

Noryl* Resin N190X

Americas: COMMERCIAL

PPE+PS blend. Unfilled. Non-brominated, non-chlorinated FR system. UL94 V0/5VA rated. RTI Elec/Imp/Str 95/80/95. Dielectric strength. Suitable for E/E market applications.

TYPICAL PROPERTIES ¹	TYPICAL VALUE	Unit	Standard
MECHANICAL			
Tensile Stress, yld, Type I, 50 mm/min	610	kgf/cm ²	ASTM D 638
Tensile Stress, brk, Type I, 50 mm/min	480	kgf/cm ²	ASTM D 638
Tensile Strain, yld, Type I, 50 mm/min	3.6	%	ASTM D 638
Tensile Strain, brk, Type I, 50 mm/min	9	%	ASTM D 638
Tensile Modulus, 50 mm/min	26300	kgf/cm ²	ASTM D 638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	990	kgf/cm ²	ASTM D 790
Flexural Stress, yld, 2.6 mm/min, 100 mm span	930	kgf/cm ²	ASTM D 790
Flexural Modulus, 1.3 mm/min, 50 mm span	25400	kgf/cm ²	ASTM D 790
Flexural Modulus, 2.6 mm/min, 100 mm span	23400	kgf/cm ²	ASTM D 790
Hardness, Rockwell R	120	-	ASTM D 785
Taber Abrasion, CS-17, 1 kg	76	mg/1000cy	ASTM D 1044
Tensile Stress, yield, 50 mm/min	58	MPa	ISO 527
Tensile Stress, break, 50 mm/min	50	MPa	ISO 527
Tensile Strain, yield, 50 mm/min	3.2	%	ISO 527
Tensile Strain, break, 50 mm/min	9.2	%	ISO 527
Tensile Modulus, 1 mm/min	2600	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	87	MPa	ISO 178
Flexural Modulus, 2 mm/min	2350	MPa	ISO 178
IMPACT			
Izod Impact, unnotched, 23°C	73	cm-kgf/cm	ASTM D 4812
Izod Impact, notched, 23°C	29	cm-kgf/cm	ASTM D 256
Izod Impact, notched, -30°C	10	cm-kgf/cm	ASTM D 256

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TYPICAL PROPERTIES ¹	TYPICAL VALUE	Unit	Standard
IMPACT			
Instrumented Impact Total Energy, 23°C	509	cm-kgf	ASTM D 3763
Izod Impact, notched 80*10*4 +23°C	20	kJ/m ²	ISO 180/1A
Charpy Impact, notched, 23°C	20	kJ/m ²	ISO 179/2C
THERMAL			
Vicat Softening Temp, Rate B/50	104	°C	ASTM D 1525
HDT, 0.45 MPa, 3.2 mm, unannealed	95	°C	ASTM D 648
HDT, 1.82 MPa, 3.2mm, unannealed	78	°C	ASTM D 648
HDT, 1.82 MPa, 6.4 mm, unannealed	86	°C	ASTM D 648
CTE, -40°C to 40°C, flow	7.7E-05	1/°C	ASTM E 831
CTE, -40°C to 40°C, xflow	8.1E-05	1/°C	ASTM E 831
Thermal Conductivity	0.24	W/m-°C	ASTM C 177
Vicat Softening Temp, Rate B/120	107	°C	ISO 306
HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm	95	°C	ISO 75/Bf
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	82	°C	ISO 75/Af
Relative Temp Index, Elec	95	°C	UL 746B
Relative Temp Index, Mech w/impact	80	°C	UL 746B
Relative Temp Index, Mech w/o impact	95	°C	UL 746B
PHYSICAL			
Specific Gravity	1.13	-	ASTM D 792
Water Absorption, 24 hours	0.08	%	ASTM D 570
Mold Shrinkage, flow, 3.2 mm (5)	0.5 - 0.7	%	SABIC Method
Melt Flow Rate, 280°C/5.0 kgf	20	g/10 min	ASTM D 1238
Melt Volume Rate, MVR at 280°C/5.0 kg	23	cm ³ /10 min	ISO 1133
ELECTRICAL			
Volume Resistivity	1.8E+16	Ohm-cm	ASTM D 257
Dielectric Strength, in oil, 3.2 mm	19.2	kV/mm	ASTM D 149

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TYPICAL PROPERTIES ¹	TYPICAL VALUE	Unit	Standard
ELECTRICAL			
Relative Permittivity, 100 Hz	2.74	-	ASTM D 150
Relative Permittivity, 100 kHz	2.6	-	ASTM D 150
Dissipation Factor, 100 Hz	0.013	-	ASTM D 150
Dissipation Factor, 100 kHz	0.0055	-	ASTM D 150
Arc Resistance, Tungsten {PLC}	7	PLC Code	ASTM D 495
Hot Wire Ignition {PLC}	2	PLC Code	UL 746A
High Voltage Arc Track Rate {PLC}	4	PLC Code	UL 746A
High Ampere Arc Ign, surface {PLC}	2	PLC Code	UL 746A
Comparative Tracking Index (UL) {PLC}	1	PLC Code	UL 746A
FLAME CHARACTERISTICS			
UL Recognized, 94HB Flame Class Rating (3)	1.01	mm	UL 94
UL Recognized, 94V-0 Flame Class Rating (3)	1.47	mm	UL 94
UL Recognized, 94-5VA Rating (3)	2.99	mm	UL 94
Oxygen Index (LOI)	39	%	ASTM D 2863
UV-light, water exposure/immersion	F1	-	UL 746C

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PROCESSING PARAMETERS	TYPICAL VALUE	Unit
Injection Molding		
Drying Temperature	75 - 80	°C
Drying Time	3 - 4	hrs
Drying Time (Cumulative)	8	hrs
Maximum Moisture Content	0.02	%
Melt Temperature	250 - 275	°C
Nozzle Temperature	250 - 275	°C
Front - Zone 3 Temperature	240 - 275	°C
Middle - Zone 2 Temperature	225 - 270	°C
Rear - Zone 1 Temperature	215 - 265	°C
Mold Temperature	55 - 75	°C
Back Pressure	0.3 - 0.7	MPa
Screw Speed	20 - 100	rpm
Shot to Cylinder Size	30 - 70	%
Vent Depth	0.038 - 0.051	mm