

# NORYL™ Resin SE1GFN1 - Europe

Polyphenylene Ether + PS

SABIC

PROSPECTOR®

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## Technical Data

### Product Description

NORYL™ SE1GFN1 resin is a 10% glass reinforced blend of polyphenylene ether (PPE) + high impact polystyrene (HIPS). This injection moldable grade contains non-brominated, non-chlorinated flame retardant and carries a UL94 flame rating of V1 at 1.5mm along with UL746C Outdoor Suitability rating of F1 and RTI 110C. NORYL SE1GFN1 exhibits high heat resistance, good dielectric strength, dimensional stability, hydrolytic stability, and very low moisture absorption. This material is an excellent candidate for solar / photovoltaic (PV) junction boxes, appliance internals, indoor and outdoor electrical enclosures / housings / connectors.

### General

Material Status	• Commercial: Active
UL Yellow Card <sup>1</sup>	• E45329-306538
Search for UL Yellow Card	• SABIC • NORYL™ Resin
Availability	• Europe
Uses	• Aerospace Applications • Appliances • Automotive Exterior Parts • Automotive Under the Hood • Construction Applications • Electrical/Electronic Applications • Electronic Displays • Lenses
RoHS Compliance	• RoHS Compliant
Also Available In	• Asia Pacific • Latin America • North America

### Physical

	Nominal Value Unit	Test Method
Density / Specific Gravity		
--	1.16 g/cm <sup>3</sup>	ASTM D792
--	1.17 g/cm <sup>3</sup>	ISO 1183
Melt Volume-Flow Rate (MVR) (280°C/10.0 kg)	15 cm <sup>3</sup> /10min	ISO 1133
Molding Shrinkage - Flow <sup>3</sup>	0.30 to 0.50 %	Internal Method
Water Absorption		ISO 62
Saturation, 23°C	0.22 %	
Equilibrium, 23°C, 50% RH	0.070 %	
Outdoor Suitability	f2	UL 746C

### 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 <sup>4</sup>	3000 MPa	ISO 178
Flexural Stress <sup>4, 5</sup>	110 MPa	ISO 178
Taber Abrasion Resistance		Internal Method
1000 g, CS-17 Wheel	50.0 mg	

### Impact

	Nominal Value Unit	Test Method
Charpy Notched Impact Strength <sup>6</sup>		ISO 179/1eA
-40°C	5.0 kJ/m <sup>2</sup>	
-30°C	5.0 kJ/m <sup>2</sup>	
23°C	6.0 kJ/m <sup>2</sup>	
Charpy Unnotched Impact Strength		ISO 179/1eU
-30°C <sup>6</sup>	30 kJ/m <sup>2</sup>	
23°C <sup>7</sup>	30 kJ/m <sup>2</sup>	



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Impact	Nominal Value Unit	Test Method
Notched Izod Impact Strength		ISO 180/1A
-40°C <sup>8</sup>	6.0 kJ/m <sup>2</sup>	
-30°C <sup>9</sup>	6.0 kJ/m <sup>2</sup>	
23°C <sup>9</sup>	7.0 kJ/m <sup>2</sup>	
Unnotched Izod Impact Strength <sup>9</sup>		ISO 180/1U
-30°C	25 kJ/m <sup>2</sup>	
23°C	25 kJ/m <sup>2</sup>	
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 <sup>10</sup>		
0.45 MPa, Unannealed, 4.00 mm, 100 mm Span	140 °C	ISO 75-2/Be
1.8 MPa, Unannealed, 4.00 mm, 100 mm Span	135 °C	ISO 75-2/Ae
Vicat Softening Temperature		
--	145 °C	ISO 306/B120 ISO 306/A50
--	140 °C	ISO 306/B50
Ball Pressure Test		IEC 60695-10-2
123 to 127°C	Pass	
135°C <sup>11</sup>	Pass	
CLTE		
Flow : -40 to 40°C	5.5E-5 cm/cm/°C	ASTM E831 ISO 11359-2
Flow : 23 to 80°C	5.0E-5 cm/cm/°C	ISO 11359-2
Transverse : -40 to 40°C	6.8E-5 cm/cm/°C	ASTM E831 ISO 11359-2
Transverse : 23 to 80°C	7.0E-5 cm/cm/°C	ISO 11359-2
Thermal Conductivity	0.27 W/m/K	ISO 8302
RTI Elec <sup>12</sup>	110 °C	UL 746
RTI Imp <sup>12</sup>	105 °C	UL 746
RTI Str <sup>12</sup>	110 °C	UL 746
Electrical	Nominal Value Unit	Test Method
Surface Resistivity	> 1.0E+15 ohms	IEC 60093
Volume Resistivity	1.0E+15 ohms·cm	IEC 60093
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	
Relative Permittivity		IEC 60250
50 Hz	2.80	
60 Hz	2.80	
1 MHz	2.70	
Dissipation Factor		IEC 60250
50 Hz	5.0E-3	
60 Hz	5.0E-3	
1 MHz	3.0E-3	
Comparative Tracking Index (CTI)	PLC 2	UL 746
Comparative Tracking Index	250 V	IEC 60112
Needle Flame Test <sup>13</sup> (1.50 mm)	Pass	IEC 60695-2-2
High Amp Arc Ignition (HAI) (> 0.8 mm)	PLC 1	UL 746
High Voltage Arc Tracking Rate (HVTR)	PLC 4	UL 746
Hot-wire Ignition (HWI) (> 0.8 mm)	PLC 1	UL 746



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Flammability	Nominal Value Unit	Test Method
Flame Rating		UL 94
> 0.8 mm	V-1	
> 2.5 mm <sup>14</sup>	5VA	
Glow Wire Flammability Index		IEC 60695-2-12
1.0 mm	960 °C	
1.5 mm	960 °C	
2.0 mm	960 °C	
2.5 mm	960 °C	
3.0 mm	960 °C	
Glow Wire Ignition Temperature		IEC 60695-2-13
1.0 mm	775 °C	
1.5 mm	775 °C	
2.0 mm	800 °C	
2.5 mm <sup>15</sup>	800 °C	
3.0 mm	800 °C	
Oxygen Index	30 %	ISO 4589-2

Injection	Nominal Value Unit
Drying Temperature	100 to 120 °C
Drying Time	2.0 to 3.0 hr
Hopper Temperature	60 to 80 °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 to 120 °C

## Notes

<sup>1</sup> A UL Yellow Card contains UL-verified flammability and electrical characteristics. UL Prospector continually works to link Yellow Cards to individual plastic materials in Prospector, however this list may not include all of the appropriate links. It is important that you verify the association between these Yellow Cards and the plastic material found in Prospector. For a complete listing of Yellow Cards, visit the UL Yellow Card Search.

<sup>2</sup> Typical properties: these are not to be construed as specifications.

<sup>3</sup> Tensile Bar

<sup>4</sup> 2.0 mm/min

<sup>5</sup> at Yield

<sup>6</sup> 80\*10\*3 sp=62mm

<sup>7</sup> 80\*10\*4 sp=62mm

<sup>8</sup> 80\*10\*3 mm

<sup>9</sup> 80\*10\*4 mm

<sup>10</sup> 120\*10\*4 mm

<sup>11</sup> Approximate Maximum

<sup>12</sup> 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.

<sup>13</sup> 10 sec

<sup>14</sup> Testing by SABIC

<sup>15</sup> Value shown here is based on internal measurement.



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## Where to Buy

### Supplier

**SABIC**

Web: <http://www.sabic.com/>

### Distributor

#### **3Polymer (Guangzhou) Chemical Technology Co., Ltd.**

Telephone: +86-20-3466-7988

Web: <http://3polymer.com>

Availability: China

#### **AECTRA**

Telephone: +33-4-72-54-36-42

Web: <https://www.aectra.fr/>

Availability: Bulgaria, Romania

#### **GRÄSSLIN**

Telephone: +49-7721-4040-261

Web: <https://www.graesslin-kunststoffe.de>

Availability: Germany

#### **Lenorplastics**

Telephone: +41-61-706-11-11

Web: <https://www.lenorplastics.ch>

Availability: Switzerland

#### **Plastoplan**

Telephone: +43-1-25040-0

Web: <https://www.plastoplan.com/>

Availability: Austria, Czech Republic, Hungary, Poland, Slovakia

#### **POLYMIX**

*POLYMIX is a Pan European distribution company. Contact POLYMIX for availability of individual products by country.*

Telephone: +33-3-8920-1380

Web: <http://www.polymix.eu/>

Availability: France

#### **RESINEX Group**

*RESINEX is a Pan European distribution company. Contact RESINEX for availability of individual products by country.*

Telephone: +32-14-672511

Web: <http://www.resinex.com/>

Availability: Europe

#### **Ultrapolymers**

*Ultrapolymers is a Pan European distribution company. Contact Ultrapolymers for availability of individual products by country.*

Telephone: +32-11-57-95-57

Web: <http://www.ultrapolymers.com/>

Availability: Belgium, Netherlands, South Africa

