT, 0.45 MPa, 3.2 mm, unannealed	142	°C	ASTM D648
HDT, 1.82 MPa, 3.2mm, unannealed	137	°C	ASTM D648
CTE, -40°C to 40°C, flow	3.06E-05	1/°C	ASTM E831
CTE, -40°C to 40°C, xflow	6.18E-05	1/°C	ASTM E831
CTE, -40°C to 40°C, flow	2.3E-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	143	°C	ISO 306
Vicat Softening Temp, Rate B/120	147	°C	ISO 306
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	137	°C	ISO 75/Af
Relative Temp Index, Elec [2]	90	°C	UL 746B
Relative Temp Index, Mech w/impact [2]	90	°C	UL 746B
Relative Temp Index, Mech w/o impact [2]	90	°C	UL 746B
PHYSICAL [1]			
Specific Gravity	1.29	-	ASTM D792
Mold Shrinkage, flow, 3.2 mm [3]	0.1 – 0.4	%	SABIC method
Melt Flow Rate, 280°C/5.0 kgf	3.2	g/10 min	ASTM D1238
Water Absorption, (23°C/saturated)	0.1	%	ISO 62-1
Moisture Absorption (23°C / 50% RH)	0.04	%	ISO 62
Melt Volume Rate, MVR at 280°C/5.0 kg	2	cm³/10 min	ISO 1133
ELECTRICAL [1]			
Comparative Tracking Index (UL) {PLC}	4	PLC Code	UL 746A
High Amp Arc Ignition (HAI), PLC 4	≥1.5	mm	UL 746A
Hot-Wire Ignition (HWI), PLC 0	≥1.5	mm	UL 746A
High Voltage Arc Track Rate {PLC}	3	PLC Code	UL 746A
Arc Resistance, Tungsten {PLC}	6	PLC Code	ASTM D495
FLAME CHARACTERISTICS [2]			
UL Yellow Card Link	E207780-228546	-	-
UL Yellow Card Link 2	E45587-237022	-	-
UL Recognized, 94HB Flame Class Rating	≥1.5	mm	UL 94
UV-light, water exposure/immersion	F2	-	UL 746C
INJECTION MOLDING [4]			
Drying Temperature	110 – 120	°C	
Drying Time	3 – 4	Hrs	
Drying Time (Cumulative)	8	Hrs	
Maximum Moisture Content	0.02	%	
Melt Temperature	300 – 325	°C	
Nozzle Temperature	300 – 325	°C	
Front - Zone 3 Temperature	290 – 325	°C	
Middle - Zone 2 Temperature	275 – 320	°C	
Rear - Zone 1 Temperature	265 – 315	°C	
Mold Temperature	80 – 110	°C	
Back Pressure	0.3 – 0.7	MPa	
Screw Speed	20 – 100	rpm	

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PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
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) UL Ratings shown on the technical datasheet might not cover the full range of thicknesses, colors and regions. For details, please see the UL Yellow Card.
(3) 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.
(4) 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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