

Radel® R-5800

polyphenylsulfone

Radel® R-5800 is a high melt flow grade of Radel® polyphenylsulfone (PPSU). It is especially well-suited for parts requiring long flow length with thin walls. Radel® resins offer exceptional hydrolytic stability and toughness superior to other commercially-available, high-temperature engineering resins. They also offer high deflection temperatures and outstanding resistance to environmental stress cracking. Radel® polymers are inherently flame retardant, provide excellent thermal stability and possess good electrical properties.

Additional Radel® grades include a transparent injection molding grade (R-5000), an opaque, general purpose, injection molding grade (R-5100) and a transparent, extrusion grade (R-5500).

- Natural/Transparent: Radel® R-5800 NT
- Additional Made-to-Order Colors Available

General

Material Status	• Commercial: Active		
Availability	• Asia Pacific • Europe	• Latin America • North America	
Features	• Acid Resistant • Autoclave Sterilizable • Base Resistant • Biocompatible • Chemical Resistant • E-beam Sterilizable • Ethylene Oxide Sterilizable	• Flame Retardant • Good Sterilizability • Good Thermal Stability • Heat Sterilizable • High ESCR (Stress Crack Resist.) • High Heat Resistance • Hydrolytically Stable	• Radiation (Gamma) Resistant • Radiation Sterilizable • Radiotranslucent • Steam Resistant • Steam Sterilizable • Ultra High Toughness
Uses	• Aerospace Applications • Aircraft Applications • Automotive Applications	• Dental Applications • Food Service Applications • Hospital Goods	• Medical Devices • Medical/Healthcare Applications • Surgical Instruments
Agency Ratings	• ISO 10993		
RoHS Compliance	• RoHS Compliant		
Automotive Specifications	• ASTM D6394 SP0313		
Appearance	• Clear Amber	• Colors Available	
Forms	• Pellets		
Processing Method	• Extrusion • Injection Molding	• Sheet Extrusion • Thermoforming	

Physical

	Typical Value	Unit	Test method
Specific Gravity	1.29		ASTM D792
Melt Mass-Flow Rate (MFR) (365°C/5.0 kg)	20 to 28	g/10 min	ASTM D1238
Molding Shrinkage - Flow (3.18 mm)	0.70	%	ASTM D955
Water Absorption			ASTM D570
24 hr	0.37	%	
Equilibrium	1.1	%	

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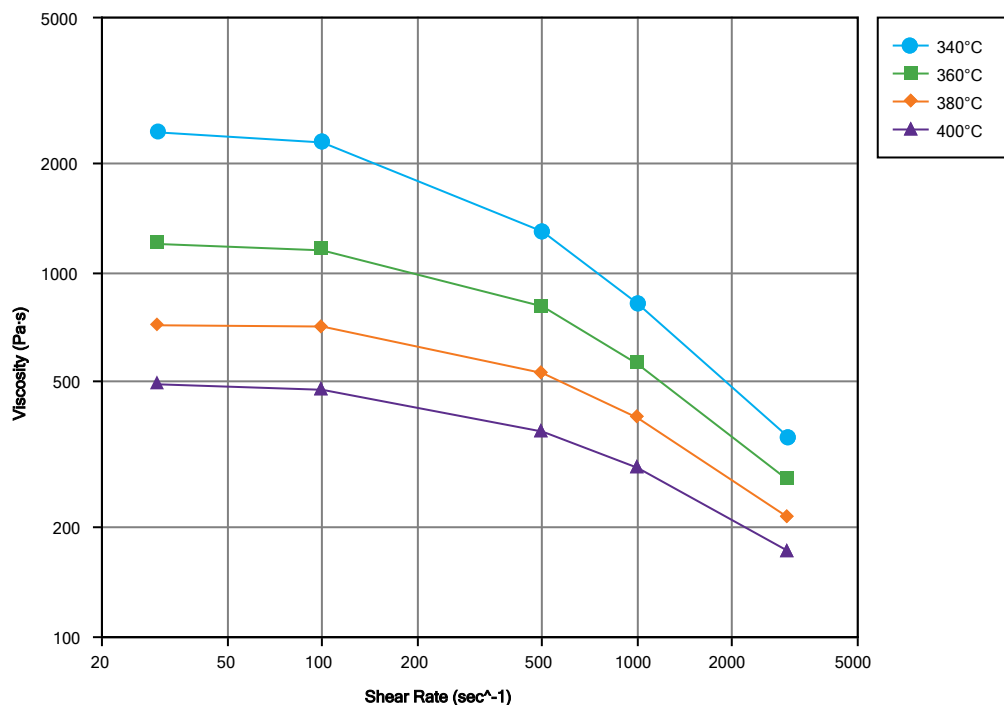
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Mechanical	Typical Value	Unit	Test method
Tensile Modulus (3.18 mm)	2340	MPa	ASTM D638
Tensile Strength (3.18 mm)	69.6	MPa	ASTM D638
Tensile Elongation			ASTM D638
Yield, 3.18 mm	7.2	%	
Break, 3.18 mm	60 to 120	%	
Flexural Modulus (3.18 mm)	2410	MPa	ASTM D790
Flexural Strength (5.0% Strain, 3.18 mm)	91.0	MPa	ASTM D790
Impact	Typical Value	Unit	Test method
Notched Izod Impact (3.18 mm)	690	J/m	ASTM D256
Tensile Impact Strength (3.18 mm)	399	kJ/m ²	ASTM D1822
Thermal	Typical Value	Unit	Test method
Deflection Temperature Under Load			ASTM D648
1.8 MPa, Unannealed, 3.18 mm	207	°C	
Glass Transition Temperature ¹	220	°C	DSC
CLTE - Flow (3.18 mm)	5.6E-5	cm/cm/°C	ASTM D696
Electrical	Typical Value	Unit	Test method
Volume Resistivity (3.18 mm)	9.0E+15	ohms-cm	ASTM D257
Dielectric Strength			ASTM D149
0.0254 mm	> 200	kV/mm	
3.18 mm	15	kV/mm	
Dielectric Constant (3.18 mm, 60 Hz)	3.44		ASTM D150
Flammability	Typical Value	Unit	Test method
Flame Rating ² (0.76 mm)	V-0		UL 94
Optical	Typical Value	Unit	Test method
Refractive Index	1.672		ASTM D542
Additional Information	Typical Value	Unit	
Steam Sterilization - w/ Morpholine ³	> 1000	Cycles	
Injection	Typical Value	Unit	
Drying Temperature	149	°C	
Drying Time	2.5	hr	
Processing (Melt) Temp	360 to 391	°C	
Mold Temperature	138 to 163	°C	
Screw Compression Ratio	2.2:1.0		
Extrusion	Typical Value	Unit	
Drying Temperature	171	°C	
Drying Time	4.0	hr	

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Viscosity vs. Shear Rate (ISO 11403-2)



Notes

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

¹ Heating rate of 36°F (20°C) per minute.

² These flammability ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions.

³ Cycles passed without cracking, crazing, or rupture.

Steam Autoclave Conditions:

- Temperature: 270°F (132°C)
- Time: 30 minutes/cycle
- Steam Pressure: 27 psig (0.19 MPa)
- Stress Level: 1000 psi (7.0 MPa) in flexure
- Additive: Morpholine at 50 ppm

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