

NORYL™ HS2000X resin

Polyphenylene Ether + PS

SABIC Innovative Plastics

Message:

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.

General Information			
UL YellowCard	E121562-221170		
Filler / Reinforcement	Mineral,17% Filler by Weight		
Additive	Flame Retardant		
Features	Bromine Free		
	Chlorine Free		
	Flame Retardant		
	Good Dimensional Stability		
Uses	Electrical/Electronic Applications		
	Outdoor Applications		
Processing Method	Injection Molding		
Multi-Point Data	Compressive Stress vs. Strain (ASTM D695)		
	Elastic Modulus vs Temperature (ASTM D4065)		
	Flexural DMA (ASTM D4065)		
	Instrumented Impact (Energy) (ASTM D3763)		
	Instrumented Impact (Load) (ASTM D3763)		
	Tensile Creep (ASTM D2990)		
	Tensile Fatigue		
	Tensile Stress vs. Strain (ASTM D638)		
	Thermal Conductivity vs. Temperature (ASTM E1530)		
Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.25	g/cm ³	ASTM D792
Melt Mass-Flow Rate (MFR)			ASTM D1238
280°C/5.0 kg	7.6	g/10 min	
300°C/5.0 kg	7.6	g/10 min	
Melt Volume-Flow Rate (MVR)			ISO 1133
280°C/5.0 kg	6.80	cm ³ /10min	
300°C/5.0 kg	6.80	cm ³ /10min	
Molding Shrinkage - Flow (3.20 mm)	0.50 to 0.70	%	Internal Method
Outdoor Suitability	f1		UL 746C

Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus			
-- ¹	3650	MPa	ASTM D638
--	4000	MPa	ISO 527-2/1
Tensile Strength			
Yield ²	74.0	MPa	ASTM D638
Yield	71.7	MPa	ISO 527-2
Break ³	60.0	MPa	ASTM D638
Break	57.1	MPa	ISO 527-2
Tensile Elongation			
Yield	3.8	%	ASTM D638
Yield	3.7	%	ISO 527-2
Break ⁴	8.4	%	ASTM D638
Break	11	%	ISO 527-2
Flexural Modulus			
100 mm Span ⁵	3550	MPa	ASTM D790
50.0 mm Span ⁶	3670	MPa	ASTM D790
--	3800	MPa	ISO 178
Flexural Stress			
--	117	MPa	ISO 178
Yield, 100 mm Span ⁷	117	MPa	ASTM D790
Break, 50.0 mm Span ⁸	117	MPa	ASTM D790
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength (23°C)	10	kJ/m ²	ISO 179/2C
Notched Izod Impact			
23°C	130	J/m	ASTM D256
23°C ⁹	9.7	kJ/m ²	ISO 180/1A
Unnotched Izod Impact (23°C)	2200	J/m	ASTM D4812
Reverse Notch Izod Impact (3.20 mm)	810	J/m	ASTM D256
Instrumented Dart Impact (23°C, Total Energy)	443	J	ASTM D3763
Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load			
0.45 MPa, Unannealed, 3.20 mm	117	°C	ASTM D648
0.45 MPa, Unannealed, 6.40 mm	128	°C	ASTM D648
0.45 MPa, Unannealed, 100 mm Span ¹⁰	126	°C	ISO 75-2/Be
1.8 MPa, Unannealed, 3.20 mm	108	°C	ASTM D648
1.8 MPa, Unannealed, 6.40 mm	116	°C	ASTM D648
1.8 MPa, Unannealed, 100 mm Span ¹¹	111	°C	ISO 75-2/Ae
Vicat Softening Temperature			
--	132	°C	ISO 306/B50
--	136	°C	ISO 306/B120

CLTE			ASTM E831
Flow : -40 to 40°C	7.1E-5	cm/cm/°C	
Transverse : -40 to 40°C	7.8E-5	cm/cm/°C	
RTI Elec	100	°C	UL 746
RTI Imp	85.0	°C	UL 746
RTI Str	100	°C	UL 746
Electrical	Nominal Value	Unit	Test Method
Surface Resistivity	> 1.0E+16	ohms	ASTM D257
Volume Resistivity	1.2E+16	ohms·cm	ASTM D257
Dielectric Strength (3.20 mm, in Oil)	17	kV/mm	ASTM D149
Dielectric Constant			ASTM D150
50 Hz	2.89		
60 Hz	2.89		
1 MHz	2.70		
Dissipation Factor			ASTM D150
50 Hz	0.017		
60 Hz	0.017		
1 MHz	4.4E-3		
Arc Resistance ¹²	PLC 6		ASTM D495
Comparative Tracking Index (CTI)	PLC 2		UL 746
High Amp Arc Ignition (HAI)	PLC 2		UL 746
High Voltage Arc Tracking Rate (HVTR)	PLC 3		UL 746
Hot-wire Ignition (HWI)	PLC 0		UL 746
Flammability	Nominal Value	Unit	Test Method
Flame Rating			UL 94
1.47 mm	V-0		
2.01 mm	5VA		
Radiant Panel Listing (UL)	YES		
Injection	Nominal Value	Unit	
Drying Temperature	104 to 110	°C	
Drying Time	3.0 to 4.0	hr	
Drying Time, Maximum	8.0	hr	
Suggested Max Moisture	0.020	%	
Suggested Shot Size	30 to 70	%	
Rear Temperature	249 to 299	°C	
Middle Temperature	260 to 304	°C	
Front Temperature	271 to 310	°C	
Nozzle Temperature	282 to 310	°C	
Processing (Melt) Temp	282 to 310	°C	
Mold Temperature	76.7 to 104	°C	
Back Pressure	0.345 to 0.689	MPa	
Screw Speed	20 to 100	rpm	

NOTE	
1.	5.0 mm/min
2.	Type I, 5.0 mm/min
3.	Type I, 5.0 mm/min
4.	Type I, 5.0 mm/min
5.	2.6 mm/min
6.	1.3 mm/min
7.	2.6 mm/min
8.	1.3 mm/min
9.	80*10*4
10.	120*10*4 mm
11.	120*10*4 mm
12.	Tungsten Electrode

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