

# NORYL™ RESIN LS6010

REGION EUROPE

## DESCRIPTION

NORYL™ LS6010 resin is a non-reinforced blend of polyphenylene ether (PPE) + polystyrene (PS). 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.

GENERAL INFORMATION	
Features	Flame Retardant, Heat Stabilized, Hydrolytic Stability, Low Warpage, Low Smoke and Toxicity, Amorphous, Low Shrinkage, Low Moisture Absorption, Low Specific Gravity, Non Cl/Br flame retardant, Non halogenated flame retardant, Dimensional stability, No PFAS intentionally added
Fillers	Unreinforced
Polymer Types	Polyphenylene Ether + PS (PPE+PS)
Processing Techniques	Sheet extrusion, Injection Molding, Profile Extrusion

INDUSTRY	SUB INDUSTRY
Automotive	Aerospace
Industrial	Electrical

## TYPICAL PROPERTY VALUES

Revision 20241016

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
<b>MECHANICAL <sup>(1)</sup></b>			
Tensile Stress, yld, Type I, 50 mm/min	64	MPa	ASTM D638
Tensile Stress, brk, Type I, 50 mm/min	53	MPa	ASTM D638
Tensile Strain, yld, Type I, 50 mm/min	4.6	%	ASTM D638
Tensile Strain, brk, Type I, 50 mm/min	20	%	ASTM D638
Tensile Modulus, 5 mm/min	2220	MPa	ASTM D638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	100	MPa	ASTM D790
Flexural Modulus, 1.3 mm/min, 50 mm span	2390	MPa	ASTM D790
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
<b>IMPACT <sup>(1)</sup></b>			
Izod Impact, notched, 23°C	300	J/m	ASTM D256
Izod Impact, notched, -30°C	181	J/m	ASTM D256
Instrumented Dart Impact Total Energy, 23°C	52	J	ASTM D3763
Izod Impact, notched 80°10°4 +23°C	18	kJ/m <sup>2</sup>	ISO 180/1A

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Izod Impact, notched 80*10*4 -30°C	14	kJ/m <sup>2</sup>	ISO 180/1A
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	20	kJ/m <sup>2</sup>	ISO 179/1eA
<b>THERMAL <sup>(1)</sup></b>			
Vicat Softening Temp, Rate B/50	143	°C	ASTM D1525
HDT, 1.82 MPa, 3.2mm, unannealed	122	°C	ASTM D648
CTE, -40°C to 40°C, flow	6.7E-05	1/°C	ASTM E831
CTE, -40°C to 40°C, xflow	6.7E-05	1/°C	ASTM E831
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
<b>PHYSICAL <sup>(1)</sup></b>			
Specific Gravity	1.11	-	ASTM D792
Mold Shrinkage, flow, 3.2 mm <sup>(2)</sup>	0.5 – 0.8	%	SABIC method
Melt Flow Rate, 280°C/5.0 kgf	5.6	g/10 min	ASTM D1238
Density	1.11	g/cm <sup>3</sup>	ISO 1183
Water Absorption, (23°C/saturated)	0.2	%	ISO 62-1
Moisture Absorption (23°C / 50% RH)	0.05	%	ISO 62
Melt Volume Rate, MVR at 280°C/5.0 kg	5	cm <sup>3</sup> /10 min	ISO 1133
<b>FLAME CHARACTERISTICS <sup>(3)</sup></b>			
Flame Spread Index (1.52mm)	15	-	ASTM E162
Vertical Burn a (60s, 1.52mm) passes at	0	Seconds	FAR 25.853
Vertical Burn b (12s, 1.52mm) passes at	4	Seconds	FAR 25.853
NBS Smoke Density, Flaming, 4 min (1.52mm)	30	-	ASTM E662
Draeger Tube Toxicity, Flaming (1.52mm)	Pass	-	ASTM E662 - Modified
NBS Smoke Density, Non-Flaming, 4 min (1.52mm)	7	-	ASTM E662
Draeger Tube Toxicity, Non-Flaming (1.52mm)	Pass	-	ASTM E662 - Modified
<b>INJECTION MOLDING <sup>(4)</sup></b>			
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	%	
<b>SHEET EXTRUSION</b>			
Drying Temperature	95 – 105	°C	
Drying Time	2 – 4	Hrs	
Drying Time (Cumulative)	12	Hrs	
Maximum Moisture Content	0.07	%	

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
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	
<b>PROFILE EXTRUSION</b>			
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	
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) 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) 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.
- (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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