NORYL* SE1GFN1 Resin

Polyphenylene Ether + PS

SABIC Innovative Plastics Europe

IDES | Prospector

Product Description

Noryl* SE1GFN1 is a 10% glass reinforced, injection moldable modified polyphenylene ether resin. Designed for improved dimensional stability and good flow , this resin also uses non-chlorinated, non-brominated FR additives to achieve a V1 UL94 rating at 1.0 mm and UL94 5VA rating @ 2.5 mm. Noryl SE1GFN1 has a GWIT of 775C@ 1.00 mm according to IEC 60695-2-13, and a CTI > 250 V according to IEC 60112 (Color dependant). Noryl SE1GFN1 may be an excellent material candidate for electrical or electronic applications requiring good rheological properties, heat resistance, hydrolysis resistance, low density and thin wall flame resistance. SE1GFN1 is halogen free according to VDE/DIN 472 part 815.

General

Material Status	• Commercial: Active		
Availability	• Europe		
Filler / Reinforcement	• Glass Fiber Reinforcement, 10% Filler by Weight		
Additive	• Flame Retardant		
Features	• Bromine Free • Chlorine Free • Flame Retardant	• Good Dimensional Stability • Good Flow • Hydrolysis Resistant	• Low Density • Medium Heat Resistance
Uses	• Electrical/Electronic Applications		
Agency Ratings	• DIN VDE 0472 Part 815		
RoHS Compliance	• RoHS Compliant		
Forms	• Pellets		
Processing Method	• Injection Molding		

Physical	Nominal Value	Unit	Test Method
Specific Gravity			
--	1.16	g/cm³	ASTM D792
--	1.17	g/cm³	ISO 1183
Melt Volume-Flow Rate (MVR) (280°C/10.0 kg)	15.0	cm³/10min	ISO 1133
Molding Shrinkage - Flow	0.30 to 0.50	%	ASTM D955
Water Absorption			ISO 62
Saturation, 23°C	0.22	%	
Equilibrium, 23°C, 50% RH	0.070	%	

Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus	4000	MPa	ISO 527-2/1
Tensile Stress			ISO 527-2/5
Yield	75.0	MPa	
Break	70.0	MPa	
Tensile Strain			ISO 527-2/5
Yield	2.5	%	
Break	3.0	%	
Flexural Modulus [2]	3000	MPa	ISO 178
Flexural Strength [2, 3]	110	MPa	ISO 178
Taber Abrasion Resistance			ASTM D1044
1000 Cycles, 1000 g, CS-17 Wheel	50.0	mg	

Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength			ISO 179/1eA
-40°C	5.1	kJ/m²	
-30°C	5.2	kJ/m²	
23°C	6.1	kJ/m²	
Charpy Unnotched Impact Strength			ISO 179/1eU
-30°C	30	kJ/m²	
23°C	30	kJ/m²	
Notched Izod Impact Strength			ISO 180/1A
-40°C	6.20	kJ/m²	
-30°C	6.20	kJ/m²	
23°C	7.10	kJ/m²	
Unnotched Izod Impact Strength			ISO 180/1U
-30°C	25.0	kJ/m²	

Revision History
Document Created: Thursday, June 24, 2010
Added to Prospector: June, 1998
Last Updated: 10/15/2009

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Impact	Nominal Value	Unit	Test Method
23°C	25.0	kJ/m²	
Hardness	**Nominal Value**	**Unit**	**Test Method**
Ball Indentation Hardness (H 358/30)	100	MPa	ISO 2039-1
Thermal	**Nominal Value**	**Unit**	**Test Method**
Heat Deflection Temperature [4]			
0.45 MPa, Unannealed, 100 mm Span	140	°C	ISO 75-2/Be
1.8 MPa, Unannealed, 100 mm Span	135	°C	ISO 75-2/Ae
Vicat Softening Temperature			
--	145	°C	ISO 306/A50 ISO 306/B120
--	140	°C	ISO 306/B50
Ball Pressure Test			IEC 60695-10-2
125°C	Pass		
135°C [5]	Pass		
CLTE			
Flow: -40 to 40°C	0.00055	cm/cm/°C	ASTM E831 ISO 11359-2
Flow: 23 to 80°C	0.000050	cm/cm/°C	ISO 11359-2
Transverse: -40 to 40°C	0.000068	cm/cm/°C	ASTM E831 ISO 11359-2
Transverse: 23 to 80°C	0.000070	cm/cm/°C	ISO 11359-2
Thermal Conductivity	0.27	W/m/K	ISO 8302
Electrical	**Nominal Value**	**Unit**	**Test Method**
Surface Resistivity	> 1.0E+15	ohms	IEC 60093
Volume Resistivity	1.0E+15	ohm·cm	IEC 60093
Relative Permittivity			IEC 60250
50 Hz	2.80		
60 Hz	2.80		
1 MHz	2.70		
Dissipation Factor			IEC 60250
50 Hz	0.0050		
60 Hz	0.0050		
1 MHz	0.0030		
Comparative Tracking Index	250	V	IEC 60112
Electric Strength			IEC 60243-1
0.800 mm, in Oil	33	kV/mm	
1.60 mm, in Oil	26	kV/mm	
3.20 mm, in Oil	16	kV/mm	
Needle Flame Test (1.50 mm)	Pass		IEC 60695-11-5
Flammability	**Nominal Value**	**Unit**	**Test Method**
Flame Rating - UL			UL 94
1.00 mm, Testing by SABIC	V-1		
1.50 mm	V-1		
2.50 mm, Testing by SABIC	5VA		
Glow Wire Flammability Index (1.00 mm)	960	°C	IEC 60695-2-12
Glow Wire Ignition Temperature			IEC 60695-2-13
1.00 mm	775	°C	
2.00 mm	800	°C	
3.00 mm	800	°C	
Oxygen Index	30	%	ISO 4589-2
UL 746	**Nominal Value**	**Unit**	**Test Method**
RTI Str	110	°C	UL 746
RTI Imp	105	°C	UL 746
RTI Elec	110	°C	UL 746

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UL 746	Nominal Value	Unit	Test Method
High Voltage Arc Tracking Rate (HVTR) (PLC)			UL 746
--	PLC 4		

Injection	Nominal Value	Unit
Drying Temperature	100 to 120	°C
Drying Time	2.0 to 3.0	hr
Hopper Temperature	60.0 to 80.0	°C
Rear Temperature	240 to 260	°C
Middle Temperature	260 to 280	°C
Front Temperature	280 to 300	°C
Nozzle Temperature	260 to 280	°C
Processing (Melt) Temp	280 to 300	°C
Mold Temperature	80.0 to 120	°C

Notes

[1] Typical properties: these are not to be construed as specifications.

[2] 2.0 mm/min

[3] Yield

[4] 120*10*4 mm

[5] Approximate maximum

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