

PPS – Polyphenylene Sulphide

Facts:

PPS, Polyphenylene Sulphide is a tough, stiff material that is frequently used as a substitute for aluminium.

PPS offers excellent processing, surface finish, low creep, good dimensional stability and high impact strength. PPS is usually sold as glass fibre filled grades.

Applications:

Automotive interior and exterior, appliance housings and white goods.

Limitations:

- High process temperatures
- Comparatively high cost

Product Description

Ryton® R-4 PPS is a 40% fiberglass reinforced polyphenylene sulfide compound that provides outstanding chemical resistance and mechanical properties even at elevated temperatures.

General

Material Status	• Commercial: Active	
Availability	• Asia Pacific	• North America
	• Europe	• South America
Filler / Reinforcement	• Glass Fiber Reinforcement, 40% Filler by Weight	
Features	• Good Chemical Resistance	
RoHS Compliance	• RoHS Compliant	
Appearance	• Black	
Forms	• Pellets	
Processing Method	• Injection Molding	

Physical	Nominal Value Unit	Test Method
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Specific Gravity	1.68 g/cm ³	ASTM D792
Molding Shrinkage		
Flow: 3.18 mm	0.30 %	
Across Flow: 3.18 mm	0.50 %	
Water Absorption (23°C, 24 hr)	0.020 %	ASTM D570

Mechanical	Nominal Value Unit	Test Method
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Tensile Stress		
Yield	145 MPa	ISO 527-2
--	152 MPa	ASTM D638
Tensile Elongation (Break)	1.0 %	ASTM D638 ISO 527-2
Flexural Modulus		
--	14500 MPa	ASTM D790
--	14000 MPa	ISO 178
Flexural Strength	200 MPa	ASTM D790 ISO 178
Compressive Strength	265 MPa	ASTM D695

Impact	Nominal Value Unit	Test Method
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Notched Izod Impact		
3.18 mm	75 J/m	ASTM D256
--	8.0 kJ/m ²	ISO 180/A
Unnotched Izod Impact		
3.18 mm	350 J/m	ASTM D256
--	20 kJ/m ²	ISO 180

Thermal	Nominal Value Unit	Test Method
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Deflection Temperature Under Load		ASTM D648
1.8 MPa, Annealed	> 260 °C	
CLTE		ASTM E831
Flow: -50 to 50°C	0.000020 cm/cm/°C	
Flow: 100 to 200°C	0.000015 cm/cm/°C	
Transverse: -50 to 50°C	0.000040 cm/cm/°C	
Transverse: 100 to 200°C	0.000080 cm/cm/°C	
Thermal Conductivity	0.32 W/m/K	
UL Temperature Rating	200 to 220 °C	UL 746B

Electrical	Nominal Value Unit	Test Method
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Volume Resistivity	1.0E+16 ohm-cm	ASTM D257
Dielectric Strength	20 kV/mm	ASTM D149

Electrical	Nominal Value Unit	Test Method
Dielectric Constant		ASTM D150
26°C, 1 kHz	3.80	
26°C, 1 MHz	3.80	
Dissipation Factor		ASTM D150
26°C, 1 kHz	0.0020	
26°C, 1 MHz	0.0020	
Arc Resistance	128 sec	ASTM D495
Insulation Resistance (90°C, 95%RH, 48 hr)	1.0E+11 ohms	

Flammability	Nominal Value Unit	Test Method
Flame Rating - UL	V-0 5VA	UL 94

UL	Nominal Value Unit	Test Method
Comparative Tracking Index (CTI)	130 V	UL 746

Injection	Nominal Value Unit
Drying Temperature	135 to 149 °C
Drying Time	2.0 to 4.0 hr
Suggested Max Moisture	0.10 %
Suggested Shot Size	25 to 75 %
Rear Temperature	293 to 316 °C
Middle Temperature	302 to 327 °C
Front Temperature	316 to 343 °C
Nozzle Temperature	302 to 327 °C
Processing (Melt) Temp	316 to 329 °C
Mold Temperature	135 to 149 °C
Injection Rate	Moderate-Fast
Back Pressure	0.350 to 0.700 MPa
Screw Speed	100 rpm
Clamp Tonnage	3.4 to 5.5 kN/cm ²
Cushion	2.50 to 6.50 mm
Screw L/D Ratio	16.0:1.0 to 20.0:1.0
Screw Compression Ratio	2.5:1.0

Injection Notes

Injection Pack/Hold Pressure: Set high enough to achieve maximum cavity pressure in the part. Typically set at 60-75% of peak injection pressure.

Notes

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