SABIC Innovative Plastics™

Noryl* Resin HS2000X
Americas: COMMERCIAL

PPE+PS blend. 17% Mineral reinforced. Non-brominated, non-chlorinated FR system. UL94 V0 and 5VA listing. UL746C f1. Radiant panel listing. Dielectric strength. Dimensional stability. Suitable for E/E market indoor/outdoor applications including electrical ceiling boxes and smoke detectors.

TYPICAL PROPERTIES[1]	TYPICAL VALUE	Unit	Standard
MECHANICAL			
Tensile Stress, yld, Type I, 5 mm/min	750	kgf/cm²	ASTM D 638
Tensile Stress, brk, Type I, 5 mm/min	610	kgf/cm²	ASTM D 638
Tensile Strain, yield	3.8	%	ASTM D 638
Tensile Strain, brk, Type I, 5 mm/min	8.4	%	ASTM D 638
Tensile Modulus, 5 mm/min	37200	kgf/cm²	ASTM D 638
Flexural Stress, brk, 1.3 mm/min, 50 mm span	1190	kgf/cm²	ASTM D 790
Flexural Stress, yld, 2.6 mm/min, 100 mm span	1190	kgf/cm²	ASTM D 790
Flexural Modulus, 1.3 mm/min, 50 mm span	37400	kgf/cm²	ASTM D 790
Flexural Modulus, 2.6 mm/min, 100 mm span	36200	kgf/cm²	ASTM D 790
Tensile Stress, yield	71	MPa	ISO 527
Tensile Stress, break	57	MPa	ISO 527
Tensile Strain, yield	3.7	%	ISO 527
Tensile Strain, break	10.5	%	ISO 527
Tensile Modulus, 1 mm/min	4000	MPa	ISO 527
Flexural Stress	117	MPa	ISO 178
Flexural Modulus	3800	MPa	ISO 178
IMPACT			
Izod Impact, unnotched, 23°C	227	cm-kgf/cm	ASTM D 4812
Izod Impact, notched, 23°C	13	cm-kgf/cm	ASTM D 256
Izod Impact, Reverse Notched, 3.2 mm	82	cm-kgf/cm	ASTM D 256
Instrumented Impact Total Energy, 23°C	4517	cm-kgf	ASTM D 3763
Izod Impact, notched 80*10*4 +23°C	9	kJ/m²	ISO 180/1A

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(2) Only typical data for selection purposes. Not to be used for part or tool design.
(3) This rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.
(4) Internal measurements according to UL standards.
(5) 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.

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TYPICAL PROPERTIES[1]	TYPICAL VALUE	Unit	Standard
IMPACT			
Charpy Impact, notched, 23°C	10	kJ/m²	ISO 179/2C
THERMAL			
HDT, 0.45 MPa, 3.2 mm, unannealed	117	°C	ASTM D 648
HDT, 1.82 MPa, 3.2mm, unannealed	108	°C	ASTM D 648
HDT, 0.45 MPa, 6.4 mm, unannealed	128	°C	ASTM D 648
HDT, 1.82 MPa, 6.4 mm, unannealed	116	°C	ASTM D 648
CTE, -40°C to 40°C, flow	7.06E-05	1/°C	ASTM E 831
CTE, -40°C to 40°C, xflow	7.76E-05	1/°C	ASTM E 831
Vicat Softening Temp, Rate B/50	132	°C	ISO 306
Vicat Softening Temp, Rate B/120	136	°C	ISO 306
HDT/Be, 0.45MPa Edgew 120*10*4 sp=100mm	126	°C	ISO 75/Be
HDT/Ae, 1.8 MPa Edgew 120*10*4 sp=100mm	111	°C	ISO 75/Ae
Relative Temp Index, Elec	100	°C	UL 746B
Relative Temp Index, Mech w/impact	85	°C	UL 746B
Relative Temp Index, Mech w/o impact	100	°C	UL 746B
PHYSICAL			
Specific Gravity	1.25	-	ASTM D 792
Mold Shrinkage, flow, 3.2 mm	0.5 - 0.7	%	SABIC Method
Melt Flow Rate, 280°C/5.0 kgf	7.6	g/10 min	ASTM D 1238
Melt Flow Rate, 300°C/5.0 kgf	7.6	g/10 min	ASTM D 1238
Melt Volume Rate, MVR at 280°C/5.0 kg	6	cm³/10 min	ISO 1133
Melt Volume Rate, MVR at 300°C/5.0 kg	6	cm³/10 min	ISO 1133
ELECTRICAL			
Volume Resistivity	1.2E+16	Ohm-cm	ASTM D 257
Surface Resistivity	>1.E+16	Ohm	ASTM D 257
Dielectric Strength, in oil, 3.2 mm	17.3	kV/mm	ASTM D 149

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TYPICAL PROPERTIES[1]	TYPICAL VALUE	Unit	Standard
ELECTRICAL			
Relative Permittivity, 50/60 Hz	2.89	-	ASTM D 150
Relative Permittivity, 1 MHz	2.7	-	ASTM D 150
Dissipation Factor, 50/60 Hz	0.017	-	ASTM D 150
Dissipation Factor, 1 MHz	0.0044	-	ASTM D 150
Arc Resistance, Tungsten {PLC}	6	PLC Code	ASTM D 495
Hot Wire Ignition {PLC}	0	PLC Code	UL 746A
High Voltage Arc Track Rate {PLC}	3	PLC Code	UL 746A
High Ampere Arc Ign, surface {PLC}	2	PLC Code	UL 746A
Comparative Tracking Index (UL) {PLC}	2	PLC Code	UL 746A
FLAME CHARACTERISTICS			
UL Recognized, 94V-0 Flame Class Rating (3)	1.47	mm	UL 94
UL Recognized, 94-5VA Rating (3)	2	mm	UL 94
Radiant Panel Listing	YES	-	UL Tested
UV-light, water exposure/immersion	F1	-	UL 746C

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PROCESSING PARAMETERS	TYPICAL VALUE	Unit
Injection Molding		
Drying Temperature	105 - 110	°C
Drying Time	3 - 4	hrs
Drying Time (Cumulative)	8	hrs
Maximum Moisture Content	0.02	%
Melt Temperature	280 - 310	°C
Nozzle Temperature	280 - 310	°C
Front - Zone 3 Temperature	270 - 310	°C
Middle - Zone 2 Temperature	260 - 305	°C
Rear - Zone 1 Temperature	250 - 300	°C
Mold Temperature	75 - 105	°C
Back Pressure	0.3 - 0.7	MPa
Screw Speed	20 - 100	rpm
Shot to Cylinder Size	30 - 70	%

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