NORYL™ RESIN FP5140

REGION AMERICAS

DESCRIPTION

NORYL FP5140 resin is a non-reinforced blend of polyphenylene ether (PPE) + polystyrene (PS). This injection moldable grade contains non-brominated, non-chlorinated flame retardant with a UL94 flame rating of V1 at 1.5mm NORYL FP5140 resin was designed to have very good dimensional stability with high flow and exhibits good rheological properties, high heat resistance, hydrolysis resistance, and very low density. The combination of these properties makes this material an excellent candidate for Flat Panel TV enclosure applications.

GENERAL INFORMATION	
Features	Flame Retardant, Good Processability, High Flow, Hydrolytic Stability, Low Warpage, Amorphous, Low Shrinkage, Low Moisture Absorption, Low Specific Gravity, Non Cl/Br flame retardant, Non halogenated flame retardant, Dimensional stability
Fillers	Unreinforced
Polymer Types	Polyphenylene Ether + PS (PPE+PS)
Processing Techniques	Injection Molding

INDUSTRY	SUB INDUSTRY
Electrical and Electronics	Mobile Phone - Computer - Tablets

TYPICAL PROPERTY VALUES

Revision 20231109

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL [1]			
Tensile Modulus, 50 mm/min	2940	MPa	ASTM D638
Tensile Stress, yield, 50 mm/min	58	MPa	ISO 527
Tensile Stress, break, 50 mm/min	48	MPa	ISO 527
Tensile Strain, yield, 50 mm/min	3.5	%	ISO 527
Tensile Strain, break, 50 mm/min	7	%	ISO 527
Tensile Modulus, 1 mm/min	2450	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	87	MPa	ISO 178
Flexural Modulus, 2 mm/min	2300	MPa	ISO 178
IMPACT [1]			
Izod Impact, notched 80*10*4 +23°C	6	kJ/m²	ISO 180/1A
Izod Impact, notched 80*10*4 -30°C	4	kJ/m²	ISO 180/1A
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	5	kJ/m²	ISO 179/1eA
THERMAL [1]			
Vicat Softening Temp, Rate B/50	103	°C	ASTM D1525
HDT, 1.82 MPa, 3.2mm, unannealed	81	°C	ASTM D648
CTE, -40°C to 40°C, flow	8.3E-05	1/°C	ASTM E831
CTE, -40°C to 40°C, xflow	7.7E-05	1/°C	ASTM E831
CTE, -40°C to 40°C, flow	8.3E-05	1/°C	ISO 11359-2
CTE, -40°C to 40°C, xflow	7.7E-05	1/°C	ISO 11359-2
Vicat Softening Temp, Rate B/50	105	°C	ISO 306

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Vicat Softening Temp, Rate B/120	110	°C	ISO 306
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	85	°C	ISO 75/Af
Relative Temp Index, Elec [2]	65	°C	UL 746B
Relative Temp Index, Mech w/impact [2]	65	°C	UL 746B
Relative Temp Index, Mech w/o impact [2]	65	°C	UL 746B
PHYSICAL [1]			
Specific Gravity	1.11	-	ASTM D792
Mold Shrinkage, flow, 3.2 mm [3]	0.5 – 0.7	%	SABIC method
Density	1.11	g/cm³	ISO 1183
Water Absorption, (23°C/saturated)	0.18	%	ISO 62-1
Moisture Absorption (23°C / 50% RH)	0.05	%	ISO 62
Melt Volume Rate, MVR at 280°C/1.2 kg	15	cm³/10 min	ISO 1133
Melt Volume Rate, MVR at 280°C/2.16 kg	44	cm³/10 min	ISO 1133
ELECTRICAL [1]			
Volume Resistivity	3.E+16 – 3.5E+16	Ω.cm	ASTM D257
Surface Resistivity	8.E+13 – 8.5E+13	Ω	ASTM D257
Relative Permittivity, 1 MHz	3	-	ASTM D150
Dissipation Factor, 1 MHz	0.002	-	ASTM D150
Volume Resistivity	3.E+16 – 3.5E+16	Ω.cm	IEC 60093
Surface Resistivity, ROA	8.E+16 – 8.5E+16	Ω	IEC 60093
Dielectric Strength, in oil, 1.6 mm	27.5	kV/mm	IEC 60243-1
Relative Permittivity, 1 MHz	2.8	-	IEC 60250
Dissipation Factor, 1 MHz	0.002	-	IEC 60250
Comparative Tracking Index [4]	250	V	IEC 60112
FLAME CHARACTERISTICS [2]			
UL Yellow Card Link	E121562-101271387	-	-
UL Recognized, 94V-0 Flame Class Rating	≥2	mm	UL 94
UL Recognized, 94V-1 Flame Class Rating	≥1.5	mm	UL 94
UL Recognized, 94V-2 Flame Class Rating	≥1	mm	UL 94
Glow Wire Flammability Index 960°C, passes at [4]	3	mm	IEC 60695-2-12
Glow Wire Ignitability Temperature, 3.0 mm [4]	725	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 2.0 mm [4]	725	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 1.0 mm [4]	700	°C	IEC 60695-2-13
Oxygen Index (LOI)	30	%	ISO 4589
INJECTION MOLDING [5]			
Drying Temperature	70 – 80	°C	
Drying Time	2 – 3	Hrs	
Melt Temperature	250 – 285	°C	
Nozzle Temperature	240 – 270	°C	
Front - Zone 3 Temperature	250 – 285	°C	
Middle - Zone 2 Temperature	230 – 260	°C	
Rear - Zone 1 Temperature	200 – 220	°C	
Hopper Temperature	60 – 80	°C	
Mold Temperature	40 – 65	°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) 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) Value shown here is based on internal measurement.

(5) 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.

DISCLAIMER