NORYL™ RESIN LS6010

REGION ASIA

DESCRIPTION

NORYL™ LS6010 resin is a non-reinforced blend of polyphenylene ether (PPE) + high impact polystyrene (HIPS). This high performance, injection moldable and extrudable grade contains non-brominated, non-chlorinated flame retardant and carries a UL94 flame rating of V0 at 1.5mm. NORYL LS6010 resin features low smoke production upon burning, high heat resistance, very low specific gravity, enhanced resistance to melting and dripping and meets the requirements of FAR 25.853. In addition, this material is heat stabilized and impact modified. It is an excellent candidate for aerospace interior applications such as rub strips, seat track covers, cable guides, switch panels, conduit, wall/ceiling mounted electronics, and parts machined from slab stock.

TYPICAL PROPERTY VALUES

Revision 20190925

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL			
Tensile Stress, yld, Type I, 50 mm/min	64	MPa	ASTM D 638
Tensile Stress, brk, Type I, 50 mm/min	53	MPa	ASTM D 638
Tensile Strain, yld, Type I, 50 mm/min	4.6	%	ASTM D 638
Tensile Strain, brk, Type I, 50 mm/min	20	%	ASTM D 638
Tensile Modulus, 5 mm/min	2220	MPa	ASTM D 638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	100	MPa	ASTM D 790
Flexural Modulus, 1.3 mm/min, 50 mm span	2390	MPa	ASTM D 790
Tensile Stress, yield, 50 mm/min	64	MPa	ISO 527
Tensile Stress, break, 50 mm/min	58	MPa	ISO 527
Tensile Strain, yield, 50 mm/min	4.7	%	ISO 527
Tensile Strain, break, 50 mm/min	8.3	%	ISO 527
Tensile Modulus, 1 mm/min	2440	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	100	MPa	ISO 178
Flexural Modulus, 2 mm/min	2360	MPa	ISO 178
IMPACT			
Izod Impact, notched, 23°C	300	J/m	ASTM D 256
Izod Impact, notched, -30°C	181	J/m	ASTM D 256
Instrumented Impact Total Energy, 23°C	52	J	ASTM D 3763
Izod Impact, notched 80*10*4 +23°C	18	kJ/m²	ISO 180/1A
Izod Impact, notched 80*10*4 -30°C	14	kJ/m²	ISO 180/1A
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	20	kJ/m²	ISO 179/1eA
THERMAL			
Vicat Softening Temp, Rate B/50	143	°C	ASTM D 1525
HDT, 1.82 MPa, 3.2mm, unannealed	122	°C	ASTM D 648
CTE, -40°C to 40°C, flow	6.7E-05	1/°C	ASTM E 831
CTE, -40°C to 40°C, xflow	6.7E-05	1/°C	ASTM E 831
CTE, -40°C to 40°C, flow	6.7E-05	1/°C	ISO 11359-2
CTE, -40°C to 40°C, xflow	6.7E-05	1/°C	ISO 11359-2
Vicat Softening Temp, Rate B/50	143	°C	ISO 306
Vicat Softening Temp, Rate B/120	146	°C	ISO 306
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	124	°C	ISO 75/Af

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PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
PHYSICAL			
Specific Gravity	1.11	-	ASTM D 792
Mold Shrinkage, flow, 3.2 mm	0.5 – 0.8	%	SABIC method
Melt Flow Rate, 280°C/5.0 kgf	5.6	g/10 min	ASTM D 1238
Density	1.11	g/cm³	ISO 1183
Water Absorption, (23°C/sat)	0.2	%	ISO 62
Moisture Absorption (23°C / 50% RH)	0.05	%	ISO 62
Melt Volume Rate, MVR at 280°C/5.0 kg	5	cm³/10 min	ISO 1133
FLAME CHARACTERISTICS [1]			
Flame Spread Index (1.52mm)	15	-	ASTM E 162
Vertical Burn a (60s, 1.52mm) passes at	0	sec	FAR 25.853
Vertical Burn b (12s, 1.52mm) passes at	4	sec	FAR 25.853
NBS Smoke Density, Flaming, 4 min (1.52mm)	30	-	ASTM E 662
Draeger Tube Toxicity, Flaming (1.52mm)	Pass	-	Based on ASTM E 662
NBS Smoke Density, Non-Flaming, 4 min (1.52mm)	7	-	ASTM E 662
Draeger Tube Toxicity, Non-Flaming (1.52mm)	Pass	-	Based on ASTM E 662
INJECTION MOLDING			
Drying Temperature	95 – 105	°C	
Drying Time	2 – 4	hrs	
Drying Time (Cumulative)	12	hrs	
Melt Temperature	280 – 305	°C	
Nozzle Temperature	295 – 305	°C	
Front - Zone 3 Temperature	295 – 305	°C	
Middle - Zone 2 Temperature	290 – 300	°C	
Rear - Zone 1 Temperature	280 – 295	°C	
Mold Temperature	65 – 100	°C	
Screw Speed	40 – 80	rpm	
Shot to Cylinder Size	30 – 70	%	
SHEET EXTRUSION			
Drying Temperature	95 – 105	°C	
Drying Time	2 – 4	hrs	
Drying Time (Cumulative)	12	hrs	
Maximum Moisture Content	0.07	%	
Melt Temperature	220 – 260	°C	
Barrel - Zone 1 Temperature	220 – 260	°C	
Barrel - Zone 2 Temperature	220 – 260	°C	
Barrel - Zone 3 Temperature	220 – 260	°C	
Barrel - Zone 4 Temperature	220 – 260	°C	
Adapter Temperature	220 – 260	°C	
Die Temperature	220 – 260	°C	
Roll Stack Temp - Top	90 – 150	°C	
Roll Stack Temp - Middle	90 – 150	°C	
Roll Stack Temp - Bottom	90 – 150	°C	
PROFILE EXTRUSION			
Drying Temperature	95 – 105	°C	

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PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Drying Time	2 – 4	hrs	
Drying Time (Cumulative)	12	hrs	
Maximum Moisture Content	0.07	%	
Melt Temperature	220 – 260	°C	
Barrel - Zone 1 Temperature	220 – 260	°C	
Barrel - Zone 2 Temperature	220 – 260	°C	
Barrel - Zone 3 Temperature	220 – 260	°C	
Barrel - Zone 4 Temperature	220 – 260	°C	
Hopper Temperature	80 – 120	°C	
Adapter Temperature	220 – 260	°C	
Die Temperature	220 – 260	°C	
Calibrator Temperature	30 – 60	°C	
Water Bath Temperature	30 – 50	°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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