NORYL™ Resin V01525

DESCRIPTION

NORYL V01525 resin is a 15% milled fiber reinforced blend of polyphenylene ether (PPE) + high impact polystyrene (HIPS) that was designed for applications requiring very good dimensional stability, low warpage, and thin-wall flame retardance. This material contains non-brominated, non-chlorinated flame retardant and carries a UL94 flame rating of V0 at 1.5mm for thin-wall parts. NORYL V01525 resin is targeted for electrical insulator components, appliance internal components, and electrical enclosures and housings requiring thin-wall FR and good dimensional stability.

GENERAL INFORMATION	
Features	Hydrolytic Stability, Low Warpage, Thin Wall, Non Cl/Br flame retardant, Creep resistant, 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
Consumer	Home Appliances, Commercial Appliance
Electrical and Electronics	Electronic Components
Industrial	Electrical, Industrial General

TYPICAL PROPERTY VALUES

Revision 20231109

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL [1]			
Tensile Stress, yld, Type I, 5 mm/min	69	MPa	ASTM D638
Tensile Stress, brk, Type I, 5 mm/min	66	MPa	ASTM D638
Tensile Strain, yld, Type I, 5 mm/min	4	%	ASTM D638
Tensile Strain, brk, Type I, 5 mm/min	5	%	ASTM D638
Tensile Modulus, 5 mm/min	3100	MPa	ASTM D638
Flexural Strength, 1.3 mm/min, 50 mm span	115	MPa	ASTM D790
Flexural Modulus, 1.3 mm/min, 50 mm span	3200	MPa	ASTM D790
Taber Abrasion, CS-17, 1 kg	75	mg/1000cy	SABIC method
Tensile Stress, yield, 5 mm/min	58	MPa	ISO 527
Tensile Stress, break, 5 mm/min	55	MPa	ISO 527
Tensile Strain, yield, 5 mm/min	4	%	ISO 527
Tensile Strain, break, 5 mm/min	5	%	ISO 527
Tensile Modulus, 1 mm/min	3100	MPa	ISO 527
Flexural Strength, 2 mm/min	100	MPa	ISO 178
Flexural Modulus, 2 mm/min	3000	MPa	ISO 178
Ball Indentation Hardness, H358/30	140	MPa	ISO 2039-1
IMPACT [1]			
Izod Impact, notched, 23°C	50	J/m	ASTM D256
Izod Impact, notched, -30°C	55	J/m	ASTM D256
Instrumented Dart Impact Total Energy, 23°C	8	J	ASTM D3763

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Izod Impact, unnotched 80*10*4 +23°C	35	kJ/m²	ISO 180/1U
Izod Impact, unnotched 80*10*4 -30°C	30	kJ/m²	ISO 180/1U
Charpy 23°C, Unnotch Edgew 80*10*4 sp=62mm	40	kJ/m²	ISO 179/1eU
Charpy -30°C, Unnotch Edgew 80*10*4 sp=62mm	40	kJ/m²	ISO 179/1eU
THERMAL [1]			
Vicat Softening Temp, Rate B/50	140	°C	ASTM D1525
HDT, 1.82 MPa, 3.2mm, unannealed	120	°C	ASTM D648
CTE, -40°C to 40°C, flow	6.6E-05	1/°C	ASTM E831
CTE, -40°C to 40°C, xflow	5.2E-05	1/°C	ASTM E831
Thermal Conductivity	0.28	W/m-°C	ISO 8302
CTE, 23°C to 80°C, flow	5.E-05	1/°C	ISO 11359-2
CTE, 23°C to 80°C, xflow	6.E-05	1/°C	ISO 11359-2
Ball Pressure Test, 125°C +/- 2°C	PASSES	-	IEC 60695-10-2
Ball Pressure Test, approximate maximum	125	°C	IEC 60695-10-2
Vicat Softening Temp, Rate A/50	140	°C	ISO 306
Vicat Softening Temp, Rate B/50	130	°C	ISO 306
Vicat Softening Temp, Rate B/120	140	°C	ISO 306
HDT/Ae, 1.8 MPa Edgew 120*10*4 sp=100mm	115	°C	ISO 75/Ae
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	1.13	-	ASTM D792
Mold Shrinkage on Tensile Bar, flow [3]	0.3 – 0.5	%	SABIC method
Mold Shrinkage, flow, 3.2 mm [3]	0.3 – 0.5	%	SABIC method
Melt Flow Rate, 300°C/5.0 kgf	24	g/10 min	ASTM D1238
Density	1.25	g/cm³	ISO 1183
Water Absorption, (23°C/saturated)	0.45	%	ISO 62-1
Moisture Absorption (23°C / 50% RH)	0.06	%	ISO 62
Melt Volume Rate, MVR at 280°C/5.0 kg	10	cm³/10 min	ISO 1133
ELECTRICAL [1]			
Volume Resistivity	1.E+15	Ω.cm	IEC 60093
Surface Resistivity, ROA	>1.E+15	Ω	IEC 60093
Dielectric Strength, in oil, 0.8 mm	33	kV/mm	IEC 60243-1
Dielectric Strength, in oil, 1.6 mm	26	kV/mm	IEC 60243-1
Dielectric Strength, in oil, 3.2 mm	16	kV/mm	IEC 60243-1
Relative Permittivity, 1 MHz	2.9	-	IEC 60250
Dissipation Factor, 50/60 Hz	0.006	-	IEC 60250
Dissipation Factor, 1 MHz	0.003	-	IEC 60250
Comparative Tracking Index	175	V	IEC 60112
Relative Permittivity, 50/60 Hz	3	-	IEC 60250
Comparative Tracking Index (UL) {PLC} [2]	4	PLC Code	UL 746A
High Amp Arc Ignition (HAI), PLC 1 [2]	≥3	mm	UL 746A
High Amp Arc Ignition (HAI), PLC 2 [2]	≥1.5	mm	UL 746A
High Amp Arc Ignition (HAI), PLC 3 [2]	≥2	mm	UL 746A

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PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
High Amp Arc Ignition (HAI), PLC 4 [2]	≥1.2	mm	UL 746A
Hot-Wire Ignition (HWI), PLC 0 [2]	≥1.2	mm	UL 746A
High Voltage Arc Track Rate {PLC} [2]	3	PLC Code	UL 746A
Arc Resistance, Tungsten {PLC} [2]	6	PLC Code	ASTM D495
FLAME CHARACTERISTICS [2]			
UL Yellow Card Link	E45329-236783	-	-
UL Recognized, 94-5VA Flame Class Rating	≥3	mm	UL 94
UL Recognized, 94V-0 Flame Class Rating	≥1.5	mm	UL 94
UL Recognized, 94V-1 Flame Class Rating	≥1.2	mm	UL 94
Oxygen Index (LOI) [1]	32	%	ISO 4589
INJECTION MOLDING [4]			
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) 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 and colors. 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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