NORYL™ RESIN NH7112

REGION ASIA

DESCRIPTION

NORYL™ NH7112 resin is a 10% glass reinforced blend of polyphenylene ether (PPE) + high impact polystyrene (HIPS). This injection moldable and extrusion grade contains non-brominated, non-chlorinated flame retardant and carries a UL94 flame rating of 5VA at 2.5mm and V1 at 1.5mm along with a UL746C Outdoor Suitability rating of F1. NORYL NH7112 resin offers an exceptional balance of strength and dimensional stability and is an excellent candidate for electrical and electronic applications.

TYPICAL PROPERTY VALUES

Revision 20190925

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL			
Tensile Stress, yld, Type I, 5 mm/min	83	MPa	ASTM D 638
Tensile Stress, brk, Type I, 5 mm/min	83	MPa	ASTM D 638
Tensile Strain, yld, Type I, 5 mm/min	3	%	ASTM D 638
Tensile Strain, brk, Type I, 5 mm/min	3	%	ASTM D 638
Tensile Modulus, 5 mm/min	4300	MPa	ASTM D 638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	137	MPa	ASTM D 790
Flexural Modulus, 1.3 mm/min, 50 mm span	3750	MPa	ASTM D 790
Tensile Stress, yield, 5 mm/min	85	MPa	ISO 527
Tensile Stress, break, 5 mm/min	85	MPa	ISO 527
Tensile Strain, yield, 5 mm/min	3	%	ISO 527
Tensile Strain, break, 5 mm/min	3	%	ISO 527
Tensile Modulus, 1 mm/min	4400	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	140	MPa	ISO 178
Flexural Stress, break, 2 mm/min	134	MPa	ISO 178
Flexural Modulus, 2 mm/min	4150	MPa	ISO 178
IMPACT			
Izod Impact, notched, 23°C	70	J/m	ASTM D 256
Izod Impact, notched, -30°C	60	J/m	ASTM D 256
Instrumented Impact Total Energy, 23°C	15	J	ASTM D 3763
Izod Impact, unnotched 80*10*3 +23°C	26	kJ/m²	ISO 180/1U
Izod Impact, unnotched 80*10*4 +23°C	24	kJ/m²	ISO 180/1U
Izod Impact, unnotched 80*10*4 -30°C	25	kJ/m²	ISO 180/1U
Izod Impact, notched 80*10*4 +23°C	7	kJ/m²	ISO 180/1A
Izod Impact, notched 80*10*4 -30°C	6	kJ/m²	ISO 180/1A
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	7	kJ/m²	ISO 179/1eA
Charpy Impact, notched, 23°C	7	kJ/m²	ISO 179/2C
Charpy -30°C, V-notch Edgew 80*10*4 sp=62mm	6	kJ/m²	ISO 179/1eA
Charpy 23°C, Unnotch Edgew 80*10*4 sp=62mm	31	kJ/m²	ISO 179/1eU
Charpy -30°C, Unnotch Edgew 80*10*4 sp=62mm	31	kJ/m²	ISO 179/1eU
THERMAL			
Vicat Softening Temp, Rate B/50	148	°C	ASTM D 1525
HDT, 1.82 MPa, 3.2mm, unannealed	138	°C	ASTM D 648

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PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
CTE, -40°C to 40°C, flow	5.5E-04	1/°C	ASTM E 831
CTE, -40°C to 40°C, xflow	6.8E-05	1/°C	ASTM E 831
CTE, -40°C to 40°C, flow	5.5E-05	1/°C	ISO 11359-2
CTE, -40°C to 40°C, xflow	6.8E-05	1/°C	ISO 11359-2
Ball Pressure Test, 125°C +/- 2°C	PASSES	-	IEC 60695-10-2
Vicat Softening Temp, Rate B/50	148	°C	ISO 306
Vicat Softening Temp, Rate B/120	150	°C	ISO 306
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	137	°C	ISO 75/Af
Relative Temp Index, Elec [1]	110	°C	UL 746B
Relative Temp Index, Mech w/impact [1]	105	°C	UL 746B
Relative Temp Index, Mech w/o impact [1]	110	°C	UL 746B
PHYSICAL			
Specific Gravity	1.16	-	ASTM D 792
Mold Shrinkage, flow, 3.2 mm	0.2 – 0.4	%	SABIC method
Melt Flow Rate, 280°C/5.0 kgf	6.5	g/10 min	ASTM D 1238
Density	1.17	g/cm³	ISO 1183
Water Absorption, (23°C/sat)	0.22	%	ISO 62
Moisture Absorption (23°C / 50% RH)	0.07	%	ISO 62
Melt Volume Rate, MVR at 300°C/5.0 kg	14	cm³/10 min	ISO 1133
ELECTRICAL			
Dielectric Strength, in oil, 3.2 mm	25	kV/mm	ASTM D 149
Relative Permittivity, 1 MHz	2.93	-	ASTM D 150
Dissipation Factor, 1 MHz	0.0034	-	ASTM D 150
High Voltage Arc Track Rate {PLC}	4	PLC Code	UL 746A
Volume Resistivity	>1.E+15	Ohm-cm	IEC 60093
Surface Resistivity, ROA	>3.E+17	Ohm	IEC 60093
Dielectric Strength, in oil, 3.2 mm	16	kV/mm	IEC 60243-1
Relative Permittivity, 1 MHz	2.9	-	IEC 60250
Dissipation Factor, 1 MHz	0.0034	-	IEC 60250
High Amp Arc Ignition (HAI), PLC 1	≥0.8	mm	UL 746A
Hot-Wire Ignition (HWI), PLC 1	≥0.8	mm	UL 746A
FLAME CHARACTERISTICS [1]			
UL Yellow Card Link	E207780-101237287	-	-
UL Yellow Card Link 2	E207780-101251746	-	-
UL Recognized, 94-5VA Flame Class Rating	≥2.5	mm	UL 94
UL Recognized, 94V-1 Flame Class Rating	≥0.8	mm	UL 94
Glow Wire Flammability Index, 1.0 mm	960	°C	IEC 60695-2-12
Glow Wire Flammability Index, 1.5 mm	960	°C	IEC 60695-2-12
Glow Wire Flammability Index, 2.0 mm	960	°C	IEC 60695-2-12
Glow Wire Flammability Index, 2.5 mm	960	°C	IEC 60695-2-12
Glow Wire Flammability Index, 3.0 mm	960	°C	IEC 60695-2-12
Glow Wire Ignitability Temperature, 1.0 mm	775	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 1.5 mm	775	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 2.0 mm	800	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 2.5 mm	800	°C	IEC 60695-2-13

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PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Glow Wire Ignitability Temperature, 3.0 mm	800	°C	IEC 60695-2-13
UV-light, water exposure/immersion	F1	-	UL 746C
INJECTION MOLDING			
Drying Temperature	100 – 120	°C	
Drying Time	2 – 3	hrs	
Melt Temperature	280 – 300	°C	
Nozzle Temperature	260 – 280	°C	
Front - Zone 3 Temperature	280 – 300	°C	
Middle - Zone 2 Temperature	260 – 280	°C	
Rear - Zone 1 Temperature	240 – 260	°C	
Hopper Temperature	60 – 80	°C	
Mold Temperature	80 – 120	°C	

(1) UL Ratings shown on the technical datasheet might not cover the full range of thicknesses and colors. For details, please see the UL Yellow Card.

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